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$2.50 | The Newspaper for Radio Managers and Engineers | September 24, 2008

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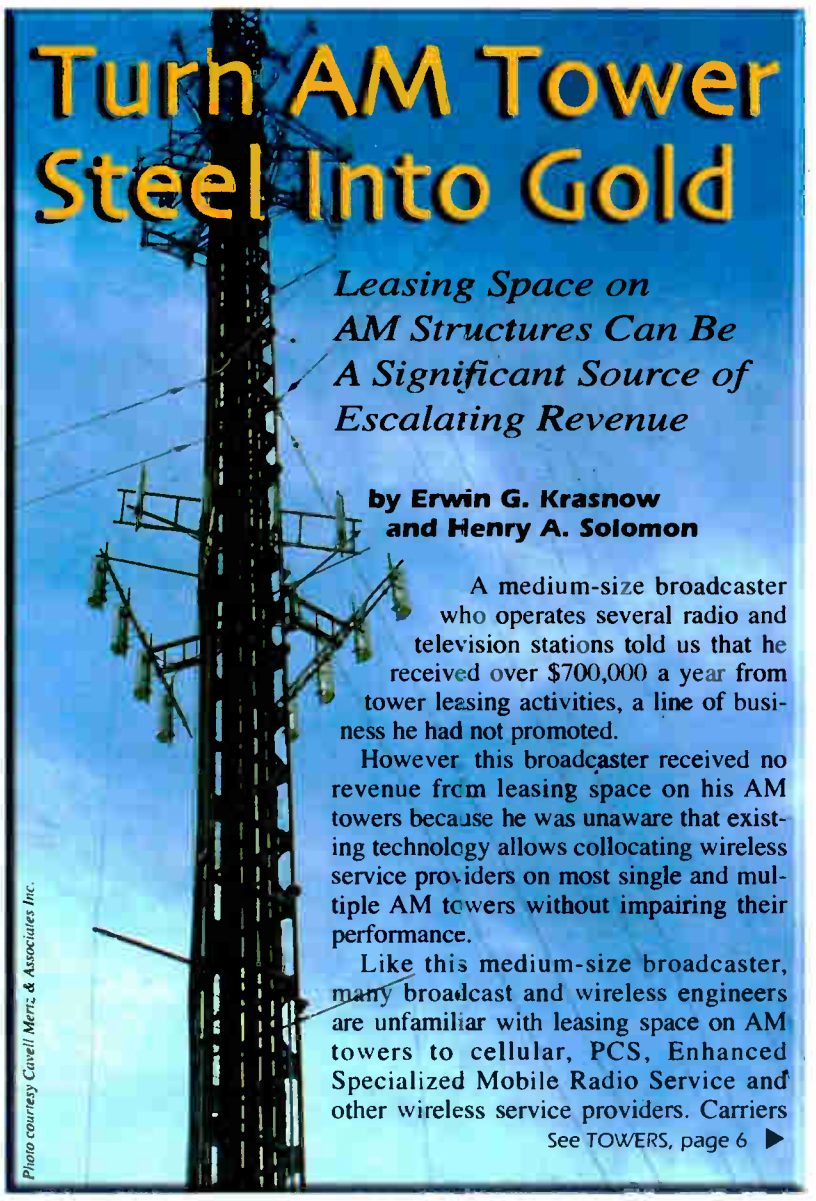

Turn AM Tower Steel Into Gold

Leasing Space on AM Structures Can Be A Significant Source of Escalating Revenue

by Erwin G. Krasnow and Henry A. Solomon

A medium-size broadcaster who operates several radio and television stations told us that he received over $700,000 a year from tower leasing activities, a line of business he had not promoted.

However this broadcaster received no revenue from leasing space on his AM towers because he was unaware that existing technology allows collocating wireless service providers on most single and multiple AM towers without impairing their performance.

Like this medium-size broadcaster, many broadcast and wireless engineers are unfamiliar with leasing space on AM towers to cellular, PCS, Enhanced Specialized Mobile Radio Service and other wireless service providers. Carriers

See TOWERS, page 6 ▶

Photo courtesy Cavell Mertz & Associates Inc.

HCJB: Tech Center for Christ

Nature of Work at U.S. Technology Center Evolves Along With Global Trends in Radio

by Randy J. Stine

ELKHART, Ind. Thousands of radio listeners around the world can tune in their favorite Christian radio stations thanks, in part, to the work done at a broadcast technology center in this northern Indiana city.

The HCJB Global Technology Center, founded to design and build specialized high-power shortwave transmitters, has evolved into a hybrid tech center that also offers a variety of broadcast services to Christian organizations worldwide, including consulting and broadcaster training.

Tech center staff design and manufacture FM antennas, sell their own automation system called Wings and pre-package studios for use by evangelical broadcasters.

The industrial complex here is part of HCJB Global, a non-profit Christian organization headquartered in Colorado Springs, Colo.

HCJB Global transmits Christian programming

See HCJB, page 8 ▶

NEWSWATCH

Construction on Track for DRM Alaska Tests

DELTA JUNCTION, Alaska Construction of the antenna field is underway for the shortwave tests Digital Aurora Radio Technologies has planned in Alaska.

The Federal Communications Commission has approved the project and DART consultant Don Messer said actual testing will be done next spring.

DART has a two-year experimental authorization for coverage of Alaska with Digital Radio Mondiale signals in three of the lower shortwave bands around 5, 7 and 9 MHz. The project is funded by the Department of Defense.

How much power it will take to accomplish that is unknown and something DART and the DRM Consortium hope to learn during testing.

"We've done simulations to try to find the right frequency bands to use. My guess is this will work well and the power levels won't be high," although the group does have authorization to go as high as 100 kW, Messer said.

How much interference might the DRM signal encounter?

"We should be able to find 10 kHz frequency slots within these bands with no problem."

The three antennas DART is constructing are large; the largest one is about 100 feet wide. They will be connected to the existing transmitter with rigid coax, built to withstand the –40 degrees Fahrenheit or below in the Delta Junction testing area some 130 miles southeast of Fairbanks.

If the tests show excellent results for digital broadcasts to cover the entire state, the next step would be to obtain approval to use the DRM system and the transmission station for a regular broadcasting service, says the consortium.

Homeland Security Seeks Info From Vendors

WASHINGTON The U.S. Department of Homeland Security is seeking information from vendors active in the Common Alerting Protocol, Emergency Alert System and alerting fields.

The government said it is soliciting information on the availability of commercial CAP-based alerting products. The specs cover alert origination, alert and warning processing, alert routing and "other interoperability and conversion" functions. The DHS is seeking white papers first; manufacturers selected to take part in the second phase of the RFI will demo the product. White papers were due Sept. 12.

In July, FEMA, part of DHS, said it intended to adopt CAP in the first quarter of the coming year and that EAS participants, including broadcasters and state and local emergency managers, must be in compliance with the CAP 1.1 standard within 180 days of its formal adoption.

News Roundup

AUCTION PENALTY RELIEF: Fireside Media owner Dave Garey is getting money back from the Federal Communications Commission concerning high auction bids he made and later with-

See NEWSWATCH, page 10 ▶

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FIRST PERSON

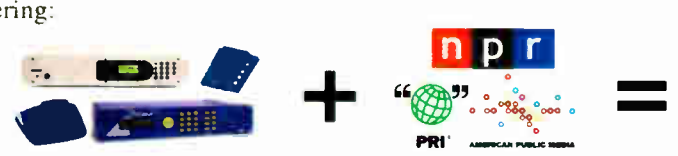
ISDN Can Help Generate Studio Rentals

by Aaron Read

If you're a commercial radio station or a college campus and you've never thought about ISDN, I have two words for you: public radio.

The generic term for content creators National Public Radio, American Public Media and Public Radio International (among many others), and their affiliate broadcast stations, "public radio" is an award-winning source of news for over 20 million listeners every week.

You might be wondering: "So what? Both NPR and ISDN have been around for decades, why are you talking about them now?"



ISDN hasn't changed, but public radio has. There are a lot more listeners, a lot more prestige and a lot more producers. These producers need studios to book their guests in, and you can help fill that need.

If you're a commercial radio station with a lightly used extra studio, public radio has the cash to rent that studio to interview a local guest in.

And if you're a college or university, or a college radio station, you can make your professors available to be interviewed by public radio, thus bringing you national prestige and publicity ... and the respect of your college.

Earning extra cash, bringing extra prestige, what's not to love?

What exactly is 'the deal'?

Public radio, in general, places a premium on audio quality; ISDN helps achieve that.

In this case, ISDN refers to dedicated hardware that uses special telephone lines and high-speed algorithms to deliver CD-quality sound with almost no delay. In short, even though a guest might be in a studio 1,000 miles away, with ISDN they sound like they're sitting in the same room as the host.

When an average public radio producer wants to interview a guest, that producer is looking — often frantically — for a readily available studio, convenient for the guest, that has the following:

- A quiet/soundproof studio or room with a studio-quality microphone.
- A location convenient for guests.
- A means of doing a backup recording.
- An ISDN codec compatible with the MPEG Layer II algorithm at 128 kbps (a.k.a. "L2 mono/128").

What makes a good "broadcast studio?" Dense, solid walls, internal acoustic treatment, soundproof doors, baffled HVAC vents and a method for allowing a trained technician to handle the techie stuff, so the guest doesn't have to.

Don't have all that? You can still create a "studio" of sufficient quality with much less effort and cost. A regular room that's naturally quiet — with thick concrete walls, no windows, a solid-core door and egg-crate foam on the walls — can do the trick. Or a "pre-fab" solution such as a WhisperRoom booth can work well, too.

If you're a college radio station, try talking to the marketing or public relations office, which may be willing to pay for your ISDN in exchange for access to your production studio. The rest of the time you can rent your ISDN to bring in some extra bucks to your station, or use it for remote broadcasts like concerts and sports.

An installation note: strictly speaking, ISDN is a special data telephone line from your local phone company, or the campus telecommunications department. It's a somewhat esoteric technology, and telcos are slowly retiring it in favor of IP-based technologies.

It may take several calls and four to eight weeks to see if ISDN is available and get it installed. To cover your bases, try to get a codec that can handle IP/Internet audio connections as well as ISDN.

If you can't find one, try to find out if and/or when your telco plans to "retire" ISDN in your area. If it's more than five years or so, go for ISDN now and plan to upgrade to IP codecs later.

For help with your installation, many major ISDN hardware providers have excellent "ordering guides" in the support sections of their Web sites. Three I know are *www.tieline.com*, *www.comrex.com* and *www.telos-systems.com*.

Now what?

Okay, you've got this ISDN but no one to call.

To fix that, a little marketing and some patience is required.

First, set up a Web site page just for the studio. Include lots of details: directions with maps, parking information, equipment lists, availability guidelines and your rates/charges. Time is critical in booking; so include enough contact information that a producer can reach a booking agent quickly and easily.

Next, make sure your studio is listed on the appropriate Web sites. When I'm looking to rent a studio, the two I use the most are "Wisconsin Public Radio's ISDN Directory" (*www.wpr.org/isdn*) and the "DigiFon Digital Dialup List" (*www.digifon.com/aboutddl.html*.)

If you're a college campus, make sure every department head knows about your studio and that their professors can use it to be interviewed by so-called "prestigious" public radio. Make sure the campus public relations/marketing office knows, too.

Don't forget to just call up NPR, PRI and APM, and also any public radio stations nearby. Ask to speak with whoever handles their studio booking on their end, and ask them to keep you in mind if they ever get overbooked. It's not uncommon for other studios to get requests for studio rentals they just can't deliver on, and they'll be happy to send you the business.

Even after all this effort — be patient. Most people will stumble across you through Internet searches and through word-of-mouth, but over time you'll build up a reputation.

Finally, how much should you charge for your ISDN? There's a lot of variation, but to get you started: rates typically run from $40 per hour to $250 per hour, with a one-hour minimum. The most common is $100/hr but that usually includes an engineer to run things for the guest. If you're a college station, offer free rentals to campus professors; it helps build good relations with your parent college.

Some studios charge extra for providing a backup recording or extra to cover the per-minute ISDN line fees. I personally prefer to charge a blanket rate that might be a little higher; it's simpler for everyone.

Conclusions

Getting ISDN — or if you have it, getting the word out about it — is a great way to help turn an empty room into revenue generator; your business manager will love you. Plus, it can open up a new avenue of free publicity on a national platform; your college PR office will love you. And you'll help some poor public radio producer, like I used to be, have it just a little easier.

The author is general manager of WEOS(FM), public radio from Hobart & William Smith Colleges in Geneva, N.Y. Find more engineering details at www.friedbagels.com/blog.

Products That Work, Out of the Box

An Engineer Sees a Growing Trend Toward 'Under-Documentation' of Gear

When you open that new exciter or other broadcast device, how much work, exactly, do you expect to have to do?

An engineer who asks not to be named writes me to say he sees an increasing trend toward under-documented equipment.

The case in point involved FM transmitters from a familiar brand. He felt the information regarding menu screens was not well documented in the manuals and that better docs could have saved him *five* trips to the transmitter site recently.

Unfortunately, he says, this isn't an isolated case. He feels it is a trend, one that leaves engineers to depend on technical support phone calls for even the most simple of problems.

"I know it is uncommon for equipment makers to send anything 'plug and play' anymore," he says. "But it is most disturbing to see the trend toward a constant dependence of their tech support people for simple troubleshooting.

"I never called any tech support number in my entire career until just a few years ago," he continued. "I have to admit some shame and embarrassment in doing so at the time. Not being able to figure something out on your own wasn't something I was used to."

These days, he says, not only are calls to tech support considered routine; they are nearly mandatory for even daily maintenance at times.

"I, for one, am not at all comfortable with this trend. Regarding the equipment I currently have installed, I want this practice to stop. I want to be self-reliant in my market and will strive to obtain all information available, or unavailable, for what I have. I am also instituting a policy that I will not purchase equipment that is under-documented in the future."

Adding grit to his sore: Back when his employer's contract for new transmitters was about to be awarded, he had really stuck his neck out for that brand for all its FM stations.

Plug, no play

Separately, he was frustrated during installation of a backup exciter.

"I decided it would be beneficial in the long run having the full capability of the transmitter built in. I set it all up with the company to do the field installation and upgrade (I am completely capable) and adamantly drove the point that I want this to be plug-and-play. And I meant it.

"They took my money, sent me a 'kit' with everything I needed and the all-important exciter. I made the changes and set everything up so it matched the factory docs and pictures. Nothing worked!

"Despite my demands that they set up the exciter, it did not work. And, I mean NOT work. It would not put out RF or even begin to function. Why? It needed to be 'set up' with my laptop computer, using information that is only available by calling tech support and begging to get someone who is not in a hurry to leave somewhere and is willing to help as long as required."

He spent a full day setting up software, which he feels could have been done in minutes at the factory, and found that none of what he was doing had been documented. He also encountered several "secret" menus that were not described in the materials he received.

Loyalty must be earned

In another incident involving a different major manufacturer, this engineer says he demanded that a new transmitter be tested and the whole system be run as a system at the factory.

"They said they did, and charged for it. No problem. I get the thing and hook it all up and start the computer and I get the 'Welcome to Windows setup' screen.

"They *never* ran the whole system as a unit, as they said they did. If they had, I would have booted up to an application, or at minimum, a Windows desktop, not the Windows startup and installation screen, the same one you see on every brand-new computer."

He had to install software, enter IP addresses and make several calls to tech support to set up things not documented, using a laptop, which he was trying to avoid.

"I was really angry with them," he says — presumably not the mindset a transmitter manufacturer would want to engender in a customer who is about to throw the switch on an expensive new product.

This engineer says companies that send him products that work out of the box will continue to get his business, and the others will not.

What do you think? Is his an isolated case? Or is the quality of documentation and tech support for major broadcast products not up to snuff?

I'm at *pmclane@nbmedia.com*.

'I want this practice to stop. I want to be self-reliant in my market and will strive to obtain all information available, or unavailable, for what I have.'

From the Editor

Paul J. McLane

Ken and Fred

Radio World contributor Ken Deutsch visited backstage with Fred Newman, sound effects master of "A Prairie Home Companion," when the show came to the Blossom Music Center in Cleveland recently. Ken profiled Newman in our May 7 issue. (If you missed that story, go to *radioworld.com* and type "Fred Newman" in the search field at the bottom.)

Typically for Ken, his visit included a touch of adventure. Ten minutes into the broadcast, all the power at the facility went out due to an electrical storm. "Everything was dead for two minutes," Ken tells me.

"So at the end of the two hours, after the live broadcast was off the air, the whole cast came back out and redid the material that was lost so that in subsequent re-broadcasts, they would have a full show."

GUEST COMMENTARY

Getting Big AM Sound — Correctly

Don't Go Overboard in Setting AM Modulation

by Larry Langford

Some AM stations have a stellar sound: clean, bright, natural and loud. Some sound so bad you wonder if anyone in management ever listens at all.

To the detriment of AM, almost gone is the old crusty chief engineer who cut his teeth on an RCA BTA 1 and knew the difference between a tank circuit and a swinging choke. Today's younger chief engineers probably knew computers before transmitters and transmitters were more FM than AM.

In FM, engineers strive to keep the 100 percent modulation lights flashing as much as possible without overmodulation. Those who insist on the same for AM need to read on, and get educated.

Those of us who have a passion for AM cringe at the sound some stations pass off as broadcast quality. Sure AM has problems, poor signal-to-noise in many areas and of course the cesspool called IBOC — don't get me started on that again — but the medium can sound decent even under present constraints.

Too many engineers get the latest and loudest box, put it inline and crank it up till all the peak lights come on and that's it. Wrong! In order to set up modulation correctly you need to understand the characteristics of your type of transmitter.

One hundred percent negative and 125 percent positive are legal limits, not necessarily obtainable goals! There are still some plate-modulated transmitters around, many designed and built in the late '60s or early '70s. These behemoths modulate well as long as both the modulator tubes and the RF finals are fresh.

Aging tubes

As these tubes age they lose ability to handle high levels of modulation and often, even when fresh, their power supplies can not handle the demands of positive peaks over 100 percent at all. Back then, the legal limit for positive modulation was 100 percent.

Despite those drawbacks, some AM neophytes insist on trying to hit 125 percent modulation because it's the legal limit, with terrible results. The audio is bad and system components are taxed to early failure.

Back it down! The chokes, tubes, modulation transformer and power supply will thank you and the sound will be a lot better. If you have one of these old timers and use modern processing I suggest you set peaks at 86 to 90 percent negative and positive, which is still legal.

For those with Pulse Width Modulation transmitters, more common today, the story is different. It's the negative modulation that can be a problem.

If you're using a high-performance processor like Omnia or Optimod you may find the modulation sounds a little edgy like the clipper is too high. Before thinking your $5,000 processor is bad, check your modulation settings.

Some PWM transmitters are prone to cliff effect. They can't handle extremely high negative modulation without running away to nasty-sounding cutoff.

To see this effect, use a 1 kHz tone and modulate at about 93 percent negative. Then slowly raise that modulation level and watch the monitor. If you see it get to maybe 95 or 96 and then jump to 100 percent then you have cliff effect.

This occurs as the result of asymmetric antenna loading to the final PA. The PDM 70 kHz filter cannot properly handle the reflected energy. The effects are more noticeable with high frequency modulation. Usually simple phase rotation can improve that.

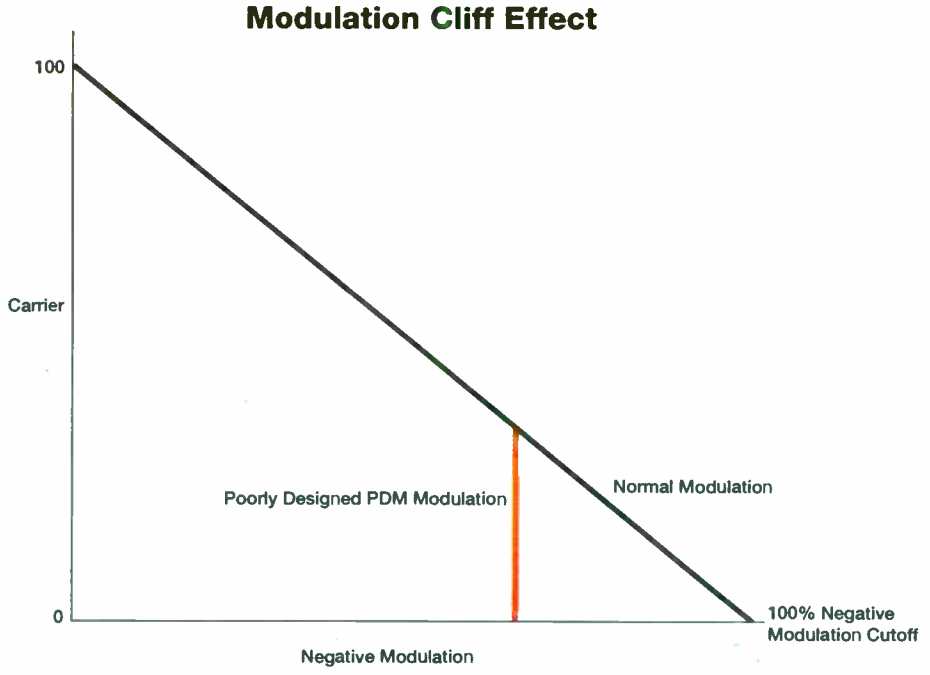
My remedy is simple. Set the maximum negative modulation for just under 95 percent. I personally set it at 93 percent. The sound will be much cleaner and the loudness won't really suffer.

And you will find you can push the processing harder if you want. You should never see a flash from the 100 percent negative indicator.

PWM transmitters do an excellent job of passing positive peaks but personally I like the sound of symmetrical modulation so I set both positive and negative peak at under 95 percent. It might surprise you to know the most successful AM stations in the past and present were never known for beating modulation peaks to death.

Top 40 king CKLW in Windsor, Ontario, back in the '60s used a lot of RMS compression but set modulation peaks at 85 to 89 percent. WGN, Chicago's current big AM biller, uses only moderate processing for a non-fatiguing warm and pleasing sound.

Modulation Cliff Effect



This shows the so-called cliff effect that occurs with some PDM transmitters. You can see the cliff that is formed as the negative modulation fails to properly track as it nears cutoff. To the right, negative modulation increases with motion. The sharp 'cliff' causes audible distortion. The graphic is not to scale. The orange line normally appears at about 96 percent on some PDM transmitters depending on how heavily processed the audio is. Heavier processing can give a lower cliff point. Very light processing may not show a cliff at all.

