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Radio World



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July 3, 2002

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EAS Decoders for LPFMs Readied

by Randy J. Stine

WASHINGTON The FCC is considering a request that would allow low-power FM stations to comply with Emergency Alert System rules by using less-expensive equipment still in development.

A broadcast equipment manufacturer has proposed changing Part 11 of the commission's EAS rules to allow LPFMs to install limited-function, pass-through decoders.

A critic of the proposed rules change says the pass-through decoder lacks logging capability and would only monitor a single broadcast station. Standard encoders/decoders require a minimum of two audio inputs, which allow for multiple monitoring.

The proposed switching equipment would allow an LPFM station to monitor
See EAS DECODERS, page 10 ▶

IN THE MIX



▶ **Consoles, Mixers & Routers in Buyer's Guide**

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DIGITAL NEWS

To Beat the Cascading Bogeyman

With IBOC Coming And More Codecs Than Ever Already in Use, Radio Struggles to Preserve Decent Sound

by Daniel G.P. Mansergh

What do you do when an audio feed has been stomped on several times before it reaches your station, and you need to encode and decode that audio even more before your station transmits it? How do you avoid ending up with ugly audio?

In today's broadcast production environment, many stations use digital audio from a variety of sources, much of it subject to different codecs applied to conserve storage space or to reduce the data rate for transmission over links with limited bandwidth.

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See CASCADING, page 8 ▶

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NEWSWATCH

New Task Force To Tackle Scarce Spectrum

WASHINGTON As more wireless and other companies want to use spectrum, the FCC is challenged to divide it up among users efficiently. To that end, the agency has formed a task force to help the agency to identify and evaluate changes in spectrum policy. Dr. Paul Kolodzy, senior spectrum policy advisor for the Office of Engineering and Technology, will head the cross-bureau

and multi-disciplinary task force.

FCC Chairman Michael Powell said, "The government has an almost impossible task trying to keep pace with the ever-increasing demand for spectrum and continuing advances in wireless technology and applications. In this fast-moving world, the commission cannot rely on outmoded procedures and policies. We must establish new ways to support innovation and the efficient, flexible use of spectrum."

Meanwhile, the FCC's new spectrum task force is seeking comment on everything related to the commission's spectrum policies, including spectral efficiency, public safety communications and interference

protection. Some of the questions:

Should the agency develop rules to require or facilitate band-clearing negotiations between new licensees and incumbents?

Should current, restrictive service and operating rules applicable in many bands be changed to provide licensees with greater flexibility? If so, in which bands and how?

How would the interference rights of incumbents and new licensees be redefined under flexibility?

Should spectrum policies vary by geographic area according to the relative level of spectrum congestion or use?

What is the impact, if any, of increased flexibility on how harmful interference should be defined and understood?

If the FCC adopts new policies to address interference, should the rights of new spectrum users be defined differently from those of the present incumbents? If yes, how?

Should the agency consider developing receiver standards or guidelines for each radio service that would be used in judging harmful interference?

Interested parties may file comments no later than July 8 and replies by July 23 to ET Docket 02-135.

Music Industry Raises Payola

WASHINGTON Payola is back in the headlines. Record company executives, artists and consumer advocates have complained to Congress about reported payola problems with some large radio group owners.

The record labels and organizations including AFTRA, RIAA and the Future of Music Coalition have urged Congress and the FCC to look into promotion practices for radio, including revising payola laws to cover independent promoters, and studying the impact of consolidation on the music community.

The groups claim radio consolidation has forced up concert ticket prices and made it difficult for non-affiliated artists to book events.

In June, Sen. Russ Feingold, D-Wis., and Rep. Howard Berman, D-Calif., were reportedly preparing legislation to look into how consolidation has affected radio programming and promotion.

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NEWS ANALYSIS

EAS Planners Consider Overhaul

Many Stations, Governments Are Refocusing on The Relevance of the System in Light of Sept. 11

by Randy J. Stine

WASHINGTON Since the terrorist attacks of Sept. 11, the issue of how the Emergency Alert System factors into the nation's civil defense effort has become more critical.

Most experts contacted by Radio World believe the national warning system can be improved. But they're debating whether new technologies should be integrated into the current infrastructure or whether an entirely new system is needed to cope with natural disasters or further terrorism.

Critics of EAS claim the warning system will remain broken without mandatory broadcaster participation and improved message delivery methods to reach more people.

Future

Efforts to address homeland security issues are underway within the EAS community, including discussions with the Partnership for Public Warning, the Office of Homeland Security and the newly formed Media Security and Reliability Council.

No matter the outcome of dialogue among the groups, at least some emergency planners believe the EAS will have a place in future national warning systems.

"Local warnings have always been the lifeblood of EAS ... the tornado warnings, toxic spills and now the Amber Alerts. That is what EAS does best. You don't want to throw the baby out with the bathwater in this case," said Al Kenyon, new chairman of the EAS National Advisory Committee and senior vice president of projects and technology for

Clear Channel Radio.

Richard Rudman, chairman of the Los Angeles County EAS local emergency communications committee and the past EAS NAC chairman, said the underlying principles of EAS could be made to work.



Al Kenyon, EAS NAC chair, is congratulated by Richard Rudman, who held that post until the national EAS meeting this spring.

"At the same time, we all recognize that the media has to play a major role in the shaping of a future warning system," Rudman said.

Van Schallenberg, emergency manager for Cashion, Okla., and chairman of the EAS NAC subcommittee on future emergency alerting, said, "The public expects technology to move forward, and EAS is not. We need to give a projected date for a new system to take effect and begin

allowing some kind of transition period."

Schallenberg said EAS was adequate when it was implemented in 1997, but that with the advent of Internet protocol and wireless communications systems, EAS needs an overhaul.

"We have to blend alerting into all of the wireless devices available today. That way it would allow EAS to reach more people," he said.

A rollout of in-band, on-channel digital audio broadcasting in the United States could play a major role within EAS.

"We have had discussions with IBOC data stream people regarding future warning technology," said Kenyon. "There is some overhead in the stream that could allow stations to eventually include emergency alerts. The problem is you need the commercial receivers to understand it, whether it would turn on or override the audio with the message. ... It's just not a mature-enough product yet to help much," Kenyon said.

Planners seem to agree that the reliability of EAS must be improved to reach more people. They point to a failure this year in Louisville, Ky., as an example of how human fallibility can affect the warning system. Two people lost their lives in the storms.

In that case, the city's primary EAS station, WHAS(AM), failed to activate severe thunderstorm and tornado warnings as twisters hit the area in late April, station officials said. The radio station relied on WHAS(TV) to activate the alert tones in emergencies. However, the television station had no meteorologist on duty the morning of April 28 to issue the emergency.

WHAS(AM) officials say the deaths might have occurred anyway, but still want to improve their procedure for issuing warnings.

Kelly Carls, director of operations for station licensee Clear Channel Louisville, said, "The television meteorologists had control of the EAS (Sage) Endecs. What

See EAS, page 7 ▶

9/11 Prompts U.S. Warning Talks

WASHINGTON Since 9/11, it seems everyone wants to fix EAS.

Several quasi-federal groups have formed to address homeland security and national alert issues since the Sept. 11 attacks. Many EAS planners say they will assist the organizations in any way they can.

Partnership for Public Warning officials say the goal of the public-private partnership is to open dialogue among civil defense planners and private parties to make warnings more effective.

"We are drafting a national strategic plan for public warning that can reach more people. What we have now is quite ineffective," said Peter Ward, chair of the board of trustees for Partnership for Public Warning.

The EAS National Advisory Committee heard presentations from PPW officials and the Homeland Security Council at its May meeting.

"PPW has some real potential. They're looking at some alternative warning methods that have potential. Methods that don't require people to be listening to the radio or watching TV," said Steve Johnson, vice chair of the EAS National Advisory Committee. "It's important that we interface with these new groups to guarantee we are not duplicating efforts."

The Bush Administration created the Office of Homeland Security, and in June the president urged Congress to make it a cabinet-level department, to coordinate a national strategy to strengthen protection against terrorist threats and attacks in the United States.

Another group delving into EAS concerns as part of its mission is the Media Security and Reliability Council, formed by the FCC to help ensure the reliability of the nation's radio, TV and cable broadcasts in the event of natural disasters or further terrorist attacks. The group, consisting of executives from media organizations, also is expected to address the issue of EAS reliability.

In June, the SBE was considering a request to have a representative on the MSRC for EAS discussions. SBE already plays a role in the PPW and EAS NAC.

— by Randy J. Stine

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Opinions Clash on Ownership

As instructed by the D.C. Court of Appeals last winter, the FCC is reviewing its rules on local radio ownership.

Comments for the proceeding poured into the commission before the filing deadline in May. Radio broadcasters of all sizes as well as various interest groups took the opportunity to advise the commission about whether current local ownership limits, which allow one entity to own up to eight stations in a market, should be eliminated or changed.

Under fierce debate is whether raising the limit — and in so doing, encouraging further consolidation in the industry — would harm diversity.

The following is a sampling of comments on this and related issues:

"Please do not allow the current situation to grow even worse by removing this remaining limitation on concentrations of market power in the mass media. For the sake of preserving our most basic liberties, which depend upon a free flow of information and ideas, we urge the commission to keep in place the restrictions on maximum media ownership in given local markets. ...

"It is no secret, to either the commission or the Congress, that removal of past limits on media ownership has already led to serious negative consequences: reduced quality of radio and TV programming; reduced variety in radio and TV programming; reduced innovation in radio and TV programming; more commercials, and less pro-

gramming, on radio and TV; reduced news coverage by radio stations; greatly reduced local news coverage by radio stations; reduced employment in radio and TV broadcasting; reduced opportunities for entrepreneurship and upward

"Studies by ... Network prove that consolidation led to an increasing variety of formats. A(nother) study by University of Wisconsin at Milwaukee provides empirical support for the proposition that consumers at the local level have access to a growing range of media options. Given the presence of such a healthy and competitive market, both within the radio industry itself and across the various media platforms, there is no justification for regulation in the name of diversity or competition. ...

"The evidence before the commission in this proceeding is decidedly one-sided, demonstrating that consolidation in the radio industry at the local market level has not harmed competition or diversity. There is no meaningful evidence to the contrary. Thus, as a matter of administrative law, the commission must abandon any and all efforts to impose further regulation, beyond compliance with the numerical limits of Section 202(b), on radio station ownership. ...

"On the basis of the record in this proceeding, the commission cannot justify the imposition of regulations on local radio multiple ownership beyond the statutory numerical limits. The United States Court of Appeals for the District of Columbia has made it clear that, far from being free to impose new restrictions, the commission bears the burden of justifying the retention of the existing rules. So long as it does not relax or remove all rules relating to radio ownership, the commission must

See OWNERSHIP, page 6 ▶

Loosening the local radio broadcast ownership limits does nothing to abate the trend created by the 1996 Act.

— SBA

mobility; negative consumer response (i.e., declining radio listenership and TV viewership); and, worst of all: increasingly centralized control over the flow of information and ideas in what is supposed to be a representative democracy."

Amherst Alliance
Denver

(filed on behalf of a coalition of citizens' advocacy groups)

NPR, Union Continue Talks

WASHINGTON After two days of mediation in early June, National Public Radio and its unionized technicians were optimistic that an agreement on a new contract could be reached sometime this summer.

The sides have been working on a contract since the union's certification in 1999. NPR management wants to redraw jurisdictional work rules for its technicians, which has met with resistance from the bargaining unit (RW, March 13).

"We have an agreement in principle on all major points, but not on how it will be presented to the bargaining unit," said Paula Olson, staff representative for NPR in the National Association of Broadcast Employees and Technicians-Communications Workers of America. "The bargaining committee would like to send it back with a recommendation of approval, but only if several conditions are met." She declined to identify those conditions.

Olson said the union requested the mediation sessions to resolve the remaining issues.

An NPR spokeswoman said, "A lot of progress has been made. We look forward to a comprehensive resolution in the near future."

NABET-CWA represents approximately 80 NPR technicians, who rejected an NPR contract offer in early January. Olson said a membership vote on the latest offer could happen in July.



This spring, NABET-CWA picketers at NPR headquarters passed out leaflets stating, 'We want to participate as part of the new digital workforce. We want to be treated like valuable employees.'

Currently, only NPR's unionized technicians can record and mix audio for broadcast at its Washington headquarters and at its bureaus nationwide. NPR officials believe digital technology has made audio editing more time-efficient, and the network wants its producers, engineers and reporters to share in the duties.

Union bargainers say NPR management has not offered any new assignments to compensate for the workload loss. NPR officials say technicians spend nearly 65 percent of their time mixing audio.

"We want to allow non-technical employees to perform some, but not all, routine mixing activities," said Mike Starling, vice president of engineering at NPR.

NABET-CWA members picketed NPR's Washington headquarters in May.

— by Randy J. Stine

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Ownership

► Continued from page 5
leave Section 202(b)'s numerical limits, already incorporated in its rules, as the sole regulation governing local radio ownership."

*Clear Channel Communications
San Antonio, Texas*

"From the (U. S. Court of Appeals for the District of Columbia Circuit) ruling in *Fox Television Stations, Inc. v. FCC*, ... it follows that the FCC cannot retreat from the baseline Congress has established and adopt new rules or procedures which increase restrictions on local radio ownership. ...

Americans have access to virtually countless sources of news and information, and that consolidation has led to greater format diversity. Accordingly, the local radio ownership rule is no longer necessary in the public interest.

— Viacom

"A proper reading of the FCC's statutory authority — or in the present case, its *lack* of authority to adopt a more restrictive rule — should be the end of the matter. Assuming, ... that the FCC was free to adopt a more restrictive rule, the comments show no reason why it should do so. For every argument that large groups are inimical

to 'diversity,' there is ample anecdotal evidence that the creation of station groups permitted by the 1996 Act promotes diversity. ...

"For each licensee who complains about the difficulty of competing against a multiple-station group, there is another who recognizes that adopting a more restrictive rule, after six years of industry consolidation, would only cast existing competitive balances in concrete, to the detriment of local station owners who seek only the opportunity to build stronger, more competitive combinations of their own."

*MBC Grand Broadcasting,
Grand Junction, Colo.*

The Office of Advocacy of the United States Small Business Administration "recommends that the commission treat the numeric limits of ... the 1996 Act as a presumption of acceptable levels of local radio owner-

ship that can be rebutted by specific reasons to conclude that diversity or competition in a market would be harmed ...

Any modifications to ownership rules should be guided by public interest values or promote viewpoint and source diversity, and increasing competition. ...

"(The Office of Advocacy) does not agree with commenters who argue that the FCC does not have the authority to consider other factors beyond compliance with numerical limits. ...

"(It) believes that loosening the local radio broadcast ownership limits does nothing to abate the trend created by the 1996 Act. If anything, (it) believes that the trend would continue if the local radio broadcast ownership rules are relaxed even further. The radio broadcast market would continue to consolidate, which would squeeze out small broadcasters and raise market

entry barriers for new businesses. A smaller number of broadcasting entities will restrict the number of viewpoints and jeopardize the commission's goal of promoting diversity in the radio broadcasting market."

*The Office of Advocacy of the
U.S. Small Business Administration
Washington*

"Viacom Inc. believes that the commission should neither change the methodology that it has used for many years to define radio markets nor revise the way it counts the number of commonly-owned stations in those markets. ...

"Viacom believes that the application of the overlapping signal contours methodology has been effective in the overwhelming majority of the assignment and transfer of control applications to which it has been applied since the passage of The Telecommunications Act of 1996. Any modifications to that time-tested methodology would be inconsistent with Congress' pro-competitive goals in substantially relaxing the commission's local radio ownership restrictions. ...

"Commenters supporting retention of the rule have provided data (that) show that consolidation has occurred, but not that consolidation has had any adverse impact on the listening public. In contrast, the empirical evidence submitted by Viacom and other commenters demonstrates that, notwithstanding consolidation, Americans have access to virtually countless sources of news and information, and that consolidation has led to greater format diversity. Accordingly, the local radio ownership rule is no longer necessary in the public interest. ...

"The report (by Kofi Ofori for the Minority Media and Telecommunications Council) reflects that consolidation has not had a disproportionate impact on the number of minority owners. Although the overall number of minority owners has decreased somewhat, the level of decline in the number of minority owners is *less* than the decline in the number of owners generally."

*Viacom Inc.,
Parent of Infinity Broadcasting
New York*

EAS

► Continued from page 3

happened was we got caught short at 5 a.m. on a Sunday morning when the TV weather office was not staffed."

WHAS(AM) had a newscaster on the air reading the weather warnings, but no EAS warning tones were sent to other stations. The station's EAS plan covers more than 20 counties in Kentucky and Southern Indiana, Carls said.

"This was a classic example of why EAS fails sometimes. Either staffers miss the information or do not understand how to activate the system properly," said Lawrence Estep, a NWS severe weather spotter and former broadcaster.

"I'm not sure why (WHAS) found it necessary to bypass NWS and have human intervention, which leads to failures."

WHAS radio officials have since said they would monitor and relay severe weather warnings from NOAA Weather Radio.

"We have taken measures to ensure this will not happen again," Carls said.

"We will now take EAS activations directly from the National Weather Service and the Louisville NOAA office. We feel this will offer a greater level of protection for our listeners and allow us to fulfill our EAS commitment."

"We will now take EAS activations directly from the National Weather Service and the Louisville NOAA office. We feel this will offer a greater level of protection for our listeners and allow us to fulfill our EAS commitment."

EAS 'unfinished'

Critics of EAS say the warning system needs to embrace new technology and strike a balance between alarming and not alerting enough people.

"I believe there is a failure to connect between broadcasters and listeners when it comes to EAS. Until EAS data can turn on a consumer's receiver, it's just a half-finished system and doesn't work," said Bob Hensler, vice president of engineering for Colorado Public Radio.

The public expects technology to move forward and EAS is not.

— Van Schallenberg

"As EAS stands now, it's nothing more than a drain on station resources. In the case of real emergencies like Sept. 11, it only causes unnecessary panic. That's why the FCC temporarily suspended EAS tests after the attacks." The FCC suspended routine weekly and monthly EAS tests until Oct. 2 following the terrorist attacks.

Hensler said he spends 10 to 15 hours a month reviewing EAS logs for CPR's nine radio stations across the state.

"I have to spend time tracking down why a test was missed or not sent. For the time and effort involved, there is no gain. The level of my frustration continues to grow," Hensler said.

Another EAS uncertainty for broadcasters has been a patent dispute between Quad Dimension Inc. and the National Weather Service over the technology used in EAS.

Quad believes its patent for "Storm Alert for Emergencies" is the basis for the Emergency Alert System. An examiner with the Patent and Trademark Office earlier this year rejected Quad's patent claims upon a second reexamination for being "improperly enlarged" and left the decision subject to additional appeals.

"As of late May, Quad had not appealed the examiner's claims," said Glenn Tallia, spokesman for the National Oceanic and Atmospheric Administration.



Bob Hensler

In early 1999, Quad sent notices to 1,500 broadcasters asking them to sign license agreements.

EAS and National Weather Service officials have grown weary of the patent controversy.

"We believe this is finally nearing a conclusion, a positive one for us," said Tallia.

Another issue that would presumably affect future EAS efforts is whether the EAS National Advisory Committee will continue to exist after the group's federal charter expires this



Van Schallenberg

summer. Committee members remain optimistic the charter will be extended.

"We are having on going discussions with the FCC in regards to the future of the NAC," said Kenyon.

"There is broad recognition that the National Advisory Committee plays a critical role as being a conduit between the broadcast engineering community and regulatory demands of the FCC and EAS," Rudman said.

The 25 members of the NAC meet once a year to make appointments and set agendas.

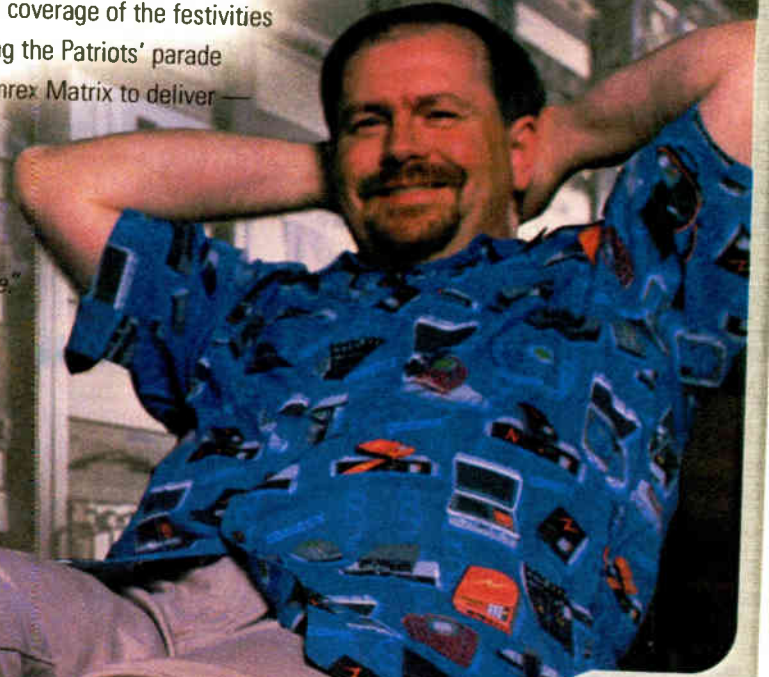
Steve Johnson, director of engineering and technology for Time Warner Cable, was appointed vice chair at its May meeting. Kenyon was appointed chairman to succeed Rudman at the meeting.

Last-minute remotes? No stress for John Kennedy of Entercom Boston.

The Patriots win the Superbowl! A major cause for celebration in Boston. And potentially major stress for John Kennedy, Engineering Director for Entercom Boston. With no advance warning, John had less than 24 hours to orchestrate coverage of the festivities on numerous stations — including live remotes along the Patriots' parade route. Fortunately, John knew he could count on Comrex Matrix to deliver — even last-minute. With Comrex in your toolbox, last-minute remotes are successful, not stressful.

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John Kennedy, Engineering Director, Entercom Boston



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Cascading

► Continued from page 1

encoded audio recorded on MiniDisc, MPEG Layers II and III over ISDN, proprietary coding schemes for POTS transmission, and soon, the Perceptual Audio Coder employed as the compression technology for in-band, on-channel digital audio broadcasting — all find their way into the broadcast chain, making these perceptual codecs an essential part of the audio production toolbox.

However, applying multiple encode-decode cycles on the same piece of audio can cause significant degradation that decreases with each generation until the audio becomes unlistenable.

Unlistenable audio

This problem of “cascading codecs” is becoming more common, especially at radio stations that produce programs with audio from many sources, leading radio engineers to ask how an audio production and distribution chain involving multiple stages of perceptual coding should be designed.

A trio of presenters addressed the question at the Public Radio Engineering Conference in Las Vegas this spring.

Ken Pohlmann, professor of music at the University of Miami and author of “Principles of Digital Audio,” reviewed perceptual coding theory and presented an overview of techniques used by codec designers to encode bit-reduced digital audio.

Ultimately, he said, no coding technique will be able to remove unnecessary bits from the data stream completely without leaving or creating artifacts. These artifacts can add up through serial application of the same or different codecs, creating audible defects.

“The lower the bit rate, the greater the chances for problems,” Pohlmann said.

He discussed ways of assessing the characteristics and magnitude of particular coding artifacts. Traditional graphical methods for measuring audio signals are not particularly useful for detecting digital audio defects, he said, because single-tone, multitone or pink noise sources don’t emulate the very short duration and narrow frequency bands typical of coding errors.

FFT analysis is capable of measuring the difference between samples of actual source material, but the volume of data can be difficult to interpret consistently, he said. Subjective listening tests are the most accurate way to evaluate codec cascading problems, Pohlmann said, and they have the advantage of accessibility. An engineer with a critical ear can easily set up an A-B test to examine a specific set of codecs.

Pohlmann played examples of encoded audio using two different MP3 codecs. As expected, the audio quality of music as it passed through one codec and then the other degraded gradually with each successive generation until it became unlistenable after the fourth or fifth pass.

The most dramatic examples were of the same codec applied to the same piece of audio multiple times. One of the codecs performed remarkably well, with only slight degradation after each pass, so that the fifth-generation audio sounded fairly close to the second-generation audio.

With the other codec, however, significant degradation was evident even

after the first encode-decode cycle, and the audio was seriously impaired after the second cycle. Pohlmann used these examples to demonstrate that not all codecs are created equal, even those based on the same encoding algorithm.

The codecs employed and the sequence of their use create wide variations in the severity of audio degradation.

Many perceptual codecs available for computers are written by software engineers, not audio engineers, he said, so users should experiment with products and choose those that perform best with other codecs in your particular broadcast chain.

Alex Cabanilla, senior engineer with the PAC Group at Ibiqity Digital Corp., detailed the PAC codec architecture and the subjective listening tests on PAC-encoded audio conducted during the development of Ibiqity’s IBOC system.

Ibiqity has conducted limited compatibility testing with cascading MPEG Layer II and Layer III codecs, Cabanilla said; but the company is looking to the users of PAC, both satellite radio and terrestrial IBOC broadcasters, to supply data for further assessment of any cascading problems.

Cabanilla discussed QPAC, a variant of the PAC codec developed by Ibiqity as a studio-side complement to the IBOC transmission system. Ibiqity designed the algorithm to allow storage, real-time audio transport and transcoding to PAC without requiring a decoding and re-encoding cycle, eliminating the possibility of cascading problems at this stage in the signal chain, according to Cabanilla.

Ibiqity’s testing indicates that QPAC-to-PAC transcoding allows higher-quality audio than MPEG Layer II-to-PAC or Layer III-to-PAC broadcasting chains.

As development of the QPAC algorithm continues, Cabanilla said, Ibiqity will test QPAC in a variety of real-world applications, including STL transmission, digital storage, content production and satellite distribution. The company also plans to study intercodec cascading problems in greater detail.

Case study

Rich Rarey, master control supervisor at NPR and a Radio World columnist, described a troubleshooting project to demonstrate how adding one more digital codec to a transmission chain can cause audio problems in conjunction with other codecs.

WUNC(FM) in Chapel Hill, N.C., found that a translator in Buxton would transmit severely garbled audio of certain elements within NPR programs, but those elements sounded fine on WUNC. After evaluating and testing the signal chain, NPR and WUNC were able to replicate the problem with a particular piece of audio fed from Scotland to NPR using a G.722 codec over ISDN.

When played from NPR’s MPEG

Layer II audio storage system through an analog board to NPR’s MPEG Layer II satellite system, then through WUNC’s linear digital plant and a final MPEG Layer II satellite link to feed the translator, this audio element intro-

duced enough digital artifacts to “break” the second satellite codec, affecting only the translator.

Layer II audio storage system through an analog board to NPR’s MPEG Layer II satellite system, then through WUNC’s linear digital plant and a final MPEG Layer II satellite link to feed the translator, this audio element intro-

duced enough digital artifacts to “break” the second satellite codec, affecting only the translator. NPR has been more vigilant about the digital coding of audio feeds since the WUNC experience, Rarey said. Now NPR does not accept audio feeds in MP3 format, because employing this algorithm can lead to degraded audio in fewer generations than does

Recommendations

Their recommendations for minimizing problems were similar:

- Keep digital audio linear with high bit rates as long as possible;
- Know your codecs. Experiment and test to see what makes them “break”;
- When you have to use a codec, keep the compression ratio as low as is practical.

They agreed that further research and development of new or modified coding algorithms optimized for multi-generational storage and transmission signal chains would be the best long-term solution to the cascading codec problem.

Radio World is interested in hearing from readers who have experience with cascaded algorithms, good or bad. Send e-mail to Lstimson@imaspub.com.

NEWSWATCH

Tauzin, Upton Seek Repeal of Cross-Ownership

WASHINGTON Two prominent Republicans — House Energy and Commerce Committee Chairman Billy Tauzin of Louisiana, and Telecommunications and the Internet Subcommittee Chairman Fred Upton of Michigan — want the FCC to repeal the newspaper/broadcast cross-ownership rule, which prohibits common ownership of a broadcast station and a daily newspaper in the same market.

In a letter to FCC Chairman Michael Powell, they wrote, “When the rule was first adopted, there were 7,785 radio stations, 952 television stations, three major broadcast networks ... cable television systems served 13 percent of television households, direct broadcast satellite providers were nonexistent, and the Internet was not commercially available.

“Today, there are approximately 12,900 radio stations, 1,600 full-power television stations, 2,390 low-power television stations and 230 Class A television stations. There are now four major broadcast networks ... along with other emerging broadcast networks (e.g., UPN and WB). Today, cable television systems serve approximately 70 percent of television households (with over 200 video programming services available on such systems, including significant news programming). Today, DBS is serving approximately 15 percent of multi-channel video programming distribution households.”

The pair also stated, “We believe this explosion of media sources should eliminate any concern regarding a lack of diversity of views in the marketplace and competition, which have been the principal justifications for the rule.”

XM Explores Data Applications

XM Satellite Radio and Command Audio Corp. have inked a licensing deal for Command Audio’s application audio technology. XM said this allows it to develop a data applications platform for future radios. The technology will let the satellite radio company provide subscribers enhanced national information services now being researched. The satellite broadcaster says these are dedicated to rural, trucking and other markets.

Command Audio is a privately held company backed by investors Macrovision, Motorola and Texas Instruments and various financial investors.

Most Stations Want More Booze Money

DALLAS According to the results of an RAB study on radio liquor ads, 62 percent of respondents are accepting hard-liquor advertising, and of those that are accepting, about half are actively pursuing the category.

More than 80 percent want to increase their revenue from the category, yet a small percentage (14 percent) currently have more than four hard-liquor brands on the air.

Sixty percent of the respondents have been accepting revenue from this category for more than a year. The survey also shows a recent rise in the percentage of stations accepting these ads.

Finally, the survey turned back to those stations that do not accept hard-liquor advertising to find out why. The top answer, at 51 percent, was that the ban was due to a company policy.

CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing: Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it. Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

On the other hand, maybe you are the sort who can run a fast machine. Who loves the thrill of smooth power. Who revels in the admiration of others.

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EAS Decoders

► Continued from page 1

another broadcast station in its market and automatically "pass through" EAS bulletins, said Ken Lawson, president of Lawson Associates.

When the bulletin is received, the EAS decoder/switch controller transmits a command to switch audio from the LPFM to the EAS source station, he said.

LPFM exemption

"Instead of monitoring a local EAS station for the purpose of manually shutting down the station for a bulletin, the decoder automatically switches the EAS bulletins on-air from the source," Lawson said.

Lawson Associates, a developer of automated information systems based in St. George, Utah, filed the Petition for FCC Rulemaking in March. The petition followed the commission's Feb. 22 Report and Order, which called for LPFM broadcasters to install only EAS decoders.

However, because FCC-certified EAS decoder-only equipment is not yet on the market, the commission has granted a temporary exemption for LPFM broadcasters allowing them to operate without EAS gear.

"We provide that LPFM stations need not install EAS decoders until one year after the commission publishes in the Federal Register that at least one EAS decoder has been certified," the commission stated in its latest R&O.

Several manufacturers have non-

broadcast-type, full-function EAS decoders on the market, but they have yet to be certified by the FCC. An example of a non-broadcast EAS decoder is the TFT Safety First, a public emergency warning system sold to schools, hospitals, shopping malls, sports arenas, churches and convention centers. The product is not FCC type-certified for broadcast operation.



Ken Lawson

The commission fears the number of authorized LPFM stations "is too small to create sufficient demand for the manufacturers of such devices" to create EAS decoder-only devices. As of early June, 16 low-power FM stations had completed the commission licensing process and 284 construction permits had been issued.

During LPFM proceedings, the FCC anticipated that certified decoders would be available to broadcasters for under \$1,000. Lawson estimates the price point of his company's limited-function EAS decoder, currently in development, at around \$650.

Most full-function EAS encoder/decoders on the market cost around \$2,000, Lawson said. Gorman-Redlich's EAS1 encoder/decoder lists for \$1,795, while TFT's EAS911R4 encoder/decoder lists for \$2,195. The Sage Endec 1822 EAS system lists for \$2,399 through Harris.

"The unit we are developing has no printing or memory capability. It will, however, allow LPFM broadcasters to participate in EAS at a reasonable cost," Lawson said.

Objection

At least one EAS encoder/decoder manufacturer filed reply comments with the FCC critical of the reduced capabilities an EAS decoder switcher would provide.

Harold Price, a consultant to Sage Alerting Systems and president of BekTek Inc., wrote, "The FCC has (previously) resisted calls to reduce EAS functionality and general applicability. By continuing to hold all who broadcast ... to a common standard, the EAS system is strengthened.

"My concern is that the request provides a set of capabilities that are severely reduced from that of other broadcast and cable outlets, resulting in an underclass of citizens whose notification options are reduced," Price wrote.

In his reply comments to the FCC, Price urged the commission not to give up on the full decoder-only option.

"The industry has been challenged to



Dr. Keith Morton is the designer of Lawson's EAS limited-function switch controller.

to react to selected alert codes. It lists for \$795.

"We do plan to offer a decoder for FCC approval. We expect to submit an application to the commission shortly," Parker said.

Parker said there was no need for a certified EAS decoder-only device prior to the commission's February report and order that approved them for use on LPFMs.

Obligations

The role of low-power FM stations in local EAS plans is evolving.

Al Kenyon, chair of the EAS National Advisory Committee, said it is unlikely an LPFM station would ever be used as a relay point or data originator for EAS messages.

At least two vendors are working on a decoder-only option as specified by the new EAS rules.

— Harold Price

provide a low-cost option while still providing full EAS functionality, including multiple receivers for redundancy, the ability to override a low-priority test with an Emergency Alert Notification and logging features to ensure compliance. At least two vendors are working on a decoder-only option as specified by the new EAS rules. We should allow time for the industry to address the market within the new rules."

One EAS observer said the non-broadcast-type EAS decoders on the market right now would likely work for low-power broadcasters.

"It would be a simple, off-the-shelf solution to the problem of not having these certified decoders available yet. Regardless, I prefer that low-power broadcasters voluntarily participate in EAS," said Michael Brown, president of Brown Broadcast Services Inc., a private broadcast consulting firm.

TFT Inc. makes the Safety First decoder, which is not type-certified for FCC applications, said Darryl Parker, TFT vice president for business development.

The Safety First has a built-in NOAA Weather Radio and can be programmed

"However, if it were in a real rural community and the broadcast outlets were limited, I would hope the (LPFM) broadcaster would step up and purchase an encoder/decoder as a service to the community," Kenyon said.

Lawson expects the FCC will act quickly on his company's petition and authorize an EAS decoder that meets the Part 11 specification.

"I think (the FCC) realizes that low-power broadcasters need some relief and are anxious to move forward with their EAS obligations," Lawson said.

The commission's next step could be to issue a Notice of Proposed Rule Making and seek additional comments on the proposal.

A source close to the Society of Broadcast Engineers said the industry group is likely to support the idea of decoder-only EAS equipment.

"I think SBE will support the concept as long as there is a way to make decoder-only devices fit within the basic concept of EAS, including diverse routes to cut down on single-point failure and assurances that the device will respond properly," the source said. ●

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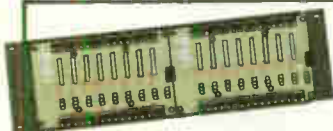
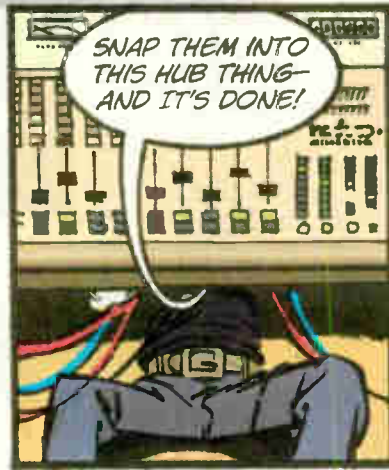
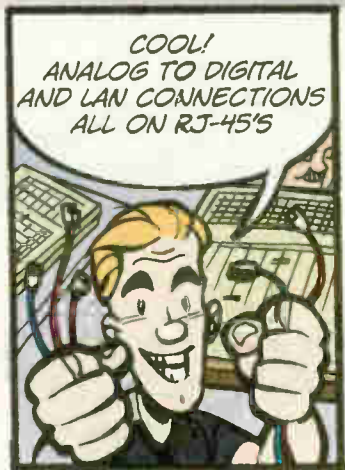
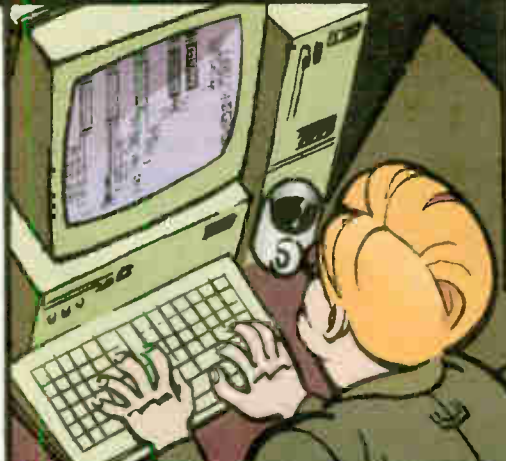
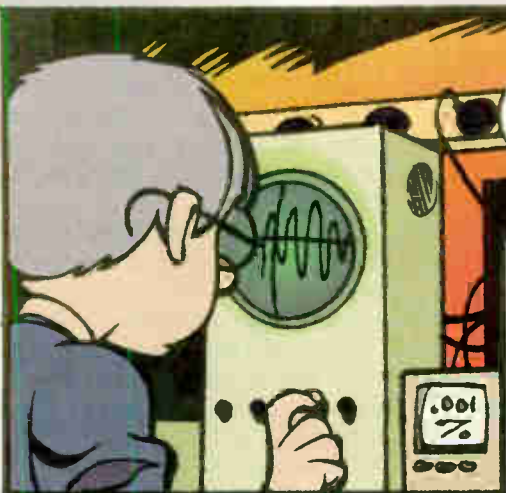
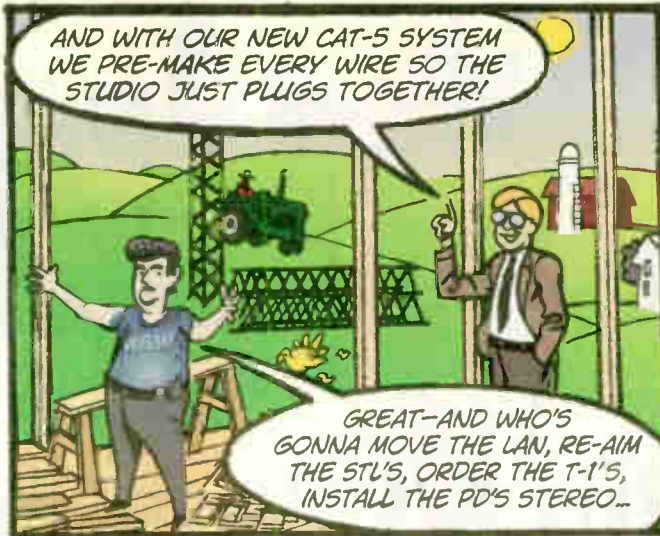
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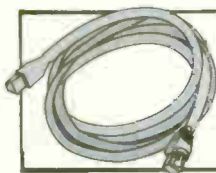
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Workbench

Radio World, July 3, 2002 Past columns are archived at www.rwonline.com/reference-room

Install This A/C Insurance Tray

by John Bisset

Now that summer is in full swing, consider adding a safety "insurance" tray designed by Jon Banks, a contract engineer in Colorado.

Space limitations require the air-conditioning system to be ceiling-mounted. Although they weren't directly over the transmitters, Jon didn't want to take any chances with clogged condensate drains.

Speaking of cleaning, now is the time to place an anti-algae tablet in the drain pan of your air conditioner. These horse-pill sized tablets prevent the formation of algae in the drain system. Algae, which the summer heat only accelerates, develops a formidable clog that will block the drain and cause indoor flooding. The tablets are available at HVAC supply stores.

★ ★ ★

but when Mike arrived, he found a 40V peak-to-peak RF difference (measured on a scope) between the transmitter chassis and the rack next to it. Both the transmitter and the rack were tied to ground straps — different ground straps.

Further analysis showed the RF appeared on the output terminals of the audio processor, wiping out the op-amp outputs by being forced back into them. Mike writes on Dave Biondi's *radio-tech@broadcast.net* that this is a common occurrence, RF getting back into the outputs, and one that often is overlooked.

The problem was resolved by grounding the rack and transmitter together.

In troubleshooting radio frequency interference, shielding is the next thing to check. Conventional wisdom is to ground the audio shields as only one end; otherwise the shield carries current if there is any voltage difference between the two ends. If such a situation occurs, the shield

stops shielding and contributes to the problem by inducing current into the wires inside.

It's generally considered best to ground the shield at the lowest-impedance end, which is almost always the source. In building more than 100 studios, Mike says he's not seen connecting either end an issue — as long as there's no RF. Just make sure both ends don't get grounded.

Add RF, and the rules all change. Sometimes grounding at both ends works best, sometimes only one end. And which end may make a difference.

It's been Mike's experience that if you need to ground both ends of a wire to improve the situation, you might want to engineer a better ground connection between the two points, then revisit the issue of grounding the shield.

A last resort is to use chokes and bypass capacitors. Remember that while caps are easier to obtain and install, chokes are much more effective. Capacitors only shunt RF away by

See WORKBENCH, page 14 ▶

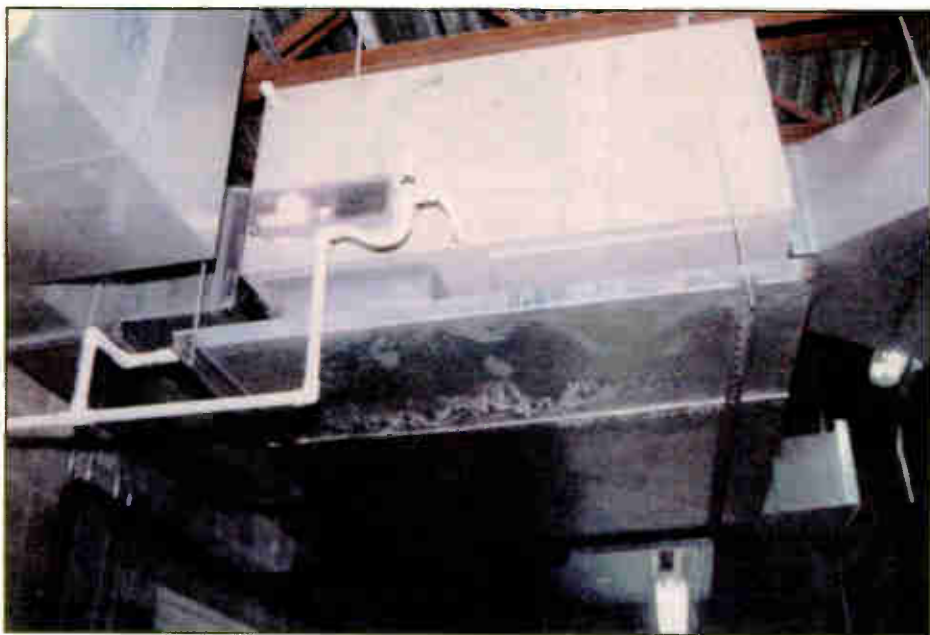


Fig. 1: The tray is mounted under the air conditioner.

Fig. 1 shows the tray mounted under the air conditioner. Note how the tray has a drainpipe tied to the condensate drain, just in case a flood occurs. A moisture sensor placed in the pan and tied to the remote control is a fitting final touch.

Fig. 2 is a close-up of the condensate drain, which should always include a trap and a capped port for cleaning.

Grounding, or the lack thereof, can do some weird things.

Mike Patton, president of Michael Patton and Associates in Baton Rouge, Fla., recalls an RF problem in which an MW-1 transmitter couldn't be turned up above 200 watts because the higher power would literally kill the audio.

All suspicions were on the transmitter;



Fig. 2: The condensate drain should include a trap and capped port.

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WIRED FOR SOUND

USB & FireWire, Fired Up for Data

by Steve Lampen

I've been leading you astray about data cable in the last couple of columns (April 24, June 5).

Many broadcast facilities now have a huge percentage of data cables, such as Category 5 or 5e or 6, in amongst the audio cables. It's almost getting to the point where you can't buy a box without some data processing chip inside and a data port on the outside.

Some of these ports are RJ-45 Ethernet. But there are other types of data delivery, with their own advantages and disadvantages. They include USB and IEEE 1394 "FireWire."

Bandwidth

Both of these trademarked protocols use "plug-and-play" architecture — you can attach or disconnect devices while the network is running.

Another similarity is that you can daisy-chain devices. Each must have the right jack and a chip that allows it to speak to the other parts connected. In this way, there is no center and no "hub." You can add or remove devices as long as you don't exceed the design maximum.

The real difference is bandwidth.

USB, for Universal Serial Bus, runs at a maximum speed of 16 MHz. This makes everything almost foolproof. Heck, these days, you could probably run it down barbed wire.

It's almost getting to the point where you can't buy a box that doesn't include a data processing chip and a data port.

USB cable consists of two data pairs and two power pairs. The data pairs are 28 AWG; the power pairs vary, depending on how far you want to run. Gage size in the power pair can be anywhere from 28 to 20 AWG.

The problem is the 16 MHz limit. While this is fine for a printer, you won't run a lot of audio; and most people have avoided video, although theoretically you could run a few channels of moderate-to-low quality images.

USB has been used primarily as a simple data-exchange medium, and it doesn't look like it's going to progress much farther. If you disagree, drop me an e-mail.

FireWire, on the other hand, has some

serious potential. Originally suggested by a consortium of manufacturers such as Apple and Texas Instruments (Apple owns the FireWire trademark), the specs were written by the IEEE 1394 committee. The key

advantage is bandwidth, up to 400 MHz.

However, the maximum distance between devices is 4.5 meters or 15 feet, which essentially means the signal will not leave the room in which it started. The maximum number of devices that can be daisy-chained is 63.

The signal pair also is 28 AWG, with a power pair of 22 AWG. You can hook up a lot of things, but you can't go far. This will not carry enough amperage to drive a device. The power is sufficient to allow control, such as a footswitch with an electric guitar, and to keep the FireWire chip awake in non-powered devices.

This gives away FireWire's purpose: to simplify and organize the connection of devices in the home. I don't need to tell you that the average consumer is having a hard time with all the wires from every new box he or she buys. There's a thriving business just hooking up people's televisions, home theaters and other toys.

FireWire is an attempt to make everything simple: one cable, one connector, hot-swappable, in-and-out and away you go. It has become most popular in small video editing systems and often is used for editing news in the field.

More uses

Sony has its own version, called *ilink*, which is just the signal pairs, no power pairs. It uses a four-pin connector instead of the "standard" six-pin. You can go from one format to the other but, of course, expensive adaptor cables are required.

Meanwhile, the IEEE 1394 "FireWire" committee is working on 1394B, which will allow the use of Category 5 cables for longer distances and plastic optical fiber for short distances. FireWire also is emerging as a viable format for hard-drive interconnection. Because so much stuff these days is stored on a drive and spit out when you need it, you may find yourself playing with FireWire sooner than you think. Naturally, it won't be your choice, but the choice of the hard drive or server manufacturer. You're just a willing victim.

Don't go to your local parts store or even a cable distributor expecting to pick up a roll of USB or FireWire and a bag of connectors. These parts typically are built by an "assembly house" and are rarely offered to the public.

Instead go to the "plastic-bag" section of the store. That's where you'll find cables pre-made, pre-assembled and pre-priced. If you know where you can find the connectors and the crimp tools for them, drop me a note. I get many requests from users who would like to make their own cables at odd lengths.

Of course, these computing devices require you to see what's going on. That means a computer monitor over your

mixing console. There are lower-cost consoles that include a monitor or two (or three or four).

Because these are essential to the operation of your station, let's discuss the cable that connects them. There are two common types, RGB and VGA. Many people think the cables that run these applications are the same. Not exactly.

RGB cable is intended to run analog video monitors. The video signal is divided up to its constituent parts, red, green and blue (hence the acronym). Sometimes sync signals are added; sometimes they use separate coaxes such as RGBHV, five coaxes with separate horizontal and vertical sync signals. RGB is familiar to the video folks running analog video monitors. That's probably not you.

More likely you'll be running a monitor from your computer. This is VGA, or "video graphics." There are key differences and similarities between VGA and RGB. They both use multiple coaxes. They divide the signal into component colors.

However, a VGA display is progressive scan (not interlaced, like your TV) and has a much higher scanning rate. The bandwidth on RGB is 4.2 MHz, tops, while on VGA it can be 200 MHz, 300 MHz or even more.

If you're using RGB cable to run VGA, check the performance at the VGA bandwidth, if the manufacturer even lists it. Of course, most pre-made VGA cables, like the one from your laptop to a VGA projector, are short — so short that a lot of them aren't even 75-ohm coaxes.

At 300 MHz, the wavelength is 1 meter, so those VGA cables really should be impedance-specific. That's why it's hard to find a 50-meter pre-made cable. At that distance, impedance is important. But RGB and VGA cables can be custom-made, and there are high-quality constructions intended for longer runs (and the higher frequencies of VGA). If you're good with a BNC, you can make your own.

We'll talk about that in our next installment.

Reach Steve Lampen at shlampen@aol.com.

Workbench

► Continued from page 12 providing a low-impedance path (you hope) to ground. The RF current is still there, but redirected.

Chokes, on the other hand, are high impedance at RF frequencies, so they actually stop the flow of RF current, which causes less-desirable side effects. Chokes can be added to either the source or the termination end of an audio or remote control metering pair, or both, depending on where the interference is occurring.

Generally speaking, the end where the shield is connected will have the lower RF voltage, although even relatively low levels of RF can cause trouble with certain circuits. Don't be afraid to try a choke at any I/O point.

They can be purchased for less than \$1 with values from 500 to 1,000 uHy from Mouser, Digi-Key and others.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com.

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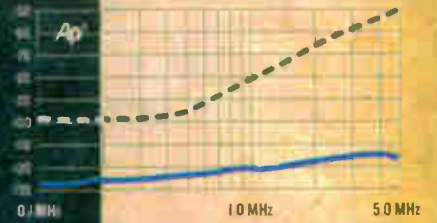
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Radio Applications of MPEG-7

Practical Uses Are Emerging for a Metadata Standard and Its Content Description Capabilities

by Skip Pizzi

Yes, Virginia, there really is an MPEG-7 — and an MPEG-21, too, since you asked.

Many readers may wonder how the numbers got that high so quickly. Wasn't it just a few short years ago that MPEG-2 was issued? And hasn't there been more recent discussion about MPEG-4? Did we miss something important?

Perhaps some review is in order.

Let's start at the beginning. In 1988, the Moving Pictures Expert Group (MPEG) of the International Standards Organization (ISO) was formed, and subsequently issued a specification for the perceptual coding of digital audio and video signals.

Levels

Retrospectively, this specification was named MPEG-1, after the next set of specs was issued by the group as "MPEG-2" a few years later (in a process similar to our application of "WW-I" to what had been called "the Great War" prior to WW-II).

The audio coding components in MPEG-1 and MPEG-2 were called Audio Layers I, II and III, which gave rise to audio professionals' shortcuts of "MPEG Layer II" and "Layer III" (or the occasional misnomer of "MPEG-2" and "MPEG-3"), and the now well-known consumer audio file format "mp3."

MPEG-2 video coding has since become the world standard for DTV and DVD, and for a while it was envisioned that an MPEG-3 family of codecs would occupy the same functionality for HDTV. But as it turned out, MPEG-2 had a range of scalability — specifically, a matrix of *profiles* and *levels* — that allowed it to accommo-

date the requirements of HDTV, so the MPEG-3 work was dropped.

Meanwhile, streaming media on the Internet was developing. The MPEG-4 initiative was started in the late 1990s, at first to address the specific needs of low bit-rate media representation in this environment.

Yet unlike its predecessors, which were targeted at fairly specific applications, the MPEG-4 process grew to encompass a wide range of different elements. About the only thing they all shared was their application to areas not especially well served by MPEG-1 or -2 (such as online media, gaming, datacasting, wireless telecom, graphics, object-oriented representation, etc.).

MPEG-7 is a metadata specification that provides a powerful and interoperable XML-based environment for describing media content.

So today, MPEG-4 includes a number of widely divergent "parts," each of which specifies a different technology for a targeted application. It also includes the ability to integrate digital rights management (DRM) to media content.

So now, on to MPEG-5, right? Well, no.

There are numerous theories why the MPEG organization decided to skip directly from MPEG-4 to MPEG-7, ranging from the sensible — e.g., it looked like the MPEG-4 work would be

so broad that it might be broken into several different initiatives, so like the assignment of street-address numbers by the post office, room was left for adjacent expansion — to the quirky — e.g., MPEG's idiosyncratic leader, Leonardo Chariglione, simply wanted to leave people guessing.

The truth probably lies somewhere in between. Standards people have a unique world view, and often an offbeat sense of humor. You have to be a little wacky to sit in a room all day and discuss this stuff.

Change in focus

Even more questions of sequence were raised when the organization named its next initiative "MPEG-21," and the range of reasons behind its derivation became even more inventive, to the point where it's best just not to ask anymore.

The discontinuities in MPEG's numbering scheme do point out the substantial changes in focus among the group's processes, however.

While all of MPEG's work remains associated with digital audio and video media, the MPEG-1 through MPEG-4 efforts essentially are essence (i.e., program content) coding or representation systems, primarily intended to provide high-quality, efficient transmission or storage of digital media programs.

In contrast, MPEG-7 is a metadata specification, which provides a language for describing media content, and MPEG-21 intends to be an interoperable multimedia framework or a complete "content-delivery platform" specification, incorporating comprehensive content identification, usage-environment description and rights expression schemes. Some have proposed, only half-facetiously, that MPEG's next efforts be called MPEG-33, MPEG-45 and MPEG-78.

Actual products are beginning to emerge from the MPEG-7 work. As you might expect, "traditional" metadata typically is the realm of program librarians or search engines; and indeed MPEG-7 provides a powerful and interoperable XML-based language and environment for sophisticated management, searching and filtering of the content it describes.

But MPEG-7 goes beyond this conventional approach to metadata and its "tagging" methodology to use what it calls *low-level descriptors*, which enable rich and direct descriptions of minute details about the content's structure. Recently, a few applications have surfaced that use the audio low-level descriptors of MPEG-7 for some interesting and practical functions extending well beyond the world of library science.

Most professionals today think of

The Big Picture



Photo: Garry Hayes, BBC

by Skip Pizzi

metadata in two basis categories:

Descriptive: Data about the content in terms of genre, the talent involved, materials included, the source pedigree/history of each content element, number of channels or tracks, rights conveyed, etc.; and **Compositional** data that describes how a program is put together, in terms of in/out edit points, language selection, multichannel mapping, etc., such that different versions of the show might be derived from a single batch of audio elements based on how the metadata is written.

In MPEG-7 terms, these metadata types are considered "high-level descriptors" or *Description Schemes* (DS), which are compiled from collections of low-level descriptors that are the result of detailed analysis of the content's actual data samples and signal waveforms. MPEG-7 expresses these descriptions in XML, thereby providing a method of describing the audio or video samples of the content in textual form.

In this way, a program can be specifically described in a standardized form that can be parsed by a text processor and stored in a database. Among other things, this provides a reliable, convenient and computationally efficient way to identify a particular piece of content without actually decoding its essence data or analyzing its waveform, but rather by simply scanning its textual description.

Audioid

An application of this technique with potential interest to radio broadcasters has emerged in a system called *Audioid*, produced by the Fraunhofer Institute for Integrated Circuits, the originators of Layer III coding.

Using Part 4 of the MPEG 7 Standard — officially, ISO/IEC International Standard 15938-4 — which covers multimedia audio description, it provides a robust and scalable method of recognizing and identifying audio programs, in the following manner:

Sound clips (e.g., songs, radio spots, voice tracks, etc.) are played into the Audioid system, which applies some preprocessing, then extracts certain spectral features from each sound based on specialized psychoacoustic principles, ultimately generating a representation of those features using MPEG-7 low-level descriptors.

This XML-based representation, called a *fingerprint*, is stored in a database under a given file identity (e.g., the name of the song, advertiser, voice talent, etc.), completing what is called

See PIZZI, page 18 ►

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Pizzi

► Continued from page 16
the *Training Phase* of the system. Later, during the *Recognition Phase*, an audio program can be played into the AudioID system, which will apply the same processing and feature-extraction process, comparing the results to the fingerprint descriptions stored in its database.

If it finds a match with sufficient confidence, it will declare the identity of audio being auditioned in real time.

The system is designed to allow for significant distortions between the training and recognition phases, such that a sound clip that was loaded into the system with perfect fidelity directly

from its original source might still be accurately identified if it is compared with a version that has been through multiple generations of recording, data compression, transmission or band-limiting (such as being played over a telephone line).

Name that tune

The psychoacoustics mentioned earlier play an important role here, making the system operate in a similar fashion to human hearing, which is quite tolerant of severe distortions when identifying a known sound. Moreover, the entire duration of the sound need not be played; reasonable confidence of recognition can often be obtained after playing only a few seconds of a song into the system, for example.

There are several practical (and

potentially monetizable) uses for this system, which Fraunhofer has been impressively demonstrating around the world in recent months.

One is the automatic and reliable verification of a spot's broadcast schedule, for use in as-aired reports and affidavits to advertisers. The flip side of this is the ability automatically to monitor and track down broadcasts or Webcasts of *unauthorized* content, such as the airing of music or a program for which the broadcaster has not obtained proper clearances and rights.

This concept could even be extended to content protection schemes, in which such identification could invoke decryption of encrypted content. Remember that the system is not looking for metadata tags but actually examining description of the audio con-

tent itself, in a manner that is largely insensitive to the degradation typically encountered in content distribution chains. It is therefore difficult to spoof. It also does not require the audio to be specially processed ahead of time, such as through the addition of a watermarking signal.

Perhaps most interesting is the system's ability to identify sound over the phone. A proposed application envisions a radio listener using his or her cell phone to call a radio station's "ID line" and, when prompted, holding up the phone to the radio for a few seconds during a song that the listener would like to know more about (e.g., title, artist, album information for prospective purchase, etc.). The listener then hangs up and waits for an SMS message on the cell phone that provides the identification data within a few seconds.