Despite the drawbacks, some AM neophytes insist on trying to hit 125 percent modulation because it's the legal limit, with terrible results.

Then there is the receiver factor. Most cheaply designed AM receivers show audible distortion when hit with extremely high peak modulation levels.

In the end we must remember it's what the listener hears that counts. Take a cue and go for quality vs. maximum peaks at any cost. It pays off in the long run.

Larry Langford is chief engineer and principal of Langford Broadcasting LLC, WGTO(AM), Cassopolis, Mich. and WDOW(AM), Dowagiac, Mich. Reach him at larrylangford@aol.com.

RW welcomes other points of view to radioworld@nbmedia.com.

Towers

▶ Continued from page 1

have been more likely to put a new wireless tower near AM stations rather than try to collocate on AM towers.

When they build the new tower, wireless tower owners are required by the FCC to ensure that the AM pattern is not compromised by re-radiation from the structure. Sometimes it is an independent tower company that wants to build a tower and generate rental revenue from the wireless carriers — at the expense of potential income to a nearby AM tower owner.

Where the wireless carrier elects to build a tower, new service can be delayed due to zoning issues and complaints by anti-tower interests. In other cases, it is the wireless carrier itself, thinking that it will be cheaper and easier to install a new tower than to collocate on an AM tower.

Such thinking has resulted in lost opportunities for AM licensees to receive a steady stream of recurrent revenues that increase each year over a long period of time.

Revenue

Leasing space on an AM tower can be a significant source of continuing and escalating revenue. Rents often exceed $2,500 per month per carrier for desirable sites and some AMs can accommodate several carriers on a single tower.

Rick Edwards, president of Tower America, reports that he has added collocators to AM arrays that in one instance created revenues of over $500,000 a year and resulted in over $11.2 million in revenues during the term of the lease. The carrier paid construction and engineering costs.

Eddie Esserman, a broker with Media Services Group, told us about the experience of an AM station in southeastern Georgia. A large wireless carrier needed tower space but didn't want to build its own cell tower in a small picturesque community where zoning was problematic.

Instead, the carrier leased space on the AM tower. However, before installing its antennas, the carrier rebuilt the structure, re-guyed the site, installed a new ground system, added lighting, built a fence and proofed the finished system — at a cost of $100,000. The AM station received the first year's rent in advance. It also discovered that the site modifications improved the station's signal.

With regard to legal considerations, the 1996 Telecommunications Act made it clear that states or municipalities may not unreasonably delay requests to place, construct or modify towers used for mobile private and common carrier wireless communications. The legislation also spelled out an appeal process and enacted other reforms, all designed to assist the wireless industry.

Busy grounded tower base

In fact, municipalities often require wireless companies to utilize existing towers, including AM towers, instead of building new ones. Collocation should enable the carrier to jump fewer regulatory hurdles than for a new tower, such as compliance with federal environmental restrictions governing locating in wetlands or migratory birds, and local land use restrictions, as well as objections by residential and environmental groups.

While it is true that zoning laws in some jurisdictions may prohibit adding to towers, many AM towers in urbanized areas have been standing for decades. So carriers seeking to eliminate gaps in coverage usually can collocate under the broadcaster's existing permits.

Photos courtesy Cavell Mertz & Associates Inc.

AM tower hosting wireless antennas.

Collocation is now practical for both single and multiple tower systems. Radio engineers have overcome the traditional obstacles to this technique while permitting virtually unlimited wireless users on most AM towers.

Collocation requires modifying the feed characteristics of the AM tower (from series-fed to shunt-fed) without affecting efficiency, or installing specialized hardware to feed the wireless signals to the hot tower. Since the tower is a radiating element and wireless antennas and coaxial cable are self-contained systems, physical connection to the AM antenna is easily accomplished in most cases whether the station is directional or non-directional.

For example, in a multi-tower array, carriers that want to improve coverage in different directions can use more than one structure. Once a system is installed, tuned up and proofed, wireless antennas and coaxial cables attached to the towers have virtually no effect on the host AM station's signal.

Loading

The most critical factor that must be addressed up front is the structural loading of the new antennas and cables placed on the tower (wind and weight loading).

Many loading issues can be addressed by tower reinforcement, re-guying the tower or full replacement of the tower with a sturdier one — all at the expense of the new tenant.

Moreover, while ANSI/EIA/TIA-222 G's ("Rev G") design criteria for steel towers may not be mandatory for tower changes, insurers may nevertheless require compliance with the new standards since they affect tower safety. The fact remains that some older AM towers simply cannot accommodate sectorized wireless antennas and modifications may not be feasible.

To be sure, every AM station is unique and its ability to host wireless antennas will vary. However, most AM towers can handle wireless antennas, which generally are lightweight and compact, and special shunt-fed and wire-skirt techniques that ground the tower base permit those antennas to be maintained while the AM station is broadcasting.

Nevertheless, some AM situations may not readily adapt to these changes without impeding the broadcast signal. Where such is the case, collocating could require more complex solutions that may not be sufficiently economical to appeal to a wireless carrier. As with any complex engineering project, experienced technical and legal experts should be working for the broadcaster beginning at the earliest stages of such a project.

The bottom line is that AM broadcasters can fatten their bottom lines if they are able to attract wireless tenants and to negotiate favorable leases.

This article is based on a chapter in "Broadcast Towers: A Step-by-Step Guide to Vertical Real Estate," published by the National Association of Broadcasters, www.nabstore.com.

The authors are attorneys with Garvey Schubert Barer, Washington. Reach Erwin Krasnow at ekrasnow@gsblaw.com *and Henry Solomon at* hsolomon@gsblaw.com.

Rents often exceed $2,500 per month per carrier for desirable sites and some AMs can accommodate several carriers on a single tower.

NEWS WATCH

BARRY THOMAS: Society of Broadcast Engineers President Barry Thomas is recovering from spinal surgery but has been diagnosed with multiple myeloma, a type of cancer that attaches to the spine, ribs and other bones. Society Executive Director John Poray told members that Thomas, with help from his employer, Lincoln Financial, has begun working from home and is also conducting SBE business from there. Thomas was expected to begin cancer treatment this month and planned to participate in the SBE National Meeting and Webcast in October.

BW BROADCAST, DANAGGER: London-based processor and transmitter manufacturer BW Broadcast acquired Danagger Audio Works, maker of the Plan B, a dead-air prevention system. Terms were not disclosed. Danagger stopped production of the original Plan B this year, citing the poor economy and manufacturing difficulties, but continues to support the product. Danagger was founded by Rob Robson. BW Broadcast will offer current owners a trade-in on new units, when available. Robson said, "BW's strength in both processors and transmitters makes them the ideal firm to produce a new air chain protection device." BW Broadcast Managing Director Scott Incz confirmed plans for future Plan Bs.

SONY HD RADIO-READY TUNERS: Sony unveiled four in-dash head units that are HD Radio-ready and connect to compatible iPods, other digital music players and USB thumb drives with a USB connection. The Xplod stereos range in price from $80 to $160. The top-of-the-line CDX-GT630UI includes Sony's Zappin function, which offers a way of searching and listening to music, similar to a Scan function. The receiver supports MP3 and non-DRM WMA and non-DRM AAC codecs and is satellite- and HD Radio-ready with their respective tuner modules.

DIGITAL CONVERSION GRANTS: The Corporation for Public Broadcasting has opened a new round of HD Radio digital conversion grants to CPB-qualified stations. Grant applications in this round are due Sept. 29. CPB has details (*www.cpb.org/grants/grant.php?id=149*). To date, CPB has approved funding for the digital conversion of 697 public radio transmitters. More than 400 public radio stations have completed conversions and are transmitting digital signals. To help engineers plan budgets and applications, CPB made travel scholarships available for a CPB Digital Transition Assistance Program held Sept. 16 in Austin, Texas.

Impossible Remote?

Nah...You've Got ACCESS!

Cape Town's Heart 104.9FM's hot, new ACCESS opens new horizons!

*Above: Heart 104.9FM DJ **Koketso Sachane** doing his show from the streets of Cape Town.*

*Top: **Saskia Falken**, Heart 104.9FM Mid Morning Mix host broadcasting from Table Mountain.*

With ACCESS, Heart 104.9FM left its competition literally standing still by offering innovative, superb sounding remote broadcasts that kept listeners (and advertisers) coming back for more. Whether it was from a sailing yacht, from the top of majestic Table Mountain or from the vibrant streets of downtown Cape Town, ACCESS always delivered with its winning combination of pristine audio and ease of use.

ACCESS delivers mono or stereo over DSL, Cable, Wi-Fi, 3G cellular, satellite, POTS (yep, ACCESS is a full featured POTS codec and works seamlessly with Matrix, Vector and Bluebox)—plus some services you may not have even heard of. Given the challenges of the public Internet, it's no small boast to say that ACCESS will perform in real time over most available IP connections.

Contact Comrex today and find out how ACCESS can help you open up your new horizons— wherever you are!

ACCESS

NEW from COMREX:

BRIC-TS TRAVERSAL SERVER & AAC-ELD *Software from Fraunhofer IIS*

Two new options to enhance your ACCESS: **BRIC Traversal Server** makes IP connections a snap by automatically syncing with your buddy list.

The **AAC-ELD** option offers exceptionally high quality, low latency audio. Contact Comrex for more info!

Put Comrex On The Line.

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HCJB

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via shortwave radio from broadcast facilities in Ecuador and Australia. It also has helped partner ministries start more than 300 radio stations in more than 100 countries. HCJB is an acronym for "Heralding Christ Jesus' Blessings."

It was the need to design and build a 500,000 watt shortwave transmitter capable of overcoming Russian jamming that led HCJB Global broadcast designers and engineers to take up residence at Crown International in Elkhart at the invitation of Clarence Moore, founder of Crown International.

Moore had at one time served as chief engineer at HCJB Radio in Quito, Ecuador, and invited the Christian broadcaster to work on the shortwave project at Crown's facilities in the mid-1970s.

Crown

That relationship continued until 2000 when Harman Pro Group North America purchased Crown International and its line of power amplifiers. The property and buildings that house the HCJB Global Technology Center were given to HCJB Global by the Moore family at that time.

Since then, tech center staffers have been involved in research, development, training and technical support for AM, FM and shortwave radio stations as well as satellite distribution and satellite-based Internet services, said Charlie Jacobson, manager of international broadcast technology for HCJB Global.

The facility's name changed in 2007 from the HCJB World Radio Engineering Center to the HCJB Global Technology Center to reflect a more global outreach, Jacobson said.

"Our focus is not just on development and engineering, but also service and training in technology for Christian ministry," Jacobson said.

Two industrial buildings on the site, measuring together approximately 23,000 square feet, house a machine shop for work on FM antennas and other mechanical assemblies, a transmitter assembly and fabrication area, an electronics research lab and training facilities.

Approximately 40 people work at the tech center, Jacobson said. Some are volunteers; about 28 are paid staff with missionary status, which means, "They have raised the funds in order for them to be here," Jacobson said.

The majority of the facility's funding for personnel and projects comes from donations, Jacobson said. Other sources of income include the sale of transmitters and antennas. Jacobson declined to give specific operating budget information for the HCJB tech center.

DRM

HCJB Global considers itself a pioneer in its work on Digital Radio Mondiale, the digital broadcasting system for broadcasting bands below 30 MHz, which includes international AM broadcast and shortwave bands.

Members of the HCJB staff pose with a crated, refurbished Continental 10 kW AM transmitter before it was shipped to Indonesia this summer.

Staff members Herb Jacobson, Charles Jacobson and Peter DeBonte, from left, carry out DRM bench tests with the HCJB low-power shortwave transmitter.

Herb Jacobson, HCJB senior design engineer and Charlie's father, served on the Channel Coding & Modulation Technical Subcommittee of the DRM consortium and wrote the first white paper detailing transmitter design changes required for compliant DRM transmission, Charlie Jacobson said.

"We have been very committed to digital broadcast technology and committed to DRM since 2000. We have a DRM product that is both a content server and AM modulator and we are extending that to our shortwave transmitters. We see DRM as a means to open up the market for shortwave across the world. However, a lot of it is 'wait and see,' mainly from the receiver development end.

"We want to be very active at developing future technologies in broadcasting."

At one point, HCJB Global Technology supplied Harris with a DRM content server and exciter compatible with the Harris line of solid-state AM transmitters. That relationship has since ended, Jacobson said.

'Radio planting'

"We are the only U.S.-based group to have developed a DRM transmitter exciter package. The content server is a PC Linux-based DRM encoder and multiplexer, using Coding Technologies' AAC audio encoder, but all other software was developed by HCJB," Jacobson said. "The exciter is a DSP-based single-board DRM channel encoder and RF generator with hardware and software developed by HCJB."

Shortwave transmitters are built at the tech center on an "as needed" basis, Jacobson said. Demand for high-power transmitters — up to 500,000 watts — has dropped dramatically as Christian broadcasters have discovered satellite and Internet distribution channels.

"We just completed a 100,000 watt high-power shortwave transmitter for Transworld Radio in Swaziland, Africa. Over the years we have built nine of the 100,000 watt models, but we do not have any plans to build any more of them. We continue to build a 1,000-watt shortwave transmitter," Jacobson said.

The tech center's consultation work includes evaluating a Christian broadcaster's equipment needs as well as providing coverage studies, Jacobson said. It's through HCJB Global's "radio planting ministry" that many religious broadcasters have gotten their start.

Technology Center staffer Ken Cummings packs an FM transmitter for shipment.

The popularity of lower-power FM stations in foreign countries, especially across Southeast Asia and parts of Africa, has benefited the tech center. Tech staffers have worked on a number of startups, which typically include Crown Broadcast 250-watt transmitters, which can literally fit inside a suitcase, and HCJB Global Technology FM antennas and automation systems.

Those broadcasting partners often are inexperienced, which has led to an increased need for technical training for both in-house staff and people working at the radio stations, Jacobson said.

"We are in the process of developing a more thorough training system, everything from installs to upkeep of facilities to automation system training and studio maintenance. Training typically lasts up to a month," he said.

In some cases, Jacobson said, missionary engineers will be sent to train on site. At other times, partner broadcasters send trainees to Elkhart for a series of training sessions.

"We are currently expanding a media training center, which will include a studio with full broadcast capability," Jacobson said.

In addition to its design work with transmitters and antennas, the HCJB Global Technology Center has developed a fixed-tuned solar-powered FM radio that can be pre-tuned to pick up specific Christian radio stations.

"We sell them in bulk to our radio partners to distribute them to their listeners. They are intended for use in rural areas where there is limited reception. We are hoping to add AM and shortwave to the unit," Jacobson said.

HCJB Goes Global

HCJB Global, known as HCJB World Radio until 2007, is a multifaceted Christian organization that includes a medical ministry and television operations.

HCJB Radio aired its first shortwave radio broadcast from Quito, Ecuador in 1931. Originally featuring English and Spanish language programming, the shortwave station later added German, French, Russian, Portuguese, Japanese and Dutch.

HCJB Global broadcasts the gospel in five languages from its Quito facility, which feature 10 radio studios and a master control. Its international transmitter site is located just outside of Quito and includes one 500 kW, four 100 kW, two 50 kW, two 25 kW and two 10 kW shortwave transmitters.

The Christian broadcaster also has launched a podcasting initiative featuring satellite-based Internet services in an effort to reach a new, younger generation of listeners.

Can a radio console be over-engineered?

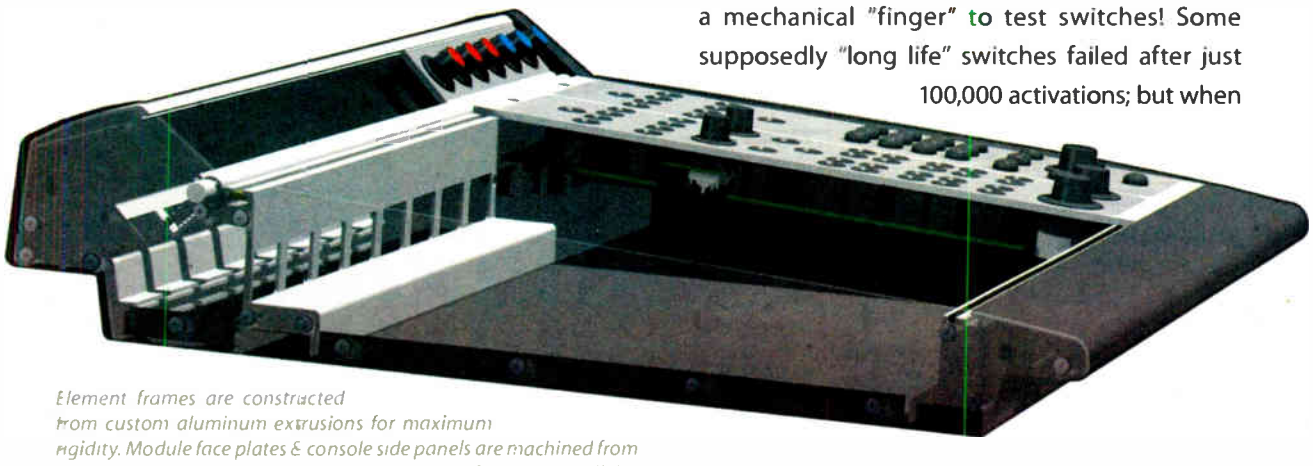
(Only if you think "good enough" really is good enough.)

The radio console, redefined.

Building a great console is more than punching holes in sheet metal and stuffing a few switches in them. Building a great console takes time, brain-power and determination. That's why Axia has hired brilliant engineers who are certified "OCD": **Obsessive Console Designers,** driven to create the most useful, powerful, hardest-working consoles in the world.

Beneath the surface

There's more to a great board than just features. **Consoles have to be rugged,** to perform flawlessly 24/7, 365 days-a-year, for years at a time. So we literally scoured the globe for the absolute best parts — hardware that will take the torture that jocks dish out on a daily basis.



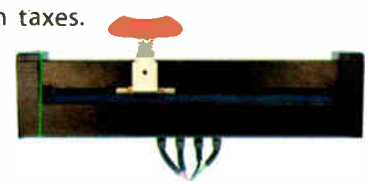
Element frames are constructed from custom aluminum extrusions for maximum rigidity. Module face plates & console side panels are machined from thick plate aluminum. Even the hand rest is a beefy extrusion. All this heavy metal means even the most ham-handed jock can't dent it..

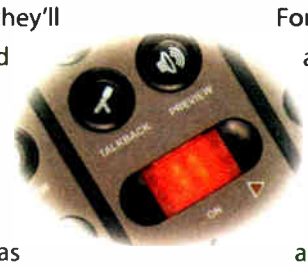
First, Element is fabricated from thick, **machined aluminum extrusions** for rigidity and RF immunity. The result: a board that will stand up to nearly anything.

With so many devices in the studio these days, the last thing anyone needs is gear with a noisy cooling fan. That's why Element's **power-supply is fanless,** for perfectly silent operation inside the studio.

Element modules are **hot-swappable**, of course, and quickly removable. They connect to the frame via CAT-5, so pulling one is as simple as removing two screws and unplugging an RJ — no motherboard or edge connectors here.

Faders take massive abuse. The ones used in other consoles have a big slot on top that sucks in dirt, crumbs and liquid like the government sucks in taxes. By contrast, our silky-smooth conductive-plastic faders actuate from the side, so that **grunge can't get in**. And our rotary controls are high-end optical encoders, rated for more than **five million rotations**. No wipers to clean or wear out — they'll last so long, they'll outlive your mother-in-law (and that's saying something).





Element's **avionics-grade switches** are cut from the same cloth. Our design team was so obsessed with finding the perfect long-life components that they actually built a mechanical "finger" to test switches! Some supposedly "long life" switches failed after just 100,000 activations; but when our guys found the switches used in Element, they shut off the machine after **2 million operations** and declared a winner. (The losers got an all-expense-paid trip to the landfill.)

Element's individual components are **easy to service.** Faders come out after removing just two screws. Switches and rotary volume controls are likewise simple to access. And all lamps are LEDs, so you'll likely **never need to replace them**.

Engineers have said for years that console finishes don't stand up to day-to-day use. Silk-screened graphics wear off; plastic overlays last longer, but they crack and chip — especially around switches and fader slots, where fingers can easily get cut on the sharp, splintered edges. We decided that we could do better.

There's a reason these board-ops are smiling. Axia consoles are in more than 1000 studios worldwide.

Element uses high-impact Lexan overlays with color and printing on the back, where it **can't rub off.** And instead of just sticking the Lexan to the top of the module like some folks do, our overlays are **inlaid on the milled aluminum module faces** to keep the edges from cracking and peeling — expensive to make, but worth it. For extra protection, there are **custom bezels** around faders, switches and buttons to guard those edges, too. Which means that Element modules will **look great for years.**

By the way, those on/off keys, fader knobs and bezels are our own design, custom-molded to give **positive tactile feedback**. The switch is flush with the top of the bezel, so it's easy to find by touch. But if something gets dropped on it, the bezel keeps the switch from being accidentally activated.

More than just products

Even the best products are nothing without **great support.** So Axia employs an amazing network of people to provide the best support possible: Application Engineers with **years of experience** in mapping out radio studios... the most knowledgeable, **friendly** sales people in the biz... Support Engineers who were formerly broadcast engineers. Plus a genius design team, software authors who dream code... one of the **largest R&D teams** in broadcast.

And now Axia has become radio's **first console company to offer 24/7 support**, 365 days a year. Chances are you'll never need that assistance, but if you do, we'll be ready for you. Our 'round-the-clock help line is +1-216-622-0247.

Proudly Over-Engineered

Are Axia consoles over-engineered? **You bet.** If you're looking for a cheap, disposable console, there are plenty out there — but this ain't it. Not everyone appreciates this kind of attention to detail, but if you're one who seeks out and appreciates excellence wherever you may find it... Axia consoles are built **just for you.**

AXIA
A TELOS COMPANY

www.AxiaAudio.com

Newswatch

▶ Continued from page 2

drew for construction permits. He also won dismissal of fines totaling more than $100,000. Fireside submitted bids for CPs in Auction 37 in 2004, then withdrew all four due to financial hardship. A bidder who withdraws a provisionally winning bid during an auction must pay the difference between the amount of the bid and the subsequent winning bid. The FCC assessed penalties of more than $108,000. Garey said he couldn't pay and submitted tax records showing he'd sustained business losses that exceeded his income. The commission said that because he'd proved his inability to pay, there is no new debt and since the case has been pending for several years, it decided to forgive the debt.

CUBA: WOR's Tom Ray says a Cuban station on 710 kHz was shooting a powerful nighttime signal up the eastern seaboard and interfering with his New York AM and possibly others. He said the FCC located the source of the transmitter in Cuba. In Utica, N.Y., he said, the Cuban station was delivering a local-grade signal. An FCC source told Ray he estimated the station is pushing at least 500,000 watts, possibly up to a million, up the coast. WOR is looking to hear from stations that may be affected.

HD RADIO @ CEDIA: This year's Custom Electronic Design & Installation Association Expo — a show featuring the residential electronic systems industry — showcased new HD Radio receivers. Some 20 IBOC models were on display at the show in early September; seven new products were unveiled from CE brands Integra, McIntosh Laboratories and Yamaha.

Integra's DHC 9.9, DTR 8.9 and DTR 9.9; McIntosh's TM2 (module for MA6600 tuner); and Yamaha's RX-V1900, RX-V3900 and RX-Z7 were unveiled. The new iTunes tagging application is supported by some of models displayed, including the Polk Audio I-Sonic Entertainment System 2, in addition to AV receivers Yamaha RX-V3900 and Yamaha RX-Z7. Custom audio manufacturers, such as Audio Design Associates, Denon, Marantz, Niles Audio, Onkyo and Polk, offered a lineup of custom-install, home theater receivers and processors that feature HD Radio technology.

IBiquity Digital President/CEO Robert Struble called adoption of HD Radio in the advanced home audio system niche as "yet another proof point in the overall manufacturer dedication to offering consumers a variety of HD Radio products that enhance their entertainment experience across a wide-ranging price point spectrum."

AUDIO DESIGN ASSOCIATES: Home audio specialist Audio Design Associates has extended its ADA-30 warranty program through July 4, 2009. Beginning on July 4, 2007, ADA implemented a 30-year limited warranty on its product line of home theater and distributed audio components. ADA-30 applied to all new products sold by authorized dealers through July 4 of this year. ADA conducts its parts acquisition, design and manufacturing at its White Plains, N.Y. facility.

BMI: Broadcast Music Inc. earned more than $901 million in revenues for its 2008 fiscal year, a 7.2 percent increase from the previous year and the first time such a group has topped the $900 million mark for music performance revenues. The music copyright organization said it will disburse more than $786 million to the 375,000 songwriters, composers and copyright owners it represents, an 8 percent increase over the prior fiscal year. It generated $664 million in domestic licensing income, an increase of 8 percent or $51 million over the prior year. Most of the growth came from music licensing for radio and television at $340 million, or about 38 percent of revenue.

WWO, NBC NEWS: Westwood One and NBC renewed a multi-year agreement with NBC News to continue distribution of "NBC News Radio" and "Meet the Press." The companies noted they've had a 20-year relationship. The announcement was made by NBC News President Steve Capus and Westwood One President and CEO Thomas Beusse. "The parties have also agreed to work together to launch new NBC News products on the radio as well as exploiting the NBC Radio archives," they stated. "This archive content includes coverage of World War II, U.S. presidencies from Harry Truman forward, political conventions, coverage of the Olympic Games, the civil rights campaign, the Vietnam War, Watergate, the Iranian Hostage crisis and other major historical events."

C. CRANE: Now that high-quality handheld digital flash memory-based recorders are becoming common it looks like it is time to start differentiating them by expanding their non-recorder features. C. Crane's CC Witness has an onboard radio — with both AM and FM. It retails for $229.95. The company states in its FAQ that AM reception is good when tuned to a strong signal. "The AM tuner in the CC Witness will not receive distant AM stations like the CCRadio plus. With the display screen off, reception is better." Besides the radio, the CC Witness has 2 GB of onboard memory, an SD slot for adding more memory, a USB 2.0 interface for offloading recordings and included calendar and alarm clock functions. Recording file format is MP3 (32 kbps to 256 kbps). Included accessories are an FM antenna, USB-based charger and stereo earbuds.

CALL FOR PAPERS: NAB is asking for technical papers for its next Broadcast Engineering Conference. The deadline for submitting a proposal is Oct. 17. If selected, the paper would be due Jan. 16, 2009. Radio topics suitable for technical papers include data broadcasting, AM directional antenna systems, automation systems, surround sound, audio coding and HD Radio implementation, to name a few. If selected for publication in the Broadcast Engineering Conference Proceedings, the papers would be presented at NAB2009 April 18–23. Info: *www.nabshow.com/2009/forms/beccallforpapers.asp.*

DIGITAL NEWS

Israel Prepares for DAB+ System

by Gabriel Koerner

TEL AVIV, Israel The Ministry of Communications recently invited companies to submit proposals for constructing a DAB+ system in Israel, ending an intense three-year preparation phase that followed a government decision to introduce digital radio and TV services.

Spectrum congestion and the relatively small size of the country prevent the addition of more radio networks, so the decision for a new multichannel digital radio service was the only solution, according to officials.

Commercial uncertainty

The contract will be for a countrywide license, based on the build-operate-transfer principle.

In the first stage, the DAB+ system will accommodate 36 channels at 48 or 64 kbps each.

DAB+, the new generation of Eureka-147 technology, allows broadcasters to use the MPEG-4 HE-AAC v2 audio coding instead of the original less-efficient MPEG Layer II codec. Observers say the new codec will enable two to three times as many audio channels to be multiplexed within an "ensemble," with comparable audio quality as current services.

In the first stage, the DAB+ system will accommodate 36 channels at 48 or 64 kilobits per second each, and then 54 kbps channels in the second stage.

The Communications Ministry prefers a single-frequency network be built, but it would consider a plan based on a combined single/multifrequency network design. The franchise period is 14 years.

Aware of the commercial uncertainty and the complexity in justifying a reasonable return on investment, the government mandates a substantial discount to potential broadcasters on the proposed transfer cost, which will gradually decrease in each of the following four years after the system becomes operational.

To encourage potential bidders to take the risk, the government proposes a grant of up to 23 million new Israeli shekels, roughly $6.4 million U.S. The decision on the winning bidder will also take into account the amount of funding asked from the government as a grant.

For the main technical requirements, the tender specifies an urban indoor reception level of 66 dB (uV/M), with protection level 3 according to the RRC2006 [2006 ITU Regional Radiocommunication Conference] guidelines, 60 dB (uV/M) on the highways and 40dB (uV/M) in rural outdoor areas.

Planning guidelines

The system should be operational 12 months after award, with 80 percent coverage of urban areas with more than 20,000 inhabitants, 80 percent of rural places and 80 percent of highways, with higher penetration levels required subsequently.

The general planning guidelines specify three types of sites: main sites with transmission powers of more than 500 W, 10-dBi antennas and towers higher than 60 meters; medium-sized sites with 100 to 500 W transmitters, 6- to 8-dBi antenna systems and 30-meter towers; smaller, gap-filler sites with sub-100 W transmitters, 3-dBi antenna systems and 10- to 15-meter towers.

All the systems should have redundancy, with 99.9 percent availability. This also applies to the system head-end and to all of the distribution network.

The franchisee selected will be responsible for the monitoring of the entire area covered, ensuring compliance according to ITU recommendations.

Authorities likely will allow additional Digital Multimedia Broadcasting, designed to deliver anything from MPEG-4 full motion video to static images within the bundle of DAB+ service channels.

Gabriel Koerner reports on the industry from Tel Aviv, Israel.

SBE Election Results

The Society of Broadcast Engineers announced results of its board elections.

Barry Thomas was elected to a second term as president. He's vice president of engineering for radio at Lincoln Financial Media.

Also reelected were Vinny Lopez as vice president, Ted Hand as secretary and Ralph Hogan as treasurer.

Elected to two-year terms on the board were Ralph Beaver, president/CEO of Media Alert in Tampa, Fla.; Jim Bernier, director of maintenance, design & engineering for Turner Entertainment Networks, TBS Inc. in Atlanta; Gary Liebisch, regional sales manager of Nautel, based in Milford, Ohio; Scott Mason, regional DOE for CBS Radio, out of Los Angeles; Mark T. Simpson, director of engineering /MIS for Citadel Broadcasting, in Tucson, Ariz.; and Jeff Smith, supervisor of broadcast systems for Clear Channel Radio, New York.

PRODUCT EVALUATION

Analyzer Is a Master of Many Masks

LPT-3000 Is Manufactured by LP Technologies Out of Kansas

by W.C. Alexander

During the NAB Radio Show last year I saw something that caught my eye at the ATI booth, a spectrum analyzer with built-in §73.44 emissions mask.

It's possible to "draw" this mask on the display of pricier analyzers with built-in features, and that's what we had been doing, but this particular analyzer caught my eye because the presence of that mask built in told me that it was made for broadcast work.

ATI's Art Constantine put me in touch with the folks at LP Technologies, and they told me all about the LPT-3000 analyzer. That was enough. Several went into the budget for the following fiscal year.

We received our first LPT-3000 in our Western New York cluster earlier this year, and I heard good things about it from our chief engineer there. But before I purchased additional units, I wanted to see and lay hands on one myself. So LP Technologies sent one my way to play with for awhile.

Hefty

The first thing you will notice about this analyzer is its size — about that of a medium CRT oscilloscope, about 14 inches wide, 8 high and 18 deep. It weighs in at close to 20 pounds, so this is no lightweight instrument. It is substantial.

The unit is shipped with a CD-ROM containing PDF files of the user manual, but who wants to load that up and wade through it? I plugged it in, turned it on and started playing.

I think an indication of the overall quality piece of equipment, whether test equipment or anything else, is how well the user interface is designed. Better equipment has an intuitive user interface, making it easy for the operator to figure things out.

That is certainly the case with the LPT-3000. Controls consist of a number of "hard keys" that bring up specific menus and an array of screen-side "soft keys" that represent menu selections. There is also a 12-key numeric keypad, a set of up/down buttons and a control/selector wheel. The display is a sharp, 4 x 5-1/2 inch color LCD screen.

Within a few minutes after turning the unit on and without consulting the manual, I had it set for a spectrum display of an AM transmitter.

I pressed the Frequency button and keyed in the center frequency, then pressed the Span key and set that. The RBW, sweep time and other parameters were automatically set for the situation, and they were right where I would have set them.

All that remained was setting the amplitude, and that was done by pressing the Amplitude key, then adjusting the reference level to the desired value.

There is a built-in preamplifier and 50 dB attenuator, both of which can be operated manually or automatically in conjunction with the reference level control. With both in automatic, setting the level was an easy, one-control affair.

The rest of the controls were just as intuitive. Markers were self-explanatory and include all the usual options, including peak find, delta, delta pair and span pair. Four markers can be activated at one time. Several measurement modes are also provided, including channel power, occupied bandwidth and adjacent channel power.

Graphics

As I mentioned, the thing about this analyzer that attracted me to it was the built-in masks. LP Technologies has provided several, including DTV (8VSB), AM §73.44, AM iBiquity, FCC §73.317 and FM iBiquity.

Selecting the desired mask was a snap: simply press the Measure hard key, press the AM FM Mask soft key, press the Meas Setup hard key and finally press the soft key next to the desired mask. Again, I didn't need the manual to figure this out.

When the mask is selected, the analyzer is configured to a default setting for the selected mask, including span, RBW, VBW and sweep speed.

The reference level is also set back to 0 dBm, and that was a bit of an irritation. When would the reference level ever be 0 dBm out in the real world unless you had an infinitely-variable external attenuator in the line? So once the desired mask is selected, it is necessary to go back and press the Amplitude hard key and adjust reference level, attenuator and preamp to get the proper reference level.

The Peak Search marker, which is provided on a hard key, is useful in determining the peak level of the unmodulated carrier. Simply set the trace to max hold, let the analyzer go through a number of sweeps and press Peak Search. The level of the peak will be displayed on the screen.

Spitting out a graphic save of the screen display was also a piece of cake. Simply press the File hard key, use the soft keys to navigate to the desired internal or external folder (a USB port is provided for a pen drive or printer), then press the Save Now soft key.

Available file formats are GIF and Reverse GIF. The image shown here was produced using this feature with a pen drive plugged into the front-panel USB port.

You can also save the current "state" of the unit, including all parameters, using the File hard key. This is a useful feature that will make quick work of returning to a previously-determined instrument setup (frequency, span, reference level, etc.).

Yet another save option is "trace," which as its name suggests stores the current trace to a file. You can also combine "state + trace" saves and loads.

Another aggravation with the self-resetting reference level came when coming out of a save operation. Every time I tried this in one of the measurement (mask) modes, the reference level would be reset to 0 dBm. If you're done measuring at that point, no big deal, but if you're saving a trace for comparison during adjustments, you're going to be aggravated.

Options

A number of options are available for this unit, including preamp, FCC mask option, tracking generator, CDMA signal generator, 300 Hz bandwidth filter (you'll need this for AM measurements), GPIB interface and Ethernet interface. The unit sent to me had the 300 Hz filter and Ethernet interface. The unit I bought for New York included the Ethernet interface in the purchase price, but the 300 Hz filter, preamp and FCC mask options were $350 extras.

I tried the Ethernet option and remote control software but could not make it work. The folks at LP Technologies weren't a lot of help, insisting that the IP address must be the same on the analyzer as the computer on which the R/C software is running. I tried this, following their instructions to the letter, but got predictable results with two same-address devices on the network. I was able to "ping" the LPT-3000 at any address I set it to, so I suspect the issue is in the R/C software.

One thing I did not try was connecting the unit directly to the computer (i.e. no hubs, switches, etc.) and setting the same IP address on both. If that did work, you might as well use an RS-232 cable and the provided RS-232 R/C program.

It seems to me that the whole point of having this device Ethernet-capable would be to have it remotely located but on the WAN or LAN, such as at the transmitter site but accessible anytime from the studio.

Cost for the unit is an attractive $4,500. Add the preamp, FCC mask and 300 Hz RBW options and you're looking at a little over $5,500 out the door — a chunk of change, but still attractive. At that price, this analyzer is affordable for many medium- and large-market clusters.

After playing with the unit, I'm still sold on it and plan on proceeding with my budgeted purchases of additional units later this year. Perhaps that sums this product evaluation up better than anything else I might say.

The author is director of engineering for Crawford Broadcasting and the SBE's Broadcast Engineer of the Year.

Product Capsule:
LP Technologies LPT-3000 Spectrum Analyzer

Thumbs Up
- ✓ Price
- ✓ FCC/iBiquity masks
- ✓ Ease of operation

Thumbs Down
- ✓ Reset of reference level during mask measurements
- ✓ Communications issues with Ethernet option
- ✓ Graphical file save format limited to GIF

PRICE: $4,500 base

Information: *www.lptech.com*

A combination of hard keys, soft keys, 12-key numeric keypad, up/down buttons and a control/selector wheel is used to control the LPT-3000.

Screen shot showing an FCC occupied bandwidth measurement of an FM station. This station showed a 'pass.'

What initially attracted me were the built-in masks. LP Technologies has provided several including DTV (8VSB), AM §73.44, AM iBiquity, FCC §73.317 and FM iBiquity.

WHEN EVERY SECOND COUNTS

Z/IP: THE WORLD'S MOST RELIABLE IP CODEC

Just what you'd expect from a Zephyr™.

IP offers clear advantages with regard to cost, ubiquity, and mobility. But also, new challenges. That's why Telos developed ACT™ - Agile Connection Technology. Working in concert with MPEG-ELD, the world's most advanced coding technology, ACT continuously monitors the connection, adjusting the buffer and bitrate to compensate dynamically for network conditions. It does so automatically and without audible artifacts to keep delay as low as possible and quality as high as possible.

Telos

AUDIO | NETWORKS

AES Show Preview: Audio on the Move

by Ken Deutsch

Audio now comes in many flavors, and it is moving in ways that could never be predicted.

That is the message of many of the broadcast-oriented sessions at the 125th Audio Engineering Society Convention.

San Francisco's Moscone Center is the site, and symposia will be held Oct. 2–5.

First-day topics in the Broadcast Session track include "Mobile/Handheld Broadcasting: Developing a New Medium."

"Radio has been wireless from the beginning," said Mark Aitken, director of advanced technology for Sinclair Broadcast Group, who will be on the panel.

"The fact is that 'mobile' is just an extension of the wireless capabilities of traditional television broadcasters. Mobility provides a means to reach audience segments we are locked out of today."

But the new mobile handheld standard is a knife with two edges, according to Aitken, who serves as a member of the Technical Advisory Group with the Open Mobile Video Coalition and chairman of TSG/S4, the specialist group responsible for mobile/handheld standardization.

According to Aitken, the new standard has the potential to move TV operators into the radio business, at a time when radio does not welcome more competition.

"With the bandwidth digital TV operators have, they'll be in a position to carry dozens of music channels if they desire," he said. "The questions they have are, 'What will best drive revenues, and is this a new business opportunity?' The TV industry will gravitate to whatever provides the largest value for shareholders."

New technologies, new studios

"The nature of the audio entertainment workplace has changed fundamentally in the past decade," according to Bice C. Wilson. He is a principal in New York-based Meridian Design and will be a participant in the roundtable "Considerations for Facility Design," to be held Oct. 2 and moderated by Radio World Editor in Chief Paul McLane.

At Howard Stern's studios in New York, 'every space is used in the content including hallways, green rooms, offices and the studio,' said Bice Wilson of Meridian Design. Facility design is among the broadcast topics at AES.

"Where once we designed radio stations, now we design multimedia content creation facilities, visually rich radio environments where the space is also part of the product," Wilson said. "We haven't designed an audio-only project in some years."

Two recent examples of his firm's work are the Clear Channel complex in New York and Howard Stern's studios at what is now called Sirius XM.

"At the latter, every space is used in the content including hallways, green rooms, offices and the studio. And each was design to perform acoustically and visually. In the new content creation workplace, the whole environment is content and all content is repurposed as much as possible."

On Sunday Oct. 5, "The Art of Sound Effects" will feature Sue Zizza, owner of SueMedia Productions, and her partner David Shinn, a sound designer/engineer and Foley artist.

Slam, bam, crunch

The pair has worked on audio drama, audio books and sound effects for theater. For this session they plan to present a demonstration of manual sound effects performance and recording techniques in mono, stereo and surround sound.

"Every sound effect must reflect the character making it," she said. "The subtext of the sound conveys the emotion of that person. You don't just open a door, you perform it."

A sample of the kind of dense sound design Zizza and Shinn produce can be heard at *www.prx.org/pieces/24862*.

If You Go

What: 125 AES Convention

Where: Moscone Center, San Francisco

When: Oct. 2–5; exhibits Oct. 3–5

How: *www.aes.org/events/125/*

How Much: Advance full registration starts at $295 for members and $395 for others. See site for students, special event registration, exhibit floor only and other info

David Shinn at work making sound effects.

According to Zizza, there is a big difference between sound effects work and Foley, which is the art of providing audio to accompany on-screen action.

"When I work on a project like an audio book, the director may tell me the character is angry at her husband," she said. "That means I may pace back and forth on a hard surface in a certain way and I have quite a bit of latitude.

"But in Foley, if Julia Roberts doesn't pick up a pan and throw it on screen, I can't either. If she doesn't walk, I don't walk. I'm locked into the visual in terms of my movement."

Zizza considers herself a performer and a technician and will show why crinkling cellophane to simulate fire no longer cuts it with today's sophisticated equipment.

"We have to listen differently now," she said, "because the mics and recorders hear differently, so the art and skill have to evolve too."

Louder!

Another Friday session is "The History of Audio Processing."

"Digital algorithms have enabled improved quality and loudness with respect to the same type of processing systems a couple of decades ago," said Frank Foti, president of Omnia Audio.

See AES, page 16 ▶

Omnia 6EXi is:

AND EVERYTHING IN BETWEEN

Omnia
A Telos Company

AES

▶ Continued from page 14

"We are now able to generate transmission signals that border on the best theoretical limits. By example, the FM stereo multiplex signal we generate provides protection to the 19 kHz pilot tone that rivals the system noise floor. That was never possible with older, analog systems."

When asked about the changes he sees over the next few years, he was not shy with his opinions.

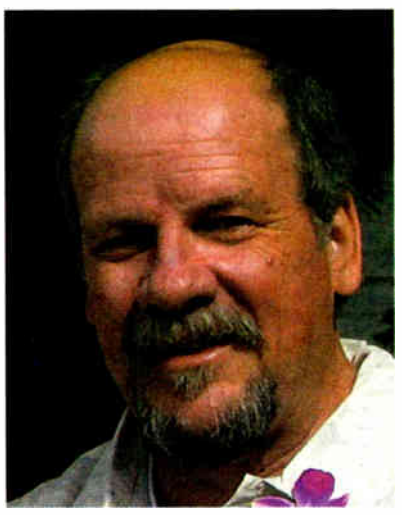
"It is the quality," he said. "Broadcasters and record producers are at odds with content. Producers and mastering engineers are creating hypercompressed music, and then broadcasters throw gas onto the fire with more dynamics processing. Houston, we have a problem!

"I do believe there's a subliminal boost in the listeners' minds when they can feel the punch of the signal. But they don't wish to have audio that's over the top."

Eric Small, chief technical officer and founder of Modulation Sciences, will also participate in this session. He first learned about high-quality audio as chief engineer of a classical music station, then spent two years recording under producer Phil Ramone. He later became a "radio doctor" traveling the world making rock stations louder. Teaming with fellow session participant Bob Orban, he collaborated on the development of the Orban Optimod 8000.

"After studying occupied bandwidth and protection ratios," said Small, "I've concluded that much radio processing is unnecessary."

The panel includes processing innovators Bob Orban, Marvin Caesar, Mike Dorrough, Dick Burden and Glen Clark, and is moderated by Emil Torick.



Mike Uhl

Sue Zizza

From here to there

"Audio Transport" is on Saturday Oct. 4; Mike Uhl, director of western sales for Telos, Omnia and Axia Audio, will be one of the speakers. He will address the topic of Quality of Service and how one's distribution requirements dictate the best way to send audio from point to point.

"The first level of service is moving multiple channels of linear, digital audio through an Ethernet system or network," he said.

"This is a closed system that can handle thousands of inputs and outputs, mix them together, provide level control and digital signal processing. The next level puts multiple channels of compressed digital audio onto a network for distribution. This works best where you have many sites or multiple studios.

"The third level of service is Internet. You can't get EQ'd phone lines anymore, and ISDN is on the wane because the phone companies no longer want to provide that service. One of the problems with the Internet is that bandwidth is not guaranteed; it changes depending on the load placed on the network. You need an adjustable bit rate that takes advantage of all the bandwidth when it is there, but with an adjustable buffer to avoid lapses."