Alternatively, the listener could call in on a land line and request that the system e-mail the information. Thinking commercially, those messages could include one-click links to purchase or download a copy of the audio, or the identification service itself could be offered via subscription. The same process could be applied to radio spots, allowing a listener to obtain further information about the advertiser.

The MPEG-7 standard likely will be adopted more widely and integrated into more products that apply its powerful content description capabilities, many of which may find valuable application within the radio broadcast industry.

For further information on MPEG-7, see <http://mpeg.telecomitalia.com/standards/mpeg-7/mpeg-7.htm>.

Skip Pizzi is contributing editor of *Radio World*. ●

Oops!

It's bad enough to publish the wrong product picture with a story; but it's *really* bad to mix up photos from two competitors.

That's what we did in the June 5 issue on page 20. The photos are identified correctly here. They are the AudioScience ASI6114 Digital Audio Adapter and the Antex LX-24MBD.



AudioScience ASI6114



Antex LX-24MBD

Sure, computer cards may look alike to you and me. But not to their manufacturers. Sorry, guys.

Also, in the May 8 article "Radio Trailblazer: Hal Jackson," Paul Harvey's age was incorrect. He is 83.

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ERI has been chosen to supply antennas, combiner, tower and erection services for Clear Channel's Sandridge Tower project in Dayton, Ohio. The project is to be operational by late summer.

Clear Channel Communications Director of Engineering for Dayton Jeff Bennett said, "The Sandridge Tower is a large structure which must be placed on a small parcel of land. It will be within 14 feet of an existing 540-foot tower, alongside a warehouse and an industrial office-building complex. The existing 540-foot tower will remain in use until the new tower/antennas are completed."

The project will permit four stations to collocate, consolidating from other locations. An ERI Cogwheel-style antenna will allow Class B FM stations WMMX, WTUE and WLQT to share a facility. A separate ERI 1084DA panel antenna on the tower will be an upgrade for WXEG. ...

California's K-LOVE and Air 1 Christian radio networks purchased 40 Omnia-6fm processors from Omnia, a Telos Systems Co.

K-LOVE, founded in 1988 with one station, now serves cities in 31 states. The goal of its president, Dick Jenkins, is to see a noncommercial contemporary Christian radio station in every U.S. city of 50,000 or more, according to the K-LOVE Web site. ...

Greater Media is building an 11-studio facility for three stations in Detroit. The cluster will include a sizable investment in

equipment from Klotz Digital America.

The announcement was made at the NAB convention by Chris Crump, director of sales and marketing for Klotz Digital America, and Milford K. Smith, vice president of radio engineering for Greater Media.

Klotz will supply Greater Detroit Radio Group with its Vadis AudioMedia Platform. The group purchased 23 Vadis 880s and 11 Vadis D.C. II digital consoles for the facility, scheduled for completion early next year.

It will house 11 on-air, news and pro-

PWRS was started in 1998 by L.A. sportscaster Larry Kahn. ...

Mayah Communications said it has recently provided extensive installations of its Centauri codec at Deutsche Welle in Bonn; at ORF in Vienna; and Radio France in Paris.

Nine new radio transmission buildings at Deutsche Welle will have 34 Centauri Audio Gateway Codecs. In January Mayah installed 192 codecs at ORF in Vienna. The user cited the product's Ethernet-IP interface for handling audio via IP with short delay times as and management via SNMP/IP. ...

The Mohegan Sun tourist destination in Connecticut features a radio studio housed in a casino, WMOS(FM).

The 350-square-foot broadcast studio was designed by Brennan Beer Gorman Monk/Interiors. Its goal is to promote awareness for Mohegan Sun, which is owned by the Mohegan Tribe, and to entertain listeners in Connecticut and Rhode Island with classic rock.

In addition to a CD library and display wall, the studio includes a cherry wood DJ console faced with stainless steel and topped by a sheet of floating glass. The station's wolf logo is rendered in a backlit glass sign behind the console.

"The radio station is located in a retail storefront within the casino," said Amy Jakubowski, senior associate with BBGM. Mohegan Sun is in southeastern Connecticut along the Thames River and features a new luxury hotel. ...

USA Cable has installed six Model 2020 Audio Processors from Aphex Systems at its broadcast facility in New Jersey.

The facility provides feeds for the Sci-Fi Channel, TRIO and the USA Network. ...

Auditronics has designated Creative Studio Solutions Inc. as a national seller for its broadcast audio console systems. CSS will provide consultation, integration and installation for Auditronics models ALM, 2660 and 220. CSS also is an authorized installer for Wheatstone, Audioarts and Auditronics consoles and the new Wheatstone Bridge Digital Audio Network. ...

Broadcast Software International and U.K. distributor Broadcast Computers supplied software for the first radio stations to go on the air in Afghanistan since the war on terrorism began.

The initial phase of the project was undertaken by the BBC, which selected the BSI Simian digital automation system for Radio Kabul. The BBC worked with Broadcast Computers, which had helped with a similar project in Kosovo a year ago. Reg Butcher of the BBC said, "The development and rebuild of Afghanistan media has great potential. Simian is their first exposure to computer-based playout and scheduling software."

BSI and Broadcast Computers also are providing four Simian systems for new BBC World Service programs broadcast to the former Soviet Union. ...

Houston radio station KILT(AM), SportsRadio 610, has affiliated with ESPN Radio. "ESPN Radio Sports Center Updates" air at the top of selected hours, along with the SportsRadio 610 Sports Center Updates at :20 and :40 after.

The Infinity station also airs "The Dan

See WBW, page 29 ▶



It's a radio studio within a casino. BBGM/Interiors designed a compact studio for WMOS at Mohegan Sun Casino.

duction studios for FM stations WRIF, WMGC and WCSX. The Vadis Platform will provide central routing and signal distribution via its fiber optic network. ...

A company that wants to create a new interactive radio business model has signed its first group to commit to a specific rollout. StratosAudio signed the deal with Nassau Broadcasting Partners to engage in enabling interactivity with conventional FM radio. Installations are planned by July.

The first station to go live will be WPST(FM) in the Philadelphia area, with plans to extend interactivity to other Nassau properties if it goes well.

StratosAudio services let consumers identify and purchase on-air content such as music and advertisements during a radio broadcast. ...

Jones Radio Networks' evening country program "Lia" now can be heard on KKBQ(FM) in Houston. Michael Cruise is program director for The New 93Q.

"At night, you must do something different to attract come from both radio and TV," he said. ...

Jones MediaAmerica will represent Pacific West Radio Sports, an independent national syndicator of sporting events with a focus on major college football.

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World Radio History

KUSC Makes Digital Comeback

by Ed Ritchie

LOS ANGELES Classical music has a tough time surviving in today's radio market, especially in Los Angeles, which offers 50 stations representing virtually all the major radio formats.

Yet public station KUSC(FM) at 91.5 MHz is beating the odds and celebrating with new studios, a stronger broadcast signal and a satellite network.

Chief Engineer Pablo Garcia guided the station's equipment upgrade and its move from a cramped 7,700 square feet on the campus of the station's licensee, the University of Southern California, to 16,100 square feet on two floors of an office building in the heart of downtown Los Angeles.

From Cuba to L.A.

Garcia is as much a success story as KUSC. In 1961, his family escaped from Cuba with just the clothes on their backs and Cuba's international currency, cigars. Garcia was 12 years old and didn't speak English. One of his earliest memories is of his father selling the cigars at an upscale hotel in Miami.

Garcia graduated from California State University in Northridge and joined KUSC in 1987, rising from assistant to chief engineer. He moved to all-news KFVB(AM) in 1997, after KUSC's management implemented a controversial programming change that was followed

conversion," Garcia said. "The actual microwave we shot to our mountain transmitter was also analog. It was a case of bits and pieces mixed together."

Garcia replaced those pieces with a seamless digital chain from the studio to the transmitter. Starting with voice tracking, he specified two tracking studios with Yellowtec Intellimix Digital consoles.

"They're just for people to basically go in there and track," Garcia said, "no production, just voice. It's working out really well."



Pablo Garcia



Lobby visitors can see into the conference studio.

by diminishing listenership and layoffs.

Two years later, the university hired Brenda Barnes, former president and general manager of WGUC(FM) in Cincinnati, as station manager. She returned the station to its classical programming and brought Garcia back to guide a relocation to new facilities and oversee an equipment upgrade from analog to digital.

For the new facilities, Barnes gave Garcia a clean slate and asked him to create a station that could handle the growth and the development of a satellite network. The budget for the technical upgrade was set at \$500,000.

Garcia's goal for the station's operation was to have a digital system automated on a 24/7 basis. The old system used an analog console, CD and DAT players.

"There was still this constant D-to-A

An additional interview studio can accommodate six people and has a large window facing the station's lobby area.

Three production studios are equipped with Harris Pacific Integrity digital consoles, Sony CDP-D500 CD players, Denon M-1050R MiniDisc machines and Telos Zephyr ISDN gear.

Files are handled by a DADpro32 ENCO Systems Digital Audio Delivery system and transferred via a dedicated LAN.

The ENCO system is networked throughout the studios and master control. It uses ISO/MPEG Layer II coding.

The station has four workstations and two mirrored servers. A second LAN handles administration, e-mail and Internet activities. In addition to special projects, engineers Garcia and Nisie Teeter manage the computer and network

infrastructure, which operates on a Windows NT platform.

The ENCO supports production, automation and programming origination. It has a storage capacity of approximately 30 hours of stereo material, and controls airplay by automatically sending the appropriate commands to an SAS 64000 Digital Audio Router.

"Basically," Garcia said, "all inputs and outputs of every audio resource including every CD player, console, MD player, ENCO, absolutely everything,



Three additional stations in Palm Springs, Santa Barbara and Thousand Oaks, Calif., simulcast via Galaxy IVR satellite, said Garcia. "We also air IDs and promotional announcements. All of these are stored on the ENCO, then aired as scheduled in the traffic log."

The station's satellite system, Classical Public Radio Network, is a partnership between KUSC and Colorado Public Radio and provides classical music across the United States.

Via Boise

Eight members of the network's staff are based at KUSC's studios. Shows are produced in Los Angeles and Denver. Everything gets funneled via T-1 into CPRN's Prophet Systems Audio Wizard audio server and automation at KBSU in Boise, Idaho, where the network's satellite facilities are located.

Garcia wanted all connections and operations hardware centralized in a master control room. Interconnects, basic hardware and hard drives for storage systems, plus computer and telephone systems, are housed in one area.

"This is great compared to the old facility," Garcia said. "We had three different rooms and it was really difficult to put things together and work."

In its 55-year history, KUSC had always been located on the University of California campus. But space demands required a move to outside facilities, and the station found favorable lease terms on the 20th and 21st floors of an office building in downtown Los Angeles, minutes from the campus.

Garcia and KUSC management interviewed three architectural firms with broadcasting design experience, and chose Hellmuth, Obata and Kassabaum Inc., an award-winning firm with 22 offices. HOK also is working on two

See KUSC, page 24 ▶

gets fed into our SAS switcher and then routed throughout the station."

The Harris Intraplex STL provides T-1 Internet connectivity to a transmitter on Mt. Harvard, atop the San Gabriel Mountains northeast of Los Angeles. A Harris CD-Link digital STL provides backup connectivity. Both paths are uncompressed.

Classical network

The RF site uses a Harris Z-20 solid-state 20 kW transmitter and Aphex 2020 Mk II processing. That facility was not part of the project, having been upgraded in 1999.

Garcia said the station maintains a consistent sampling rate from all its equipment, so he hasn't had any problems with synchronizing one digital audio source to another.

KUSC Hardware List

This is a sampling of the KUSC infrastructure. Most items listed were purchased new for the project.

- Harris Pacific Integrity digital consoles (3)
- ENCO Systems DADpro32 Digital Audio Delivery system and automation with dual mirrored servers and four workstations
- SAS 64000 Digital Audio Router
- Sony CDP-D500 CD players (6)
- Denon M-1050R MiniDisc player/reproducers (6)
- Harris Intraplex STL-Plus for T-1 (3)
- Harris CD-Link Digital STL backup
- Neumann U-87 mics (6) and TLM-103 mics (2)
- Belden 7893A and 1800B AES/EBU digital cable for all audio runs and interconnects
- Yellowtec Intellimix digital mixers for tracking studios (2)

Two LANs: one for office/admin and the ENCO system for broadcast and production

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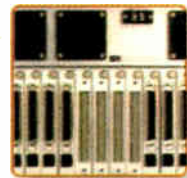
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KUSC

► Continued from page 22
other stations in Los Angeles, KZLA(FM) and KPWR(FM).

The designers had good things to say about their client.

"They were really knowledgeable about what they needed and what worked for them," said Brett Shwery, vice president of the interior division of HOK. "The most important thing was placement of the studios. You have to be careful of the mechanical systems in the building."

Shwery and his team consulted with KUSC and it was agreed to put the studios on the 20th floor, to avoid complications from heating, ventilation and air conditioning equipment above the 21st.

The space on both floors had never been occupied, so wiring and cable installation were simplified.

The Los Angeles-based Victor Group and KUSC engineering staff provided studio wiring and interconnects. Telephone and data wiring were subcontracted out.

The design plans took about four months, and construction took another four, ending with a grand opening for the station's supporters in November 2001.

The studios were placed on interior walls. A complication came from a noisy gear mechanism for a private elevator servicing the offices. To solve the problem, HOK had the mechanism rebuilt with a base isolator.

One wall of the large interview studio borders on the station's lobby space, and visitors can see the room's activities through a large window. In fact, a unique



The large studio is for interviews and live performances. Production can be coordinated with or independent from the adjoining studio.

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floor plan and window placement on walls shared by the studios allows viewing between all six of the rooms. The studios use double-layered dry walls and ceilings, sound lock doors, airshafts and double-paned windows.

Ultimately, Garcia said the digital upgrade provides tremendous quality for the money available to a public radio station.

"I found it much easier to upgrade here rather than at a commercial station," Garcia said. "At a commercial station, the obligation is to the stockholders; and the less spent on the station, the more returned to them. Our obligation is to the listeners because they pay for the station."

The author is a Los Angeles-based free-lance writer who covers technology, business and Internet-related topics. Reach him via e-mail to eritchie@pacbell.net. ●

You
Read
It
Here



Ten
Years
Ago

"The NAB has asked the FCC to revise its radio ownership rules, reducing certain of the limits while requesting a minority set-aside for overall station ownership. ...

"The FCC has adopted national limits of 30 AM and 30 FM stations, with the number of stations allowed to be owned in a single market based on a percentage of market share as determined by Arbitron ratings data. ... The NAB recommends elimination of (such) data from the regulation, and elimination of market share as a limitation on ownership in a market.

"The NAB petition suggests reduction of ownership limits to 25 AM and 25 FM stations nationally, while allowing common ownership of five more stations if they are minority controlled ... Also recommended is reduction of ownership limits in a market to two AM and two FM stations in any market with 30 or more ...

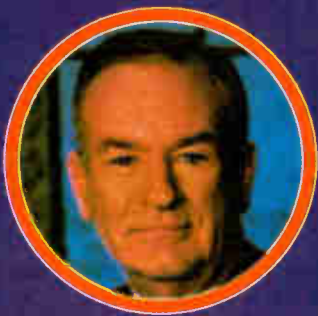
"According to the NAB petition, the measures would be a 'safety net' against 'the undesirable consequences of using market share in guarding against the possibility of undesirable levels of ownership concentration.'"

— News Item
June 24, 1992

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Friday, September 13

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◆ MARKETPLACE ◆

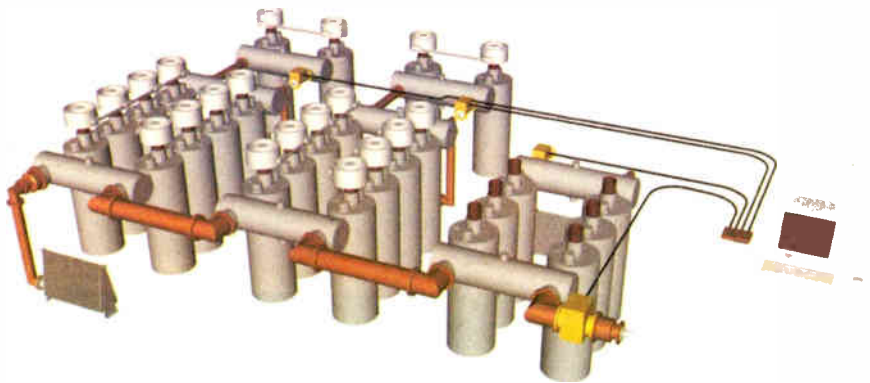
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I-SAM Site Control Is New From ERI

I-SAM is an Internet-ready/accessible Antenna Site Control Monitor tool for master antenna systems. ERI says it provides data, alarms and corrections not otherwise available. Instantaneous equipment function/malfunction notification is provided.

The company described a typical scenario in which the operator receives an e-mail message on his Internet-ready PDA or laptop, indicating a problem at a distant station. He or she directs a Web browser to a secure I-SAM Web page to discover that a main feed line at the remote location is losing pressure, and the nitrogen supply bottle sensor is indicating that it is nearly empty.



While on the Web site, the operator confirms that auxiliary operation is OK and checks site weather. He or she can then make an informed decision on a possible weather-related incident and call a local crew.

A typical system will incorporate as many combiner module sensors as are required by the stations participating in the multiplexing. Feed line sensors are standard; two are employed if dual feed lines are used.

I-SAM monitors parameters and issues an alarm if one strays from desired levels. For the main feed line, parameters include forward and reflected power; line pressure, temperature and humidity; room temp; RF safety short status; antenna patching status; and optional I/O transmitter control.

For the combiner, parameters include forward and reflected power; over-temperature status; combiner temperature; RF safety short status; station patching status; cooling fan status; and transmitter control.

For information contact the company in Indiana at (812) 925-6000 or visit www.eriinc.com.

TerraSonde Has Digital Toolbox

TerraSonde is touting The Digital Audio Toolbox, which offers multifunction test and analysis capabilities for digital audio.

Company President Andrew Smith said the hand-held system has 25 digital audio test, analysis and utility functions. The DSP-powered product has four main sets of I/O connectors — Digital Inputs 1 and 2, Digital Output and Analog Output — as well as word clock I/O and a serial port.

Supported formats include AES, S/PDIF, TOSLINK and ADAT, at bit depths of 24 bits and sample rates to 96 kHz. These let the system check lock between digital streams, and to provide an analog output for monitoring or as a test signal. It is designed to inter-



face with other digital test equipment, and includes what the company calls the first digital audio cable tester that can determine injected interface jitter for a particular cable.

Digital tests include transparency, lock, latency, jitter and cable quality. Analysis tools include bitstream analyzer, bitscope, error "watchdog" and clock and sample counter.

Functions include digital generator, level meter, SRC, pass mode and DSP algorithms such as a de-emphasis filter. Utilities include a digital monitor, dialog level, transmit data and setup and calibration functions.

Retail price is \$2,499, including a rechargeable battery system, a carrying case and computer interface cables.

For information contact the company in Colorado at (888) 433-2821 or visit www.terrasonde.com.

Staco Touts

Single-Phase UPS

The new UniStar Sx* is a single-phase online uninterruptible power supply from Staco Energy Products Co., suitable for use with workstations, telecom and networking equipment.

The company says the double-conversion design isolates and conditions the power coming into the unit before it is distributed to the protected equipment. It is available in sizes from 700 VA to 3,000 VA offers remote monitoring and diagnostic capabilities through an SNMP adaptor or its own power management software.

For maximum installation versatility, it is offered in tower and rack-mount models.



Battery diagnostics protect against overheating, deep discharge and low current damage. The UniStar Sx* comes with a hot-swappable internal battery pack that provides time for equipment shutdown during an outage. Optional external battery cabinets extend the run time.

For information call the company in Ohio at (866) 261-1191 or visit www.stacoenergy.com.

DataDirect Pushes SAN Approach

A scalable storage-area network (SAN) appliance for workgroup and departmental uses is on the market from DataDirect Networks.

The company says it brings affordable enterprise capabilities to workgroups.

The S2A 3000 Silicon Storage Appliance lets IT managers create SANs for broadcast, post and digital media facilities. At this spring's NAB show, the company exhibited a plug-and-play S2A 3000 Silicon Storage Appliance workgroup SAN with 1 TB for \$49,995.

DataDirect Networks says its technology allows users to accelerate their applications, providing data at least three times faster than other SAN solutions and 10 times faster than Network Attached Storage technology.

For information contact the company in California at (818) 700-7600 or visit www.datadirectnet.com.



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If you're looking for a new system, this is an opportunity that you won't want to miss. Find out more about our systems and the MusicStore online at www.bsiusa.com.

Series 210 \$19,999



The BSI Series 210 is a state-of-the-art, 2 PC broadcast system. We use Dell 2500 servers with a 17" flat-panel in production and a 17" touch screen in the air studio.

We have included all of the software and hardware you need for full automation (satellite and music on hard drive), live assist, or even live broadcasting.

Simian digital automation is at the heart of the system, combining with WaveCart digital cart machine, Stinger instant audio, Speedy CD-to-PC dubbing and WebConnect Pro remote control to make an amazing digital studio. In addition to BSI software, we include new Cool Edit Pro 2.0, pcAnywhere 10.0, and an AudioScience 4346 sound card for each PC. The quadruple-play sound cards also have triggers and switching capabilities, so you don't need any additional hardware.

The BSI Series 110 consists of two Dell PowerEdge 500 servers, with a 15" touchscreen in the air studio and a 15" flat-panel for the production studio.

This system is perfect for a combination of live-assist and hard drive automation. Satellite automation is also available.

Simian digital automation, WaveCart digital cart machine, Stinger instant audio and Speedy CD-to-PC dubbing are included, as well as pcAnywhere 10.0 from Symantec and Cool Edit 2000 from Syntrillium.

We have also installed two AudioScience 4344 soundcards with on-board MP3 decoding.

With professional BSI installation, this collection of software and hardware has been combined into a powerful and versatile broadcasting system. Call us for more information.

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107.7 Extends Motorway Service

by Christian Marcelin

SENLIS, France Keeping a mobile audience informed is no easy task, especially if listeners are traveling long distances.

Most French motorways are covered by a single station, 107.7 FM, the main aim of which is to increase motorway safety.

The choice of a single frequency enables continuous program reception without drivers having to retune their car radios. RDS receivers, which have since become more popular in Europe, were not then in wide use.

Another advantage of the single fre-

quency: drivers can remember the frequency and preset it easily.

Coverage constraint

In France, the various motorways are the property of several companies. Those in the north belong to Société des Autoroutes du Nord et de l'Est de la France, or SANEF.

When the government authorized motorway radio, it limited the output of the stations to a narrow area around the motorway itself.

In 1993, SANEF founded a subsidiary, Soderane, to cover the Calais-Roissy route — A1 and A26 North — with a

traffic info service. Eurotunnel, which operates the Channel Tunnel linking France and England, shares the costs with SANEF, while Radio France has a contract for programs.

In 1995, the station covered 160 miles of motorway. In 1999, Régie Radio Music, a Lagardère Active company, partnered with Soderane to manage advertising.

In late 2001, 107.7 FM introduced coverage of part of the A4 motorway that runs from Paris to Strasbourg, with plans to cover the entire motorway — some 425 miles of radio coverage.

SANEF also plans to renew equipment on the A1 and to extend 107.7 FM cover-

age to its entire network by the end of 2004.

For greater convenience, 107.7 FM uses the "enhanced other networks-traffic announcements" RDS code. This allows drivers who wish to listen to another radio program, a CD or a cassette to have their RDS receiver automatically switch over to specific motorway-information messages.

With a coverage area of more than 400 miles, however, this information must be specific to particular areas. Real-time information on traffic near the Channel Tunnel, for example, is of no interest to drivers near Strasbourg, even if they are heading in that direction.

Area-specific information

To provide information of immediate interest, the motorways are divided into zones. By pushing the correct button, the announcer can feed relevant information to a specific zone.

Only the transmitters of this specific zone deliver the information; those in other zones continue with their music program uninterrupted.

At certain times of day or on particular days when the traffic is heavy, two studios operate at the same time with the same program, each with its own announcer, in order to give all information to all zones as expeditiously as possible.

Most French motorways are covered by a station, 107.7 FM, the main aim of which is to increase motorway safety.

Both studios are located in Senlis, northern France, and were rebuilt in December.

Because regulators limited the reach of 107.7 FM to the motorway itself, the number of transmitters involved in the network is high.

All transmitters and associated antennas are installed on existing structures along the motorway.

The sites may serve several purposes, such as an internal communication network for motorway staff, variable display panels and emergency call terminals.

On the A4 motorway, the sites are linked by redundant fiber-optic connections.

On most parts of the motorway, a 200 W Rohde & Schwarz transmitter is in place every 4 to 6 miles, together with two to four coupled antennas.

In particular stretches where the motorway curves a lot, the transmitters may be spaced more closely; synchronization among them is more difficult to achieve.

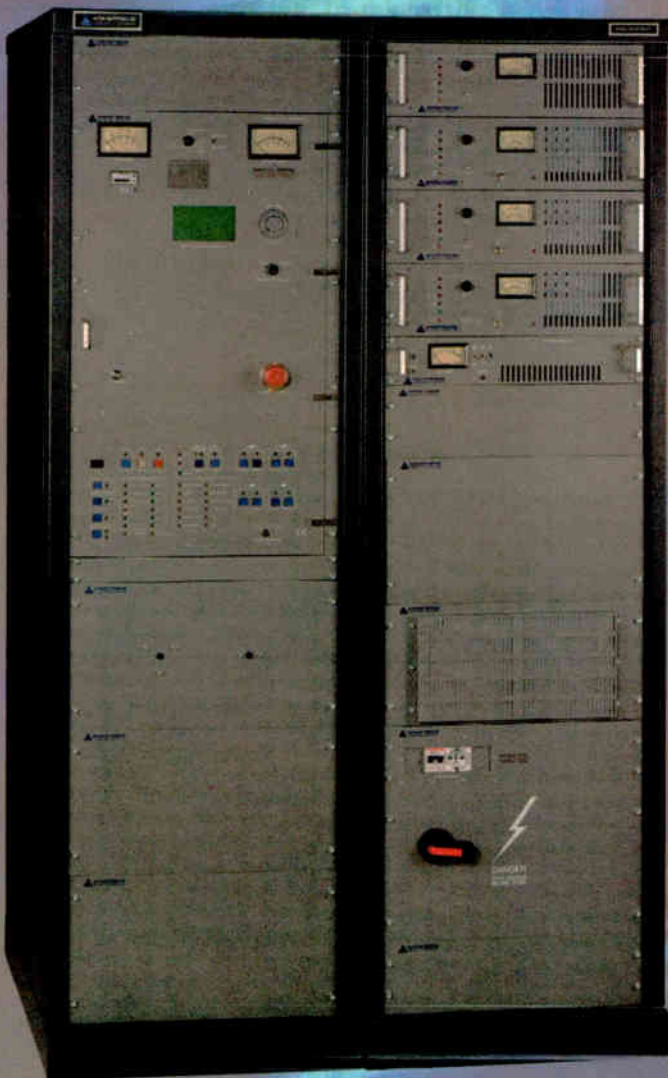
To minimize the coverage area, antennas are coupled and positioned to be as directional as possible. The signal feeding the antennas also is put in the right phase by adjusting the length of the coaxial cable.

The result of this arrangement is a back attenuation of approximately 30 dB.

To allow the area-specific information

See FRANCE, page 29 ►

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France

► Continued from page 28

breaks, two programs are transmitted simultaneously via fiber optics. The first program is the main program; the second is an auxiliary.

Both programs are digitized and multiplexed with associated data in a 2 Mbps frame by means of a Harris multiplexer.

The associated data includes time stamps taken from GPS for single-frequency network synchronization, RDS data with codes generated on each transmission site and an address code.

This address code permanently tells the transmitters to broadcast the main program.


When an area-specific break occurs, the same address code tells the transmit-

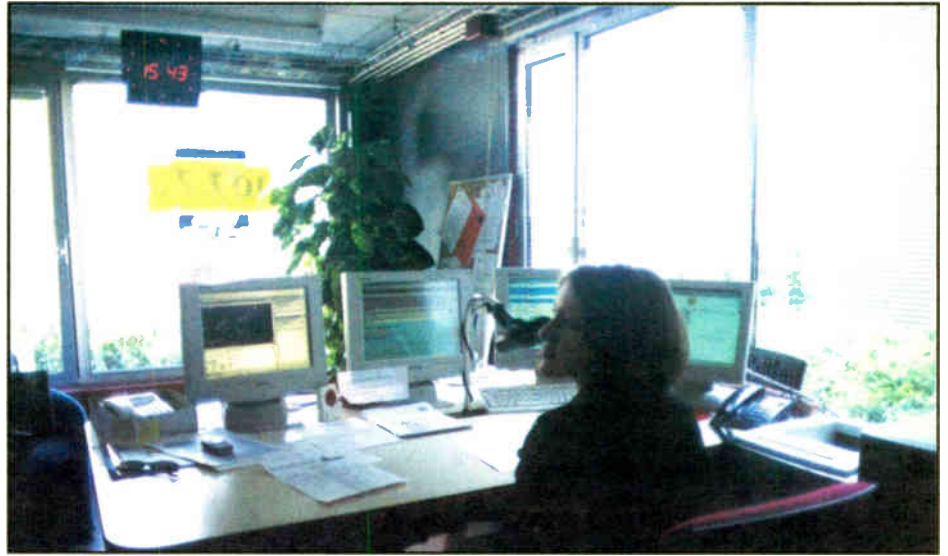
ters of the particular zone to switch to the auxiliary program.