Another panelist in that session is Chris Crump, director of sales and marketing for Comrex.

"Technology is redefining what a 'broadcaster' really is," he said. "I think the industry is faced with a looming paradigm shift that is forcing traditional broadcasters to become content creators. We are all having to adapt to the tastes and habits of the consumer. We're always looking for ways to help create tools that allow for the most creative and unique content imaginable."

The chairman of Broadcast Sessions is David Bialik, who is also an independent systems engineering consultant. He will moderate the Oct. 5 session, "Internet Streaming."

"I think there is a brewing loudness war over the Internet and the newer generation of engineers who are focused on computers does not know what to do when they have to peak at 'zero,'" he said. "I'm seeing a lot of Internet streamers going over 'zero' and not understanding why their audio is falling apart."

And as to the future of the Internet?

"I envision people listening to the Internet in their cars," he said. "They'll be listening to New York's WOR(AM) while driving in California. The manufacturers are dying to put this in. I wish them luck designing the graphic human interface for that!"

Radio World Contributing Editor Skip Pizzi is part of the streaming panel.

For those in a touring mood, there will be a technical tour of Dolby Labs on Tuesday, Oct. 2; and for the very technical-minded, a Sunday tutorial, "FPGA for Broadcast Audio," is planned. Girish Malipeddi of Altera Corp., a designer of floating point programmable array chips, will be hosting.

Some other sessions of interest for radio broadcasters include "Audio & Non-Audio Services and Applications for Digital Radio" on Thursday, and "Listener Fatigue and Longevity" and "Audio Transport," both Saturday. In all there are 11 broadcast-related sessions planned for the AES convention.

The broadcast schedule can be found at *www.aesbroadcast.com/125*.

The convention's technical program includes other sessions and events of interest that are not broadcast-specific. They include tutorials, live sound seminars, tours (including Industrial Light & Magic), master classes and historical and special events.

The AES exhibit floor is open for three days, Oct. 3–5.

General show info can be found at *www.aes.org/events/125/*.

Broadcast Sessions at AES

These are among the broadcast program sessions at the AES convention in San Francisco. Other sessions cover topics including DTV audio myths and lip sync issues. For dates and times, visit www.aesbroadcast.com/125.

"Audio & Non-Audio Services and Applications for Digital Radio" — Moderator David Bialik. A discussion of codecs used throughout the world, USA HD Radio, Eureka, surround sound, Electronic Program Guide, other data services and public adoption. Various implementations of digital radio including terrestrial and satellite services. Participants include Dave Casey, Neural Audio Corp.; Toni Fiedler, Dolby Laboratories; David Layer, NAB; Dave Wilson of CEA; Skip Pizzi, Radio World; Simon Tuff, BBC; and Robert Bleidt, Fraunhofer USA Digital Media Technologies.

View of Moscone Center at night

"Considerations for Facility Design Roundtable" — Moderator Paul McLane, Radio World. A chat with design experts Sam Berkow of SIA Acoustics, John Storyk of Walters-Storyk Design Group and Bice C. Wilson of Meridian Design Associates, Architects. What makes for an exceptional facility? What are the pitfalls of facility design? How are demands of today's multi-platform broadcasters changing design of facilities? What key decisions must you make today to ensure that your fabulous new facility will still be doing the job in 10 or 20 years?

"Mobile/Handheld Broadcasting: Developing a New Medium" — Moderator Jim Kutzner of the Public Broadcasting Service. The broadcasting industry and the Advanced Television Systems Committee have been moving toward development of a standard and practical implementation. Topics: What the emerging system includes, how far the industry has progressed and what's left to be done. Mark Aitken of Sinclair Broadcast Group; Sterling Davis of Cox Broadcasting; Brett Jenkins of Ion Media Networks; Dakx Turcotte of Neural Audio.

"The Art of Sound Effects" — Sound effects and Foley artists Sue Zizza and David Shinn of SueMedia Productions explore the art of sound effects; creating and performing manual effects; recording sound effects with a variety of microphones; and using various primary sound effect elements for audio, video and film projects.

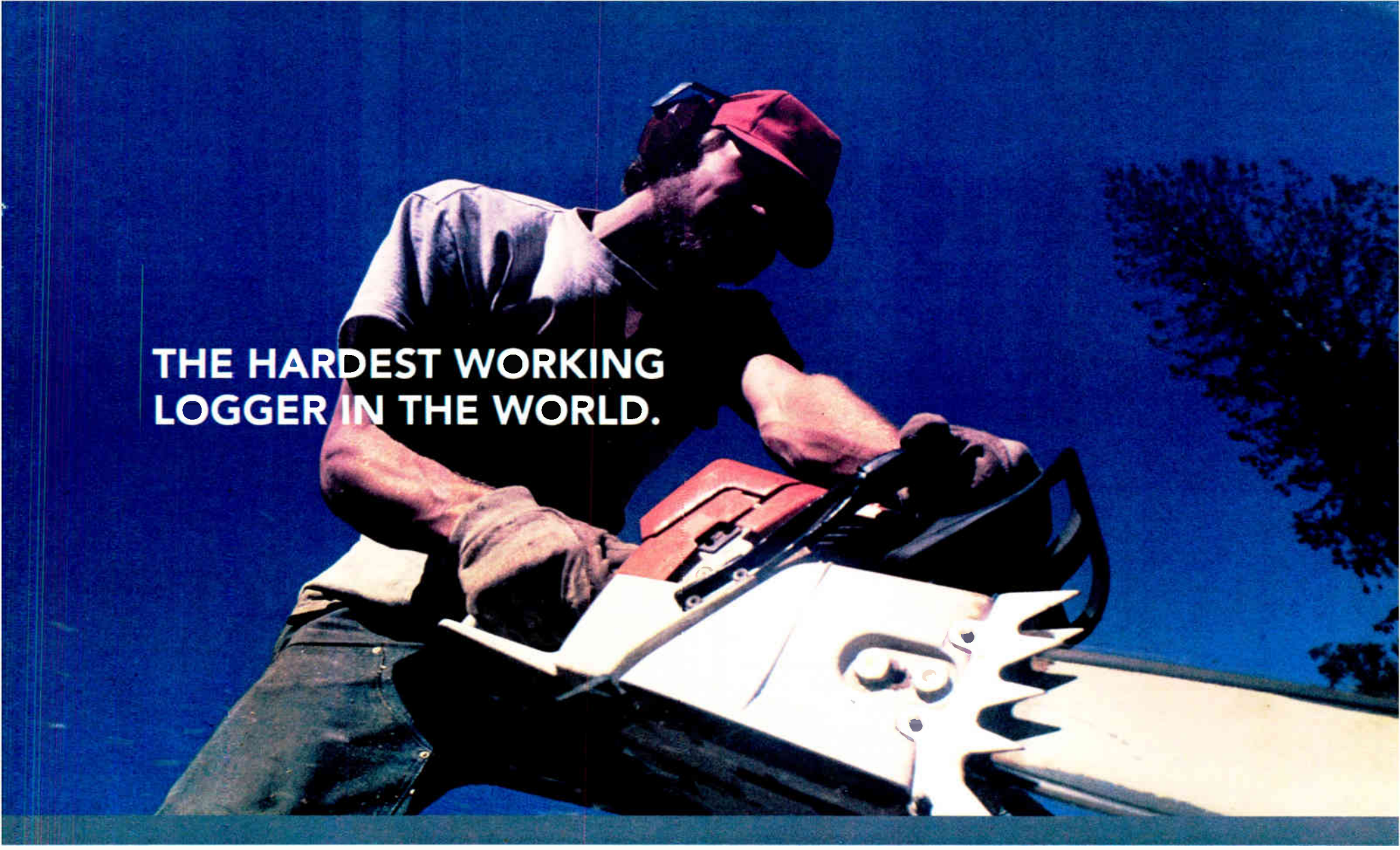
"Loudness Workshop" — Moderator John Chester, consultant. The state of the art in measurement and control of loudness levels and a look ahead to the next generation of techniques that may be available to audio broadcasters. Thomas Lund, TC Electronics; Jeffery Riedmiller, Dolby; Andrew Mason, BBC; Marvin Caesar, Aphex; James D. Johnston, Neural Audio; and Greg J. Ogonowski of Orban/CRL.

"The History of Audio Processing" — Moderator Emil Torick. High-profile panel of notable contributors to today's audio processing landscape. A discussion of the developments, technology and "loudness wars." Marvin Caesar, Aphex; Frank Foti, Omnia; Bob Orban, Orban/CRL; Glen Clark, Glen Clark & Associates; Eric Small, Modulation Sciences; Mike Dorrough, Dorrough Electronics; Dick Burden.

"Listener Fatigue & Longevity" — Moderator David Wilson, CEA. While this is an issue of interest to broadcasters, it is also an issue of interest to telecommunications service providers, consumer electronics manufacturers, music producers and others. Sam Berkow, SIA Acoustics; Marvin Caesar, Aphex; James D. Johnston, Neural Audio; Ted Ruscitti, On-Air Research.

"Audio Transport" — Moderator David Prentice, VCA. A discussion of techniques and technologies used for transporting audio (i.e., STL, RPU, codecs) with Mike Uhl, Telos Systems; Kevin Campbell, APT; Herb Squire, DSI RF; Chris Crump, Comrex; and Angela DePascale, Global Digital Datacom Services Inc.

"Internet Streaming, Audio Quality, Measurement & Monitoring" — Moderator David Bialik. Streaming has become a provider of audio and video content to the public. Now that the public has recognized the medium, the provider needs to deliver the content with a quality comparable to other mediums. With Geir Skaaden, Neural Audio; Skip Pizzi, Radio World; Ray Archie, CBS Radio; Rusty Hodge, SomaFM; and Benjamin Larson, Streambox Inc.



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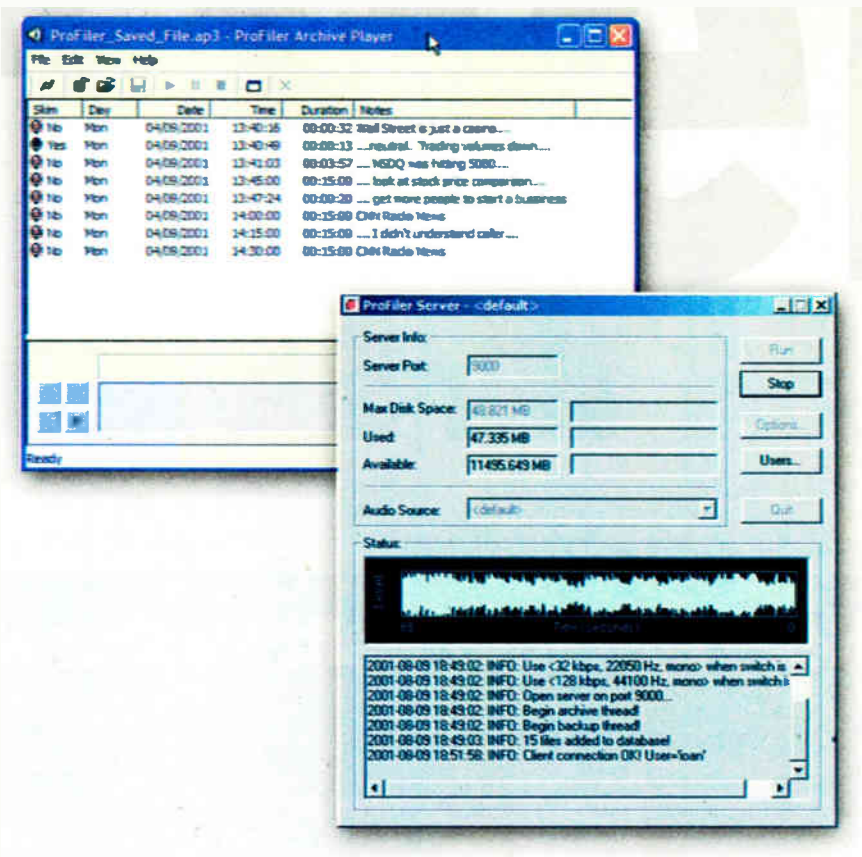

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HD Radio News

ICART Develops Captioned Radio
Page 20

Radio World | Covering Radio's Digital Transition | September 24, 2008

DIGITAL RADIO

DRM Trials Under Way in Italy

They're Part of an Agreement Between Radio Maria and Transmission Company Irte

by Fabio Carera

VATICAN CITY Digital Radio Mondiale trials in Italy are underway.

They're notable because the broadcasts are the first for the digital technology to involve a private broadcaster, Radio Maria, and also one of the few analog-digital simulcast experiments for DRM, a digital technology for frequencies below 30 MHz.

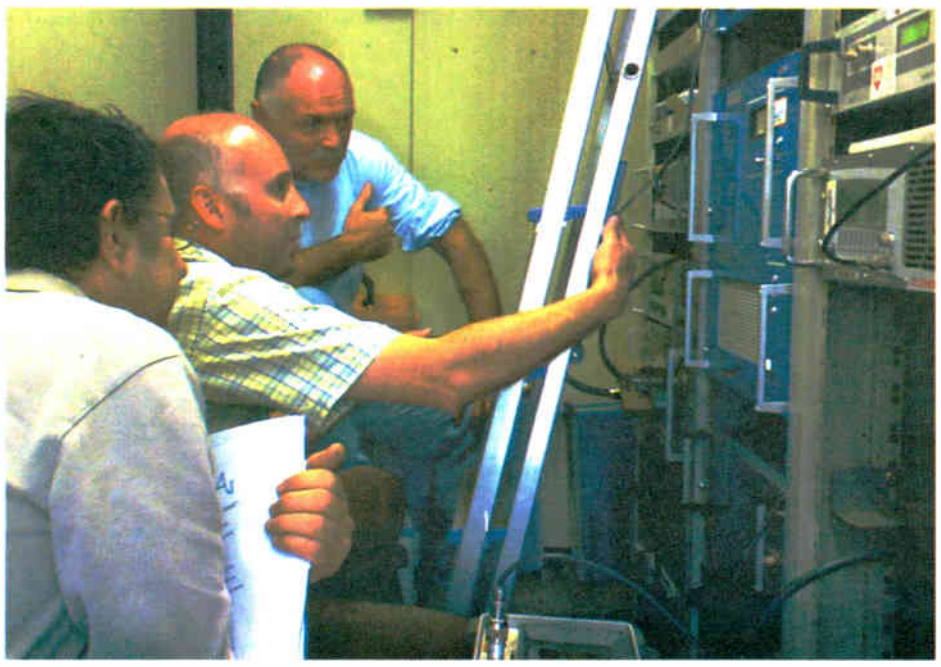
The agreement between World Family of Radio Maria and Italian transmission technology company Irte covers the experimental installations of the Digital Radio Mondiale system in Italy as well as all countries where the Christian broadcasting operation has established Radio Maria stations.

Up until now, DRM testing has been on public-service broadcasters only.

Privately-owned Radio Maria is investing capital and resources in a standard that has yet to really take off.

The three "driving forces" behind the project at Radio Maria are Irte Managing Director Maurizio Martinelli, World Family of Radio Maria President Emanuele Ferrario and Claudio Re, network director at Radio Maria, who oversaw the planning and installation of the DRM system.

A Catholic broadcaster, Radio Maria programs are heard on five continents. Radio Maria is active in more than 40 nations and provides programming in 15 languages; its mission is the preaching of the gospel.



Irte Technician Luciano Candiani, right; Digidia Chief Executive Pascal Olivier, center; and Radio Maria Network Director Claudio Re, front, set up the Radio Maria DRM transmitter.

Funding comes entirely from donations and the broadcaster depends primarily on volunteers for its activities.

Asymmetrically shaped

The DRM transmissions got under way in June from the Andrate site, located at an altitude of 915 meters, about 50 kilometers from Turin, in the Piedmont region of northwestern Italy.

Radio Maria is simulcasting in AM and DRM, with the AM transmissions receivable at 26.000 MHz and the DRM transmissions at 26.010 MHz. The transmissions go out at a power of 250 W from a 5/8 wavelength antenna.

"To get the most out of the DRM, the AM protection ratio not fully safeguarded, so AM listening is better in a lower sideband or with a software defined radio with a deep rolloff — otherwise, when using normal AM receivers, there can be excessive noise from the adjacent DRM signal," said Re.

Re also said that, in order to limit disturbance of the AM by the DRM, the lower portion of the DRM radiation pattern is asymmetrical.

The transmission itself is just the last part of a project that involved two important broadcast industry firms: Irte and the

See MARIA, page 20 ▶

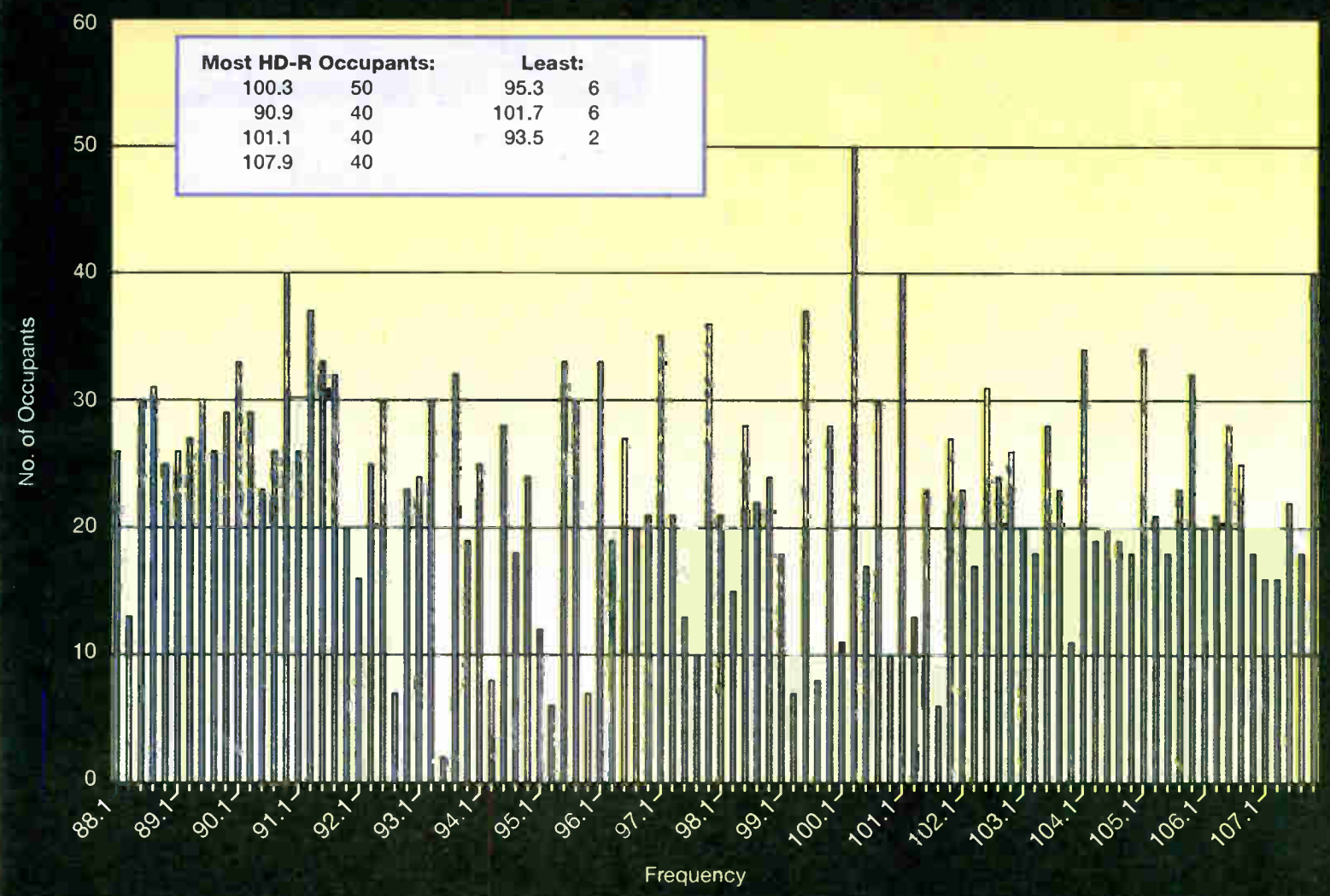
The transmitter mast at Andrate, a site used by various operators that also houses the antenna used by Radio Maria for the DRM trial.

Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp., the HD Digital Radio Alliance BIA Financial Network and other sources. Data reflect best information as of the end of August. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

HD Radio Distribution on the FM Dial

Most HD-R Occupants:		Least:	
100.3	50	95.3	6
90.9	40	101.7	6
101.1	40	93.5	2
107.9	40		



Source: Data is from BIA Financial Network's data service MEDIA Access Pro ™ and also includes iBiquity information. Visit www.bia.com

Multicasts On the Air

HD2	767
HD3	51
HD4	1

The HD Radio Bottom Line

	Total Licensed	On the Air	FMs Multicasting
	2,214	1,763	913
Last Month:	2201	1,740	903
Last Year:	1,933	1,422	688

HD Radio in Latin America

MIAMI John Schneider, iBiquity Digital's manager for Latin America in the Broadcasting Business Development Division, delivered an update on HD Radio in Spanish to attendees of the recent Latin America Broadcast Show in Miami.

In Mexico, he said, several AM and FM stations are transmitting in IBOC. Regulator CoFeTel approved its use on stations located within about 200 miles of the U.S. border in May.

In Brazil, nearly 30 stations, both AM and FM, are on the air with IBOC signals. In April and May, final measurements were taken to open the way to official adoption of IBOC as the Brazilian standard, he said.

In the Caribbean, Puerto Rico claims five IBOC stations. Radio Jamaica AM/FM is on the air with an IBOC signal in Kingston as is Caracol FM in Bogotá, Colombia.

There are now eight authorized transmitter manufacturers worldwide: Harris, RVR, Broadcast Electronics, Nautel, Continental, Elettronica, Continental Lensa and Rhode & Schwarz.

Maria

▶ Continued from page 18

French company Digidia.

Irte supplied the know-how, transmitter and antennas and project coordination; Digidia developed the DRM modulation system as specified by Re.

Accessible costs

The Italian trial is one of the few analog-digital simulcast experiments for DRM.

Another interesting element in the project is the affordability of the solution, officials said, given the accessible costs not only of the Digidia modulator but of the entire transmission chain.

Finally, the trial uses a 26 MHz frequency band that could also constitute an interesting technical solution for local or limited-area transmissions, according to DRM officials.

The transmission chain comprises a Digidia DRM Alto audio content server, a Digidia DRM Soprano exciter and an Irte HF amplifier, which delivers 1 kW in analog and 250 W in DRM.