The 2 Mbps frame allows room for a second auxiliary program, currently unused, which could enable two simultaneous zone breaks on the same motorway.

The same 2 Mbps frame also carries monitoring information generated by each transmission site.

A future extension of monitoring, to allowing remote listening of the transmitted audio, is under consideration as part of a renewal of the remote monitoring network for motorway equipment.

Dominique De Paoli, SANEF operations manager; Jean Gibert, SANEF head of special technical services; Jean Dominique Warlop, Radio France program director; and François Cosyns, head of 107.7 FM radio for SANEF were sources for this article. 



The 107.7 FM Studios in Senlis

WBW

► Continued from page 20

Patrick Show." Bill Van Rysdam is director of programming and operations manager for the station. ...

ABC personality **Sam Donaldson** broadcast live from the recent NAB show in Las Vegas with primary ISDN feeds on a **Comrex Matrix** and **Comrex Nexus**. Backup was available on POTS through the Matrix, which was further outfitted with NiMH battery for backup power.

The engineer in attendance was **Dave Burgess**. ...

International Datacasting Corp. said the Canadian government has exercised its option for a third-year extension to a service contract for the **Canadian Forces Personnel Support Agency**.

The service is uplinked from ICD's SuperFlex DVB teleport in Ottawa and provides one channel of video in English, one in French, several FM radio stations, CBC Radio and other information to Canadian peacekeeping troops and forces overseas. ...

Radio 24, a top-rated local station in Switzerland, is using **IDT's Digital Virtual Processor@FM** broadcast processor.

Bernd Lienberger said that, for a long time, the station had been using the analog **Dorrough DAP-A610** with a **Dorrough Stereo coder 80B**. ...

Waves Ltd., a supplier of psychoacoustic audio signal processing said **Danish Broadcasting** is using **Waves MaxxStream** for its streaming requirements. The head of Danish Broadcasting's new-media division, **Michal Karrber Harrit**, said it has installed **MaxxStream** systems to support every Danish Radio Webcast program, eight channels in all.

Waves has shipped approximately 500 **MaxxStream PCI** systems. Users include **Swiss Radio**; **Belgium Radio**; **Norwegian Radio**; several German broadcasters including **WDR** and **Saarländischer Rundfunk**. **MaxxStream** has also been adopted by **Sirius Satellite Radio** for its audio broadcast facilities.

"Who's Buying What" is printed as a service to our readers who are interested in how their peers choose equipment and services. Information is provided by suppliers.

E-mail information and photos to radioworld@imaspub.com.

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MARKET PLACE

Wenger Opens (Studio) Doors

Wenger Corp. offers several products suitable for radio environments.

Its acoustical doors use a four-sided leaf frame for rigidity and sealing, and have STC ratings in the range of 50-54. Window options include narrow window, full vision or solid leaf.

The company makes the V-Room Booth, a sound-isolating, modular broadcast booth. Optional variable acoustics simulate 10 acoustical environments.

Specialized products also include upper-deck audience seating for indoor applications of four or more seating tiers; portable audience chairs; and staging systems, useful for remotes and events.

For information contact the company in Minnesota at (800) 326-8373 or visit www.wengercorp.com.



Tom Koza left KPWR(FM) after 17 years and now oversees the engineering department for five Los Angeles-area stations owned by **Hispanic Broadcasting**.

Dennis Martin has expanded his duties from chief engineer at **Emmis Communications'** KZLA(AM) to include the CE position at KPWR(FM).

Sirius Satellite Radio named Terry Smith as chief technology officer.

Clay Steely was promoted to VP of engineering of **ABC Radio Networks**. The organization appointed Mike Connolly as VP of ESPN radio sales. Jo Ann Hilton, a senior telecom planning specialist at ABC Inc.'s Information Systems Voice Engineering & Operations department, has been chosen as the ABC Inc. Black Achiever in Industry for 2002.

John Sykes is now chairman and CEO of **Viacom's Infinity Radio**.

NBG Radio Network appointed Chris Ruh as director of affiliate relations.

Jason Crane is the new station manager at **WGMC(FM)** in Rochester, NY.

Criswell Communications has named James Nance as vice president of development. Ronald Harris, the executive VP/CEO for Criswell, was elected to the **National Religious Broadcasters Executive Committee**.

Westwood One appointed Lauren Mazzuca as director of advertising sales marketing.

Premiere Radio Networks' Executive VP and GM Tim Kelly vacated his post in February but continues as a consultant. Gregory Noack was promoted to executive VP of talk programs.

Weekend Radio Network hired Chris Witting and Creative Broadcast Consulting to handle affiliate relations.

Metro Networks/Shadow Broadcast Services promoted John Frawley to senior VP of broadcast operations. Metro appointed Andy Kazen as GM.

Anne Schepp was hired as human resource supervisor for the **Journal Broadcast Group**.

On Air Productions hired Lauren Issett as an account manager.

Salem Communications appointed Chuck Finney as PD of Dallas station **KLTY(FM)**.

Emmis Communications Corp. promoted David Lebow to senior VP of operations for the radio division.

Radio Unica named Mara Rankin vice president of sales. She will oversee national sales in the Southeast.

United Stations Radio Networks promoted Rob Pierce to VP of affiliate relations.

Renda Broadcasting of southwest Florida welcomed Nic Natarella to the production director's seat at **WSGL(FM)** in Naples and **WGUF(FM)** in Marco Island. Producer Andrew Frame shifted to the day-to-day on **WWGR(FM)** and **WJGO(FM)** in Fort Myers.

Sporting News Radio named Don Leshnock to director of network sales, and James Brown is a new on-air personality there.



James Nance



Ronald Harris



James Brown

Enter to win one of 26 great prizes in Radio World's reader appreciation contest giveaway!

Dear *Radio World* Reader: Last year, many of the greatest names in our industry teamed up with *Radio World* for a year-long sweepstakes extravaganza that resulted in almost \$50,000 in prizes given away. Due to the overwhelming response from you, we've decided to do it all again in 2002 as a way of showing our appreciation to our loyal readers.

Throughout 2002, *Radio World* will conduct 26 random drawings. Prizes and winners will be announced in every issue of *Radio World*. **That's 26 chances to win!**

To enter the contest you need to complete these three easy steps:

1. Go to our Web site: www.rwonline.com
2. Click the Readers' Choice icon on our home page.
3. Follow the instructions and fill out the electronic entry form — that's it, you're done!



This is your chance to participate in our Readers' Choice program and win great prizes from these fine *Radio World* supporters:



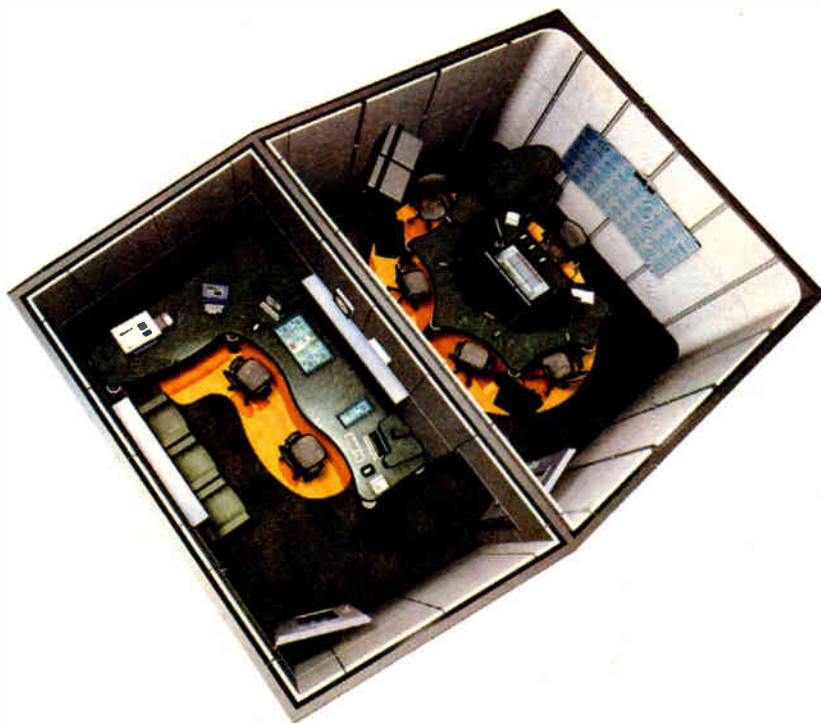
Contest Rules: To enter the drawing, simply register online at www.rwonline.com/sweeps. 26 drawings will be held throughout the year. Contest registration expires Dec. 4, 2002. Final contest prize announcement on Jan. 1, 2003. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification; however, actual delivery time may vary and is not guaranteed by IMAS Publishing. Federal, state and local tax laws may apply to prizes and are the sole responsibility of the winner. Employees and affiliates of IMAS Publishing are not eligible.

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Special Sale on Mackie 8-Bus Production Board

Mackie's 24-channel 8-Bus series console combine high-quality components, innovative design and incredible features, giving you excellent value for your dollar. Features: 100 mm precision network faders; separate tape monitor path; A & B mix paths; 6 AUX sends and returns; 4-band EQ (Hi and Low shelving; Hi mid-sweep and Low mid-sweep); solo/channel metering, 2 headphone mixes; studio/control speaker mixes; talkback with built-in mic; balanced XLR mic and TRS line inputs; balanced XLR main outputs; balanced TRS sub-outputs. Meter bridge (#MB24) sold separately.

24-8 **Call for Price**
MB24 **Call for Price**

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Incredible Low Price on 32-Channel Digital Mixer – Only \$1,599⁹⁹

This exciting new Behringer digital mixer should really be called a mini automated workstation. With motorized faders, four on-board effects processors and dynamic automation features, it'll soon become your favorite "or only" production tool. Behringer's 32 channels, 16 internal busses and 8 AUX sends make it extremely versatile. Each channel features a fully parametric 4-band equalizer, sweepable high-pass filter, gate, compressor/limiter and phase inversion – all simultaneously operable. Full-fledged dynamic and static automation functions, extensive synchronization options and MIDI implementation, a comprehensive internal I/O patchbay, and full digital compatibility make it a powerful production board. Four on-board effects processors put just about any imaginable effect type at your fingertips. The DDX3216 also offers two expansion slots for ADAT, TDIF, AES/EBU interfaces. An amazing deal!

DDX3216 **\$1,599⁹⁹**



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The Dixon Systems NM-250 mixer is designed for busy newsrooms and contains almost all the features of a full broadcast console. Features: 2 mic inputs with on/off switch and 48-volt phantom power; monitor output mutes when mic is on; mono line input for telephone hybrid; input for computer sound card; input for DAT/cassette recorders; 2 balanced +4 line inputs; built-in mix-minus bus for telephone hybrid; built-in talkback system with 2 sends and receives; relay closures for computer channel on, telephone channel on and mic on; LED VU meter display; headphone amp lets you select Mixer (program), Cue or Off-Air; balanced XLR line, mic and phone inputs; unbalanced RCA I/Os.

NM250 **\$969⁰⁰**

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AS101 \$899⁰⁰



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RADIX

Our Best-Selling Telephone Line Mixer

This portable, battery-powered mini-console can turn any modular telephone into a remote broadcast studio link or telephone interview control center. Simply plug the telephone handset cord into the TLM along with a studio quality microphone and headphones. Features: mic and line inputs; low battery indicator; peak reading LED and headphone amplifier. Includes AC adaptor. Order today!

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RUMX5 \$189⁰⁰ PS24A \$16⁰⁰

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6X1 \$379⁰⁰



SALE
\$449⁰⁰

Broadcast Tools' 8X1 routes any one of eight AES-ID or AES-3 digital inputs to three outputs. Features: programmable; last selected source memory; safety lock out; output muting; remote control/status and multi-drop RS-232 and RS-485 serial ports; balanced AES-3 110 ohm with XLR connectors.

With Broadcast Tools Active Series switchers any and all inputs can be routed to any and all outputs. The 3X2 is designed to accommodate 3 stereo inputs and 2 stereo outputs. Features: two control modes; cascade multiple units; local and remote control and status via contact closures and RS232 serial ports; input and output level control and active balanced I/O.

8X1DAS/XLR \$449⁰⁰ 3X2 \$379⁰⁰



SALE
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Here's the solution for interfacing non-broadcast consoles or digital workstations to the broadcast studio. Features: 3 channels of insert switching to turn on or off console input channels or other source equipment (i.e. mic preamps); LEDs on each channel may be programmed to flash when activated; monitor amplifier mute control; monitor level control.

CC11A \$279⁰⁰

BROADCAST tools inc.

N.Y. Jocks Wary of Voice Tracking

by Ken R.

Voice tracking is a relatively new technology that has recently come into wider use across the country. It allows talent in distant cities to be heard on a local station and sound live and local.

The air talent represented by the American Federation of Television and Radio Artists at the Clear Channel cluster in the Big Apple feels that this technology would do a disservice to listeners.

in December 2000; WWPR's expired in June 2001. Employees at both stations are working without contracts. The announcers at WLTW have been working without a contract since March 2002.

The other two stations are operating under existing agreements. Negotiations for the entire cluster are underway.

WHTZ Production Director Dave Foxx, who is not affected directly by these negotiations, agrees with the announcers.

has specific plans to use voice tracking in New York City, but they want future AFTRA contracts to grant them this right, should they wish to do so in the future.

Currently only one New York personality, whom Fuster declined to name, voice tracks for other markets, and he is a recent arrival from another city. The rest of the New York City AFTRA announcer/members decided that they do not want to voice track for other markets. But it seems the main point of contention is the use of voice-tracked shows in New York.

Michaels

Michaels, no stranger to controversy, said in a statement that the desires of the New York announcers remind him of musicians who fought against the introduction of phonograph records in the early days of radio.

"They believed that all music should come from a live orchestra," stated Michaels. "Voice tracking is just a tool, and like all tools, it can be used in good and bad ways."

Michaels cited the example of WHKF(FM), a Clear Channel property in Arbitron Radio Market 78, Harrisburg-Lebanon-Carlisle, Pa., which uses voice tracking extensively yet is ranked first in cume among 12 to 17 year olds in the Fall 2001 survey.

"We will work with our talent to find good ways to use this particular tool," stated Michaels. "Expect voice tracking to be a big benefit to our talent in New York."

Pam Taylor, vice president of communications for Clear Channel, agrees that voice tracking is here to stay.

"It's a difficult time because we're in negotiations with AFTRA," she said. "But we hope we can reach an agreement

See VOICE TRACKING, page 39 ▶

Unions Work To Remain Relevant

by Ken R.

One of the changes in the wake of radio deregulation is the difficulty that unions face in maintaining a viable presence in the industry.

The three unions with which radio stations interact most often are the National Association of Broadcast Employees and Technicians, which is a sector of the Communications Workers of America and is affiliated with AFL-CIO; the American Federation of Television and Radio Artists; and the International Brotherhood of Electrical Workers.



NABET shrinks in radio

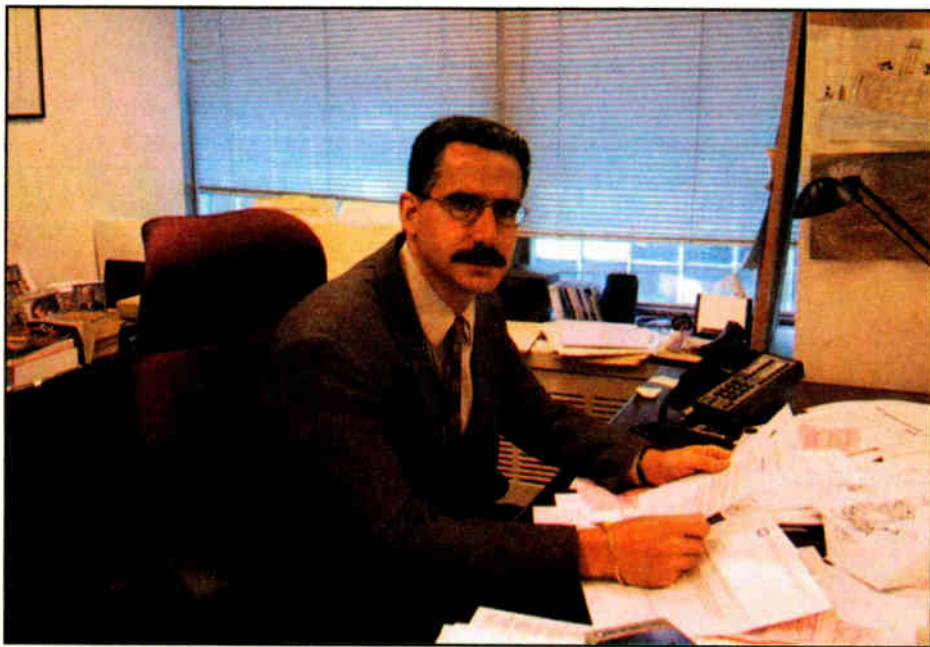
Ed Spillett is a staff representative for NABET, which bargains collectively and lobbies on behalf of its members, who are primarily engineers and board ops.

The union's history goes back to the NBC radio network in the 1930s. Today radio plays a much smaller part in its operations.

"The number of people we represent in radio now is down to about 200 in this country, most of whom are in New York, Philadelphia, Detroit and a few other places," he said.

"It goes along with the decrease in the number of people who are needed to run a station. Now that automation has taken over, instead of needing 30 or 40 employees

See UNIONS, page 38 ▶



Peter Fuster

On May 21, 60 announcers working for the five FM stations in New York City — WKTU, WWPR, WLTW, WAXQ and WHTZ — appealed in a letter to Randy Michaels, chairman and CEO, Radio, for the parent company, to prohibit prerecording local shows in future contracts.

The WKTU AFTRA contract expired

"I would be amazed if anyone really wanted to do it here," he said. "Voice tracking allows small to medium markets to get major-market talent. It doesn't work the other way."

According to Peter Fuster, assistant executive director of AFTRA for Clear Channel's New York negotiations, Clear Channel management has not said that it

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NEWS ANALYSIS

Where Did All the Deals Go?

by Steve Sullivan

Between 1996 and 2000, record numbers of stations were transferred for mind-boggling prices. But, as with most binges, there is always a morning after, and 2001 was the radio industry's hangover.

The sorry plight of last year was summed up in the recently BIA Financial Network study, "State of the Radio Industry: Radio Transactions 2001: Where Did All the Deals Go?"

Where, indeed.

There was a precipitous dropoff in the overall number of radio station transactions in 2001. Only 1,000 stations changed hands last year, a free-fall of 46 percent from 2000. This was the slowest year in sales for more than a decade.

Even more dramatic than the fall-off in overall transactions was the drop in values of the stations sold. That amount plummeted by 85 percent to just below \$4 billion.

Was it predictable?

Was this something we should have seen coming? Perhaps some of it. That's according to Mark Fratrick, PhD, a vice president with BIAfn and author of the study.

"The ownership groups max out and then take pauses to incorporate the stations they've acquired," he said.

He points to 1998 when a similar, but much less severe, transaction drop occurred.

"It's easier to explain the dropoff by looking at the prior years," said Fratrick.

"Back then, AM/FM had acquired Chancellor and Clear Channel acquired AM/FM. Then everyone took some time to incorporate the new stations."

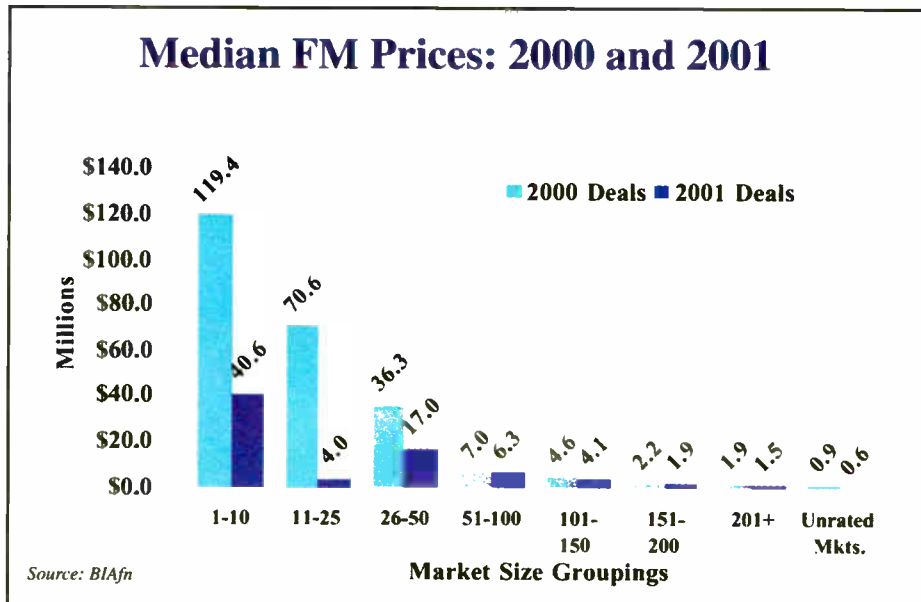
Fratrick said this maxing out in markets, and the incorporation pauses, are two of the biggest contributing factors to last year's results. The third factor, he said, was the lousy state of the economy.

to 5 percent for 2001. Well, not only was there no growth, it went down by 8 percent."

Once you take a detailed look at who was buying stations, you can argue that transaction activity was actually worse than reported last year.

The single largest radio deal of 2001 was not an exchange of stations between

Median FM Prices: 2000 and 2001



Fratrick said the advertising slowdown was worse than anticipated.

"At the end of 2000 and early in 2001, you could see decreases, but it was a kind of natural slowdown following great growth in 1998 and 1999," said Fratrick. "I predicted revenue growth of 4

two radio owners. Instead it was a corporate takeover of a single station ownership group.

When takeover specialist Forstmann Little picked up Citadel Communications at the beginning of last year, not much changed for Citadel other than the signatures on its paychecks.

"It certainly does boost up the annual numbers," said Fratrick. "You can say it's a special case because they retained the entire company and just took it private. But it still counts as an official transaction."

The year 2001 saw a precipitous dropoff in the overall number of radio station transactions.

The deal involved 208 stations, more than 20 percent of all stations that moved in 2001. And it accounted for more than half the stations bought by the top-10 acquiring groups last year.

Aside from Forstmann Little, the most active top-10 buyer was Clear Channel. The industry giant inked 35 deals to get 60 stations. That, too, points out a trend unique to 2001 — lots of one- and two-station deals. More than 70 percent of the transactions involved only one station. That's greater by 63.4 percent than the one-station deals transacted in 2000.

Few of these deals, whether for one station or several, involved top-10 markets.

"I think the significant drop in total value is explained by the lack of stations sold in the largest markets," said Fratrick. "Only 15 stations were sold in the top 10 markets, and out of those 15 stations, 13 were AM. So, while overall values may have gone down in 2001, you have to be careful about looking at which stations were sold before making any dire conclusions about the val-



Mark Fratrick

ue of radio stations."

That's good advice, because otherwise a 70-percent decrease in average station price would beg for dire conclusions.

So do we start running around and screaming that the sky is falling in on the industry?

Not unless panicking is your style. However, Fratrick speculates that the marked decline in station activity will pick up.

Relaxed restrictions?

Fratrick anticipates that the FCC likely will tinker with local ownership rules. Perhaps among one of the most uplifting changes could come if the commission relaxes restrictions on cross-ownership rules, allowing newspaper companies to buy radio stations in their publishing markets. (Note of disclosure: the author of this article is employed by one of those newspaper companies.)

Fratrick also sees the economy recovering and helping boost advertising revenues, station values and station sales.

"In the first quarter of this year, there's already been some increase in sales," said

Ditingo Moderates Business Of Broadcasting Workshop

Radio World columnist Vincent M. Ditingo moderated the New York Institute of Technology's first annual "Business of Radio Broadcasting" seminar featuring top radio and marketing executives from the New York City area.

The event attracted about 70 students and faculty members at the school's Manhattan campus. Panelists talked about the challenges and opportunities in radio programming, production, management and sales.

Among the topics addressed was radio's continuing shift to a digital foundation and how that redefines broadcast operations while creating new ways of consumer use. Radio's ability to stimulate ad sales through non-traditional selling and promotional means also was discussed.



From left, Chris Angelo, production director for WCBS(FM), New York; Dennis Falcone, format manager at Sirius Satellite Radio; Lee Simonson, radio management consultant; Ann-Marie Figueroa, account executive/market specialist with MG/Caballero Spanish Media; and Vincent M. Ditingo, assistant professor of communication arts, NYIT, served on the panel.



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Unions

► Continued from page 34

for each set of call letters, management is getting by with just two or three for the same work. Voice tracking causes more layoffs, which reduces our membership."

NABET does not represent part-time employees or free-lancers; so many stations become decertified as full-time employees are laid off.

"When there is no one left to work under a particular station agreement, we lose that representation," said Spillet.

With regard to the union's relationship with management, he said that there has been little change over recent years.

"Management tolerates our union as it tolerates any contract it needs to negotiate," he said. "It's not high on their list of things to do, but just another legal matter to be handled."

Working conditions are among the factors with which the union deals.

"We assume the employee has no voice in the workplace, so we try to achieve the best working conditions," he said. "One of the simplest things we try to do is get a regular work week with two consecutive days off, which is pretty rare in the broadcast industry now."

Other issues negotiated by NABET include health insurance, wage increases, vacations and, in some cases, safety.

In the early 1990s, NABET became a part of the CWA and still represents many technicians at organizations such as National Public Radio, Fox, ABC, NBC and several PBS stations.

As of June, NABET was working with NPR to remove a stumbling block to a new contract. Paula Olson is the staff representative negotiating that agreement on behalf of the union.

NPR talks

"NPR has made a proposal to modify the existing work rules to permit non-union production people to do union work," she said. "The two parties couldn't come to an agreement in January so now we have obtained a mediator to help us."

The contract covers workers not just in Washington, but also locations in New York City, Chicago, San Francisco and Los Angeles.

"It's the first contract between us and we have been working on it for two years," said Olson. "We hope that we'll be able to resolve the remaining issues."

In a statement in May, Mike Starling, vice president for engineering and operations at NPR, said NABET is the party that rejected the contract. The reason he cited was the technical unit's apparent unwillingness to change or relax work rules that require its members to be the only employees allowed to mix audio.

"NPR remains open and committed to reaching a reasonable, expeditious outcome," he stated.

An NPR source told Radio World in early June that "a lot of progress" had been made in recent negotiations.

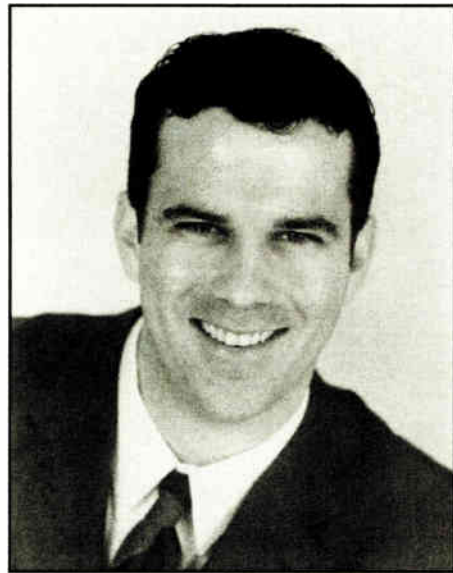
AFTRA represents announcers and journalists at about 200 radio stations as well as air talent working at the network level at

CBS, ABC and some Pacifica stations.

It also has agreements with Shadow Traffic and Metro Networks, both owned by Westwood One. But broadcasters are only a small part of their general membership.

"We have about 80,000 members including actors, free-lance announcers and singers," said Tom Carpenter, national director of news and broadcasting for the union. "But only several thousand of those are working at radio or TV stations."

The approach taken by the union is to try to smooth relations between management and talent.



Tom Carpenter

"AFTRA takes the position that we don't negotiate against the owners, but instead try to work with them," he said. "It's important for them to be successful and profitable; however, we need to make sure our members' wages, hours and working conditions are not compromised for the sake of the corporate bottom line."

But AFTRA does more than negotiate labor contracts and collect dues.

"The industry is incredibly competitive so we have to look beyond our labor relations in order to protect our members' interests," Carpenter said.

"We recently lobbied state legislatures to introduce bills to render noncompete clauses in personal service contracts unenforceable. We have succeeded in Massachusetts, Maine, Illinois and Arizona, and bills are pending in Washington state, Missouri and others."

Kim Roberts, associate national executive director, said another important function of AFTRA is dispute resolution.

"We will arbitrate on behalf of our members if they are unable to collect money or have a dispute under a collective bargaining agreement," she said.

AFTRA takes every opportunity to warn against what it considers to be the evils of consolidation.

"The voice-tracking thing is purely economic and really puts downward pressure on salaries and decreases staffs," said Carpenter. "Our members in some parts of the country voice track because it's the way the industry is going, but we have filed our comments with the FCC and in the press saying that this process destroys localism."

"Shows tracked from another city do not have a relationship with the community where they are broadcast."

Carpenter agrees with some that voice tracking has a place in radio on overnight or weekend shifts.

"But there is some duplicity involved when the announcer pretends to make local personal appearances or plays an interview that was actually recorded weeks ago in

another city," he said.

"We also represent a lot of recording artists, and if they don't have a relationship with Clear Channel's concert division, for example, they don't get on the air."

AFTRA's national director of sound recording, Ann Chiatovitz, said there is only anecdotal evidence that some musician members have been pressured to book their tours through Clear Channel's concert division.

"We have heard, though, of stations asking our artists to play free concerts at their venues," she said.

"We are opposed to vertically consolidated companies that own their own syndication and concert divisions and we are also opposed to horizontally consolidated groups that own hundreds of stations. The fact that there are fewer owners means that artists and labels have to pay increased promotional fees to get their records heard."

Diane Warren, vice president of communications for Clear Channel Worldwide, has a very different view of this issue.

"The statement that artists must have a relationship with the Clear Channel Entertainment concert division in order to get on the air is absolutely false," she said. "Clear Channel and AFTRA work hand-in-hand in many ways ... and we would be surprised and disappointed if someone at AFTRA would make this comment."

To cite a specific example, Warren mentioned pop superstar Britney Spears.

"Current data proves that, in point of fact, spins of Spears (songs) on CC radio stations actually increased during a non-CCE tour in 2001 vs. the same period of her CCE-promoted 2000 tour."

Hard lines

One AFTRA contract currently "in play" is at a CBS/Infinity station, WXYT(AM), Detroit. Sister station WWJ(AM) has been covered by the union for some time. Jayne Bower, union steward and air talent, said members are trying to bring WXYT into the same agreement.

WXYT is a sports/talk station; WWJ is an all-news operation.

"Relations with management are good, and my general manager, Rich Homberg, and I work well together. However, since WXYT's staff voted to organize, the corporate people are taking a very hard line on this negotiation," Bower said.

"The election was held Jan. 31, so the WXYT people are officially AFTRA members, and now we're negotiating the contract specifics, and management wants to give WXYT less than what the people at WWJ get."

Bower said the negotiations may go to arbitration if the sides are unable to agree.

"I was shocked to find out that in the early 1980s, all the broadcast outlets in town except one TV station had decertified from AFTRA because of a weak local," Bower said. "I was one of the ones who helped bring AFTRA back to Detroit, because I come from Los Angeles where we had union representation."

"My personal reason for wanting to organize was that my male counterpart was making 50 percent more than I was when I got here," said Bower. "I decided I could either quit, sue for discrimination, or try to do something to better the situation for the next woman."

Bower said she initially faced great opposition from even fellow employees when she tried to organize upon her arrival, but since the union arrived, "most of the nay-sayers have completely changed their minds."

What Does It Cost To Be a Union Member?

NABET National Secretary Treasurer Dan Mahoney said the cost to join is set by the local unions, but can be anywhere from \$50 in small markets to \$5,000 in the largest. Dues are dependent on market size but range from 1.33 to 1.66 percent of the member's gross salary. It's deducted weekly from his or her check.

IBEW has an initiation fee of \$100, according to a spokeswoman. There are two tiers of dues: free-lancers and weekly workers. Freelancers pay \$87 per quarter for the first \$4,200 earnings for that quarter, and an additional 1.45 percent of anything above \$4,200 for that quarter. Weekly workers, even temporary workers, pay 1.45 percent of the weekly base salary plus \$27 per quarter. If someone works less than a quarter, he or she reverts to the free-lance rate.

Kim Roberts, associate national executive director for AFTRA, said the initiation fee for her union is \$1,200, a one-time payment. The dues owed in any year are based on the money earned by the member in the previous year. Dues are 1.35 percent of earnings for the first \$100,000, then 0.25 percent for any amount between \$100,000 and \$250,000. There is a minimum payment of \$116 per year, even if the union member only earned \$1 during a given year.

Georgeann Herbert is operations manager for WXYT/WWJ. Because the contract was under negotiation, she said she could not comment on management's position.

Indeed, Radio World contacted numerous cluster managers, program directors and general managers of stations with employees represented by AFTRA and asked for their views about the union. None chose to speak on the record. Radio World also contacted the NAB and the Radio-Television News Directors Association; officials of both declined comment.

IBEW

While IBEW has 750,000 members spread out over 1,100 local unions, only about 25 people in radio are covered under current contracts.

"Our membership is mostly employed in construction, utilities, telecommunication and manufacturing, in that order," said Jim Spellane, director of journalist and media relations for the organization.

IBEW radio members primarily are employed at CBS stations in New York and St. Louis. The union has a much larger number of engineers and other technical people at TV stations across the country.

Like AFTRA, IBEW feels that the changing face of radio has not been good for their workers.

"It's just not as fertile a field as in the past due to multitasking," he said. "Conglomerates have gotten very large and very powerful."

To learn more about these unions visit www.aftra.com, www.ibew.org and www.nabet.org.

Ken R. is a former broadcaster who can be reached via e-mail to ken@kenr.com.

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Taszarek Touts Radio Recovery

by Paul Kaminski

When sales consultant Jim "Taz" Taszarek was asked to present a seminar at NAB2002, the working title was "How to Manage Our Way Out of This" (meaning the recession and business downturn). The new title "Here Comes the Recovery: Some Tips on How to Maximize the Recovery" was the result of improving economic conditions.

Taszarek began his seminar by suggesting the recovery wouldn't affect all segments of the economy equally.

He said, "The radio selling rules from 1992 don't necessarily work in 2002. With deregulation came larger sales staffs, cluster selling and for some chains, predatory share in the markets.

"Radio salespeople have been 'chumped.' By that I mean we've been talked into chasing down little bits of ad agency dollars," said Taszarek.

His remedy includes refocusing the sales staff to work smarter, and the use of a quota-based system for evaluation of sales efforts.

"When I was a GM, I was paid on how well my sales staff performed," said Taszarek. "We pay the stockholders, corporate officers and directors of sales if they make a number. So should the individual salesperson. They've got to make quota."

Taszarek said the number "has to be attainable, fair for all, agreed upon and only set for one quarter at a time, to adjust for economic conditions."

Sales efforts would be rewarded and compensated on a percentage of quotas. Taszarek's model uses a sliding commission scale to recognize the attainment of the goal.

Taszarek also advocates posting a simple chart on the station wall with percentages of quota achievement, but not

a dollar amount for each individual salesperson.

"Just put it up on the wall, and don't use it for a hammer," he said. "Don't talk about it in the sales meetings."

The radio selling rules from 1992 don't necessarily work in 2002.

— Jim Taszarek

He's found that salespeople will ask to have their percentages raised on the board as they make sales. Taszarek suggests the system be implemented in steps, with new hires going on the system immediately and a transition period before mandatory implementation for the present sales staffs.

Recruiting

Taszarek also advocates some changes in the way salespeople are recruited.

"Once you determine who your biggest clients are by category, go out and hire people who've worked in those categories," he said. "They can talk the talk with the manufacturers and open up some budgets."

He gave an example of how that translated into increased billings for Arizona Cardinals broadcasts on KTAR(AM) in Phoenix when he hired a salesperson who had worked in the grocery business.

According to Taszarek, more time should be spent qualifying advertisers who are tied to the various formats. They should be ranked by their authority to buy, their budget (or how much money per month they can spend), a countable vision (where the station and advertiser say that a certain result needs to occur by a certain date) and desire.

Taszarek said the usual approach taken by salespersons might need to change. Don't go in there with a ranker, a sheet showing audience penetration numbers for a station, he said.

He stressed the importance of having a good idea that will work for the advertiser. He explained the rationale behind the sales objection of no money in the budget.

"The client doesn't have the budget because we didn't come up with a good idea," said Taszarek.

He gave an example of how this enhanced client qualification could translate to new business.

"Your station could put on a motorcycle show," said Taszarek. "From a target category list, you might come up with, for instance, 30 motorcycle shops in your listening area. You might send an express copy (of the offer) to 10 or 15 of these clients. I'd limit the offer to a certain number.

"I'd then add a second page to this offer with the names of all of the motorcycle shops in the area. Like the newspaper, I want them to use my station to compete against each other. By doing this, I'm creating demand."

Taszarek suggests reorganizing sales staffs into "platoons," with a local sales manager, senior account executive and account executives organized into one platoon, reporting to the general sales manager.

He also thinks that an insurance industry model for compensation could help get senior account executives to spend more time on more productive accounts, while at the same time maintaining some revenue from older accounts.

Under this system, the senior account executive helps the junior executive.

"For example, as the account transitions from senior to junior, the senior would receive 75 percent of the commission, and the junior will get 25 percent in the first month. In the second month, as the account transitions, both get 50 percent of the commissions.

"In the third and subsequent months, 25 percent of the commissions on the account would go to the senior and 75 percent to the junior. This gives the senior person added incentive to help the junior person and keep tabs on the account."

More information on Taszarek's approach to sales is available at www.tazmedia.com.

Voice Tracking

▶ Continued from page 34 with these folks."

AFTRA represents announcers and newscasters at about 30 of the more than 1,200 Clear Channel stations.

Clear Channel has invested a lot of money in audio management equipment from its division Prophet Systems Innovations, which like other digital systems permits the exchange of voice tracks among stations.

Voice import

Kevin Lockhart, CEO of Prophet, said its AudioWizard and NexGen packages allow voice tracking. It sells the systems not only to Clear Channel but to other groups — 900 systems to non-Clear Channel stations, he said.

"Clear Channel presently has a proposal to import voices into our market and we oppose that," said Fuster. "We don't understand why they would want to do it, as the stations are very profitable. This proposal is detrimental to our members and the stations they worked so hard to build because voice tracking would lose the connection with the listeners."



Randy Michaels

Channel has implemented voice tracking in other AFTRA-represented markets like Chicago and Los Angeles on a limited basis, there are differences between those cities and New York.

Regarding Michaels' analogy to development of the phonograph, Fuster said, "If you go to a concert at Philharmonic Hall, do you want to hear a record player or live musicians?"

Voice tracking is just a tool, and like all tools, it can be used in good and bad ways.

— Randy Michaels,
Clear Channel

In a cover letter to Michaels with the petition, Fuster requested a meeting. At press time, there had been no response from Michaels and no meeting was scheduled.

"We believe that if given an opportunity to explain our unique circumstances here in New York, Mr. Michaels will see that this idea won't work here," said Fuster.

"Currently the negotiations are being handled by an outside attorney who was hired by Clear Channel. And lately there hasn't even been anyone from Clear Channel corporate in the room."

Fuster said that although Clear

In New York, current and previous AFTRA contracts have included a stipulation known as the "24-hour manning" clause, which requires each station to have an announcer present during all broadcast hours.

"It's unimaginable that anyone would want to use voice tracking here," said Fuster. "A good example is the catastrophe of last Sept. 11. When all that was happening, our people did a great job on the air. This might not have been as effective with a show recorded the previous day."

At this writing, AFTRA negotiations were ongoing.

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MANAGEMENT CORNER

Indicators Show Revenue Turnaround

by Vincent M. Ditingo

As the industry approaches the mid-way point in 2002, it just may be time for radio owners and managers alike to get the champagne chilled, or at least purchased.

Based upon early financial indicators, radio's uphill battle to garner additional revenues appears to be picking up momentum as advertisers once again rediscover the medium's competitive advantage in obtaining results.

"Everything is looking so positive right now," stated Radio Advertising Bureau President and CEO Gary Fries. "Sales are turning around more rapidly than in past years."

Billings for the month of April, particularly in some of the major markets, according to Fries, have finally posted an upturn. This is significant, said Fries, because radio's recovery had been slowed by the flat revenue performances of key markets like New York.

At this writing, Fries estimated April revenue dollars for New York to have climbed by 3 to 4 percent over the same period a year ago.

Healthy industry

According to Fries, the radio business now can be categorized as "healthy" because the positive numbers generally reflect a general economic recovery and are not driven by any single or new category. When radio came out of the 1992 recession, computers and cell phones primarily drove ad sales, Fries noted.

Recapping the first quarter of the year, RAB statistics showed a drop of 1 percent in overall radio ad sales compared to a year earlier. RAB blamed what it called a "glitch" in February, when the lack of TV sweeps advertising affected local revenue growth.

The latter had been down by 75 percent when a similar second-quarter analysis was conducted by Interep in 2001.

Tight, firm

"Rates are firming up and inventory is tightening across the board," observed Interep Chairman Ralph Guild in a May conference call on the release of the company's first-quarter results.

an RAB examination of non-traditional revenue ventures by radio stations in 2001 showed 84 percent of station respondents reporting an increase in their NTR selling efforts. In some cases, this increase is accounting for up to 20 percent of stations' annual revenue.

Also, 72 percent of the respondents said they are planning to expand in the area of event marketing in order to capture additional expenditures. (See "Radio

TOP % GROWTH CATEGORIES

2nd Quarter 2002 Pacing

TRANSPORTATION (AIRLINES)	+150%
HOME VIDEO	100%
ELECTRONICS/APPLIANCES	90%
SOFT DRINK/WATER/BEVERAGES	40%
FOREIGN AUTO	35%
EDUCATION	35%
COMPUTERS/SOFTWARE	35%
AUTO DOMESTIC	30%
BEER/WINE	30%
FOOD PRODUCTS	20%

Source: Interep Billings 2nd Quarter 2002

(*Excludes categories with less than \$1 million billings per quarter.)

(To that end, Guild reported Interep's radio commission revenue in the first quarter increasing by a little over 1 percent to \$16.8 million from \$16.6 million, and operating earnings before interest, taxes, depreciation and amortization increasing from a loss of \$1.2 million to a gain of \$548,000.)

"May is particularly strong with sell-out conditions in many markets," said Guild. "And since many advertisers were shut out in May because of inventory shortages for the first time in 18 months,

Stations Find NTR a Viable Source," RW, April 24 for a detailed analysis of RAB's NTR survey.)

The apparent turnaround in advertising sales should also have a major effect on station valuations, which directly affects pricing.

Domino effect

The number of stations sold during the economic doldrums of 2001, according to research by Mark Fratnik, vice president for the BIA Financial Network, decreased by 46 percent and total value of station sales fell by 85 percent to just below \$4 billion. (See related story, page 36.)

Fratnik reports a sharp decrease in the number of large-market stations sold in 2001 with some 72 percent of all radio station deals involving only one station.

Given those two factors, the median prices for stations sold last year decreased in virtually all market sizes. For instance, in market sizes 11-25 in which 19 FM and 26 AM stations changed hands last year, the median price for an FM outlet dropped from \$70.6 million in 2000 to \$4 million.

Future acquisition activity likely will be focused on medium- to small-market clusters as many of the large-market radio groups have reached the limits of their local station portfolios.

"As the economy bounces back, there is real potential for many of the larger groups to acquire groups in smaller markets with existing consolidated operations — that is, market size 30 and over," Fratnik said.

Meanwhile, in 2002, station trading remains constant.

"Activity is taking place every week," Fratnik said.

Vincent M. Ditingo is an assistant professor of Communication Arts and coordinator of the radio program at the New York Institute of Technology. Reach him via e-mail to vditingo@aol.com.

TOP % LOSS CATEGORIES

2nd Quarter 2002 Pacing

INTERNET (DOT-COM)	-50%
AUTO AFTERMARKET	-20%
FUEL/GAS	-15%
MAIL SERVICES	-10%
TELECOMMUNICATIONS	-10%
BANKS/FINANCE/MORTGAGE COs	-10%
TRAVEL/TOURISM	-05%
MOVIES	-02%
GOVERNMENT AGENCIES	-02%
INSURANCE	-01%

Source: Interep Billings 2nd Quarter 2002

(*Excludes categories with less than \$1 million billings per quarter.)

At the same time, national spot dollars, which really got hammered in 2001, down 19 percent for the year, registered a 1 increase compared to the first three months of 2001.

An Interep analysis of second-quarter national spot bookings as of May 1 over the same period last year showed major increases in buys from the airline industry, up 150 percent; home video, which essentially is the Blockbuster franchise, up 100 percent; electronics/appliances, up 90 percent; and soft drink/water/beverages category, up 40 percent.

June bookings are solidifying," he said.

Aside from other stabilizing factors affecting the economy, a key contributing factor to radio's gradual rebound is a greater emphasis by sales personnel to generate so-called non-traditional revenue. NTR generally is radio business other than transactional spot business; it could include promotional sales or integrated media such as marketing radio Web sites in conjunction with those of advertising clients.

Although typically not exceeding 10 percent of a station's total revenue base,

BUSINESS DIGEST

SBS, Interep Form Partnership To Target National Ad Dollars

Calling it a "strategic alliance," Spanish Broadcasting System Inc. and Interep have joined to form a new division.

The focus of SBS/Interep is to market more effectively the Spanish-language SBS Radio network and other Interep-represented Hispanic stations to national advertisers.

"Hispanic consumers now represent 13 percent of the U.S. population, yet receive under 3 percent of total radio ad dollars," said Ralph Guild, chairman/CEO of Interep, who said Interep is committed to closing the gap through a combination of marketing initiatives and incentive packages.

One of the initiatives is the co-sponsored Interep and SBS "Power of Hispanic Radio" event scheduled for October in New York City. It plans to bring together hundreds of the nation's media decision-makers, advertisers and clients to discuss the growing importance of Hispanic consumers and Hispanic radio's ability to reach this community.

SBS/Interep will represent stations previously represented by Interep's Caballero Spanish Media.

Ad Council Celebrates 60 Years, Fights Hunger

The Advertising Council is marking its 60th anniversary.

"From the historic 'Loose Lips Sink Ships' to the recent 'I am an American,' Ad Council campaigns have mirrored and influenced many of the most critical social issues facing our nation during the last six decades," stated Peggy Conlon, president and CEO of the Ad Council.

Meantime, PSAs addressing child hunger in the United States now are available.

Statistics show one in five children in America today is hungry or at risk of going hungry. The PSAs have been localized for approximately 100 markets and carry the theme illustrating the choices that lead to child hunger. The campaign aims to motivate people to reach out locally.

For more information, visit www.adcouncil.org.

Radio Unica Adds Mexican Leader's Weekly Address

Miami-based Radio Unica has added Mexican President Vicente Fox's weekly address to its programming lineup.

Officials of the Spanish-language network stated the decision is reflective of the closeness of current U.S.-Mexican ties.

Approximately 35 million Hispanics — an estimated 60 percent of Mexican origin — live in the United States, primarily in cities to which Radio Unica's nationwide signal is transmitted via its stations and affiliates.

Radio Unica also broadcasts President Bush's weekly address.

For more information visit www.radiounica.com.

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World Radio History

Studio Sessions

Cool Edit
Loop Tools
See Page 43

Radio World

Resource for Radio On-Air, Production and Recording

July 3, 2002

PRODUCER PROFILE

Livin' Large in a Small Market

by Ken R.

Welcome to St. Cloud, Minn., population 160,000 and Arbitron market No. 220.

It is not exactly the big time, but Paul Ciarrochi — pronounced sher-OH-

key — would not want to be production director anywhere else.

"I worked at WAIT(AM), Chicago for eight years, and by the time I left it was a relief," he said.

St. Cloud, he said, is very laid back.

"Chicago is nuts."

And in a situation almost unprecedented in radio, Ciarrochi said everyone at his current place of employment actually takes vacations.

with W? Because the Mississippi River, radio's traditional east/west dividing line, runs right through the city.

"I'm actually part of the sales team," Ciarrochi said. "I write the spots and do a lot of the voiceovers, although we have about 12 air people who are available to help out."

He said with a laugh that one reason he ends up handling a large percentage of the spots himself is that when the

PRODUCT EVALUATION

Cool Edit Pro 2.0: Even Cooler Now

by Alan R. Peterson

In its earliest days, Cool Edit was a shareware download. It did a bunch of neat things to your audio for almost no money. And if you could deal with a nag screen and work around that "two-features-only" limitation in demo mode, you could live forever off the free download.

Then Syntrillium Software came up with Cool Edit Pro, putting multitrack recording up close and personal for less than the cost of a cassette-based "mini" studio.

See COOL EDIT, page 43 ▶



The Red Rover controller lets you put aside the mouse.



Paul Ciarrochi

Ciarrochi works for Regent Communications, based in Covington, Ky., which owns stations in several other small markets. His cluster in St. Cloud includes FM stations WWJO, KLZZ, KMXX and KKSR. There are also two AMs: WJON, news/talk; and KXSS, which plays classic country.

He oversees production, local and national, for all six stations, which are in the same building.

And why do some of the cluster call letters begin with K while others start

assignments come in late, he often is the only one in the building.

Others on the team include Laura Kremers, who writes spots after her on-air duties in the morning; Lynn Olson, who shares copywriting and traffic duties; and Lynn Larson, the creative director, who also handles station presentations and promotions," he said. "People wear several hats around here."

Even though the production department may crank out as many as a

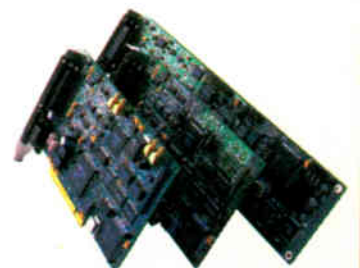
See CIARROCHI, page 46 ▶



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CEP 2.0 Features Loop Tools, Too

by Dennis J. Martin

Syntrillium Software Cool Edit Pro 2.0, while refreshingly familiar in appearance and operation, is excitingly different in other ways.

Aside from new effects and tools like dynamic EQ and delay, graphic phase and Doppler shifters, stereo field rotate and phase analysis, version 2.0 now supports 128 tracks, real-time effects including track busing, CD ripping, and group (RMS) normalize.

Loop creation and session tools, including tempo and key matching, are also new feature sets. A "loop" is a small audio file that can range from a fraction of a second to seven seconds or more; typically these are in the one- to four-second category.

The end of the file is designed to be spliced to its beginning so it sounds natural when played repeatedly (looped). Different loops often can be spliced together to form a less-repetitive sound.

Each loop is musical-sounding, may have an inherent tempo and key, and can be a solo instrument, or several instruments combined. Although this may sound intimidating to the uninitiated, Cool Edit Pro makes it simple to create professional results.

A companion Web site, *Loopology.com*, is dedicated to looping. It features 2,000 downloadable, royalty-free loops. There are 15 categories, including Blues, Bossa Nova and Latin, Classical and Orchestral, Funk and '70s, Music Beds, Rock and Pop, Techno Dance and Club, and Urban and R&B.

Within each category is an assortment of instruments. Bossa Nova instruments include congas, shakers, percussion; drum kit; heavy upright bass; organ, piano and sax and trumpet.

The loops are stored in individual CEL files (Cool Edit Loop), a format that uses the new MP3PRO algorithm (more on this later). The loops were performed by musicians, not sequenced, giving them a natural sound.

Loops are not just for musicians or those so adept. Despite an admitted lack of musical prowess on my part, within several minutes I was able to create a one-minute music bed using three Jazz Groove and one Jazz cymbal, two Walkin' Bass, and 11 Piano Comping loops from the Cocktail Jazz group.

Once assembled, I could quickly change the tempo (in beats per minute) or the key. Because the loops are royalty-free, they can be used commercially, even broadcast, without the need for compensation.

Considering the large library available and the ability to mix-n-match loops, their use in production seems boundless.

Cool Edit Pro 2.0 is the first audio editor to support MP3PRO, an upgrade to the popular MP3 format.

PRO adds data to the MP3 file enabling it to recreate high frequencies during playback, which is desirable especially at low bitrates.

A 64 kbps MP3PRO file sounds very similar to a 128 kbps MP3 file and is half the size. In addition, MP3PRO files are back-compatible; existing MP3 players that do not support PRO extensions can play them, although they will sound like a slightly degraded MP3 file of the same bitrate.

Still, unlike other formats for which the player has to be upgraded just to play a new file, this is a welcome change. And considering the popularity of e-mailing

spec spots, the smaller file size will no doubt be hailed by IT departments.

Beyond those attributes, MP3PRO at 96 kbps — the highest available — is a superior alternative to MP3 at 128 kbps, which has been adopted as the norm for voice talent and other outside production services. The advantage is a slightly smaller file size yet improved fidelity.

Frequency response of a 128 kbps MP3 cuts off at about 16 kHz and offers 11:1 compression (9.1 percent), so a 10 MB, 1 minute WAV file will be about 909 kB.

A 96 kbps MP3PRO file will preserve the full 22 kHz CD bandwidth, yet compress the file size by 14.7:1, so my 1-minute WAV file becomes about 680 kB.

Quick ripping

A time-saving feature is the Extract Audio From CD function, now built-in. Digital audio extraction can be used to digitally "rip" the audio to a WAV file up to the maximum speed of the CD drive (most newer CD drives are DAE-capable).

Any number of tracks can be extracted to either individual files or a single file with cue points between tracks. Or extract a portion of a track by specifying the start and end points in frames. (On a CD, there are 75 frames per second; the time in minutes and seconds will be displayed automatically.)

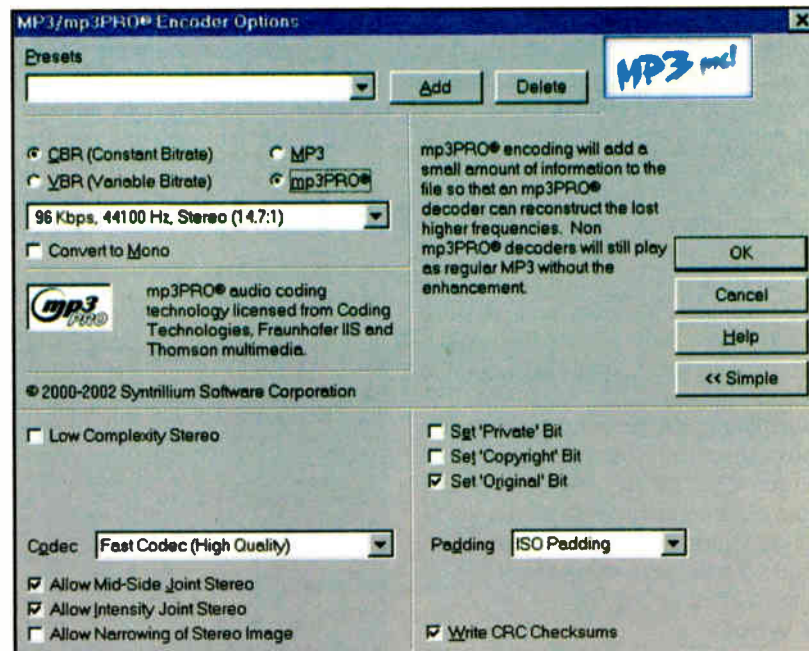
It will soon be possible to burn CDs within Cool Edit Pro using a plug-in that is now in beta test. (If you just cannot wait, download the beta version from

Syntrillium's Web site.)

Also surprising for a PC-based editor are real-time effects. For each track in Multitrack View, you can build a "rack" that contains a host of effects including Amplitude, Delay, Filters, Special and Time/Pitch.

To process several tracks identically, assign them to a bus, then process the bus. A Lock button for each track reduces CPU load by preprocessing the track. Certain effects can be automated — like the amount of dynamic EQ or delay — and can vary with time.

Other functions have been improved.



Cool Edit

► Continued from page 42

Moving ahead a few years, Cool Edit is still the coolest thing around for editing audio on the PC. And now it has grown up. A lot.

Meet Cool Edit Pro 2.0, boasting a whopping 128 audio tracks, new effects, a slick new user interface, loop-based song creation and a bunch of features that are going to make you say "cool!" all over again. At \$249 purchased online, it is a better bargain than its predecessor.

The addition of the Red Rover dedicated controller also means you can put aside the mouse and get your hands on real buttons and knobs for a "studio" feel.

I have been a user since 1997 and have found little else that compares to Cool Edit on the PC platform.

The inevitable comparisons between Cool Edit Pro, or "CEP," and Pro Tools may as well be addressed here.

Supporters in the Pro Tools community frequently have reminded me that their favorite program also is available for the PC in a free version.

Frankly, in the end, audio produced on one system or the other will not sound terribly different (digitized audio is, for the most part, dependent on the sound card). But the Pro Tools product is out there with little support and known conflicts that may cause it not to work at all on some systems.

Because I would rather spend my time on creative audio and not troubleshooting my software, CEP wins this round.

Cool Edit's power, however, requires a comparably powerful computer. The Syntrillium Web site puts a 233 MHz PC with 64 MB RAM as the barest possible

system to run the software.

This is one time I will not steer you in the "buy cheap" direction. Find the fastest screamer you can to run Cool Edit Pro 2.0.

I tried it out on a PII-333 with 128 MB RAM, and Cool Edit loaded down and chugged quite pathetically. Don't settle for anything less than a 700 MHz machine with as much RAM as you can muster and a 7,200 RPM hard disk.

A dedicated video card and a decent audio interface likewise are must-haves for this system. Dragging a window or icon could slow down screen redraw, especially with PCs with on-board RAM sharing video tasks.

No more Greenie

Among the newest features of CEP 2.0 is its screen.