The initial results have been positive, according to Irte engineers, who say the coverage area is large since there is no excessive interference in the 26 MHz band.

Thanks to the sporadic-E ionospheric propagation, it has been possible to receive and demodulate the Radio Maria DRM signal in Poland, the United Kingdom, Portugal, France and Germany.

Portables pending

The trial is scheduled to last for at least a year. Though Irte has not given any indication of other projects, the Italian company appears to be banking on the growth of the DRM standard and also of the new DRM+ version, with which it is possible to digitize the VHF range currently used for FM transmissions. DRM+ is still in development.

From top: Irte 1-kW analog, 250-W digital DRM amplifier, Digidia Soprano exciter, power supply.

Until now, practically the only way of receiving DRM signals was to connect a professional receiver to a PC and to demodulate the signal with software. However, at the DRM USA meeting held in May, officials announced that lower-priced, Chinese-made DRM portable receivers will probably be available by the end of this year.

Fabio Carera is a freelance journalist specializing in the broadcast sector.

DIGITAL NEWS

Sign Language for Cellphone Use in Development

Could sign language appear on HD Radio displays in cell phones? A group at the University of Washington said they've developed software to enable people who are deaf or hard of hearing to use American Sign Language over a mobile phone.

The university said a team of UW engineers got the phones working together this spring, and recently received a National Science Foundation grant for a field project set to begin next year in Seattle. See the Mobile ASL video at *youtube.com/watch?v=FaE1PvJwI8E*.

Photo by Leslie Stimson

ICART demo of captioned radio

Those who are deaf and hard-of-hearing can communicate by cell now using text messages, but they'd like to see someone signing in a cellphone video. UW engineers say that's possible in Sweden and Japan.

In the United States, low data transmission rates on cellular networks, combined with limited processing power on mobile devices, have prevented real-time video transmission with enough frames per second to be used to transmit ASL.

The UW team tried different ways to get comprehensible signed language on low-resolution video. They discovered that the most important parts of the image to transmit in high resolution is around the face and hands.

They say they've developed a way to encode a high-quality image of those areas, combined with a lower number of bits devoted to encoding the rest of the body. Could this discovery have applications for HD Radio receivers that will eventually be incorporated into cell phones?

RW asked that of Dr. Ellyn Sheffield, co-director of the International Center for Accessible Radio Technology, a collaborative effort among NPR, Harris Corp. and Towson University. She said the group had considered it. "It's cool and it's something we could consider using in future generations" of accessible design features for HD Radio receivers.

However, only about 10 percent of deaf consumers in the United States use American Sign Language to communicate. The rest use a variety of assistive technology, including hearing aids and cochlear implants, for their day-to-day hearing needs, according to Sheffield.

Right now, ICART is focused on a text display to "capture the largest market of deaf and hard-of-hearing," some 30 million consumers — think Baby Boomers "and particularly the elderly who are 'late deafened,' but whose command of reading is pretty good," she says. The culturally deaf community, those deaf from birth communicating almost exclusively with ASL, in general tend to read more slowly than hearing folks, probably a function of missing auditory feedback, but with buffering ICART believes it can help that situation.

ICART had a display in a dashboard with a Delphi receiver at the Harris booth at last spring's NAB Show in Las Vegas.

Mobile video sign language, meanwhile, won't be widely available until a major commercial cell phone manufacturer provides it, the UW said. One provider has expressed interest, according to the UW announcement.

Sat Rad/IBOC Tuner NOI Comments Sought

WASHINGTON The Federal Communications Commission announced a Notice of Inquiry in relation to the satellite radio ruling — about whether HD Radio receive capability should be mandated in such receivers in the future.

Actually, the FCC broadened the topic, calling it "Development of Devices Capable of Supporting Multiple Entertainment Services."

The agency seeks public input on more than 65 questions in its Notice of Inquiry, such as asking for comment on how the open access commitment would affect the development of such radios and how the lack of multi-functional receivers affects competition among S-DARS, HD Radio, iPod/MP3, Internet or any other technologies.

The commission seeks comment on information iBiquity has held close to its vest, like "To what extent is the cost of HD Radio chips and technology attributable to licensing fees for intellectual property?" Questions about how size, weight and battery life affect the cost of including HD-R in a sat tuner — or conversely, if sat rad were mandated in HD Radio tuners — are asked as well.

The agency also asks for comment on whether it has the authority to mandate a certain technology in receivers. Comments on the item to Docket 08-172 were due 60 days after publication in the Federal Register.

— Leslie Stimson

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A Simple Lock Check Pays Dividends

by John Bisset

This is a suitable time to check site security locks before the really bad weather rolls in. Are the hasps bent? Are locks rusted? Do keys work? Better to learn these answers now than find out when you can't get into a site in an emergency.

This is the kind of inspection an intern can make. Have him or her snap pictures of all locked gates and doors. Review the pictures with the intern and develop a plan of corrective action.

If all hasps are secure, squirt some liquid graphite into the lock and work the mechanism with a key, locking and unlocking until the mechanism is thoroughly lubricated. You'll be thankful for this corrective action when you arrive that cold and icy morning.

★ ★ ★

With the football season in full swing, Radio Director Darren Morton of Grove City College in Pennsylvania decided to replace the station headsets and remote mixer.

The station's football remotes are done primarily on POTS lines, with the occasional venture into "hellular reliability" just to make things interesting. Darren liked the features on the new JK Audio Remote Mix4, especially the Bluetooth capability, so he bought one.

In the past, he's used the Sennheiser HMD24 headsets (with dynamic mics) and had great success. With the new RM4 offering phantom power, he opted for the AKG HSC271 headsets (with condenser mics).

When he first plugged this combination together, he could barely raise the input gain before it went into clipping. He expected the condenser mics to be somewhat hotter than the dynamics; but this much gain made it unusable. It's been Darren's experience that getting "talent" to set gains correctly in the field is akin to negotiating a hostage release!

Comparing the AKGs to the old Sennheisers on a different mixer revealed only a slight difference in relative output. So he put a tone generator set at –30 dB into the JK and confirmed that its mic preamps were indeed very hot.

A call to JK got him a set of schematics.

The input preamp on the JK is a great opamp, the

Fig. 1: The Trackstick II provides GPS tracking data and runs for a week on two AAA batteries.

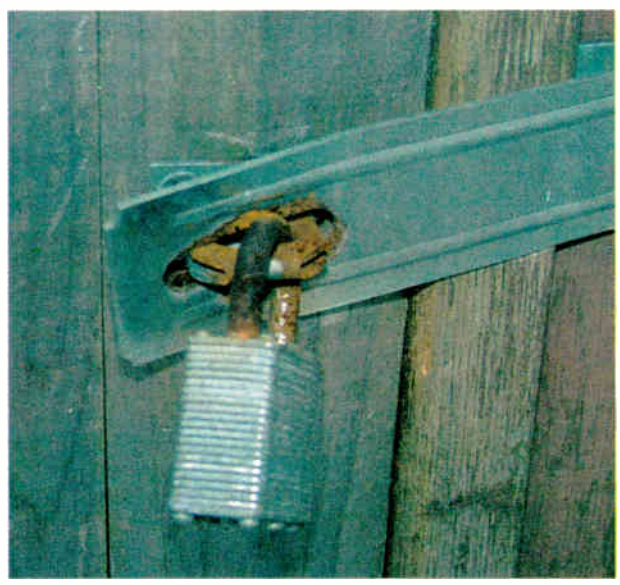

Fig. 2: Make a visual inspection of transmitter site locks and hasps at least once a year.

Analog Devices AD8221. Some research on it revealed that its gain can be set by one resistor connected between pins #2 and #3 (Rg). JK uses a 499-ohm resistor for a gain of 100. Using some simple math and figuring a gain of about 25 gave him a 2k resistor value which would knock 12 dB off the input.

Inside the JK RM4, the gain resistors are marked as follows: ch#1- R4; ch#2-R13; ch#3-R21; and ch#4-R33. They are located in line with their corresponding inputs. The only problem is: those resistors are SMDs, surface mount devices, and darn-near microscopic.

So out came the reading glasses and the forceps for surgery. On the plus side, the printed circuit board is relatively hardy. The result was good, although Darren could have thrown away some more gain and still had plenty to spare. The AKG mic headset worked great.

Of course, his actions here probably invalidated the warranty. But Darren is confident in the surgery and adds that JK equipment has never let him down before. Darren Morton can be reached at *djmorton@gcc.edu*.

The company's Joe Klinger adds: "We also hear from others who would like more gain. It's difficult to design one preamp circuit that will work equally well with all microphones and in all environments. The original design offers a respectable working range for most microphone/environment combinations."

★ ★ ★

Here's something fun, especially if you run AM radial measurements or monitor points.

The Trackstick II is a small GPS device that continuously records its own position for later download through a built-in USB connector. Plug it into your computer to see your exact route on Google Earth, Microsoft Live and many other online mapping programs. Recorded data includes date, time, location, speed, heading, altitude and the exact length and location of any stops.

The Trackstick II is popular among hikers, bikers and boaters but also among engineers who want to record an exact history of their travels for later review on digital maps. Wondering where the intern takes the remote vehicle after the remote? The Trackstick II tells all!

For monitor point location, the included software can embed location data into your photos to show the exact spot that your pictures were taken. Trackstick II is also compatible with Flickr, Myspace and other online communities that accept geotagged images.

See SUPPUES, page 23 ▶

Supplies

▶ Continued from page 22

The Trackstick II runs on two AAA batteries which can power the device for up to a week. Visit *www.trackstick.com* for information.

★ ★ ★

A safety tip is forwarded by Mike Langner of Albuquerque, N.M.; it also was reported by Radio World Newsbytes recently.

The U.S. Consumer Product Safety Commission and RadioShack issued a voluntary recall of two models of the retailer's DC power supplies. Users are warned to stop using the recalled products immediately. RadioShack notes that there are about 160,000 affected units in the recall.

RadioShack's part numbers are 22-507, a 3A supply with an automotive lighter jack and binding posts, and 22-508, a 15A supply with binding posts. Date codes of the affected units are from 08A04 through 01A08. The date code format is MMAYY where MM is the month and YY is the year. The catalog number and date code are on the back of the power supply. The supplies were sold at RadioShack stores from October 2004 through January 2008.

Power supplies with a green dot on the product and the packaging have been repaired and are not included in the RadioShack recall.

Power supplies with a green dot on the product and the product's packaging have been repaired and are not included in the recall. The recalled power supplies are wired incorrectly, posing electrocution and fire hazards, though no injuries had been reported.

Owners of recalled supplies can return them to any RadioShack store for a free repair. Registered owners of the recalled power supplies were to be mailed a notice. Additional information is available through RadioShack at (800) 843-7422 or *www.radioshack.com/recall*.

Mike Langner is a former station owner, PD, GM, DOE and chief engineer. For the last four years, Mike has provided broadcast consulting services to a variety of clients, including the New Mexico Association of Broadcasters. He can be reached at *mlangner@swcp.com*.

John Bisset has worked as a chief engineer and contract engineer for 39 years. He is the northeast regional sales manager for Broadcast Electronics and in 2007 received the SBE's Educator of the Year Award. Reach him at (571) 217-9386 or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944.*

Submissions for this column are encouraged and qualify for SBE recertification credit.

MARKET PLACE

Radiolicious: MySimBook Launches Streaming iPhone App

MySimBook.com, a sister company of Alert FM, has launched an iPhone application that allows broadcasters to stream stations' live content via the EDGE or 3G network to iPhone users in the United States.

Radiolicious will be available for broadcasters to stream their stations' content to the iPhone. The application is also HD Radio-compatible.

Users can search for stations via geo-locations data or a more generic search. They can also place stations in a favorites section for easy access.

The "sim" in the company name stands for "Sending Information Mobile." The company is based in Lafayette, La. Clients include the CW, Regent Broadcasting and Home Depot, according to its Web site.

It says more than 65 percent of the U.S. population own a cell phone and that the number rises to 80 percent of people age 18 to 34.

Radiolicious is one of several content delivery products offered by MySimBook targeting broadcasters that are looking for business models in the new digital media environment. Offerings include text/SMS message marketing and blasts, shortcode/keyword marketing, WAP pages, mobile subscribers, mobile voting and contests, time-delay messaging and shortcode acquisition.

Info: www.mysimbook.com/business

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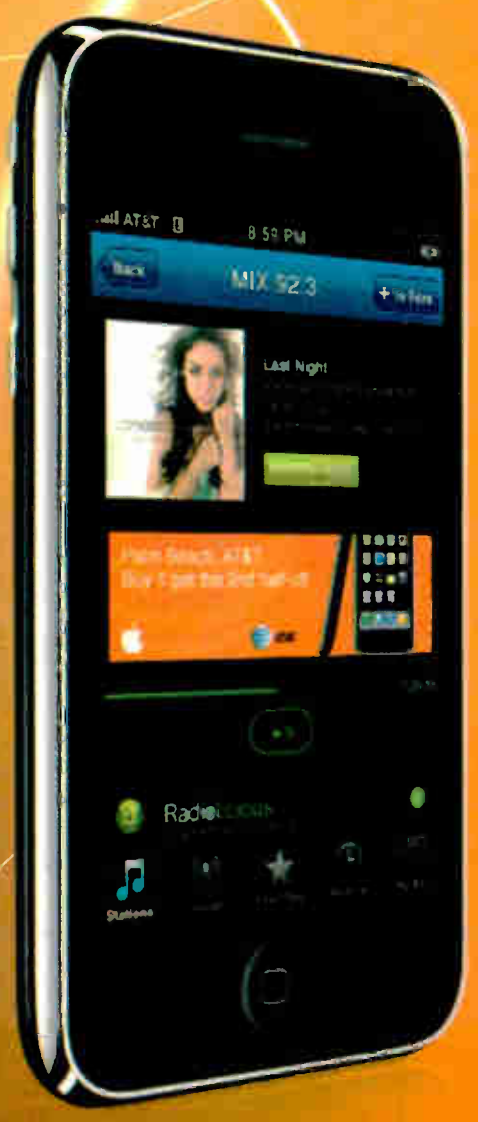
Start Earning More Non-Traditional Revenue.



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SURVIVAL GUIDE 2

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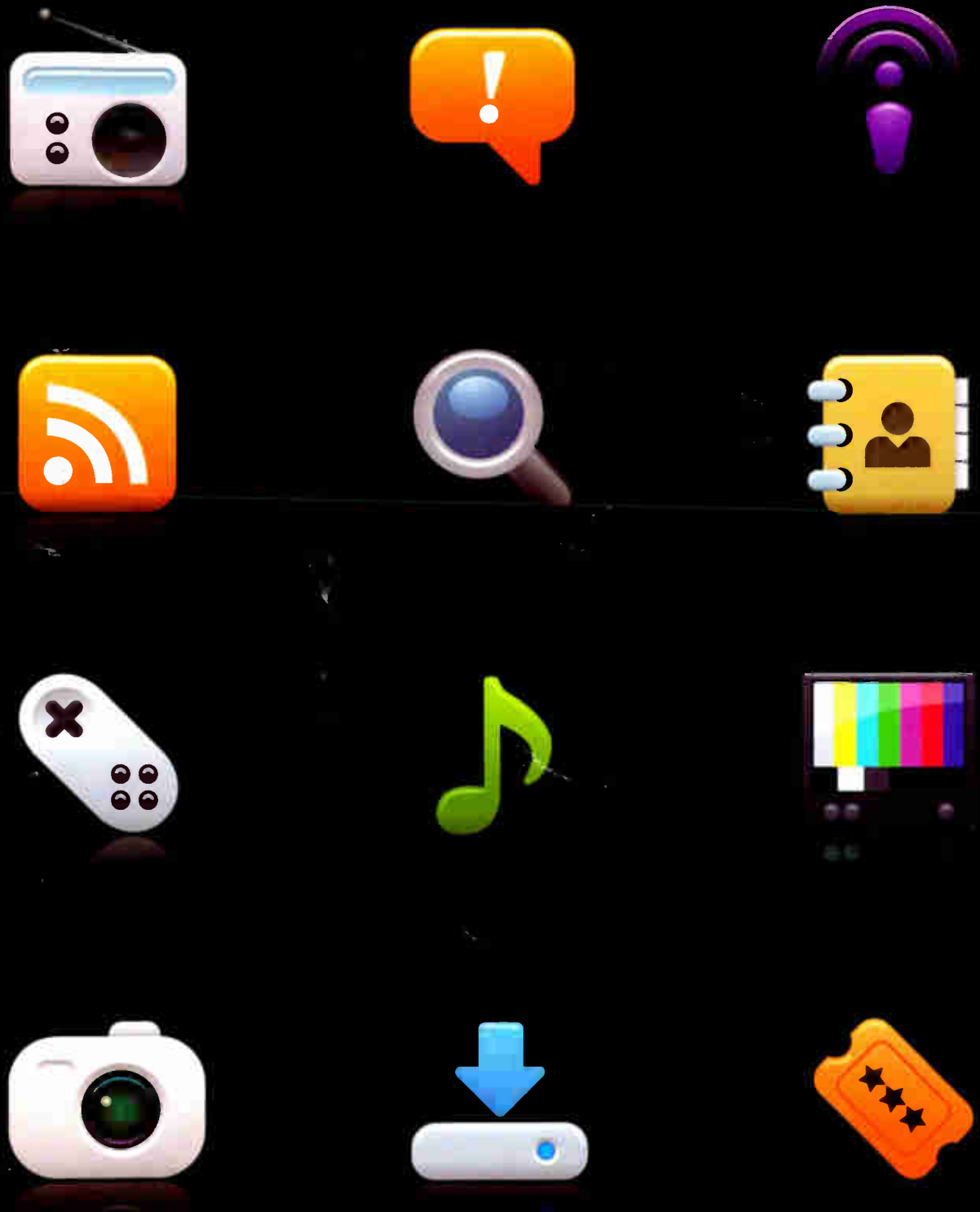

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Google Radio Automation

The next giant step forward in automation.

Not only is Google Radio Automation changing the way you work and drive revenues, it's redefining the space itself.

With time-saving new advances in operating convenience, Google Radio Automation helps make your station more efficient and productive than ever before. Features like a fully customizable, widget-based User Interface and a public protocol for easy integration with other systems mean you can achieve unparalleled flexibility and innovation. Finally, a third-generation technology solution to free you from the restraints imposed by current legacy automation systems.

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Content You Can't Find Elsewhere

Streaming Audio to iPhones Is Part of Entercom's Cross-Media 'Uniqueness Strategy'

iPhone users can tune into Entercom Communications' radio stations on their handsets—for free.

Entercom stations in San Francisco KOIT, KDFC and KBWF, and in Seattle KNDD, KMTT, KISW and KKWF, all FMs, are being offered free of charge to FlyTunes subscribers.

FlyTunes streams radio, video and podcasts to iPhones and other Web-enabled "smart phones." Eventually, all of Entercom's 110 stations will be carried on the service.

Entercom digital exec Sandy Smallens belts out a Sex Pistols song.

"Don't chase every trend; pick and choose which new media options you are going to try, then put serious resources into them."

"iPhone users are heavy consumers of multimedia and Web content," said Sandy Smallens, Entercom's SVP Digital, who is in charge of its new media efforts.

"We want to be where our listeners are; that's why we are now on their iPhones." Cost-wise, supporting FlyTunes "is analogous to providing audio streams through our own Web sites," he told RW. "It's quite affordable."

"Being where the listeners are" sums up Entercom's approach to new media. But that's just the beginning: To stand out from the thousands of stations on the Web, Entercom is pursuing what could be termed a uniqueness strategy: It is emphasizing the unique personalities and programming that its stations offer, which Web surfers can't find anywhere else.

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"It is this difference that makes our stations attractive to our new media listeners, especially because our talent is constantly reaching out to our listeners through video simulcasts and blogs. This comes naturally to them, because radio has always been an interactive medium. We are merely extending what we do on air onto the Web through what I call 'unduplicatable content'; that's content you just can't find anywhere else."

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"Next, don't chase every trend; pick and choose which new media options you are going to try, then put serious resources into them.

"Finally, be tolerant of the roughness of your staff's initial new media ventures. There's a learning curve attached to this process; you shouldn't kill something just because its first iteration isn't as polished as you want it to be."

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Contact Studer at (818) 920-3282 or visit www.studer.ch.

Product information is provided by suppliers

Q104 Tries to Crack the Code

For JC Douglas, It's All About Driving Listeners to His Site and Broadcasts

A key element of an effective new media strategy is driving listeners to your Web site, and by extension, to your radio station.

Mindful of this, Halifax rocker Q104 FM has twice run Crack the Code, a contest where listeners can improve their chances at winning by practicing on Q104's site, *www.q104.ca*.

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"We were looking for a way to boost listenership during ratings using 'forced tuning,'" said JC Douglas, Q104's program director. "But we also wanted to boost hits on our Web site, to motivate listeners to make it their home page and return to it again and again. That's where Crack the Code fits in."

Created by Rasprodz out of the U.K. and distributed in North America by Momentum Media Marketing, Crack the Code requires listeners to open a virtual "bank vault" on-air by punching in a four-digit code on their touchtone telephone.

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> **"We were looking for a way to boost listenership during ratings using 'forced tuning.' But we also wanted to boost hits on our Web site."**

Meanwhile, a practice version of the Crack the Code game is hosted on the radio station's Web site, giving listeners a chance to test their own hunches about the day's code before calling in.

"After a few practice rounds online, one can get very fast as you pick up the 'strategy' of narrowing down the codes," he said.

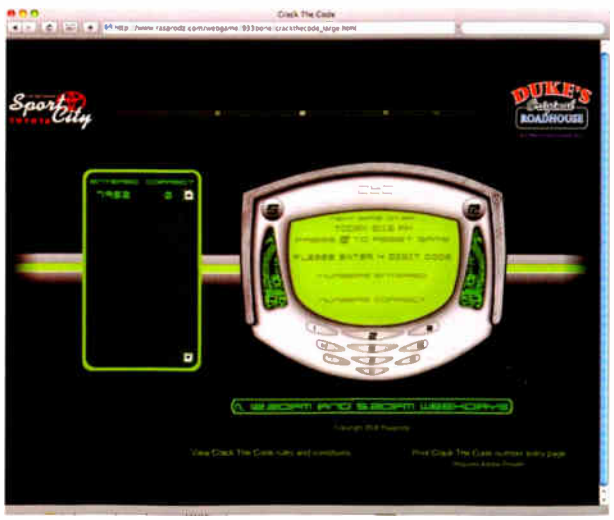
During the two ratings periods in which it ran, Crack the Code helped Q104 boost listenership, said Douglas. "It has also increased our Web site traffic, which we feel has played a big part in moving our audience numbers up. This game really is cutting-edge, and it does get people more involved with that station than other older, more static games do." He said that because its prize levels are adjustable, the game is within the budget of smaller stations.

However, he continued, "We put so much budget into the prize money, that it's hard for us to match what we did in the past" with that contest. As a result, Crack the Code has been retired for the time being. "After having gone 'big' we feel it would be awkward to go 'smaller' now."

At present, Q104 is staying focused on promoting its site on-air through other contests, radio mentions and on-site features such as the "Thong of the Day," a photo feature that definitely has nothing to do with a lisp.

"We are doing some blogging and some podcasting, but just getting people to adopt our Web site as their homepage is at the heart of our strategy," Douglas said.

— James Careless



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The most successful product in Omnia's history and a "Cool Stuff" award winner, the Omnia ONE is not content to rest on its laurels. The original Multicast has been enhanced and two flavors have been added, the rising star Omnia ONE FM and the new Omnia ONE AM, now shipping.

The Omnia ONE Multicast features SENSUS™ technology to optimize audio for HD Radio, ensuring fidelity regardless of bit rate. Add firmware and hardware that can be reconfigured for broadcast or non-broadcast applications and you've got a universal solution for any challenge.

Both models offer wideband AGC for riding gain, four-band AGC to build density and four-band peak limiting for highs and lows that jump out of the box. Both ramp it up with the same distortion-controlled final limiter/clipper found in the top-of-the-line 6EX.

The AM unit includes low-pass filters to accommodate any standard including AM HD. The FM features an integrated digital stereo generator. No wonder everybody wants ONE!

Contact Omnia Audio at (216) 241-7225 or visit www.omniaaudio.com.

Comrex BRIC Traversal Server

Comrex has already changed the way that broadcasters are doing remotes with the ACCESS Stereo BRIC IP codec. But sometimes finding an "open" Internet connection can be a challenge. And non-technical personnel may be intimidated by configuring IP settings in the field.

The BRIC Traversal Server is a server maintained by Comrex at a secure site; use is free. A BRIC-enabled device simply needs to apply the one-time license unlock for each device. Once an account has been created, a group of codecs is defined. Each is identified in the group listing and each enabled codec is configured to "Use Directory Server." When the codec is connected to an Internet connection, it will communicate with the server and sync up. A listing of codecs in that group will be displayed in a list on each of the synced codecs. A user can simply select the device they want to use and hit "Connect."

BRIC TS TRAVERSAL SERVER

Turn on the power, select and connect. Remotes don't get any simpler!

Visit www.comrex.com *or contact your favorite equipment dealer.*

Product information is provided by suppliers

WEUP on Your Desktop

A Download Helps Alabama Station Stay in Front of Its Listeners

Hundley Batts Sr., co-owner and operator of Broadcast One, parent company of WEUP(FM) in Huntsville, Ala., doesn't look at radio as an ordinary business.

"In the radio business you have to be CEO to the 13th power."

But Batts said he has found that good business practices are important no matter what the endeavor. "I try to run a business, not a broadcast business," he said. "We're an urban radio station, but we do things a little differently from what urban stations normally are known to do."

The Web site encourages visitors to use the 'WEUP on Your Desktop' application to stay close to station news and music, win tickets, view weather, listen to streaming and get AMBER alerts.

He said Broadcast One keeps its eyes out for opportunities.

"We describe opportunities as a favorable juncture of circumstance." One such opportunity it spotted was the ActiveAccess desktop application from the BIA Information Network, which he describes as "an opportunity for us to continue our brand on the computer desktop."

> ***"The traditional terrestrial radio model is fine."***

Visitors to the station's Web site are invited to download the ActiveAccess desktop application, which is installed in less than a minute. "We have a weather forecast, we have lottery numbers, we have news as it comes up, breaking news. We try to serve a broader community, and stay community connected."

WEUP Desktop users can opt for HipHop.com Daily News, Huntsville news and Vibe Entertainment News, as well as RSS feeds. And they can stream an audio feed from the station to the PC.

Broadcast One is on the lookout for such new applications to reach out to their listeners and community, and has several they are getting ready to add. But Batts doesn't look at these services as replacing the terrestrial radio portion of his business. His object is to give his customers, the advertisers, a good return on their investment.

"And once they win, we win, and the community wins," he said. "If we keep them in business, we can stay in business.

"So the traditional terrestrial radio model is fine. I think if we do what we're supposed to do for our listener base, our customer base, and listen to our audience, and create more P1 listeners — because P1 listeners have value, and if we know what that value is—we will then try to attract more of those in order for us to be more successful.

"Believe it or not, it's that simple. It's just difficult for us to see the simplicity in it."

— *Craig Johnston*

This graphic appears on the user's desktop.

"The WorldNet Oslo has provided a single, high quality, integrated solution to our STL needs."

Cris Alexander CPBE, AMD, DRB
Director of Engineering,
Crawford Broadcasting

The choice of professional broadcasters throughout the US & Canada, the WorldNet Oslo offers everything you could want from a studio transmitter link including a flexible, upgradeable platform, high quality audio and 24/7/365 reliability.

Designed to transport both compressed and uncompressed linear audio along with voice and data over T1 & IP links, the WorldNet Oslo has the capacity for up to 28 mono channels or 14 stereo pairs.

As well as linear audio and MPEG L2, the WorldNet Oslo also supports 16 or 24-bit Enhanced apt-X® offering cascade-resilient, near-lossless audio quality with under 2ms delay.

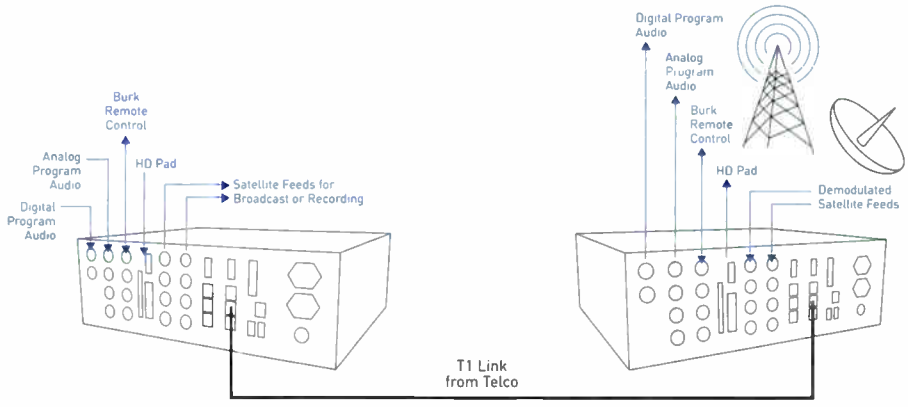
Redundant Power Supplies, "hot-swappable" cards, automatic back-up and a DSP-based architecture ensure unparalleled reliability to keep your station on the air under even the most stressful of circumstances.

All unit settings can be managed remotely using APT's highly acclaimed Codec Management System (CMS); a powerful graphical user interface that provides extensive configuration, control and fault monitoring capability of multiple WorldNet Oslos and other APT IP Audio Codecs.

"At Crawford Broadcasting, we are currently running the WorldNet Oslo in two markets, Portland and Detroit.

In both locations, our network consists of the APT units running over T1 and conveying both analog and digital program audio from the studio to the transmitter site. We also use the WorldNet Oslo to carry data, including serial remote control, HD Radio Program Associated Data or PAD, and to bring other studio LAN functions to the transmitter site.

KKPZ Portland Studio **Transmitter Site**



In Portland, the station's satellite receivers are located at the transmitter site and so, in addition to the STL functionality, the WorldNet Oslos are also serving as multi-channel backhaul, bringing demodulated satellite feeds back to the studio for air and recording for later broadcast.

We're running Enhanced apt-X® coding which ensures our multiple channels of audio and data will fit easily in the T1 link without compromising the quality of our output. Additional card capacity in the units also enables us to run back-up feeds to the transmitter should the primary source fail.

I've been particularly pleased with the performance of the WorldNet Oslo and the flexibility, reliability and quality it offers."

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CCS MUSICAM USA, the global leader in the development of high-fidelity audio codecs, offers a series of high-performance audio codecs for connection over IP, ISDN and digital leased networks.

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Settings can be managed remotely via Web browser.

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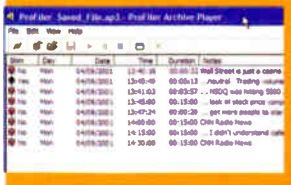
Telos ProFiler Automated Program Archiving

Telos ProFiler is the efficient, set-and-forget way to automatically log your program audio. Forget tape decks and expensive logging hardware — ProFiler runs on a standard Windows 2000 or XP PC to produce time-stamped audio archives that can be played or edited on any standard MP3 player or MP3-compatiable editor.



Each ProFiler package includes a Telos audio card with pro-level balanced audio inputs and buffered parallel closure inputs that you can use either as a start/stop trigger, or to let an active microphone trigger a high-quality capture mode. The starter kit lets you log a single stereo or two mono streams; add more audio cards to capture as many as eight mono streams simultaneously.

The included ProFiler Live and Archive players allow listening anywhere program content is needed, via LAN, WAN or the Internet. Perfect for group programming heads and consultants to monitor program content, even from a distant city.

Contact Telos Systems at (216) 241-7225 or visit www.telos-systems.com.

Product information is provided by suppliers

Relationship Marketing

E-Mail Is Anything But Mundane for Columbus Radio Group

Saga Communications' WSNY(FM) in Columbus can use its Loyal Listener Club to make an attractive offer to its clients, said Jim Bezak, director of Internet services for Saga's Columbus Radio Group.

For example, "We can guarantee 50 people will show up at a model home on Tuesday night for two hours. That may be more than they've seen all year."

He said a message to the station's listener club database, or a subset of it, kicks off the promotion.

"We send an e-mail that says 'Hey, thanks for being a member. We would like to invite you to this exclusive VIP party. There will only be 50 people there, we'll have wine and hors d'oeuvres, and someone will win a cruise to the Caribbean.' And it just happens to be at a model home."

Bezak said it's not only a win for the client, but for the listeners.

"They get the instant gratification of seeing someone that wins a trip right there, plus they feel special because they feel like they're really getting involved with the radio station." He said WSNY has done these promotions for dozens of clients. "It's really worked well for us."

> **"We're very particular of what we send out in our e-mails. There always has to be a listener benefit."**

The station began putting together its database nine years ago. And just like a prized rose garden, careful care and feeding is the secret.

"You have to make sure that you're constantly massaging that database," said Bezak. "It's one thing to build the database, but to keep those people in there, to keep them active, is another.

"We're very particular of what we send out in our e-mails. There always has to be a listener benefit. You can't just send an e-mail to send an e-mail." He said it's also important to e-mail to listeners on a regular basis, so they remember they're part of the club.

On the sales side, WSNY VIP parties and other promotions fueled by the database are no longer ad hoc sales. Hard and fast packages have been developed, where clients can opt for e-mailings targeted to specific Zip codes or other slices of the database.

"Depending on what the carrot is, we can get three, four, five hundred responses," said Bezak, "and we can only choose 50 for the event."

He said they have to "walk a fine line" on qualifying listeners for a particular event, but they sometimes require the listeners to click a button to signal their interest in a topic like springtime home improvement before the VIP party offer is made.

Another benefit of the listener club activities is the research it generates. "It's also a great way for us to find out, through a contest: What's a hot button? Do people want groceries and gas for a year? Is it something else?"

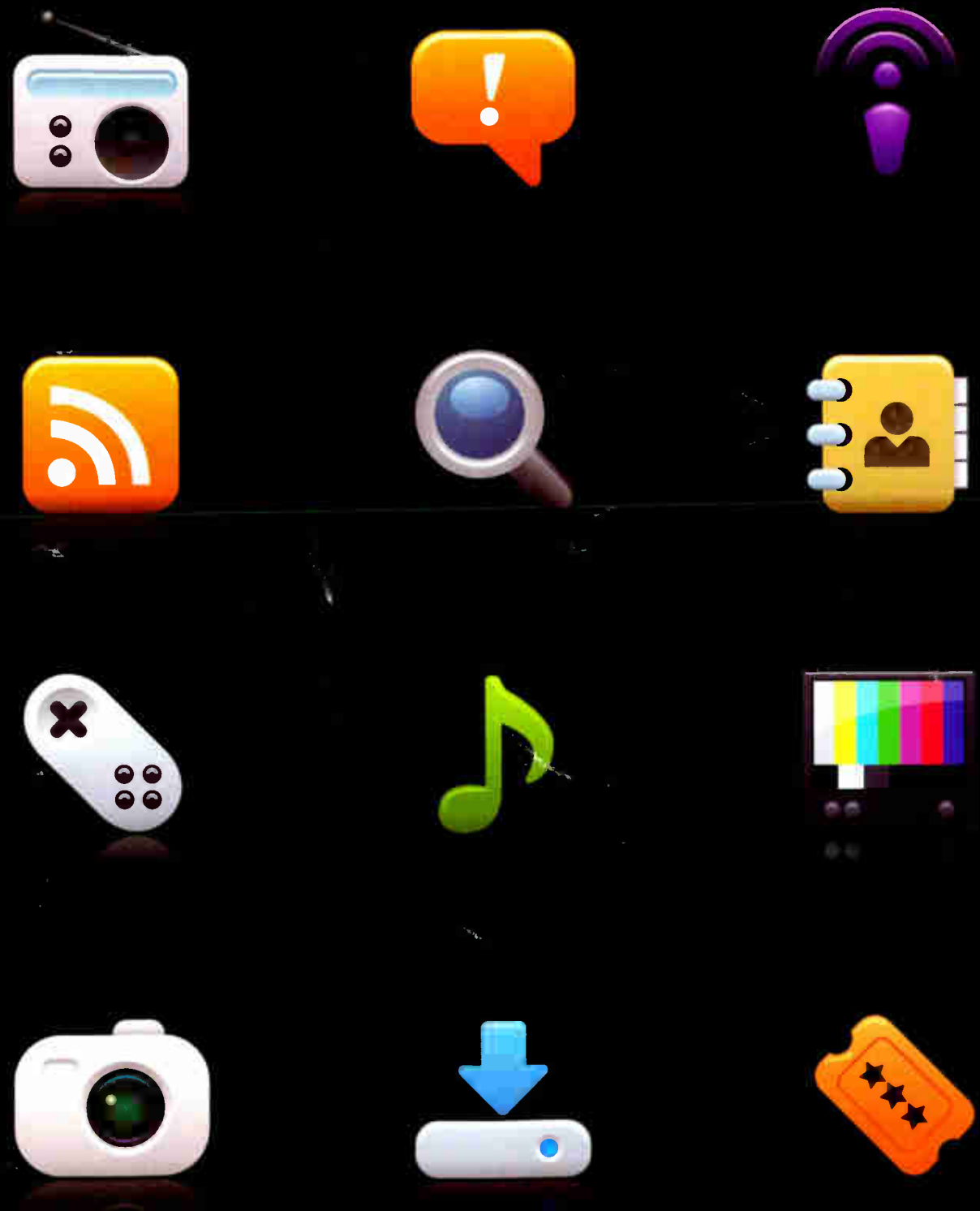
The success of this Web strategy at the Columbus Radio Group has been signaled by a new hat Bezak is now wearing: director of support and training for the Interactive Department at Saga.

— Craig Johnston

Radio World

SURVIVAL GUIDE 2

RADIO'S NEW MEDIA LEADERS



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As on-air contestants try their hunches and make mistakes — at specific times in the day, resulting in forced tuning — "listeners can eliminate digits by deductive reasoning from the incorrect guesses," Douglas told RW.

> **"We were looking for a way to boost listenership during ratings using 'forced tuning.' But we also wanted to boost hits on our Web site."**

Meanwhile, a practice version of the Crack the Code game is hosted on the radio station's Web site, giving listeners a chance to test their own hunches about the day's code before calling in.

"After a few practice rounds online, one can get very fast as you pick up the 'strategy' of narrowing down the codes," he said.

During the two ratings periods in which it ran, Crack the Code helped Q104 boost listenership, said Douglas. "It has also increased our Web site traffic, which we feel has played a big part in moving our audience numbers up. This game really is cutting-edge, and it does get people more involved with that station than other older, more static games do." He said that because its prize levels are adjustable, the game is within the budget of smaller stations.

However, he continued, "We put so much budget into the prize money, that it's hard for us to match what we did in the past" with that contest. As a result, Crack the Code has been retired for the time being. "After having gone 'big' we feel it would be awkward to go 'smaller' now."

At present, Q104 is staying focused on promoting its site on-air through other contests, radio mentions and on-site features such as the "Thong of the Day," a photo feature that definitely has nothing to do with a lisp.

"We are doing some blogging and some podcasting, but just getting people to adopt our Web site as their homepage is at the heart of our strategy," Douglas said.

— James Careless

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The BRIC Traversal Server is a server maintained by Comrex at a secure site; use is free. A BRIC-enabled device simply needs to apply the one-time license unlock for each device. Once an account has been created, a group of codecs is defined. Each is identified in the group listing and each enabled codec is configured to "Use Directory Server." When the codec is connected to an Internet connection, it will communicate with the server and sync up. A listing of codecs in that group will be displayed in a list on each of the synced codecs. A user can simply select the device they want to use and hit "Connect."

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Product information is provided by suppliers

WEUP on Your Desktop

A Download Helps Alabama Station Stay in Front of Its Listeners

Hundley Batts Sr., co-owner and operator of Broadcast One, parent company of WEUP(FM) in Huntsville, Ala., doesn't look at radio as an ordinary business.

"In the radio business you have to be CEO to the 13th power."

But Batts said he has found that good business practices are important no matter what the endeavor. "I try to run a business, not a broadcast business," he said. "We're an urban radio station, but we do things a little differently from what urban stations normally are known to do."

The Web site encourages visitors to use the 'WEUP on Your Desktop' application to stay close to station news and music, win tickets, view weather, listen to streaming and get AMBER alerts.

He said Broadcast One keeps its eyes out for opportunities.

"We describe opportunities as a favorable juncture of circumstance." One such opportunity it spotted was the ActiveAccess desktop application from the BIA Information Network, which he describes as "an opportunity for us to continue our brand on the computer desktop."

> **"The traditional terrestrial radio model is fine."**

Visitors to the station's Web site are invited to download the ActiveAccess desktop application, which is installed in less than a minute. "We have a weather forecast, we have lottery numbers, we have news as it comes up, breaking news. We try to serve a broader community, and stay community connected."

WEUP Desktop users can opt for HipHop.com Daily News, Huntsville news and Vibe Entertainment News, as well as RSS feeds. And they can stream an audio feed from the station to the PC.

Broadcast One is on the lookout for such new applications to reach out to their listeners and community, and has several they are getting ready to add. But Batts doesn't look at these services as replacing the terrestrial radio portion of his business. His object is to give his customers, the advertisers, a good return on their investment.

"And once they win, we win, and the community wins," he said. "If we keep them in business, we can stay in business.

"So the traditional terrestrial radio model is fine. I think if we do what we're supposed to do for our listener base, our customer base, and listen to our audience, and create more PI listeners — because PI listeners have value, and if we know what that value is—we will then try to attract more of those in order for us to be more successful.

"Believe it or not, it's that simple. It's just difficult for us to see the simplicity in it."

This graphic appears on the user's desktop.

— *Craig Johnston*

"The WorldNet Oslo has provided a single, high quality, integrated solution to our STL needs."

Cris Alexander CPBE, AMD, DRB
Director of Engineering,
Crawford Broadcasting

The choice of professional broadcasters throughout the US & Canada, the WorldNet Oslo offers everything you could want from a studio transmitter link including a flexible, upgradeable platform, high quality audio and 24/7/365 reliability.

Designed to transport both compressed and uncompressed linear audio along with voice and data over T1 & IP links, the WorldNet Oslo has the capacity for up to 28 mono channels or 14 stereo pairs.

As well as linear audio and MPEG L2, the WorldNet Oslo also supports 16 or 24-bit Enhanced apt-X® offering cascade-resilient, near-lossless audio quality with under 2ms delay.

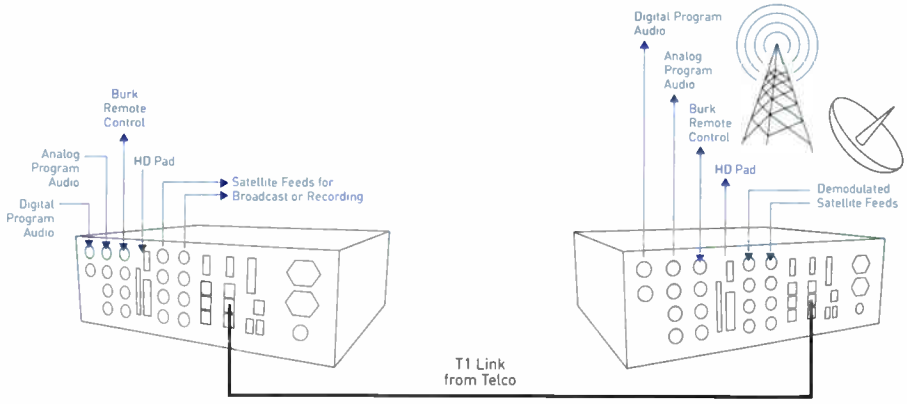
Redundant Power Supplies, "hot-swappable" cards, automatic back-up and a DSP-based architecture ensure unparalleled reliability to keep your station on the air under even the most stressful of circumstances.

All unit settings can be managed remotely using APT's highly acclaimed Codec Management System (CMS); a powerful graphical user interface that provides extensive configuration, control and fault monitoring capability of multiple WorldNet Oslos and other APT IP Audio Codecs.

"At Crawford Broadcasting, we are currently running the WorldNet Oslo in two markets, Portland and Detroit.

In both locations, our network consists of the APT units running over T1 and conveying both analog and digital program audio from the studio to the transmitter site. We also use the WorldNet Oslo to carry data, including serial remote control, HD Radio Program Associated Data or PAD, and to bring other studio LAN functions to the transmitter site.

KKPZ Portland Studio **Transmitter Site**



In Portland, the station's satellite receivers are located at the transmitter site and so, in addition to the STL functionality, the WorldNet Oslos are also serving as multi-channel backhaul, bringing demodulated satellite feeds back to the studio for air and recording for later broadcast.