The "green goblin" look has been supplanted by a classy grayish gunmetal finish with shadowed buttons. It looks highly technical and right stylish to boot, but still suggests the earlier GUI so previous users can find their way around.


The transport, timer and zoom controls are right where we left them in version 1.2, only now you can pick them up and reposition them anywhere on the screen where it makes sense.

Want to swap the position of the clock and the zoom buttons? Feel free, it's your workspace now. As you may see in Fig. 1 on page 44, I moved my transport and zoom buttons to the top, leaving a larger clock below.

Where the earlier version of CEP had a fixed-position Track Console — the area to the left where the Record, Solo and Mute icons are — version 2.0 lets you drag this as far into the workspace as you wish. Again, notice that my own preferences in Fig. 1 reveal Bus levels, a longer scribble-

For example, Undo save time now is virtually instantaneous, which can save a minute or more when working with large files. Group Waveform Normalize can normalize multiple open files to an average or specified level, or using an Equal Loudness Contour. And various elements of the user interface can float above the main window, or be docked to become part of the window.

Cool Edit Pro 2.0 is a major upgrade to what was a versatile product. Now there's even more to like.

Dennis Martin is chief engineer at KPWR(FM)/KZLA(FM) in Los Angeles. 

strip area and EQ positions as well as the R, S and M keys.

Recording and editing in CEP 2.0 are no different than before. Hit your red Record button, pick a sample rate and go. One change the programmers snuck in was renaming the Waveforms list as the Organizer Window. You used to be able to open it with the F9 key; now it's Alt+9.

Take a look at the Effect and EQ windows. These are track-assignable processors that you may tack right into the tracks to affect all .WAV files therein.

Previously, all effects were destructive, having to impress a process onto an audio file before dropping it into the Multitrack View. Now, you may globally process all audio on a specific track — just like the old days of patching a particular compressor or the echo plate into a single track off the tape deck.

See that Track EQ toward the upper right? You do not have to limit yourself to working only the faders. Grab a dot on the graphical display and *draw* your response!

Be gentle with the mouse. It is possible to accidentally dock a processor against a taskbar and it will spread out wide to fill space, much as the clock is doing in this picture.

The CEP 2.0 stock effects are still terrific. The addition of several makes the program fun to use, just to hear what you can come up with next.

Among the newly hatched audio effects are QuickVerb, a reverb that places a low load on the CPU; Doppler Shifter, which overlays the classic train whistle effect on any audio file; and a pair of dynamically controlled effects whose qualities can be adjusted by those nifty "rubber band" envelopes that Syntrillium uses in the Multitrack view.

See COOL EDIT, page 44 ►

Cool Edit

► Continued from page 43

Another, the Stereo Field Rotator, does just what it sounds like it does. Put on headphones and fly around the room.

Not enough effects for you? Activate the DirectX linker and use your favorite third-party plug-ins to process your sound even further.

The programmers heard the cry of users wanting to move fast, installing both CD ripping capability and MP3Pro encoding. Bravo. Now if only Real Audio could be put in there somewhere, as it is in Sound Forge.

Remember again that your performance depends completely on your rig. If you plan to run CEP 2.0 on a \$400 e-machine from the electronics superstore, you are in for a disappointment. This box needs power to pull off what you want to.

Woof woof

Which brings me to the Red Rover, a Radio World "Cool Stuff" Award winner. It's a small plastic USB controller for \$128 that allows you to run CEP 2.0 with as little mousing as possible.

Rover features three dials that let you spin in overall volume, track volume and track selection. If you want to make changes to one track, give the dials a twist to get there. Mute, Solo and Record buttons let you arm a track for recording, or silence one or more to isolate a problem track.

I am an instant fan of the transport buttons, fully the same size as the ones found on Otari 5050 tape decks, with a nice noisy tactile click. No mushy membrane switches here.

The cable lets you work CEP 2.0 from about 10 feet away. Owing to signal loss inherent in USB devices anyway, this is about the extent you can use Red Rover in its direct state. If you wish to isolate the PC due to noise, you may improve the range by using a powered USB hub to

boost signals.

Like CEP itself, Syntrillium put Red Rover together for simplicity, even when it comes to installation. The host PC detects Red Rover as a Human Interface Device, (HID), which obviates the need for any special driver diskettes. Just be ready with the Windows CD-ROM for whatever flavor of the OS you are using; you will likely be prompted to install the standard Windows HID driver from there.



Fig. 1 is a screenshot of a heavily modified Cool Edit session, with processor and mixer windows open, as well as newly placed transport and zoom buttons.



The Voices.cel Screen

Product Capsule:
Syntrillium Software
Cool Edit Pro 2.0 and
Red Rover USB Remote Control

Thumbs Up

- ✓ More tracks than you will ever need for radio (128)
- ✓ Superb effects with lots of parameters
- ✓ Familiar user interface
- ✓ USB remote has good feel

Thumbs Down

- ✓ Requires blisteringly powerful computer for high performance

For more information from Syntrillium, contact the company in Arizona at (480) 941-4327 or visit www.syntrillium.com.

card input and use the recorder and timeline to time how long a camera shutter stays open!

If there is one quirk I can point out with this current version, it is that a window may disappear when switching back and forth from the single-wave Edit View screen and the Multitrack View. That FX 5 box you see in the lower left of Fig. 1 kept vanishing on me when I A/B'd between both views, but I chalk that up to insufficient video RAM on my machine.

Red Rover, find your way over

If the R&D gang back at Syntrillium tackles that phone editor issue on the Red Rover, this product could find its way quickly into control rooms everywhere, costing thousands less than its nearest competitor.

On my own wish list, how about a decent vocal harmony plug-in? In place of a pitch shifter, I would love to generate real-sounding vocal harmonies in a project, without firing up a rackmount Digitech Vocalist or a TC Electronic processor. And, seeing as how everybody is doing that vocal pitch-glitching effect Cher made popular two years ago, one of those would be nice too.

Otherwise, live it up. Cool Edit Pro 2.0 is here, and it's cooler than ever.

Visit www.syntrillium.com for a time-limit demo of Cool Edit Pro 2.0.

Alan Peterson teaches Cool Edit Pro at both the Washington campus of the Connecticut School of Broadcasting and at Montgomery College in Rockville, Md. Write him at alanpeterson@earthlink.net.

A comment from an engineer I know was recently forwarded to Syntrillium: If the company could do another version of the Red Rover with a shuttle/jog wheel and a GPI start/stop interface to connect to a console, Cool Edit would be the most economical and versatile telephone editor ever made available to radio broadcasters.

And I should not neglect to mention that the CEP programmers have hid yet another Easter egg in the Help>About window. But you will just have to figure that one out for yourself, I have been sworn to secrecy.

I can find almost nothing ill to say about CEP 2.0. It installs like a dream, it does music looping (see sidebar), the effects are a gas and the Red Rover controller gives you back fingertip control over your production.

Even non-audio users like Cool Edit. Photographers have figured out a way to put a phototransistor across a sound-

Olympic Gold

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Caddy AD DA Converter:

- A companion to the Impact digital router, it is also an ideal stand alone AD DA Converter.

The Impact and Caddy were the preferred equipment used in the Audio Switching Control Room in Salt Lake City.

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Digigram Pocket PC Cards Boost Laptop

The Vxpocket 440 PC card from Digigram lets you do professional sound recording, editing, production and audio analysis on a laptop computer.

The card features four balanced analog inputs at microphone or line level, four balanced analog outputs, one stereo SPDIF I/O accommodating direct digital transfer and an LTC (SMPTE) time-code input. Included with the card is a breakout cable with XLR connectors for the analog I/O, phono (CINCH) connectors for digital and LTC and a miniplug headphone output.

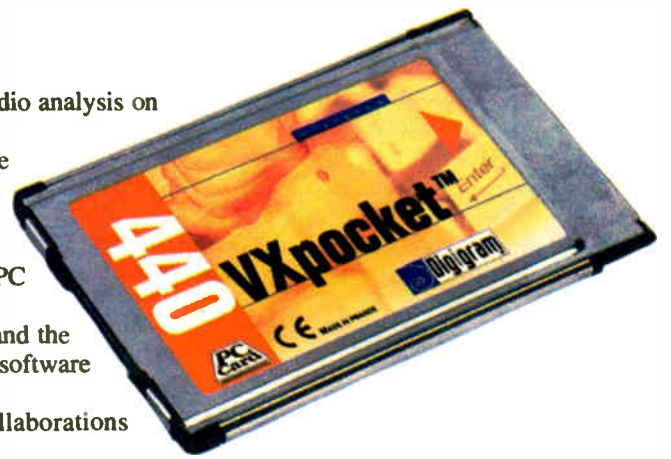
Like its companion Vxpocket v2 stereo card, the Vxpocket 440 offers 24-bit performance for WAV files in PC applications and ASIO for Mac apps.

VXpocket v2 has been enhanced; improvements include a cable that adds a connector for a headphone output and the inclusion of free SFX software. Stage Research Inc. (www.stageresearch.com) produced a basic version of its SFX software that works exclusively with the Vxpocket v2 and is ideal for sound effects applications.

According to Stéphane Bert, Digigram PCX/VX product development manager, this is the first of several collaborations where software developers will provide VXpocket-specific tools for audio professionals.

Price of the VXpocket 440: \$850.

For more information from Digigram contact the company in Virginia at (703) 875-9100 or visit www.digigram.com.



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[ok, movie monsters are rare and unusual ...but it could happen]

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Gotta give this company credit for a catchy product name.

The FATSO — Full Analog Tape Simulator and Optimizer — from Empirical Labs is a digitally controlled analog device designed to offer the qualities of older tube, class A discrete and magnetic tape mediums.

The two-channel processor features several types of compression — harmonic generation and soft clipping, high-frequency saturation, transformer and tape-head emulation and classic knee compression — with fixed attacks and releases.

The FATSO is distributed by Wave Distribution.

For information from Empirical Labs contact Wave Distribution in New Jersey at (973) 728-2425, fax (973) 728-2931, e-mail sales@wavedistribution.com or visit www.empiricalabs.com.

Sony Oxford EQs Available for PowerCore

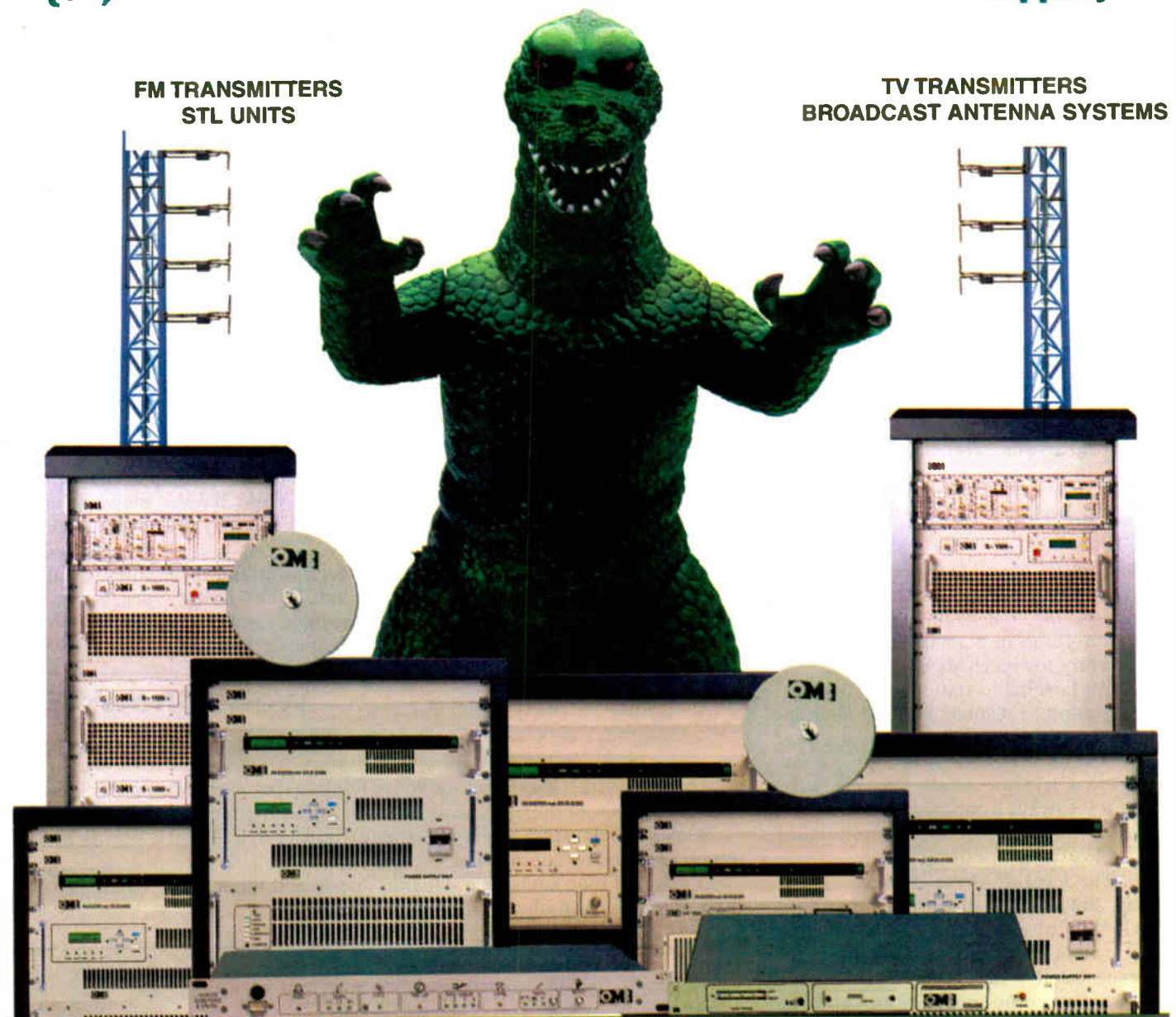
New TC Works and Sony Oxford PowerCore EQ plug-ins for the Digidesign Pro Tools platform are VST- and MAS-compatible.

Features include five-band parametric design; selectable shelf settings on low- and high-frequency sections; four EQ types; and support for sample rates up to and including 96 kHz.

System requirements: Compatible TC Works-approved Apple Macintosh or Windows hardware configuration; VST- or MAS-compliant host application; one or more TC Works PowerCore cards with driver version 1.6 or higher.

The Sony Oxford EQs plug-ins are available from www.sonyplugins.com. Price: \$490.

For more information about the PowerCore plug-ins contact Doug Stanny, marketing manager at TC Electronic in California at (805) 373-1828, e-mail dougs@tcelectronic.com or visit www.sonyplugins.com on the World Wide Web.



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Ciarrochi

► Continued from page 42

couple dozen spots in a typical day, Ciarrochi's focus is on getting results for the client.

"We push creativity," he said. "If it is not going to work for our advertisers, it doesn't work for us."

This production director is on a first-name basis with many of the cluster's clients and encourages the verbally talented ones to record their own commercials.

"The bad ones? We tactfully suggest other ideas," he said.

Positive feedback

Ciarrochi is delighted when clients bring him positive feedback from customers who hear the merchants on the air. He is aware that a production director must please two clients with every spot: the advertiser and the listener.

He enjoys working with a team of pros who occasionally socialize outside the station.

When asked about his biggest challenge, Ciarrochi said, "Keeping my office clean."

More seriously, he believes his biggest task is bringing in new business, even though he is not technically a salesperson.

"It is a challenge to develop solid creative directions if we have a new advertiser, a new product, a new service," he said. "We try to get a few people together here at the station to figure out what is best for the client."

The station atmosphere is relaxed, but Ciarrochi would stop short of calling it informal.

"We have a paper trail on everything, although we are trying to move to a more paperless operation," he said. "All scripts are filed in a computer system where they can be accessed by everyone on the network. All spots are categorized by month and year so it's easy to find anything and many presentations are on the system as well."

Competition

His system provides a safety backup and printers are all networked.

Another challenge his stations face is competition. One would think that a six-station group in a small market would not worry too much about that.

"We have radio stations in cities dotted around St. Cloud, a strong newspaper, a lot of billboards and even a new TV station," he said. "We are in a ratings war and we usually do very well, but it is always a concern."

How challenging is the production workload?

"The level of stress changes day by day, but outside of maybe creating a full singing jingle, there isn't anything we cannot do," he said. "Sure, there are headaches, but the system works here."

Station announcers who produce spots that run out of market are allowed to set their own talent fees.

The stations' production process is entirely digital, with not a cart in sight.

"When I started, we were playing records and editing commercials with razor blades," Ciarrochi said. "Digital equipment has made our lives a lot easier."

His workstation is the Windows-based SAW Pro. Spots run on Broadcast Electronics AudioVault. There are two full production rooms

the tools we need. We don't really need more gadgets, we just need people who want to make the ad sound better than what our competition can produce."

When I started, we were playing records and editing commercials with razor blades. Digital equipment has made our lives a lot easier.

— Paul Ciarrochi

and a smaller announce booth.

"I can record stuff in the studio and edit it on the computer in my office," Ciarrochi said. "My philosophy is that we have all

Ken R. is a former production director from the potted palm days of radio. Reach him via e-mail to Ken@KenR.com.

In Ciarrochi's Production Studio

Mackie SR32-4 control board
Yamaha REV 500 reverb
Tascam CD-RW 2000 to make CDs;
also an 8x burner in the PC
SAWPro
Xing Audio Catalyst to make MP3s
SpotTaxi, DGS and e-mail to
distribute production work

Ciarrochi is very much a fan and user of the good, old-fashioned turntable.

"Some of the music tracks and sound effects on those old LPs are not to be found anywhere else," he said.

PRODUCT GUIDE

Smarts Looks Beyond Audio Cards

Digital audio products being developed by Smarts Broadcast Systems and On Air Digital Inc. may eliminate the need for pricey proprietary audio cards, the companies say.

The companies aim to produce cost-effective digital audio systems with minimal reliance on proprietary technology. The new products, the first of which are available, use an auxiliary computer running under either the Linux or Windows XP operating systems. Any needed compression is handled in the computer itself, not on an audio card.

According to Smarts, the Linux OS is suitable for broadcast applications due to its stability and scalability. Elimination of proprietary audio cards reduces hardware costs without degradation in audio quality.

The new products were made possible by the acquisition of On Air Digital by Smarts Broadcast. On Air Digital had developed a strong Linux technology that fit in well with development efforts at Smarts. The products will play virtually any computer audio file, including MPEG Layer II, Layer III, PCM-WAV, BWF and apt-X. Most files can be mixed and matched and played back-to-back or overlapped.

Currently the software runs with the Smartcaster and the Ultimate Digital Studio systems. User interfaces being developed include a Linux graphics interface and an HTML interface that will allow control of the systems from any

computer on the Internet without special software.

The latter interface is valuable for smaller stations that may run unattended and need a way to control operations from home or other remote location. This could be done in the past with a dedicated modem and phone line, but the Internet interface will allow more flexibility, requiring only access to a site on the Internet.

For more information contact Smarts Broadcast Systems in Iowa at (800) 498-0487 or e-mail info@smartsbroadcast.com.

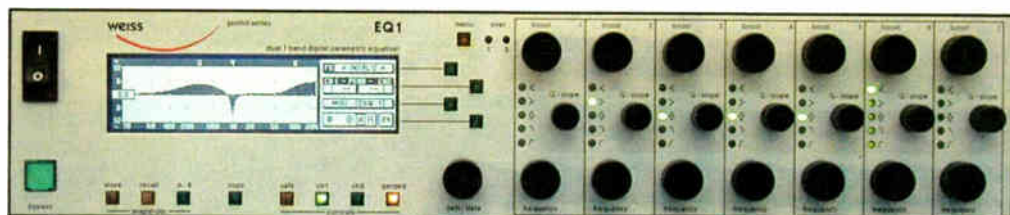


Weiss Shows EQ Unit at AES Europe

The EQ1-MK2, displayed by Weiss Engineering at the recent AES show in Munich, adds dynamic control in the frequency domain to the usual assortment of Weiss EQ features.

With the EQ1-MK2, users adjust equalization to a nominal setting and the input signal is analyzed to determine how much EQ need be applied and to which bands.

It features four adjustable dynamic bands and three linear bands per channel. The EQ1-DYN operates at 88.2 or 96 kHz, depending on input sampling frequency.



The overall dynamic frequency response is displayed in real time on the LCD screen. This aids setup of the parameters of the dynamic band and gives visual feedback about the operation of the EQ1-DYN.

For information from Weiss Engineering contact the company in Switzerland at +41-1940-2006, fax +41-1940-2214, e-mail weiss@weiss.ch or visit www.weiss.ch.

PRODUCT GUIDE

Genelec Debuts 7000 LSE Series Active Subwoofers

The 7000 LSE Series of active subwoofers from Genelec is designed for multichannel, professional surround-sound applications.

Shown by the company at the European AES show in May, the series comprises four models: The 200 mm 7050A, 250 mm 7060A, 305 mm 7070A and dual-driver 305 mm 7071A.

The 7000 Series is based on laminar spiral enclosure technology. According to Genelec, this dramatically alters the way high-level, low-frequency acoustic energy is delivered to a critical-listening acoustic space, virtually

eliminating acoustic nonlinearity from port turbulence.

Three of the LSE Series subwoofers feature Genelec 6.1 bass management technology, designed to enhance control of highs and lows.

The new 6.1 bass management system has six signal I/O channels, a discrete LFE signal input with a selectable 85/120 Hz low-pass filter and a summed signal output.

For information from Genelec contact the U.S. division in Massachusetts at (508) 652 0900, e-mail genelec.usa@genelec.com or visit www.genelec.com.



WW1, BET Launch Network

A multiyear agreement between Westwood One and Black Entertainment Television to develop a radio network will provide affiliates with exclusive access to BET talent, show prep, audio cuts and news and information.

BET Radio Network affiliates will have opportunities for live "interactives" with urban artists as well as concerts/live events and live remotes.

Available short-form programming will include BET Music News Music, BET Weekly Movie Spotlight and BET News Minute.

For information visit www.westwoodone.com.

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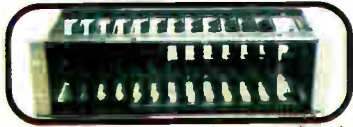


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Buyer's Guide

Tech Updates



Inside

Radio World

Consoles, Mixers & Routers

July 3, 2002

USER REPORT

Logitek Fills the Heart of Radio

by Cameron Adkins
Director of Engineering
Citadel Communications,
Nashville Operations
WKDF(FM)/WGFX(AM)/
Titans Radio Networks

NASHVILLE, Tenn. The challenge: Take a 30-year-old facility with layer upon layer of undocumented connections, punch blocks, and at least six wiring conventions, and bring it into the 21st century, *now*, and on a budget.

The solution at first glance seemed to be, as one of my colleagues put it, a good coat of fire.

The reality had begun to set in that my acceptance of the job that returned me to my hometown might have been more of a challenge than the interview had revealed. But I always enjoy a good fight when the cause is just.

This facility needed a heart transplant in the worst way. The obvious heart needed to be a serious router. But not just any router — one that could handle the present analog world, be ready for digital, do conversions from A to D and vice versa, be a console, handle the dozens of machine control functions and switching, be modular so it could grow as the facility did (and thus allow for a reasonable initial investment) and could be centralized or distributed.

Solution

The only solution to all these criteria was the Logitek Audio Engine and its complement of console control surfaces.

It truly becomes the Facility Controller and gives unlimited possibilities for the present and future of an operation.

tion, many of the remote and RPU functions are shared, so you are well on your way to having the next station online as budgets allow, without any duplicate wiring.

The engine accommodates two console control surfaces out of the box, so your second studio gets even cheaper. The variety of control options can give you anything from PC-only virtual consoles to fully expandable modular systems, as in the Numix surface.

The variety of software modules used to set up, maintain and test the system are simple menu, fill-in-the-blank forms. Whatever you want the system to do (or not do) can be configured through your direct-connect laptop or through your network from your desktop.

The most exciting part of the software, however, is also the one that can unlock heretofore impossible-to-open doors that will only be limited by one's minimal effort to learn the simple text-based trigger protocol.

Command Builder has allowed me to route audio and remote control functions for a common digital audio server, the audio and remote functions of a common phone system, independent (and different) phone recording systems, on top of converting the analog audio for a morning show studio and routing it to the airchain, and then taking full control after 10 a.m. This is all done with the push of one programmable button. Ask any other router to do that. Logitek is the router that thinks like a console.

I had been watching this product for years, and to this point had thought that it looked cool but that it really wouldn't do anything for me. I have found that by taking that leap and being forced to think somewhat outside of the box, I could no longer design any facility new or retrofit one that didn't have Logitek at the heart of the infrastructure.

That is the key to the ever-evolving technologies we are facing in our industry. Flexible infrastructure can make you a winner, or a loser without it.

The Audio Engine starts at \$3,400. Users can add DSP cards and I/O cards to match their requirements. A typical Engine price (one DSP card and four I/O cards, in a combination of analog and digital) is around \$10,400. The Numix console starts at \$7,725 for a six-fader board. Additional wedge banks of six faders each can be added for \$3,250 per wedge. Other accessories are available.

For more information contact Logitek in Texas at (800) 231-5870 or visit www.logitekaudio.com.

USER REPORT

Harris BMX Console Goes Premiere

by Mike Hagans
Director of Engineering
Premiere Radio Networks

SHERMAN OAKS, Calif. As the director of engineering for one of the largest radio syndicators in the country, Premiere Radio Networks, I am responsible for technical operations at our company's headquarters and studio complex in Sherman Oaks, Calif.

With my many responsibilities, I've learned over the years that if you find a winning formula or great piece of equipment, you always go with the proven winner because it is one less thing that you have to worry about.

That's why, when we needed an on-air console for our top-rated overnight country music and variety show "After MidNite With Blair Garner," we decided to go with a field-tested digital console that we've used in our Kidd Kraddick studio in Dallas — Harris Broadcast's BMXdigital on-air console.

Primary mission

With approximately 300 affiliate radio stations, "After MidNite" is one of the fastest-growing shows in radio history. The show's host, Blair Garner, chats nightly with some of country music's hottest stars including Lee Ann Womack, Tracy Lawrence, Mark Chesnutt and Brooks & Dunn. That's why providing the best sound possible is our show's primary mission.

We needed a reliable, functional and sleek console for our "After MidNite" studio, and the BMXdigital fit the bill on all counts. With a sleek, low-profile countertop design, the Harris console fit perfectly into our Harris-designed and -built studio furniture. The studio is beautiful and functional.

Considering the reliability and service that we have experienced with the large number of Radiomixer and BMX analog consoles that are installed within the Premiere Radio organization and our parent company, Clear Channel, our choice was quite easy in going with the BMXdigital console. It offers tremendous flexibility and power with its bussing structure. The BMXdigital is incredibly flexible, with mainframes available in 22-, 30- and 38-input modules and 48 digital busses to accomplish everything from program mixes to talk back channels.

Thanks to its integrated, SAS-compatible router control modules, the

See HARRIS, page 49



Shown is the installation at Citadel Communications in Nashville, Tenn., with the Logitek Audio Engine and Numix console controller.

Looking outside the box was nothing new to me either, but this facility would require seemingly impossible finesse in order to keep it all running in the present and take that quantum leap into the future. Admittedly, the solutions would require some measure of a leap of faith in new and different technologies to accomplish the goals.

The solutions came in two forms, but both needed to work in a symbiotic relationship to get where we wanted to go. It all boiled down to infrastructure — we had none. The existing cable structure had been maxed out years before, and with the prospects of new stations being added to the building and the addition of the network origination point for the Tennessee Titans Radio Network, more of the same was out of the question.

In contrast to the relatively recent systems that are routers and now suddenly have had control surfaces added to act like a console, I found that Logitek had been quietly doing this for years, before everyone else. It could also be done at the price of the average mid-range console and it was a router too. What a deal!

Installation was a snap. Standard DB-type connectors are arranged on the end of the interface cards that allow any number of wiring conventions. Analog or digital, the choice is up to you as you need it now or as you grow.

This gives you an almost unlimited I/O configuration. I found that the average control room needs about four cards of I/O to handle a fairly aggressive operation. In a multistation opera-

TECH UPDATES

Shure's Mixer Made For Field Use

The FP33 from Shure is a three-input, two-output, battery-powered portable stereo mixer for remote audio recording and electronic field production.

The unit can support dynamic and condenser microphones. Condensers are operated by 48-V or 12-V phantom power or 12-V T (A-B) power sources. It has a dynamic range of 100+ dB and frequency response of 20 Hz-20 kHz.

The inputs and outputs are transformer-balanced to help reject RFI and electromagnetic hum. The unit uses sealed input potentiometers and low-cut filters. LED indicators monitor input levels, output peaks and limiter action and professional backlit VU meters monitor the output levels from the unit.



Other features include pop-up pan pots and a link switch to couple inputs 2 and 3 into a stereo pair, a Mix Bus connection to expand to six inputs with an additional FP33 or FP32A, headphone monitoring control including headphone MS stereo matrix and internal DIP switches for customized setups.

The list price is approximately \$1,900 in the United States.

For more information contact Shure in Illinois at (800) 25-SHURE or visit www.shure.com.

Harris

► Continued from page 48

audio sources in our 17 production studios and our state-of-art network operations are available at the touch of a fingertip. I particularly like the well-designed mix-minus, auto foldback and offline mix busses and program busing structure, which are easy to use and thought out well.



The Harris BMXdigital Console

Another big plus is the session module that allows us to reconfigure and save session files for, among other things, control surface selections or channel labels. The BMXdigital features an embedded on-board server that uses non-volatile solid-state memory to save files. The server can act as an FTP server that allows us to access and edit session files from any computer on our network and upload them back to the console.

But the bottom line in any installation is how the personnel who use the equipment on a day-to-day basis feel about it. I'm happy to report that our talent and engineering staff love it. It's easy to use and easy to maintain.

I am definitely "sold" on the new Harris Broadcast digital on-air consoles. When we need the additional horsepower, I'll purchase a BMXdigital again. In fact, we just ordered its sister console, Legacy, for Glenn Beck's new studio facility. Glenn is a Premiere syndicated talk show host on 70 stations.

The console is priced from \$1,900-\$5,300.

For more information contact Harris Broadcast in Ohio at (513) 459-3400 or visit www.harris.com.

Yamaha Launches Mixing Consoles

The 02R96 Digital Mixing Console is an addition to the Professional Audio division lineup from Yamaha Corp.

It has 56 channels of 24-bit/96-kHz audio, stereo effects with 32-bit internal processing and automation. Yamaha says the mixer is of approximately the same size but has five times the processing power of the original 02R.

The control surface and user interface allow hands-on operation, with 16 user-defined keys available for assignable functions. The 56 input channels feature analog mic preamps, independent compression and gating/ducking processors, four-band switchable parametric channel EQ and delay. Four effect processors may be used simultaneously. A group of preset libraries may be selected and used unmodified or edited, and user setups can be added for instant recall.

The 24 100mm motorized channel faders can be layer-switched to control any channel. The available inputs, outputs, effects and channel inserts can be assigned to any channel or output via a digital patching system, and a direct-out function allows the signal from any input channel to be routed to any digital or analog output. The eight aux busses can be patched anywhere in the system, and patch setups may be stored for instant recall.

The Commercial Audio Division also has developed the DM2000 Digital Production Console, a multiplatform mixing system for the commercial production market. Its features include 96 input channels, 24-bit/96-kHz audio, four-band parametric EQ, gates and compressors on every channel and automation of most parameters.

The work surface houses a 22 x 8 (four-stereo) matrix, channel name display and 16 user-defined keys. Inputs, outputs, effects and channel inserts can be assigned to any console channel or output via a patching system; a direct-out function routes signals from any input to any other digital or analog output. Users can manipulate eight internal multi-effects processors simultaneously, which can be assigned to an aux bus for sends, or inserted into any input channel. The 24 motorized faders can be layer-switched to control the 96 channels.

Both consoles integrate with digital audio workstations and support DigiDesign ProTools. Yamaha Studio Manager Software for Macs and Windows platforms are included. The 02R96 has four I/O slots for expansion, and accepts 24-bit/96-kHz-capable Mini-YGDAI digital and analog I/O cards. The DM2000 has six mini-YGDAI slots that accept I/O and effects plug-in cards. Dedicated cascade ports enable two DM2000s to function in tandem, providing a maximum of 192 input channels.

The 02R96 will be available in August with a retail price of \$11,397. The DM2000's price is approximately \$20,000; it is shipping.

For more information contact Yamaha Corp. of America, Professional Audio (for the 02R96) or Commercial Audio (for the DM2000) at (714) 522-9011 or visit www.yamaha.com/proaudio.

Tascam Offers DM-24 Mixing System

Tascam's DM-24 is a small-format, 32-channel/eight-bus digital mixer with 24-bit/96-kHz audio, flexible routing, automation, effects and dynamics processing including configurable gates, compression and four-band parametric EQ.

A custom 32-bit, floating-point processor ensures that 24-bit performance is maintained in the digital signal path. The DM-24 offers 16 analog inputs with XLR mic and TRS line inputs on each channel as well as 24 channels of TDIF interfacing plus eight channels of ADAT Optical I/O, two stereo AES/EBU and two stereo S/PDIF interfaces.

Two option slots are provided for additional eight-channel analog and digital interface modules or a cascade module.

Using the automation features, eight mixes can be stored. When a new mix is opened the DM-24 enters automation mode automatically, saving static changes. The mixer has two effects processors with reverb, spatial effects and mic/speaker modeling effects by TC Works, Antares and Tascam.

Features include a user interface with an LCD screen and LED ring encoder, 100mm touch-sensitive moving faders, four assignable sends and returns configurable as inserts for tape return path.

The unit's MSRP is \$2,999.

For more information contact Tascam in California at (323) 726-0303 or visit www.tascam.com.



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One of the most requested FM broadcast products over the past year has been a "radio station in a box". Overseas customers, as well as some of the new LPPFM licensees have a need to quickly "get on the air" at temporary locations or in the interim to their installed studio/transmitter setup. A number of overseas customers also had to originate short term programming from various remote origination sites for disaster preparedness broadcasts! Well, here you go...a radio station in a box!

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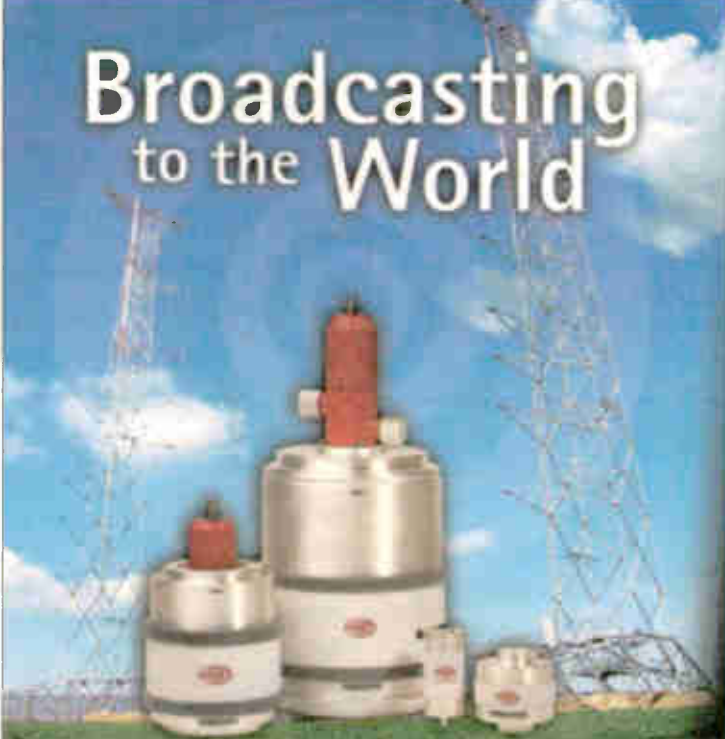
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SS 8.2
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8x2
Active audio switch with eight stereo inputs, four stereo plus two mono outputs.

16x2
The 16x2, Stereo Input, Dual Output Stereo Switcher/Router passively switches or routes any one of 16 stereo inputs to either or both stereo outputs or vice-versa through gold contact relays.

16x1
Passive switcher/router with 16 stereo inputs and one stereo output or vice versa.

8x1 DAS
Routes any one of eight 44.1KHz digital inputs to three common outputs.

10x1
Ten input, Single Output Stereo Switcher/Router passively switches or routes any one of 10 stereo inputs to one stereo output or vice-versa through gold contact relays.

6x1
Passive switcher/router with six stereo inputs and one stereo output, or vice versa.

3x2
Active audio switcher with three stereo inputs and two stereo outputs.

SM-6
Stereo mixer with two mono inputs, a stereo output, and four panel on/off switches.

SS 3.1
Passive switcher/router with three stereo inputs and one stereo output or vice versa.

SS 2.1/BNC
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TECH UPDATES

BTI Makes Switcher; Interfaces With Other Consoles

Broadcast Tools Inc.'s SS 16.4 is a 16-stereo input, quad output stereo switcher designed to accommodate 16 stereo inputs, four stereo and four monaural outputs.

The front is equipped with push buttons for input, output, macro and mute selection. LED indicators display the status of inputs, outputs, silence sensors, PIP and power.

The SS 16.4 may be configured for three switching modes. The *mix mode* allows the mixing of any inputs to any outputs. The *overlap mode* provides the overlapping of any two inputs to an output. The duration of the overlap may be set in increments of 1/10 of a second, with a maximum of 9.9 seconds.

In *interlock mode*, the selected input is connected immediately, while the previous input is disconnected.

The unit may be controlled remotely via contact closures, addressable multidrop RS-232 or RS-485 serial.

Features include a 24-input "PIP" GPI port, 16 open collector status outputs, eight SPST relays, four silence sensors, power-up selection of inputs to outputs, flexible system configuration, electronically balanced stereo inputs and outputs, digitally controlled professional-level analog switch arrays and low-noise and distortion circuitry.

Multiple units can be cascaded. The audio I/O connections are removable via screw terminals. An optional TCP/IP interface is available, as are Windows LAN and serial control software.

The SS 16.4's list price is \$1,199.

The company also makes the Console Controller IIA for interfacing nonbroadcast consoles and digital workstations to the broadcast studio.

The CC-IIA is equipped with three channels of insert switching. These allow the control of each monaural microphone channel while connected to the console's insert points, or between a source's output and a device's input.

The console also provides front-panel switching for internal and external monitor inputs. Multiple consoles can be cascaded to increase the number of inputs.

For monitoring functions, the console uses monitor muting (which can be disabled on Channel 3), bright red LED indicators on the switches, a front-panel monitor level control and channel indicators that can be set to flash when active.

Other features include audio switching with gold contact relays, remote control and status, audio connections via TRS 1/4-inch jacks and an ergonomically designed desktop unit with sloped front case.

The CC-IIA's list price is \$349.

For more information contact BTI in Washington state at (360) 854-9559 or visit www.broadcasttools.com.



Mackie Upgrades VLZ Pro, Expands Lineup

Mackie's new entry-level DFX line includes two compact mixers, the DFX-6 and -12.

The mixers are equipped with the same features as other Mackies, including a combination of mic/line and stereo line inputs, 60 mm faders and a proprietary 32-bit EMAC digital effects processor with 16 effects. Stereo program equalizers are included.

Also available, the 1402-VLZ Pro adds more features and 60 mm log-taper faders to its little brother, the 1202-VLZ Pro. One feature is the six "audiophile" Extended Dynamic Range mic inputs with RF rejection capability, freedom from ground loops and impedance-independence.

It has six balanced/unbalanced mono line inputs and four pairs of balanced/unbalanced stereo line inputs. The balanced XLR main L/R outputs have mic/line level switches. A 75-Hz low-cut filter on each mic channel reduces noise. The mute button on each channel mutes that channel in the Main Mix, placing the signal on the Alt 3-4 stereo bus. The Mute/Alt 3-4 effectively can create a second stereo bus.

The EFX-to-Monitor feature allows routing of reverb or other signals back into a monitor mix via Aux Send 1. The Aux 1 Master's Pre/Post switch can be set for pre-fader/post-EQ use or post-fader/post-EQ use. It also has a level control. The Control Room/Phones section has a level control, stereo 1/4-inch balanced L/R output pair and input matrix for selecting options to create custom headphone mixes and other functions. A separate switch routes the multisource signal back into the Main Mix.

For more information, including pricing, contact Mackie in Washington state at (425) 487-4333 or visit www.mackie.com.

Autogram Features 'Do-All' System

Autogram Corp. manufactures the "do-all" Solution 20 modular system.

It has a utility 24-V power supply, and can be configured as a summing or distribution amp, 10-W stereo audio amp, mic amp/processor, utility relay deck, stereo VCA, active or passive audio switcher, four-input mixer or consumer/pro impedance matcher. It can perform all of these functions at the same time with the proper cards in its 2-RU mainframe, using one line cord.

The company also has updated its product lines. It says its MiniMix 8 and 12 audio consoles are popular among noncommercial, educational, offshore and limited-budget operators, such as LPFMs; and the Pacemaker Classics are suited to the performance arena.

For more information, including pricing, contact Autogram in Texas at (800) 327-6901 or visit www.autogramcorp.com.

Wheatstone Offers D-Series Consoles

Wheatstone Corp. now offers the D-8000 and D-4000 to its Digital Series console line. The D-Series ranges across multiple format needs with flexible configurations, frame sizes and metering types. Design elements include a stainless-steel meter bridge, wrist rest, composite fused-finish end caps and a low-profile frame.

The D-8000 is the flagship of the line, and its communication capability with the Wheatstone Bridge Router gives it improved functionality in a networked console/router environment.

Features include Wheatstone's Bus-Minus function on input modules, which provides a dedicated mix-minus output with talkback interrupt on every equipped module; Universal Input Module Types, where the input modules can accept analog or digital signals on the A and B inputs; and Universal Logic, with which the input modules can provide mic (Cough, Talkback) and line (Start, Stop, Ready) logic.

The D-8000

provides programmable dynamics for the input channels, including four-band EQ, ducking, compressor-limiter, HPF, digital gain trim and phase reverse. It has programmable sends, where each input module can generate two Aux Sends, selectable between pre/post fader and pre/post on/off.



Wheatstone's D-8000 Console

The D-4000 is based upon the technical architecture of the D-5000 console and is designed to supply features at a lower price than its predecessors.

Other features of the D-Series include a hot-swappable design, a mix of digital and analog inputs, 99 console presets, four stereo mix busses, AES and balanced analog outputs, a choice of master clock rates and 24-bit A-to-D conversion on analog inputs.

The D-8000 has four mix-minus outputs in addition to the Bus-Minus outputs using the SPD-8000 phone remote modules, and the D-4000 has the same feature, using the SPD-4000 phone remote modules.

The price range for the D-8000 is \$28,000 to \$62,000; for the D-4000, pricing is \$18,000 to \$26,000.

For more information contact Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

Audioarts Launches Audio Switcher

Audioarts Engineering recently released its 32 x 32 AES Digital Audio Switcher for radio use.

The switcher is designed for use with Wheatstone digital console alphanumeric source display strips. It can be controlled by console- and turret-mounted control heads and the X-Point PC software package, also from Wheatstone.

The Digital Audio Switcher uses front-panel X-Y controls and has a monitor speaker. It has direct back-panel multipin connectors (DB-25 and DB-9) for ease of installation. The unit takes up 3.5 inches of rack space.

For more information contact Audioarts in North Carolina at (252) 638-7000 or visit www.wheatstone.com.



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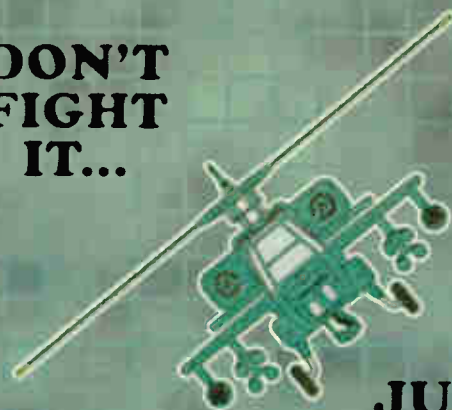
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TECH UPDATES

AEQ Offers BC2000 Digital Console

AEQ Broadcast International's BC 2000 Digital Console consists of a rack-mountable chassis with I/O, processing and control surfaces.

The console uses mic and digital transformer-balanced I/Os, with an I/O capacity of 144 mono or 72 stereo. The analog line inputs are electronically balanced. The input mics have RF protection and 48-V phantom power.

It uses AES-EBU and S/PDIF digital input formats. Physical I/O routing selection is available on each fader. The internal sampling frequency is 96 kHz, and the internal bus format is 32 bits per sample, while the I/O bus format is 24 bits per sample. The operating parameters can be modified in realtime.

Automatic amplitude control is performed through noise gate, compressor, limiter and expander, in audio band and multiband modes. It has parametric HP and LP filters and four-band parametric equalization, along with a countdown timer and clock.

The process controller uses a TFT 6.5-inch, 640- x 480-pixel color screen with an additional video monitor output connector. Two 240- x 128-pixel LCDs display graphics for level measurements on the four main outputs, level and cue meter.



The console uses an Ethernet 10/100 base T-LAN connection with an audioport module for the remote sending of I/Os through TCP/IP v.6. The design allows modifications through firmware and software.

Additional features include audio monitors and a headphone amplifier, cough muting, an on-air signal for the control room and studio and two stereo outputs to connect two optional external meters.

For more information, including pricing, contact AEQ in Florida at (954) 581-7999 or visit www.aeqbroadcast.com.

InnovaSon Makes Scalable Console

The InnovaSon Sensory Compact Live is a console designed to provide scalability as needs increase.

It ships with 32 mic/line inputs and eight line-only inputs feeding 32 patchable input channels, each with a digitally controlled preamp; a low-cut filter; a gate/expander; a compressor/limiter; four bands of parametric equalization and a four-digit label display.

Twelve busses mix down to three masters, configurable in L/R-mono, LCR or user-defined arrangements. Sixteen matrix outputs carry a complement of digital processing, including an eight full-bandwidth equalizer, a gate/expander, a compressor/limiter and 1.3 seconds of delay. Monitoring resources provide PLF, AFL and APL listening at any point in the signal path.

A stage-box option expands the input section by 64 physical inputs with digital transmission on lightweight coaxial cable. InnovaSon's "Hyper-link" approach lets the user merge the busses of two consoles, generating twice the inputs, busses, outputs and processing power. This is performed with no additional processing delay, ensuring phase coherence; and individual boards can retain their distinct automation or can link together via MIDI. Users may link several consoles by designating one as a master.

Designed for stand-alone use with a 12-inch screen and a 102-key keyboard, the console has a small 45.2- x 8- x 28-inch footprint. It uses the same operating software as the rest of the Sensory line, Sensoft v.6.

For more information, including pricing, contact InnovaSon in Connecticut at (860) 434-9190 or visit www.innovason.com.



PatchBox Multiplies Mixer Outputs

PatchBox, the newest release from Henry Engineering, is a passive "output multiplier" that can be used to feed the output of a mixer to the inputs of peripheral equipment.

It's suited for feeding a mixer's output into DAT recorders, digital editors, computer sound cards, cassette and reel decks, VCRs, PA systems, dubbing racks, limiters and other audio equipment.

In many cases it can be used in place of a conventional distribution amplifier or patchbay. It works with professional equipment with balanced inputs and consumer equipment with unbalanced inputs.

PatchBox uses the low source impedance of a typical mixer's output to create multiple feeds using resistive splitting. Because the input circuits of peripheral equipment typically are high-impedance, this technique can be used without signal loss, degradation or interaction between outputs.

It's compatible with active-balanced

(transformerless), low-impedance signal sources that are ground-referenced.

From a stereo source, PatchBox creates 11 stereo signals: five balanced stereo outputs and six unbalanced stereo outputs.

The unit's balanced outputs, on XLR and TRS connectors, provide a "unity gain" signal with a 600-ohm source impedance. The unbalanced outputs, on gold-plated RCA connectors, provide a signal compatible with the inputs of consumer gear. The outputs can be used simultaneously.

Because PatchBox is passive, it uses no power and adds no noise or distortion to the signal. It also provides an inexpensive way to feed multiple loads, without the need for DAs, patchbays or knotted adaptor cables and Y-cords.

The list price is \$195.

For more information contact Henry Engineering in California at (626) 355-3656 or visit www.henryeng.com.

Auditronics Mixes Router/Console

Auditronics offers the ALM-12d, which combines the functions of a router and a console, and the 2600 Series of consoles, for stations that want to upgrade over earlier models.

The ALM-12d allows the user to route any input source to any channel fader or monitor pot, as well as to the console's switched meter pair. It is designed to be cost-effective and offers a small footprint. It has 24-bit A-to-D and D-to-A I/Os, 12 faders plus two caller faders, four mic preamps, control-room and studio monitoring, cue and headphone amplifiers and a concealed headphone jack.

Other features include LED dot-matrix source displays, eight stereo AES digital inputs with sample rate converters, 10 stereo analog inputs and four microphone inputs. Superphone Channels generate dual mix-minuses automatically; users can program its four MXMs to be pre- or post-fader.

Users plug DB-25 connectors into the rear of the console. The lower row includes I/O connections for two callers and 10 stereo analog inputs (or eight stereo and four mono). There are analog and digital program and audition stereo outputs and two mono analog outs. The frame is built of steel and uses a rack-mount power supply.

The 2600 Series is priced for tight budgets. The modular design has 12 input channels, a monitor module with control-room, studio, headphone and talkback functions, and an output module that provides program, audition, pre- and post-mono fader outputs, plus independent meter selection. Additional line-selector and tape-remote modules are available.

The 2600 uses optoisolated microphone and machine logic. It has stereo program and audition busses, plus two mono output busses. Cue and headphone amps are included.

The steel countertop design fits in a 26 x 25-inch space. For more information contact Auditronics in North Carolina at (252) 638-7000 or visit www.wheatstone.com.



Crane Song Makes Spider Preamp

Crane Song's Spider is an eight-channel mic-preamplifier mixer with two types of digital outputs: stereo and eight-channel. The stereo output is for recording and broadcast engineers who do live stereo or multichannel recording and want a flexible audio path. The eight-channel output allows the system to function as an analog front end for DAWs, digital mixers and modular digital recorders.

In addition, the stereo bus can be assigned to digital channels 7 and 8. This allows a stereo mix of six channels to be assigned to digital outs 7 and 8 and leaves two channels independent.

The discrete Class A preamp and the converter modules have a low-noise design. The maximum analog level at the insert points is +25 dBm. The digital modules include a DSP process to provide tape emulation. Interfaces are upgradable. Its retail price is \$7,500.

For more information contact Crane Song in Wisconsin at (715) 398-3627 or visit www.cranesong.com.

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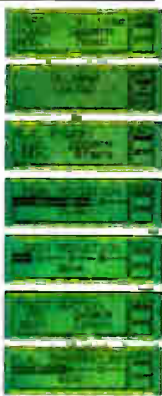
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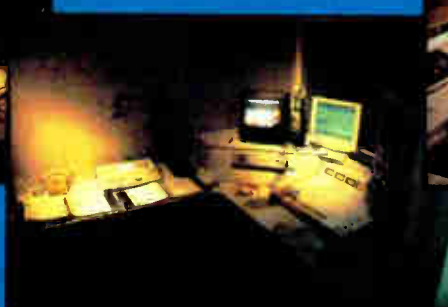


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TECH UPDATES

Remora Fits in Small Spaces

Logitek Electronic Systems is now shipping its Remora Digital Console, which won a Radio World "Cool Stuff" Award at NAB2002.

The Remora is a small, modular control surface for the company's Audio Engine router.

Operators can use the Remora to access an Audio Engine, including the audio inputs, output busses, processing functions and custom commands created by Logitek's Supervisor/Command Builder software. Functionality is similar to Logitek's Numix console, but the Remora is smaller.

The control surface can incorporate multiple pieces. The main module incorporates fader input selection, monitor and headphone controls and stereo VU meters along with four faders. Fader modules, containing six faders each, can be linked to the control module. The faders do not have to be dedicated to specific inputs; users can set up fader assignments to accommodate individual circumstances.



Four configurations are available: four, 10, 16 or 22 faders. Fader sections can be split and located in separate parts of the room, giving the members of a team control of their own faders. It can be permanently installed in a studio if desired, but its desktop design allows a user to move it as necessary.

The Remora ranges from \$3,000 for four faders to \$8,200 for 22 faders.

For more information contact Logitek in Texas at (800) 231-5870 or visit www.logitekaudio.com.

Rosendahl Features Clock Server, Upgrades Nanosyncs

Rosendahl's Nanoclocks is a word-clock distributor with an integrated audio master-clock generator.

The unit has two word-clock inputs (A and B) and 12 outputs that are controlled by a programmable output matrix. LEDs show incoming sample rates for each input and routing status for the outputs.

Nanoclocks has three modes of operation. In Distributor Mode, inputs A and B can be routed individually to the 12 outputs. Input A supports sample rates from 32 to 100 kHz, while input B handles sample rates between 32 and 200 kHz, including Super Clock.

In Generator mode, the Nanoclocks becomes a low-jitter master clock generator with 12 programmable outputs, supporting sample rates of 44.1, 48, 88.2, 96, 176.4 and 192 kHz as well as Super Clock. In Failsafe mode, the Nanoclocks is a distributor that monitors the two inputs and performs an automatic switchover of all 12 outputs if the primary word clock signal present at an input should be interrupted.

The Nanoclocks' crystal accuracy is +/- 5 ppm and clock jitter is less than 10 picoseconds RMS (20 Hz to 20 kHz). The design also addresses the four main sources of noise that can affect a clock distributor's performance. The Nanoclocks retails for \$1,299.

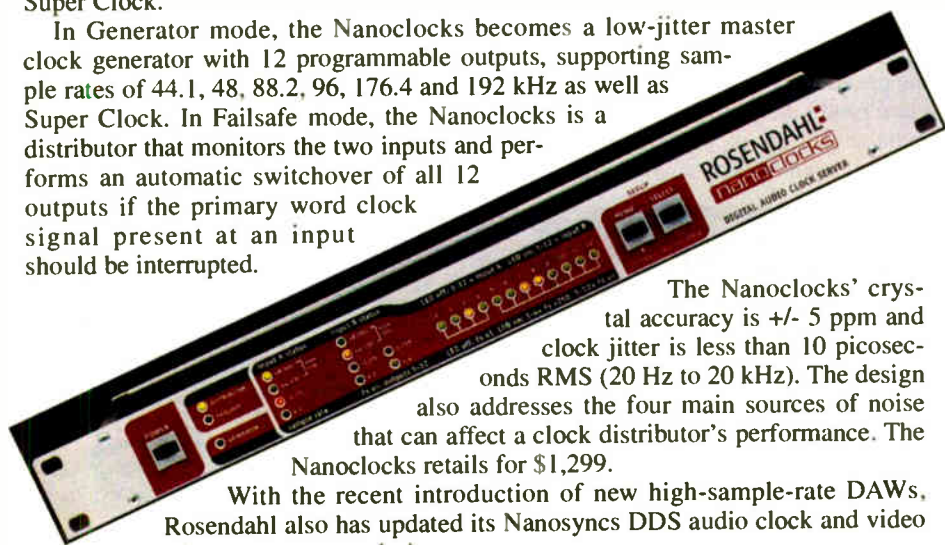
With the recent introduction of new high-sample-rate DAWs, Rosendahl also has updated its Nanosyncs DDS audio clock and video sync reference generator design.

The Nanosyncs V3 includes four setups permitting the assignment of a specific sample-frequency multiplier to the word-clock outputs. A 4x multiplier permits 176.4- and 192-kHz sample clock output. AES/EBU and S/PDIF outputs now support single-wire 88.2 and 96 kHz.

For systems requiring more Super Clock connections, one setup configures the Nanosyncs V3 for six Super Clock outputs. Jitter performance also is improved. Clock jitter is less than 12 picoseconds RMS within the audio spectrum, and random jitter amplitude is reduced to less than 200 picoseconds in all operation modes.

The Nanosyncs V3 retail for \$1,599.

For more information contact HHB in California at (310) 319-1111 or visit www.hhbusa.com.

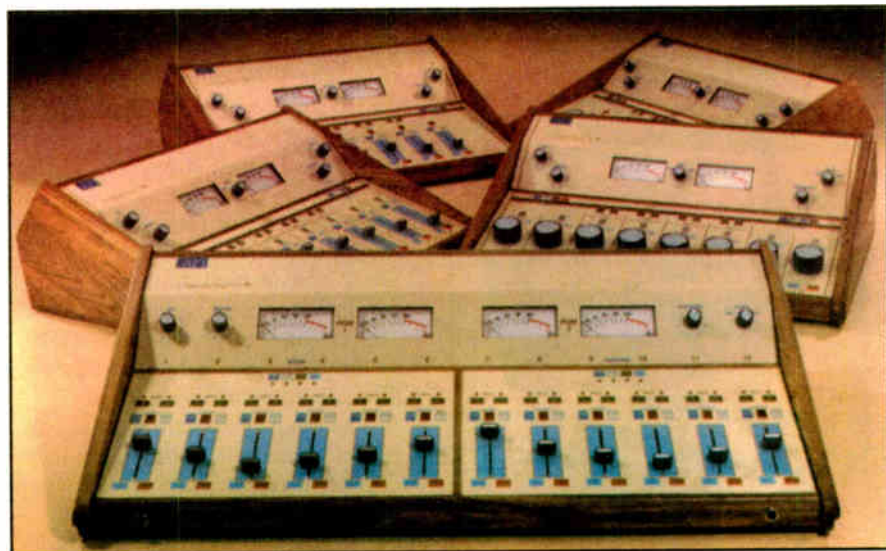


ATI Offers Line of Consoles

Vanguard Series consoles from Audio Technologies Inc. are available as a six-mixer, 10-input board (BC6DSL and BC6DSR, with linear and rotary faders), an eight-mixer, 12-input board (BC8DSL) and a 12-mixer, 24-input board (BC12DSL).

They include dual stereo and dual mono-sum program outputs with four line selectors for both the headphone and muted monitoring outputs.

A digitally scanned panel switch matrix controls distortion-free current mode IC audio switches. DC-operated VCAs remove the faders and their potential noise generation from the audio signal path. The exclusion of program audio from the panel area improves RF immunity, according to ATI.