We're running Enhanced apt-X® coding which ensures our multiple channels of audio and data will fit easily in the T1 link without compromising the quality of our output. Additional card capacity in the units also enables us to run back-up feeds to the transmitter should the primary source fail.

I've been particularly pleased with the performance of the WorldNet Oslo and the flexibility, reliability and quality it offers."

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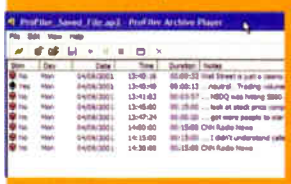


Each ProFiler package includes a Telos audio card with pro-level balanced audio inputs and buffered parallel closure inputs that you can use either as a start/stop trigger, or to let an active microphone trigger a high-quality capture mode. The starter kit lets you log a single stereo or two mono streams; add more audio cards to capture as many as eight mono streams simultaneously.

The included ProFiler Live and Archive players allow listening anywhere program content is needed, via LAN, WAN or the Internet. Perfect for group programming heads and consultants to monitor program content, even from a distant city.

Contact Telos Systems at (216) 241-7225 or visit www.telos-systems.com.

Product information is provided by suppliers

Relationship Marketing

E-Mail Is Anything But Mundane for Columbus Radio Group

Saga Communications' WSNY(FM) in Columbus can use its Loyal Listener Club to make an attractive offer to its clients, said Jim Bezak, director of Internet services for Saga's Columbus Radio Group.

For example, "We can guarantee 50 people will show up at a model home on Tuesday night for two hours. That may be more than they've seen all year."

He said a message to the station's listener club database, or a subset of it, kicks off the promotion.

"We send an e-mail that says 'Hey, thanks for being a member. We would like to invite you to this exclusive VIP party. There will only be 50 people there, we'll have wine and hors d'oeuvres, and someone will win a cruise to the Caribbean.' And it just happens to be at a model home."

Bezak said it's not only a win for the client, but for the listeners.

"They get the instant gratification of seeing someone that wins a trip right there, plus they feel special because they feel like they're really getting involved with the radio station." He said WSNY has done these promotions for dozens of clients. "It's really worked well for us."

> *"We're very particular of what we send out in our e-mails. There always has to be a listener benefit."*

The station began putting together its database nine years ago. And just like a prized rose garden, careful care and feeding is the secret.

"You have to make sure that you're constantly massaging that database," said Bezak. "It's one thing to build the database, but to keep those people in there, to keep them active, is another.

"We're very particular of what we send out in our e-mails. There always has to be a listener benefit. You can't just send an e-mail to send an e-mail." He said it's also important to e-mail to listeners on a regular basis, so they remember they're part of the club.

On the sales side, WSNY VIP parties and other promotions fueled by the database are no longer ad hoc sales. Hard and fast packages have been developed, where clients can opt for e-mailings targeted to specific Zip codes or other slices of the database.

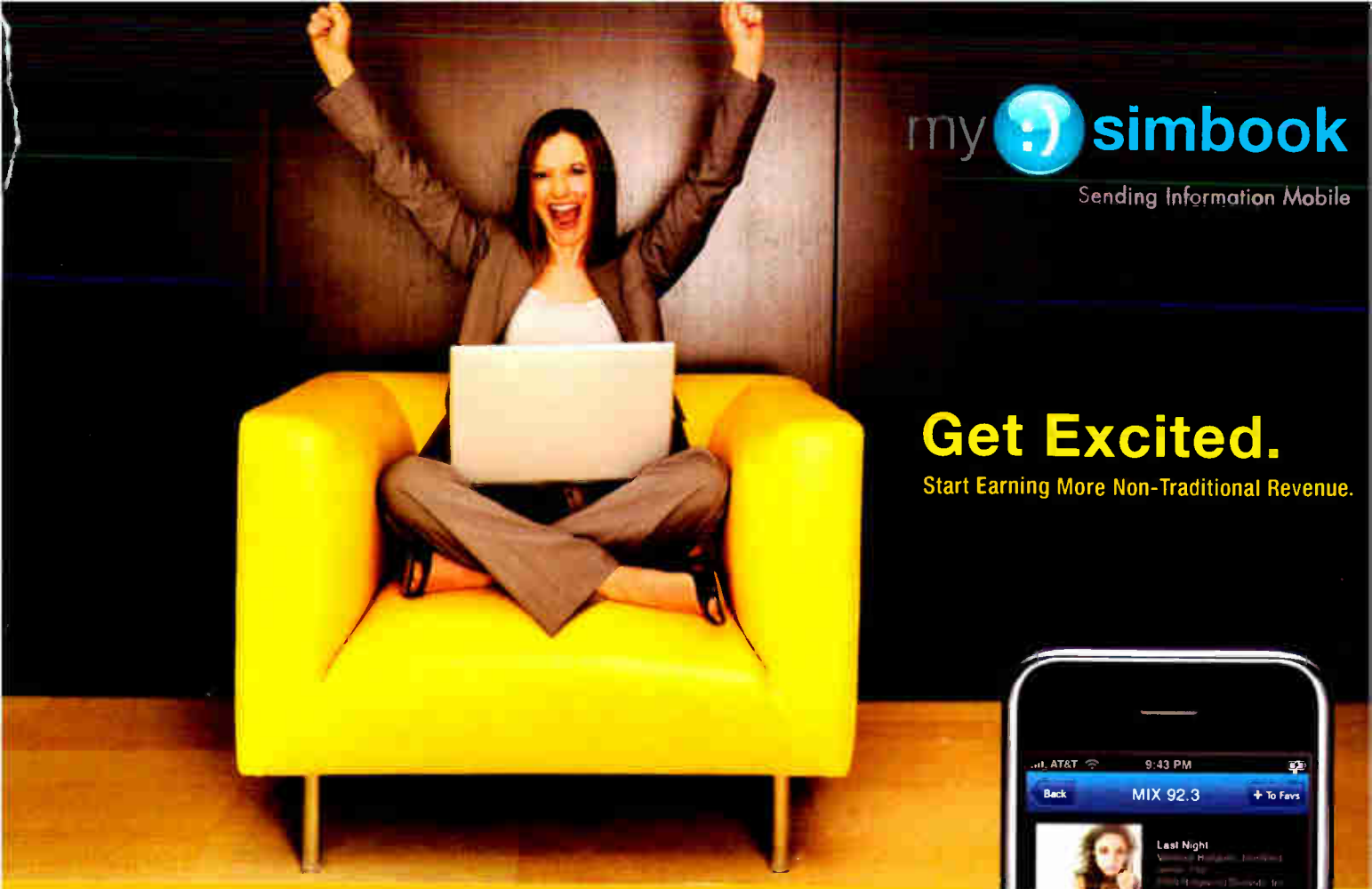
"Depending on what the carrot is, we can get three, four, five hundred responses," said Bezak, "and we can only choose 50 for the event."

He said they have to "walk a fine line" on qualifying listeners for a particular event, but they sometimes require the listeners to click a button to signal their interest in a topic like springtime home improvement before the VIP party offer is made.

Another benefit of the listener club activities is the research it generates. "It's also a great way for us to find out, through a contest: What's a hot button? Do people want groceries and gas for a year? Is it something else?"

The success of this Web strategy at the Columbus Radio Group has been signaled by a new hat Bezak is now wearing: director of support and training for the Interactive Department at Saga.

— *Craig Johnston*



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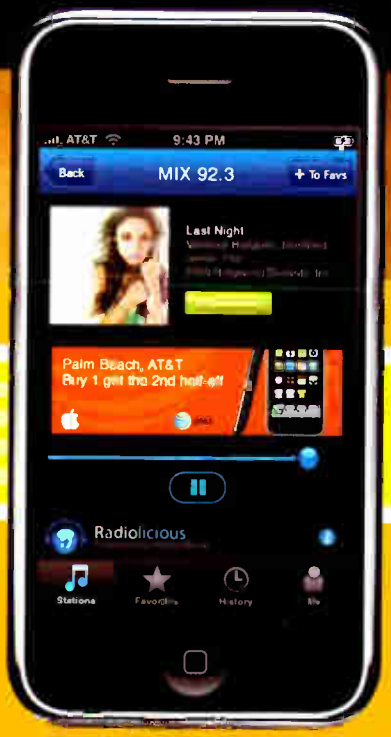

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Music Discovery

For KUT, Helping Launch NPR Music Was Tactically Sound

NPR affiliate KUT(FM) in Austin, Texas, has a simple tactical reason for providing music content to NPR Music, the public radio organization's "multimedia music discovery site" that launched in late 2007.

"We knew that NPR would be using our airwaves, during network programming, to promote NPR Music," said Stewart Vanderwilt, KUT's director and general manager. "Even if only 10 of our listeners tuned out to go there, we would be losing them. So it only made sense to hold onto them, by taking part in NPR Music."

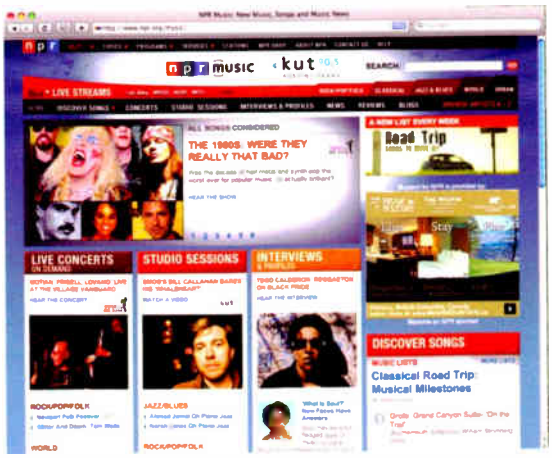
To do so, KUT is providing NPR with live recordings from its own broadcasts plus links to KUT's music blogs including KUT's Song of the Day. Eleven other stations helped launch NPR Music including WGBH(FM) in Boston; WFUV(FM) and WNYC(AM/FM) in New York; and KEXP(FM) and KPLU(FM) in Seattle.

Stewart Vanderwilt

> ***"Our goal is to take our product outside of our listening area, to boost audience and subscriber revenues."***

"For NPR Music, partnering with KUT is a natural because of Austin's music scene," Vanderwilt said.

"More precisely, it made sense for them because we produce about 300 live performances a year. These are programs that would have been aired and then disappeared, as far as listeners are concerned. By putting them on NPR Music, these performances live on, and they help us make ourselves known to out-of-market listeners."



NPR is paying the tab for NPR Music, from content management to publishing and usability. "We had always wanted to have such repurposing tools for our own use," Vanderwilt said. NPR also pays for NPR Music's bandwidth. All told, the cost of serving material to NPR Music is "marginal," he said. It can also be a channel for local musicians to find a broader audience.

As far as KUT is concerned, attracting out-of-market listeners through streaming, podcasts and blogs is well worth the effort.

"Our goal is to take our product outside of our listening area, to boost audience and subscriber revenues," said Vanderwilt. "NPR Music, plus offering our podcasts free of charge on *www.itunes.com*, are two ways to achieve this.

"This said, we probably get more people coming to our four Web sites from MySpace than we do from NPR Music."

To date, out-of-market subscriptions are helping KUT's bottom line, but not in "a hugely significant way."

At present, KUT is still hammering out its overall new media strategy.

Vanderwilt has some words of advice for other radio programmers.

"Don't take your eye off the ball," he said. "You need to know where your audience really is and why they are coming to you on a daily basis, rather than getting caught up in the Next Big Thing. You need to focus on your content and work to join the next wave, rather than lose your focus and spend your time trying to create one."

— *James Careless*

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AUDIO | NETWORKS

Just About EveryZing

Search Tools Help Cox Build a Digital Publishing Platform

Cox Radio's Vice President, Interactive & New Technologies Gregg Lindahl uses very few words as he explains why Cox considers the EveryZing applications important: "It makes the ephemeral perpetual."

Gregg Lindahl

How, exactly, the EveryZing technology does that requires a few more words.

EveryZing for years has been active in the process of creating speech to text transcriptions. Around that expertise, the company has created products to index media content from radio, television, motion pictures and other sources, and to search those indexes.

For Cox and other media companies there have long been ways of putting their content up on the Internet. But just because a media file is up there doesn't help a listener or viewer can find it.

The problem, in a nutshell, is that Internet search capability is text-based, while media files themselves are not.

EveryZing's speech recognition capabilities are allowing Cox to create a word-for-word text transcript, which can be searched, in real time.

> **"We're building a digital publishing platform, so that we can be sure that our brands are able to be consumed by any new device, and any platform, on demand."**

"We get a chance to append all of our unique content, through broadcast and stream, with text, which makes it discoverable and will lead to more consumption of the product," Lindahl said.

Each word in the transcript is time-stamped, so searching for that word not only takes the listener to the media file itself, which can be dozens of minutes long, but to the exact point in the file where the word itself appears.

Applications from EveryZing's RAMP (Reach, Access, Monetization and Protection) suite provide Cox the means to deploy a standard set of tools that allow each station to manage their individual content collections and maintain their own customized Web sites.

The Web pages created with the media files are search engine-friendly, allowing station content to be discovered by outside general search engines as well as the ezSEARCH application EveryZing supplies for the station's own site.

"We are able to leverage the unique content assets from our terrestrial broadcasts on the Web and significantly enhance how that content is discovered, presented and monetized."

He said so-called new media and terrestrial radio are very compatible.

"We're building a digital publishing platform, so that we can be sure that our brands are able to be consumed by any new device, and any platform, on demand and in any way that our users and listeners and viewers want to do that."

For listeners and viewers to do that, they've got to be able to find the content, which is why Cox plans to deploy the

EveryZing technology across its 68 radio station Web sites.

— Craig Johnston

Audio Search

WNYC Lets Listeners Search Its Archives

It began as an effort to give WNYC listeners online searchable access to the speeches of residential candidates Hillary Clinton and Rudolph Giuliani. But today, WNYC's Audio Search engine allows listeners to find specific audio clips from this public radio station's extensive archives.

All they have to do is enter the keywords for the clip they are seeking—such as "McCain" and "Palin," or "Obama" and "Berlin"—and the WNYC Audio Search engine calls up the clips that most closely correspond to their requests. From there, the clips can be played using the WNYC.org's online player.

"What we do is feed our audio using RSS feeds to our service provider, EveryZing," said Jacob Smullyan, WNYC's senior developer.

"They analyze the audio using a speech-to-text engine that creates transcripts of the content, noting at which points in the shows that the words occur.

Listeners can search the WNYC audio archives by keyword.

Although this transcript isn't perfect, it is easily good enough to provide a basis for text searches using keywords."

Jacob Smullyan

Data gathered between Feb. 27 to April 4 indicate that 55,600 page views were generated by surfers using Audio Search, spread over about 18,500 distinct "sessions" or multiple hits by one visitor.

For WNYC journalists and producers, the Audio Search feature provides fast access to archival material. Meanwhile, for listeners, Audio Search provides them with accurate information with respect to audio available online.

"We aren't able to give detailed descriptions of what we are offering online in advance of interviews actually taking place," Smullyan said. "With Audio Search, we can provide such detailed information after the fact. It makes our content much more relevant and accessible."

— James Careless

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'The Sound Wiki'

Bonneville Builds Relationships With Listeners

When Bonneville launched its AAA Los Angeles FM station "The Sound" in April, the company was looking to forge strong relationships with its listeners, interactive relationships that would keep them loyal and coming back for more.

Not surprisingly, much of this effort has been put into *www.TheSoundLA.com*, the station site that features listener forums, live streaming and concert listings.

Of course, these features can be found on many radio Web sites. "The Sound Wiki" cannot. It is a Wikipedia-style encyclopedia of artists such as Dave Matthews, Los Lobos and Steely Dan, one where listeners can add their own stories and comments to the various artist and venue entries.

"In building our Web site, we wanted to come up with ways to continue the dialog with our listeners, who are passionate music fans," said Sammy Simpson, the station's marketing director.

"The Sound Wiki is a big part of that. By giving listeners a place to learn more about their favorite artists, and to add their own stories about them, it fosters the kind of interactivity that The Sound is all about."

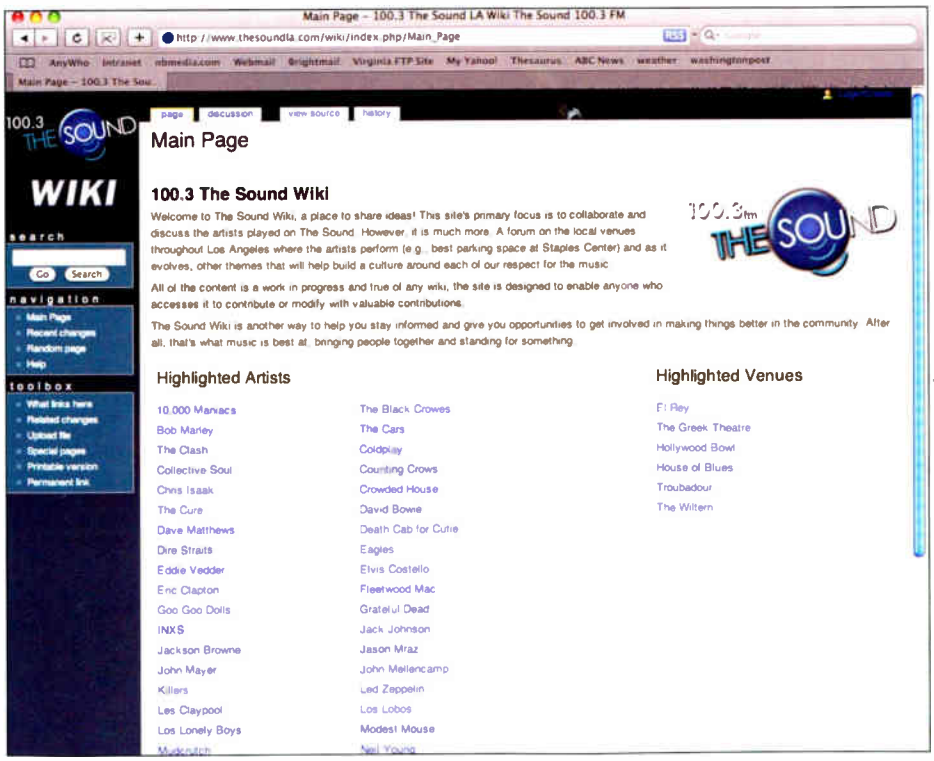
The Sound Wiki was developed by Bonneville's in-house team of Web designers at the company's headquarters in Salt Lake City. Its look, format and functionality are extremely similar to Wikipedia's, making its use easy for Wikipedia fans.

The clean simplicity of the Wiki design carries through to other parts of The Sound's site, which is organized under four tabs: Hear It, See It, Be It and About It.

Hear It takes the listener to a live audio stream, the list of the last 10 songs played, and a search tool that lets them look up what's been aired on The Sound during the past two weeks.

Sammy Simpson

See It features a concert calendar and an station promotional video. Be It includes the Sound Village Discussion Forum, Sound e-mail updates, an online survey, a "Share the Sound" feature for sending station info to listeners' friends, and the Sound Wiki.



> **"You need the entire staff to get involved in producing this content."**

About It details the station's mission, contact information and employment information.

With only a few months under their belt, Simpson said it is too soon to assess how well his station's new media strategy is working.

Still, he advises programmers to put the same emphasis on listener interaction that The Sound does.

"This means that you need the entire staff to get involved in producing this content," he said. "It can't just be two or three people maintaining the whole site."

— James Careless

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*Above: Heart 104.9FM DJ **Koketso Sachane** doing his show from the streets of Cape Town.*

*Top: **Saskia Falken**, Heart 104.9FM Mid Morning Mix host broadcasting from Table Mountain.*

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GLOBAL SECURITY SYSTEMS

Mythology Revised for the Digital Age

This Time, It's Closing Pandora's Box That Could Spell Trouble

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

As I write, the Internet radio firm Pandora stands on the brink of closing its doors, which according to its management is thanks to the high music-performance royalty fees it is required to pay to the collection agency SoundExchange.

Pandora's shutdown would serve as a bellwether for the entire Internet radio industry. If one of the largest and most successful companies in this business cannot stay afloat, how can other, smaller operators hope to survive?

The answer is more complex than you might think, and its impact on over-the-air radio broadcasters is equally nuanced.

First, consider the arguments here: While taking pains to say they support the idea of paying royalties, Pandora blames the current royalty structure for Webcasting, calling it "wrong, unfair and unaffordable." SoundExchange and the RIAA fire back with a claim that Internet radio economics are at fault, and if operators cannot afford statutory royalties set by the U.S. government, then it is unsustainable as a business model.

Both of these arguments have some truth, and they are in fact somewhat circularly linked.

The reason the recording industry has pushed for the complex and relatively expensive "willing buyer/willing seller" basis for Internet radio — while accepting the simpler and more affordable percentage-of-gross-revenues method for satellite radio — likely arises from the fact that Internet radio's current business model isn't very profitable. Therefore the advocates for the music business have tried to use a broader marketplace-based metric by which to set their compensation schedules.

The most charitable interpretation here is that the record industry might hope that this approach would spur the Internet radio industry toward developing a more profitable business model, and thereby produce a win-win.

Alternate explanations include simple greed, or that the major labels really wouldn't mind if Internet radio did fail, since it probably helps mostly less-established (i.e., low-selling) artists and independent labels anyway.

Meanwhile, it could be too early to tell just what the Internet radio business model actually is, or if there could be several very different ones. So it would be sad to see one (or eventually more) of the pioneers in this space collapse due to inappropriate or prematurely set regulation.

Between Scylla and Charybdis

Extending the mythological metaphor, the over-the-air radio broadcast industry has to steer a very careful course here.

Reviewing the history, you may recall that back in 2002, when Internet radio royalties were established under the Copyright Office's CARP process, broadcast radio essentially was silent on the issue. In the more recent royalty rate-resetting process, radio has spoken up a bit on the issue, but still not very loudly.

On the surface, this was initially a fairly simple case of "the enemy of my enemy is my friend," in that music performance royalties were generally seen by broadcasters as burdensome to their Internet and satellite radio competition, so they were a good thing.

Since then, however, broadcasters have turned their *own* interests and future prospects increasingly to the Internet, so they are cut by the same blade.

Further complicating matters of late is the separate discussion over possible future music-performance royalties for over-the-air radio, which the industry has never paid. (The fact that satellite and Internet radio are subject to these fees, but broadcast radio is not, has caused many policymakers to question the inherent fairness of the current regulatory regime.)

This matter now provides important context and influences everything that broadcast radio is likely to do in the Internet radio royalty battle today.