Two or four VU meters are standard. Other features are LED bargraph output displays with simultaneous VU and PPM peak readout, a two-channel mix-minus telephone adapter, start-stop switches, additional microphone preamplifiers and a dual five-line stereo input expander.

The BC6DSL and BC6DSR sell for \$3,499, the BC8DSL for \$3,999 and the BC12DSL for \$5,599.

For more information contact ATI in Pennsylvania at (215) 443-0330, visit www.atiguys.com or e-mail sales@atiguys.com.

Sonifex Expands Distribution Line

Sonifex's Redbox range of analog interfaces includes several products for use in analog and digital audio distribution.

The RB-DA6 is a six-way stereo analog distribution amplifier for splitting a source into a number of outputs. The unit has one stereo input and six stereo outputs. It can be configured so that one mono input is distributed to 12 outputs.

The RB-DA6's connections are on the rear. The XLR-3 inputs are electronically balanced with an impedance of 20-kohm bridging. These can be wired unbalanced to accept an output from domestic equipment.



Rear of the RB-DA6

The XLR-3 outputs are electronically balanced with an output impedance of <50 ohms. Each output is buffered individually so a short circuit on one output won't affect the others.

The outputs can be wired unbalanced by grounding the nonphase signal, allowing a user to feed balanced and unbalanced equipment. The left and right input gain controls (normalizing) are pre-set potentiometers accessible through the front panel. The 1-12 mono, 2-6 stereo switch is recessed on the front panel to prevent accidental knocking.

Two other products for distributing digital audio signals are the RB-DDA6A AES/EBU and RB-DDA6S S/PDIF digital audio distribution amplifiers.

Both have buffered inputs that are distributed to six outputs in synchronization with the input at the same level and condition as the input signal. They can accept input sample rates in the range of 30 kHz-100 kHz from 16-, 20- and 24-bit sources. They can be used for standard CD audio distribution at 16 bits/44.1 kHz, as well as for 24-bit/96-kHz recording.

Redbox products use red anodized cases that can be screw-mounted to a surface or rack-mounted for conventional wiring in a central technical area.

For more information, including pricing, contact Independent Audio in Maine at (207) 773-2424 or visit www.independentaudio.com.

Coming Up in Buyer's Guide:

Aug. 1: Codecs, Remote & STL Gear
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TECH UPDATES

Klotz Adds Modules to Consoles

The Klotz Digital VADIS (Variable Audio Distribution and Interface System) allows for the incorporation of new higher-density cards and components into an audio/media distribution platform.

Modules such as multimode 64-channel fiber optic I/O cards and eight-channel analog and digital input and output cards have been developed to complement existing audio interface modules, which include ADAT, MADI and Y2 input/output formats.

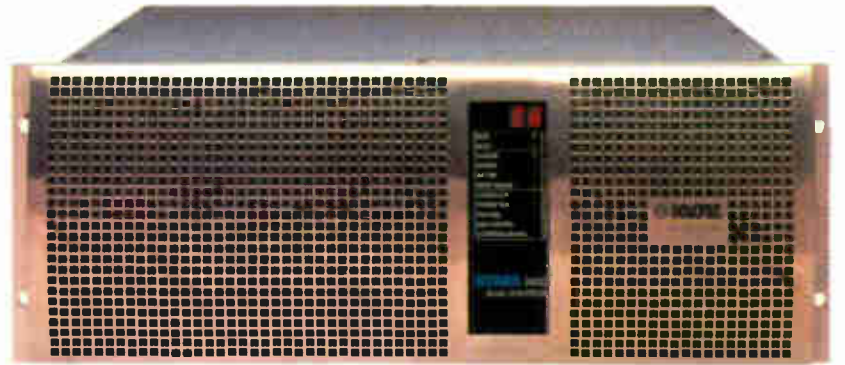
Also, Klotz Digital recently developed serial digital video input and output cards for mux/demuxing of embedded audio signals. The V960 DSP Card Module was created to make use of high-powered DSP processors and allows for DSP functions such as mixing, gain, PEQ, Dynamics and Delay on one card.

Manufactured for use in the 4-RU, 19-inch rackmount VADIS 880 Audio Engine, the cards also work in the new VADIS 220 Digital Micro Engine. The 220 is for space-constrained applications that don't need a large number of I/Os. The 220 has a small footprint and no fan, suiting it for on-air control rooms.

It is compatible with the VADIS AudioMedia platform and offers access to the same functions and integration capabilities as the 880. The frames accept a variety of audio, DSP and data modules with no limit on the number of inputs or outputs that can be incorporated.

The open-bus architecture of the 880 supports dual safe power supplies and redundant digital audio sync, allowing frames to synchronize to external devices or operate as stand-alone units.

For more information, including pricing, contact Klotz Digital in Georgia at (678) 966-9900 or visit www.klotzdigital.com.



The Klotz 880 Audio Engine

SAS Unveils RIO Link to Switcher

Sierra Automated Systems' new RIO Link is an extension of the 32KD digital audio routing switcher.

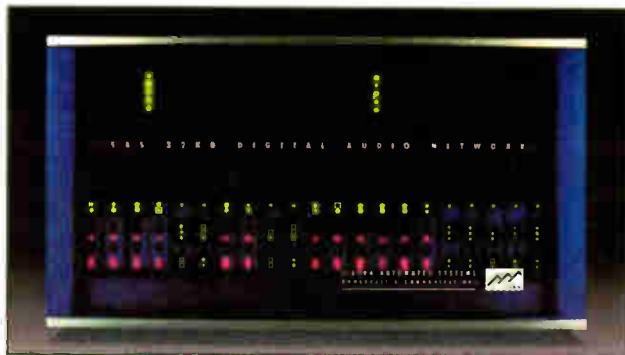
The RIO Link provides inputs and outputs from the mainframe at a remote location, such as the air studio, via either fiber or a Cat-5 connection. Capacity for one RIO Link chassis is 32 input channels, 32 output channels and 16 bidirectional data channels. This corresponds to 96 twisted pairs, which can be replaced with one fiber or Cat-5 connection.

The 32KD switcher is designed to offer more crosspoints in less space for less money. The system performs switching, mixing, DSP, IFB and mix-minus functions using SAS' DTDM bus architecture, which the company says improves fault tolerance and minimizes single-point failure issues.

Fiber-optic interfaces allow multiple mainframes to be linked for expansion. The analog and digital inputs and outputs are supported on user-selectable connector panels. The system also handles nonaudio formats such as serial data, and provides contact closures through a general-purpose interface.

The switcher uses a variety of control methods, including rack-mount and console-mount control panels, as well as "soft" panels and automation control. Special control panels for intercom systems and mix-minus programming are available.

For more information, including pricing, contact SAS in California at (818) 840-6749 or visit www.sasaudio.com.



The SAS 32KD Digital Audio Routing Switcher

Nicom Offers 8-Channel Mixer

The Nicom Atlantis 8-Channel Mixer was designed for radio stations. According to the company, it is simple to understand and flexible, especially in dubbing and program production, suiting it to low-power stations.

The Atlantis is modular. It features three balanced mic inputs, six balanced stereo line inputs, three unbalanced stereo line inputs (i.e. phono input, tape input, etc.) and two telephone inputs with conferencing capability.

The master features five outputs: two balanced stereo outputs, two unbalanced stereo outputs and one unbalanced mono output. The monitor offers one external input (tuner) and three outputs: stereo monitor, headphones and stereo control-room with a talkback feature.

Two LED meters with peak memory allow for constant signal control. The two telephone channels can control the incoming call and on/off-hook indicators. An amplifier cut-off and on-air lamp indicator are optional. The external switching power supply gives voltages between 90 and 260 VAC.

For more information, including pricing, contact Nicom in California at (619) 477-6298 or visit www.nicomusa.com.



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AMPLIFIERS

Want to Buy

McIntosh C-20 stereo preamplifier. Mike Stosich, Esoteric Sound, 4813 Wallbank Ave, Downers Grove IL 60515. 708-431-4560.

ANTENNAS/TOWERS/CABLES

Want to Sell

AM GROUND SYSTEMS: Reliable, On-time Installation, Quality Workmanship, Ground System Evaluation & Repair. www.amgroundsystems.com, 1-877-766-2999.

Dielectric 3-5/8" motorized four port coaxial switch. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.



Collins 37CP-12 12 bay FM antenna w/radomes, in use with 3/8" line, approximately 400', \$5000. Dwight Morgan, 1360 E Sherwood Dr, Grand Junction CO 81501. 970-241-9230.

ERI SHP-4AC large element, 4-bay, C pol, 39KW, tuned to 99.1, available in July, \$6000. Ron Habegger, WAWZ, 14 Chapel Dr, Zarephath NJ 08890. 732-469-0991.

Utility 520 AMFM 446' AM tower in use but moving to new site, \$10,000. Dwight Morgan, 1360 E Sherwood Dr, Grand Junction CO 81501. 970-241-9230.

ERI 3-bay antenna, end-fed, tuned to 99.9 MHz, BO. Rob Strand Innovative Broadcasting, 1604 E Quincy, Pittsburg KS 66762. 620-232-5993.

Pirot 270' tower, excellent condition, \$2700; (2) STL antennas, BO. Harry Hoyle, KKAY, 3365 Hwy 1, Donaldsonville LA 70346. 225-473-6397.

AUTOMATION EQUIPMENT

Want to Sell

AXS automation system including production room & on-air computers, monitors & Broadcast Tools 8-channel stereo switcher for satellite control, \$7500. Bruce Campbell, KORQ, 915-673-5289.

CART MACHINES

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Beucart stereo play, 4 units, \$75 each or \$250/all. J Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

Dynamax CTR-33, 3 decks, 2 play, 1 record, excellent condition with manual, \$500/BO. J Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

Spotmaster Cart Winder with clock, like new, \$150/BO. J Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

ITC Delta stereo cart system, 2 decks, with one record amplifier, in like new condition, rack mount, manual, all 3 cue tones included. \$500 for all/BO. Hank Landsberg, KCHZ, 503 Key Vista Dr, Sierra Madre CA 91024. 626-355-3656.

CD PLAYERS

Want to Sell

Denon DN-950FA CD cart players (2), like new condition, used in personal studio only, never in Radio! Includes rack mount, manuals, approximately 150 CD carts. \$500 ea/BO. Hank Landsberg, KCHZ, 503 Key Vista Dr, Sierra Madre CA 91024. 626-355-3656.

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Arrakis 150 SC 6-channel stereo console, \$450. Bruce Campbell, KORQ, 915-673-5289.

Autogram 10-channel audio console with telephone punch down block, attached to wiring, \$1500. Bruce Campbell, KORQ, 915-673-5289.

Harris Micro Mac console w/walk away capability. 16-32 inputs, 1-4 output channels, 3 assignable submaster channels, nice VU meters (6), linear attenuators, keyboard entry of many functions w/digital power supply, 3.5" h x 19" w computer circuit panel racks w/cards relay panel & (3) original service books, weighs over 100 lbs, \$300. James Cunningham, KEOB, Rt 2 Box 113B, Stonewall OK 74871. 580-265-4496. 580-265-4496.

Pacific Recorders BMX-II-26 console. Fully loaded with 26 modules, very good condition, 3 mic modules w/pan, 3 line modules w/input mode switch, 20 line modules w/input mode & pan, telco monitor module, dual remote input selector module, real time clock, digital timer, overbridge, several remote interface units, molex audio connector panels pre-wired to punch blocks. Separate announcer wedge w/dual headphone jacks & controls, digital timer, BO. M Brown, Brown Broadcast, 3740 SW Comus St, Portland OR 97219. 505-245-6065.

Want to Buy

Input line amplifier cards for a Radio Systems ESA-10 console. Will consider purchasing an old ESA-10 console for parts. Brian Walsh, GBC Media, Warsaw IN. 574-372-3064 or email: cowcountry@kconline.com.

FURNITURE

Want to Buy

Digitech DSP-256XL digital multi-effects processor/verb/delay 100 presets 100 user presets, \$165; dbx 166 2 channel gated limiter compressor, like new, \$175/BO. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

LIMITERS/AUDIO PROCESSING

Want to Sell

Apex FM2020 pro audio processor w/stereo gen, pre-emph limiter, digital I/O. Can be upgraded to current MKIII. Call for prices. Steve Scarborough, 877-722-1031.

Orban Optimod 3400 with studio chassis, less than 2 yrs old, currently on air, \$6250/BO. Rick Biddle, POB 610, Luka MS 38852. 662-423-9919.

Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

Orban 9200 digital AM processor. David Senzig, WWJQ, 5658 143rd Ave, Holland MI 49423. 616-394-1260.

EV644 with shockmount & cable, very nice, \$190. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.



MICROPHONES

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Electro-Voice 642 boom mic cardline. Never used, includes case, \$600/BO. J Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

Want to Buy

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantgmt@yahoo.com.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

Motorola TA-42 input & output terminals, T&R 2-25 amp fuses, 1-15 amp fuse, \$25. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

SAMS Project Studio Blueprint by Greg Galluccio, 236 pages; The Studio Business Book by Jim Mandrell, 335 pages, \$25/both. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Switchcraft A3F XLR 3 pin female plugs (28 new), \$30/all. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Two boxes (19 total) of new motors. Oriental motor, Japan S-301 motors, 7.5W 115V 1500/1800 rpm, \$20/all. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

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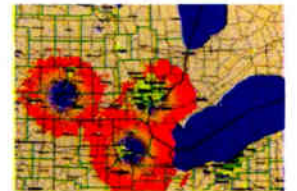
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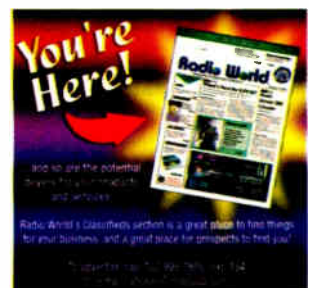
Want to Buy

Arrakis Digilink-2 & Digilink-3 computers. Need not be in operating condition. Dave Covey, Entertronics Inc Bldg, 128 Glen St, Glens Falls NY 12801-4432. 518-761-9890.

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Ampex ATR-800 2-track mastering deck, 30/15/7.5 IPS, very good condition, with remote control unit, manual & roll-around stand. Two identical machines available, \$400 ea/BO. Hank Landsberg, KCHZ, 503 Key Vista Dr, Sierra Madre CA 91024. 626-355-3656.

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BE FM-30-B 30KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

Continental 814-R1 2.5 KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

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Gates 1964 BC5H 5KW AM broadcast transmitter. Needs work. Located in Western North Carolina. BO. Tim Radford, WKRK, 427 Hill Street, Murphy NC 28906. 828-837-4332.



Gates 1974 FM 10Y3, TE-3 exciter, good working aux, new plate transformer, no PCBs, available in August, LP filter included, 10KW, 99.1MHz, \$10,000. Ron Habegger, WAWZ, 14 Chapel Dr, Zarephath NJ 08890. 732-469-0991.

Gates BC1G on 620, needs work, BO. Dwight Morgan, 1360 E Sherwood Dr, Grand Junction CO 81501. 970-241-9230.

Harris 5 KW AM xmtr tuned to 1290 kHz, missing plate transformer, \$2500. George Arroyo, WONO/WRMO, 1033 Semoran Blvd #253, Casselberry FL 32707. 407-830-0800 x110.

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Radio World, July 3, 2002

GUEST COMMENTARY

The Birth of Feature-Rich Radio

by David Maxson

It's hard to visualize, but we broadcasters *are* the future providers of radio datacasting services. We can't wait for someone else to develop our airwaves — to become "service providers."

I couldn't resist responding to the gauntlet thrown down by my esteemed colleague Skip Pizzi ("The IBOC Debate Continues," April 24). Skip seems to be waiting to see if "service providers will emerge in force to take advantage of" datacasting on IBOC.

Look ahead

This is the wrong way to look at our future as broadcasters. The folks at Impulse Radio have the right idea — make the datacasting capabilities of IBOC something broadcasters can work with and mold to consumer benefit.

If we wait for service providers to emerge, we simply push IBOC data into the subcarrier abyss. Niche providers with proprietary technologies pay a pittance for poorly utilized subcarrier bandwidth. Let's not let that happen with IBOC data capacity.

The way to make IBOC a robust consumer medium, beyond the improved audio performance, is to create a universal open platform for moving digital content to consumer receivers. Make it so that broadcasters can use their current business skills and programming skills to enhance the listener experience, and, yes, generate new revenue streams.

Skip admonishes you to "remember also that the PAD (program associated data) feature was touted as something RBDS would provide, but never did." I'm sorry Skip missed our presentation at the NAB2002 Broadcast Engineering Conference. We traced the shortcomings of RBDS and other subcarriers to several factors.

The biggest problem is that RBDS was not designed with new revenue in mind. Without revenue for the data, radio stations can only rationalize feeding the simplest of data from their automation systems. And without the creative drive of broadcasters behind the RBDS technology, there was no sizzle for consumers in the United States. Because RBDS was not designed as a flexible, extensible, object-oriented data transmission scheme, it failed to spark an evolution of new, consumer-oriented services.

Impulse Radio, in collaboration with Ibiquity and the IBOC Data Forum, has been developing an open protocol for data over IBOC. (Impulse and Ibiquity are independent companies with no connection but a shared vision of the power of IBOC.)

The fast-track development of IBOC has led to a fast track for the data services as well. To facilitate the efforts to quickly build the foundation for data over IBOC, Ibiquity wisely convened a specification forum (sometimes called a standards forum, but standardization will come more formally in time).

Broadcasters, content providers and electronics manufacturers were invited to participate in the process of building the

foundation for IBOC data. Impulse spearheaded the gathering of "Use Cases" and the creation of a first-round proposed specification.

Over recent months, the forum has had two national meetings, one in Detroit and one in Las Vegas. Numerous communications and smaller meetings have occurred to merge hundreds of ideas into a proposed specification.

This is only the beginning of the open process envisioned for IBOC data. When the market is ready and the industry is prepared to support the process (and this includes your employer, dear reader) the data specification can be ushered through a full standardization process.

Skip complains that "the bottom line is not how 'open' the development process seems, but who ultimately controls the implementation of the spec when it's deployed."

IBOC would not have gotten this far without the concerted efforts of highly focused expert enterprises.

Well, there is plenty of room on the bandwagon to contribute to the data specification and create a home for its continuing development. By the way, RBDS was imported from Europe through an open standardization process. It was deployed, with the infusion of megabucks by the consumer electronics industry, without a mechanism for it becoming an evolving economically robust service. Standards, open or not, couldn't help RBDS become the next big thing.

Bottom line

The bottom line, Skip, isn't control; it is the bottom line. Whether you are commercial or noncommercial, you have to line up an audience to serve, and make money to pay for serving them.

Impulse Radio recognizes this and is the only company to propose a platform that amplifies broadcaster skills to provide new services and pay for them. What's truly open about this data platform is that Ibiquity and Impulse and all the broadcasters and manufacturers who contributed to it leave it open to the creativity and salesmanship of broadcasters to use it to entertain and inform.

Meanwhile, consumer electronics manufacturers are eager to create new feature-rich radios that enable broadcasters to transmit data objects to the public. It could be program associated data (what we call program-synchronized data) or it could be data that relates to the audience, but is not directly tied to the flow of the program (station-related data).

Finally, there is room in the spec for data unrelated to the station's audience, as subcarrier data often is today (auxiliary data).

Rome wasn't built in a day, and feature-rich radio broadcasting won't be either.

To begin with, rather than rigidly transmitting station call sign and artist and song title, RBDS-style, Impulse Radio proposes to use the more flexible object-oriented data features of IBOC to enable consumer radios to receive and render text objects of any type.

In the first baby step, early IBOC radios can exploit the text displays of satellite-ready radios. Broadcasters can easily start delivering useful text information, entertainment and sponsor elements when IBOC is launched.

Expert enterprises

As radios evolve and broadcasters generate new services and revenue with new data tools, feature-rich radio broadcasting will grow steadily.

So the questions are these: how should the IBOC data specifications be rolled into standards? Under whose umbrella should the standards setting be conducted? If data standards are truly a concern, are more broadcasters willing to sponsor their technical people in participating in standards setting than those who have already stepped up to the forum?

Finally, to eliminate possible confusion of the various elements of standardization, we should look at the development of IBOC. Ibiquity is the culmination of a decade-long competitive effort in IBOC development by many entities, including the two final proponents whose technologies were joined in the formation of Ibiquity. It created the physical layer of transmitting digits. It remains Ibiquity's job to marry the digital waveform to such things as error correction technology, optimum interleave period and the audio codec technology. These elements and others have to be jointly optimized to the RF channel.

I don't see any way, or reason, to call for this to be a democratic process. IBOC would not have gotten this far without the concerted efforts of highly focused expert enterprises.

Rising through the physical, transport and link layers, responsibility for developing specifications is able to diverge from strictly Ibiquity's domain to all stakeholders in the success of IBOC. NPR proposes a secondary audio program "stream" that can run at low bit rates. Ibiquity accommodates this concept with a proposed "Secondary Program Service" (SPS) mode. Impulse Radio proposes a universal object-oriented data transmission capability, and Ibiquity responds with a proposed "eXtensible Data Service" (XDS) mode.

With those two enhancements proposed from outside Ibiquity and accommodated by them, the utility of IBOC is maximized. A secondary low-rate audio stream, if accepted by the industry and the FCC, would become available for universal and widespread applications. Meanwhile, the desire to move any kind of data object is



David Maxson

accommodated by the provision of XDS.

What's left? We need to agree on specifications for program-synchronized and station-related data. This will give broadcasters confidence in how their data will be experienced by the radio user and consumer electronics manufacturers will know what their displays, memory, I/O and other characteristics must do to support a certain level of functionality. So all have to agree on receiver classes and service classes upon which feature-rich radio will be built.

Managing data

We also need to begin building protocols for authentication, rights management, security, encryption and other aspects of managing data flow over the broadcast channel. I see the IBOC Data Forum as the logical place to continue this discussion until some time when there is enough momentum to enter standards-setting.

With a forward-thinking data standard based on the groundwork of Impulse Radio and Ibiquity, data over radio will no longer be relegated to the backwater of private and tiny-niche services. Instead, for the first time, radio broadcasters will be able to build economically viable data services that reach consumer receivers without relying upon outsiders to create them.

More information can be found on data specifications and use cases at www.impulseradio.com, including our white paper on the use of a data gateway to manage data flow. Also look at www.ibiquity.com for more information on IBOC technology, and the NRSC pages at www.nab.org/scitech/nrsc where the studies and evaluations of AM and FM IBOC can be downloaded.

David Maxson is managing partner of Broadcast Signal Lab LLP and has been assisting Impulse Radio's development of tools that exploit the potential of IBOC data.

RW welcomes other points of view. 🌐

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Offensive ad redux

I am writing in regards to the letter from Cindy Sue Brooks ("Offensive ad?" May 22) in which she takes issue with the ad for Eventide Digital Delay. In this letter, Ms. Brooks was kind enough to inform us that she found the ad "very offensive."

OK, you were offended. So what? Was any real harm done to you? Were you injured or threatened in some way? I suspect the answer to these questions is "No."

Our Constitution is very explicit in its protection of the freedom of speech. Try as I might, however, I have yet to find any constitutional protections against being offended.

— Mike Reed

Perhaps the seemingly endless strains of Political Correctness have finally pushed me over the edge. Whatever the case, I have grown weary of the perpetual whining of the easily offended. Our Constitution is very explicit in its protection of the freedom of speech. Try as I might, however, I have yet to find any constitutional protections against being offended.

On the playground we used to say, "Sticks and stones may break my bones but names will never hurt me." Now we watch adults curl up in the fetal position and cry for mommy over the printed word. If the ad bothers you so much, don't buy the product.

To be fair, there are standards of decency that radio and print should try to adhere to. Did this ad cross the line? I doubt it. But even if it did, was it really so traumatizing that it required chastising Radio World for printing it? I'd like to think that we in the "Land of the free and the home of the brave" are tougher than that.

Mike Reed
Senior Engineer
Harris Corp.
Rochester, N.Y.

Musical monopolies

After following developments related to the proposed fee structure for Internet

radio, you have to wonder about the type of capitalism we have.

Does it support the continued expansion of markets, so entities large and small can thrive or fail? Or is it a system controlled by a few entities bent on monopoly? This society has lived through the pain of the latter and our ancestors already had this discussion (and resolution).

One hundred years ago, Republican Teddy Roosevelt led the charge to break up monopolies. (Imagine what would

have happened to an entity like Clear Channel if it had been around then?)

There is one thing I cannot fathom in the efforts to control musical content. Why are record companies coming down so hard on upstart Webcasters that are far more likely to expand the variety, reach and profitability of a music company's portfolio? Aren't all record companies interested to some degree in expanding their roster of artists, including "alternative country," and other types of music that mega station empires will not play?

A goose laying golden eggs is being gored by an industry that stands to benefit the most. Oh brother, where art thy sanity?

Pete Simon
Radio Producer/Jazz Host
KUVU(FM)
Denver

Self-respecting engineers

Time and time again we read about the constant shortage of qualified engineers in the radio industry. Each time I keep wondering how many more articles there will be discussing the topic, the problem and the solution.

I spent many years in radio, last serving as chief engineer for WEHM(FM) in

**KVMR
Makes an
Impact**

A group that promotes worthy values in radio is the National Federation of Community Broadcasters. According to President and CEO Carol Pierson, "Our particular values are in support of local broadcasting and community involvement from stations, and representing diverse groups of the country on the airwaves."

The NFCB recognizes service with its annual Community Impact Award, part of a commitment to having stations be "critical actors" within their communities, said Pierson. The most recent recipient is KVMR(FM) at 89.5 MHz in Nevada City, Calif. This is a noncommercial station with a self-described eclectic mix of programming. Five years ago, it made the decision to plant the roots of an effective local news-gathering network. Those efforts paid off dramatically last year and the station showed how far radio can go to meet the information needs of its listeners.

When a mental-health patient went on a shooting spree in January of 2001, KVMR dropped its programming and switched to local coverage. The city was locked down while authorities searched for the man and people turned to their radio for information. KVMR took calls and passed along information from law enforcement, mental health officials, legislators and listeners. Emergency prescription drug delivery was worked out on the air by caregivers and county officials.

KVMR's coverage was doubly notable because the station already was part of a community health-care project, airing live town meetings at which mental-health care was identified as an important problem. The station aired three meetings on the subject before and after the shooting. When the state of California gave the city an additional grant for mental-health care, the local board of supervisors singled out KVMR as an important part of securing the money.

"A lot of this just trickles back to the decision made several years back to increase our local news presence," said General Manager Brian Terhorst. "All of the seed work that had been laid through a very grassroots effort, all of those connections, were in place.

"We knew exactly who to talk to, and the officials knew they could use our station to get the word out." So when the emergency broke out, he said, everything fell into place.

Serving the public interest, convenience and necessity is still a good idea. As Terhorst put it, "There's always something more that you can be doing to serve your community."

— RW

East Hampton, N.Y., a station I designed, built and maintained from 1992-94.

As a radio station in the middle of the Hamptons, we attracted many listeners and visitors. I can't keep count of the number of times we had PDs, GMs, engineer and owners from stations all over the country stop by while vacationing, who commented that our facilities and overall audio was as good as any they had ever heard. The reward for a lot of hard work and effort was a cut in my salary and later on an attempt to make me a contract engineer, which I refused to accept.

My point? It was just another example in the pattern that is so prevalent in radio today and going back 10-15 years. A complete indifference and lack of respect for the skills and experience that many engineers have.

I, like many of my counterparts, ended up in much better positions. For myself and I am sure others, I moved into the satellite and cable industry and now into the wireless industry working for the second-largest wireless provider

in the United States earning a salary that, in radio land, would only be paid to station management in large markets.

Why would any self-respecting, experienced engineer choose to work in conditions where they are treated like errand boys and janitors earning \$40,000 a year, if they are lucky, when they can work in industries where they are respected, valued and can earn double and triple the salaries offered in radio?

When someone can resolve that issue, perhaps we will see skilled engineers working in radio once again.

Aaron Brodbar
RF Performance Engineer
Cingular Wireless
Cheshire, Conn.

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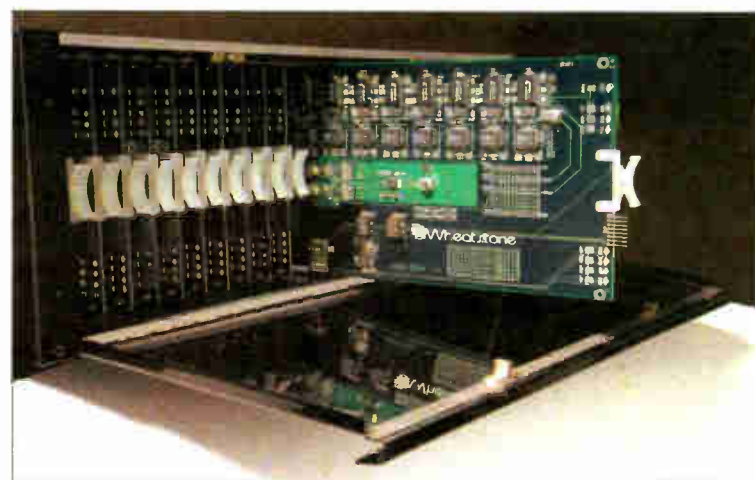
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