So the radio industry walks a tightrope: On one hand, broadcast radio stations that Webcast their music streams are subject to the current Internet radio royalties just like any other Webcaster, and are already paying them. Meanwhile, the royalties levied on Internet radio are seen by some as a "stepping stone" to possible future over-the-air royalties.

You might think this would spur broadcast radio to argue strongly against such royalties, or at least the current method of Internet radio royalty calculation. Broadcasters have indeed made some lukewarm comments in this direction, but they have largely kept their powder dry there, instead aiming most of their firepower directly at the over-the-air proposals (which they have labeled "the performance tax").

Those over-the-air royalty proposals are not yet very far along, and are necessarily taking place in the legislative (rather than regulatory) venue, where broadcasters still hold strong influence. This is because adding over-the-air radio performance royalties would require amendment of the Digital Millennium Copyright Act — the compendium of current U.S. copyright law — whereas setting of statutory royalty rates and calculation methods for distribution methods already covered by the DMCA is a regulatory process now handled by the Copyright Royalty Board, a three-judge panel that operates under the Library of Congress.

And whereas the Internet radio may have been seen as more competitive than helpful to broadcast radio in the past, recent reports show that online revenue is improving the bottom line of many radio groups. Further, some in the broadcast radio world may feel that if the music industry loses any ground on Internet radio, it might push even harder for over-the-air royalties. Thus broadcast radio has kept a fairly low profile in the Internet radio royalty debate.

Achilles ponders his heel. What are radio's weaknesses as it seeks to build a new mythology for itself?

Achilles Heel

Moving away from politics and back to business, perhaps most vexing for broadcasters today is any attempt to gauge their prospects in the online vs. on-air distribution marketplaces.

The two environments exhibit very different economics, and these extend well beyond the fact that one pays royalties and the other doesn't (for now, at least).

The growing online revenues of radio broadcasters are helping to counter losses in traditional business operations, but they are still relatively small overall. Is this truly the leading edge of a long, slow cross-fade? Could the online side of radio broadcasting ever really achieve parity with (or even overtake) the on-air business?

The stakes are high on the resolution of this uncertainty, and a giant wildcard in the discussion is what will really happen — and when — with wireless broadband.

The other key concern is just how different Internet radio and broadcast radio really are, and what it would take for broadcasters to truly morph their operations into being primarily online service providers. It's one thing to offer Internet radio streams as an adjunct to a primary on-air service, but if the tide turns in the other direction, there could be some fundamental changes required.

For example, consider the profound differences between offering a "push" vs. a "pull" business; between operating in a scarce, licensed and local environment vs. an almost infinite, unlicensed and global one; between a service architecture that's one-way and point-to-multipoint vs. two-way and point-to-point; and so on.

The divergent nature of these service businesses and how they are monetized implies that a company successful in one approach may not necessarily fare as well in the other.

In contrast, it's not so hard for broadcasters to understand how to compete with satellite radio. Although it is a subscription business, and operates nationally rather than locally, satellite radio is still "broadcasting" in the original sense.

Competing with Internet radio is another matter entirely — especially since the best path there could include beating online service providers at their own game by becoming one. A very different game it is to play.

Perhaps one day in the far future, a new set of epic stories will retell the saga of digital transition that unfolds before us with mythic embellishments and Olympian intrigues. Today, however, the struggle is very real indeed, and the outcomes remain unknown.

Skip Pizzi is contributing editor of Radio World.

It would be sad to see the pioneers in this space collapse due to inappropriate or prematurely set regulation.

Perhaps one day, a new set of epic stories will retell the saga of digital transition that unfolds before us with mythic embellishments and Olympian intrigues.

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MAYAH COMMUNICATIONS

Radio '72: The New Collectors

'Vintage' Now Includes Pioneer Receivers, Nakamichi Cassette Decks & Realistic 8-Tracks

by Tom Vernon

Think of antique radio collections and you probably conjure an image of shelves filled with cathedral and tabletop receivers, suitcase portables and large floor-standing consoles.

But to those who came of age in the 1970s, vintage radio collections can also include items like Pioneer receivers, Nakamichi cassette decks, Realistic 8-track players, Teac reel-to-reel recorders and Heathkit shortwave sets. Most of these devices have passed the 30-year mark, and they too can be classified as antiques.

Vintage '70s gear has a devoted group of collectors and small businesses that have grown around this hobby.

Rick Stout, owner of *stereomanuals.com*, started his vintage gear collection in the usual way, buying silver Pioneer gear on eBay.

After eight months of collecting gear and manuals, he began to sell manuals on eBay. Finally, Stout bought 800 Pioneer manuals in a bulk purchase and started his own Web site.

"I was overwhelmed by the response," said Stout, "and couldn't keep up with e-mail requests." He gradually involved his three daughters in the business, then acquired and cataloged an additional 60,000 manuals.

"I'm now able to respond to 90 percent of the requests in less than 24 hours."

As the business developed, Stout became an expert in documentation and manual reproduction.

The irony to all this is that the business keeps me so busy that I don't have time to enjoy the Pioneer gear that got it started in the first place.

— Rick Stout, *stereomanuals.com*

"People usually think that digitally-scanned documents are the best option, but digital scans result in the 'jaggies,' making fine print unreadable." Stout does all reproductions with a commercial-grade Toshiba analog photocopy machine, which has virtually unlimited resolution.

Stereomanuals.com's customer base includes both repair shops and collectors worldwide. Prices range from $3 to over $70.

"The more expensive manuals may be an inch and a half thick with over 300 pages, half of which are folded pull-outs. It can take over three hours just to photocopy.

"The irony to all this," Stout reflects, "is that the business keeps me so busy that I don't have time to enjoy the Pioneer gear that got it started in the first place."

Post-vintage vintage

While modern broadcasters have debated the merits of 5.1, vintage collectors revel in the original surround sound format: quad.

The four-channel enthusiast known as QuadBob explains there are two groups of vintage quad collectors, "those of us who started with quadraphonic in the '70s when it was new, and those who have backed into quad after discovering modern 5.1 multichannel music."

He adds that the "new" quad collectors experience the limited titles available in the modern 5.1 channel formats, Dolby Digital, DTS, DVD-Audio and SCAD, and when they discover that there are literally thousands of quadraphonic music titles produced during the '70s, they begin seeking them out. They then get interested in the equipment to play back quadraphonic media.

QuadBob continues, "The 'original' quad guys are a minority among vintage collectors, but are some of the most dedicated equipment and music collectors in the audio industry."

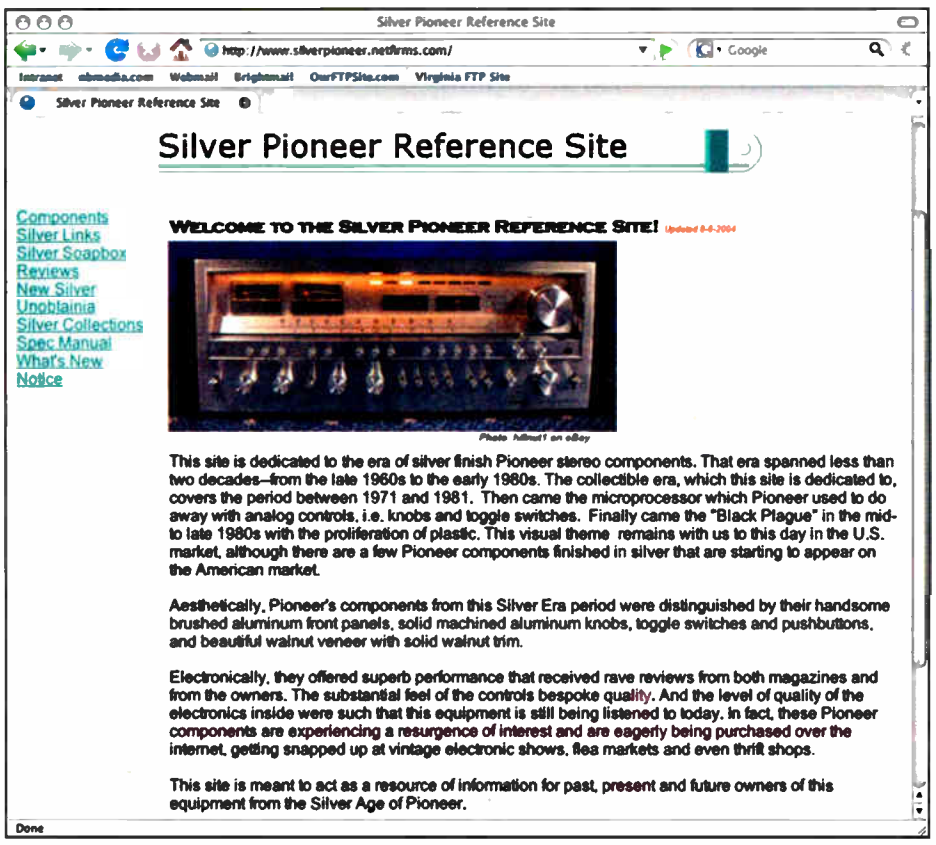
This interest drives prices for quad media on eBay to extraordinary levels. He notes that a quad 8-track of Pink Floyd's "Dark Side of the Moon" went for $676, while a quad LP of the Jackson 5's "Greatest Hits" sold for a record $900.

The interest in quad gear among collectors has been sufficient for QuadBob to develop a small business restoring vintage quad equipment. While he is known for his Sansui QRX-9001 receiver restorations, he also works on other receivers in the QRX series as well as quad decoders, 8-track decks, reel-to-reel recorders and turntables.

TLC

Dave Compton is a collector who not only runs the SansuiLovers Web site, but also has a room in his house set aside for a Sansui museum with more than 50 items.

Included in the collection is a Sansui 6,



aluminum faceplates may be made less noticeable by carefully filing away raised metal with a jeweler's file. He adds that there are others who will refinish badly damaged wood cabinets by replacing the veneer.

Some of the bulbs for tuner dial lights and stereo indicators are simply no longer available. Compton explains this is where some detective work is necessary to find a modern replacement that not only fits, but has the proper current and voltage ratings.

Carelessly substituting bulbs can damage equipment. Bulbs that run hotter than the originals can melt or discolor dial faceplates. A replacement stereo indicator bulb that draws too much current can destroy the FM demodulator ICs, many of which are no longer available.

Many novice collectors create problems by disassembling noisy switches and volume controls, which is not necessary. These are a common issue with older sets, and Compton notes that virtually all can be restored by spraying with Deoxit and exercising.

Many of the original output transistors for '70s power amps are hard to find, and Compton cautions that an additional concern is counterfeit semiconductors, which are virtually indistinguishable from the originals. He adds that the best solution is to buy a comparable unit for parts on eBay.

The only way to verify a power transistor's performance dynamically is with a curve tracer, a piece of test equipment beyond the budget of most restorers.

Compton sometimes substitutes newer output devices in power amps he is repairing. These often have better current capability than the originals, offering an improved safe operating area.

Vintage cassette decks have their own issues, mainly related to the parts in the transport. Compton notes that belts are still easy to obtain, and there are craftsmen who can remanufacture pinch rollers. Although the cassette format is still popular in some parts of Asia, finding replacement heads in this country can be difficult. Alignment cassettes are still available from companies such as TASCAM.

Tom Vernon is a long-time contributor to Radio World. He wrote about Clear Channel's new multi-station facility in New York City in the May 21 issue.

Worth a Look

The Web has a wealth of information on vintage stereo gear. Here are some notable sites for parts, service and collecting of '70s equipment:

www.8trackheaven.com — History of the 8-track medium, info on cartridge repair, 8-track tapes and gear for sale, sources for parts.

www.dual-reference.com — History, troubleshooting, maintenance, parts and service information for the classic German-made Dual turntables.

www.fmtunerinfo.com — Info on parts, repair, alignment, lamps and vintage tuner reviews.

www.stereomanuals.com — Rick Stout's site specializes in '70s audio literature and documentation. Interesting pictures and stories of collections in the 'Your Pages' section.

www.classicaudio.com — Vintage gear for sale, parts, valuation.

www.silverpioneer.netfirms.com — Great pictures of silver Pioneer collections, history of the company, descriptions of virtually all Pioneer audio gear.

www.eserviceinfo.com — Free downloads of many service manuals in PDF format.

www.classicsansui.net — Literature, discussion forum, schematics, pictures and repair info on all types of Sansui gear from the '70s.

ww_heco.home.mindspring.com — Bill Wilkinson's Heath Company page includes a history of the world's largest electronics kit manufacturer, as well as information on products. Note, the *ww_* in the URL is correct.

WIRED FOR SOUND

Caveat Emptor Is Always Good Advice

Maybe Six Weeks of English Lessons Isn't Enough for an Advertising Career

by Steve Lampen

Every January I go to the CES, the Consumer Electronics Show in Las Vegas. Another show is not far off.

I go for a number of reasons but I spend the vast majority of my time just looking at, and talking to people about, wire and cable. And I have lot of people to talk to.

One time I put "wire" and "cable" into their show computer and got 914 hits. Even in four days, I couldn't visit 914 booths.

Putting in "audio-video" with wire and cable got it down to 169, and that's how many I visited.

More than 150,000 people show up, so just talking to the audio and video wire and cable people takes me all four days.

Patrimony?

I'm sure you know that, when discussing wire and cable at any consumer or "home theater" tradeshow, common sense (much less actual scientific knowledge) is in short supply.

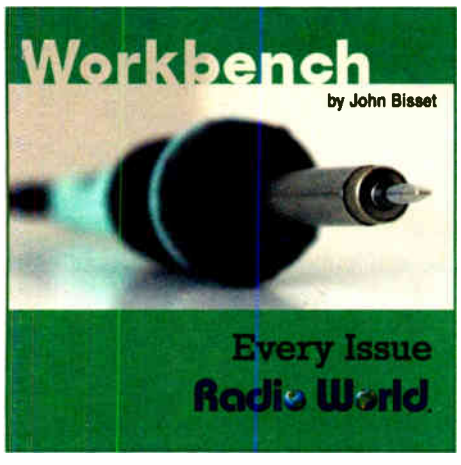
There are really two kinds of audio and video cable at these shows. One is the cable, made usually in Asia, that probably works OK. It passes continuity, and for audio, that's about it. Some of them look nice. And even if we're talking about high frequencies, such as broadband cable or HDMI digital video cable, if they're short they also probably work.

But then we have the second kind of cable. It's often made in the United States

'Neutralities, putting to fire and perfect music are unquestionable dowries of this product.'

or in Europe, using exotic materials (lots of silver wire here) and exotic plastics (Teflon is a favorite). It costs many dollars per foot, and if you must ask the actual price, well, then you probably shouldn't use that cable.

I generally smile and nod when a salesperson starts to talk about skin effect (at audio frequencies), oxygen-free copper, crystal alignment, directionality, soundstage, detail or using twisted pairs to run unbalanced audio signals. Hey, if they want to know my version of the truth, they can get a copy of my book.



Steve Lampen

This is why I so much prefer talking to broadcast engineers, such as you, dear readers, since your knowledge is based on facts, and learning, and what can be shown, tested or demonstrated. I might impart just a bit of knowledge when I talk to you. And, more often than not, I learn something in exchange.

But scientific knowledge, and/or common sense, is not a consumer item.

For instance, I walked into a room demonstrating some super-expensive cable made in Europe. The display card on top of the sample stated, verbatim:

Deriving from the new Top of the linens of (product name), offers the greater ones nuance of the greater brother. Neutralities, putting to fire and perfect music are unquestionable dowries of this product. Dedicated to who it wants to have the best, but without to spend a "patrimony". "INCREDIBLE".

OK, so maybe six weeks of English isn't enough for an advertising career.

And then we had the speaker cable that claimed, finally, to have "eliminated the problem of skin effect." Or the one that, I was told, used "tuned inductance" to dramatically improve performance.

I'm just concerned that, one of these days, they'll discover resistance and the effect it has in a speaker cable, and all hell will break loose.

Send your examples of fractured translations in product literature to radioworld@nbmedia.com.

Steve Lampen is multimedia technology manager for Belden. His latest book "The Audio-Video Cable Installer's Pocket Guide" is published by McGraw-Hill. E-mail him at shlampen@aol.com.

TECH TIPS

Find That Low-Impedance Path to Ground

A Well-Engineered Installation Gives Lightning Somewhere to Go That's Far From Equipment

by W.C. Alexander

This is the second in a three-part series. Part 1 is archived under Tech Tips at radioworld.com.

Eliminating parallel ground paths and providing a single, low-impedance path to ground for lightning energy is the key to mitigating damage from strikes. A key component in this low-Z ground path is the ground electrode or ground rod.

There are a number of ways of creating a low-impedance ground electrode, but this is usually best achieved by using an array of at least four ground rods driven around the tower base pier and tied together with a large copper conductor.

The rods should be separated by at least twice their length, and ideally they should penetrate below the deepest frost level into the water table.

Exothermic (welded, not clamped) 1/0 or larger bare copper wire should be used to tie the rods together, making a ring connecting all the rods. Then a separate wire from each rod is run to the tower base. The tower connection should also be welded. A wire connected to the tower by way of a lug or using a bolt and washer will have a lot higher resistance than a welded joint, and that resistance will increase over time with weathering and corrosion.

In some areas where the soil is particularly dry and non-conductive (such as a mountaintop with no water table and little top soil), there are chemical ground rods available to lower the impedance of the ground connection.

These rods contain a chemical paste that, over the life of the rod, seeps into the soil through weep holes in the rod. Once the chemical paste has been exhausted, the rod must be replaced. The service time of the various chemical rods is listed in their specifications.

The ground rod array and tower connection provides the first line of defense against lightning strike damage. It gives lightning current a place to go that is not through equipment or transmission lines.

Like water, lightning current seeks the path of least resistance. A well-engineered installation gives it a place to go that is far away from equipment.

AM is different

AM towers often are insulated, and this presents a special case.

Insulated AM towers employ a spark gap formed by two steel balls suspended side by side with an air gap between them. When lightning hits the tower, the air between the balls is ionized and current flows through the ionized path from the tower-potential ball to the ground-potential ball. This ionized path has a very low impedance, provided the gap is not too great.

Proper spacing of air gaps makes the difference between a gap providing the proper level of protection and having little effect in terms of lightning protection.

At sea level, the breakdown potential of air is about 5 peak kV per 0.1 inch, or 1 peak kV per 0.02 inches. As altitude increases, the breakdown voltage decreases. A good rule of thumb is to reduce the breakdown voltage by 20 percent for every 5,000 feet AMSL (we pay attention to this in Colorado where I live!).

The peak modulated RF voltage across the base of an AM tower can be calculated by the following formula:

$$V_{PEAK} = 3.182 \times Z_A \times I_A$$

Where:

Z_A = antenna impedance in ohms
I_A = antenna current in RMS amps

The minimum gap spacing can thus be calculated by utilizing the above formula to determine the peak modulated RF voltage across the gap and then multiplying .020 inches per peak kV, adjusted for altitude.

We do not, of course, want the gap set right at the spacing indicated by this exercise because towers themselves exhibit static buildup as the result of wind blowing through their structure or nearby convective activity.

The proper gap spacing is thus determined by starting at the minimum spacing and then adjusting that out to eliminate nuisance arcs in normal conditions (i.e., without thunderstorms in the area).

AM installations employ a buried radial ground system and either interspersed short radials or a ground screen near the tower base. Readers with AM towers should not be fooled into thinking that this ground screen and radial system provides a good lightning ground. In some areas with very conductive soil, this may be true, but in many locations it is not.

A set of rods should be installed at the tower base and connected with 1/0 cable or larger to the ground side of all the arc gaps. More than one broadcast engineer, when investigating altered AM antenna system parameters after an electrical storm, has found his ground radials (typically #12 copper wires) burned off the ground ring at the tower base. This type of conductor, even with many in parallel, is not capable of carrying the kinds of current present in a lightning strike.

AM tower bases should also have their antenna tuning unit chassis connected to the tower base ground rod array. Even with the best ground rod array, some portion of the current is going to flow in the parallel path presented by the tower feed tubing to the ATU. Once it hits the ATU chassis, it needs a low-impedance path to ground to prevent it from flowing through ATU components and into the transmission line.

Most modern ATUs have a horn or ball arc gap right at the point where the tower feed tubing leaves the chassis. The ground side of this gap needs to be tied into the ground rod array.

If your ATU does not have an arc gap at this point, you can purchase one inexpensively from Kintronic Laboratories, Phasetek and other manufacturers.

Another measure that AM engineers can and should take is winding at least one turn in the feed tubing between the tower and the antenna tuning unit.

This will produce a series inductance that presents an elevated impedance to fast rise-time lightning current, (hopefully) making the path across the arc gap to ground through the ground electrode more attractive.

An example of damage from a direct hit to an FM antenna bay.

Don't forget the lines

In most cases, the tower at a broadcast transmitter site is located some distance from the transmitter building. Whether this is 20 feet or several hundred, the transmission line outer conductor needs to be firmly connected to the ground rod array at the point where the line leaves the tower in FM and grounded-base AM towers.

A component of the current from a lightning strike that hits the top of a tower with one or more transmission lines will flow down the tower structure and a portion will flow down the parallel path presented by the transmission line outer conductors.

If the transmission line outer conductors are not bonded properly to the tower structure at the top and bottom (and at the manufacturer's recommended interval along the length of the lines for long runs), large potentials can develop between the lines and the tower structure.

When the potential exceeds the breakdown voltage of the outer jackets, it will arc through. Such an arc can be sufficiently hot to actually create a pinhole in the outer conductors, making a way for pressure to leak out and water to get in.

This parallel lightning discharge current in the transmission line outer conductor needs a place to jump off to ground before it travels into the transmitter building and into your equipment. This is why the outer conductor of every line leaving the tower needs to be bonded to the ground rod array in addition to being bonded to the tower structure.

Transmission line manufacturers offer grounding kits for their various lines that provide a secure, weatherproof ground connection to the outer conductor.

For long horizontal transmission line runs, it is a good idea to provide one additional grounding point for the outer conductor just outside the transmitter building. This ground should be the central point of the ground array for the transmitter building (more on that later). Shorter lines, where the tower is within 10 or 15 feet of the transmitter building, do not need the additional ground.

Some engineers advocate winding one or more turns into smaller transmission lines (7/8 inch or smaller) in the horizontal run between the tower and transmitter building. This produces the same effect as a single turn in the RF feed to AM towers, producing an inductance that is a high impedance to fast rise-time lightning current.

A caveat: this can produce a "transformer effect." The copper in the turn of transmission line will be cut by the lines of magnetic flux from the lightning current flowing in the tower steel and induce a significant voltage.

This is why it's important in such cases to provide another ground connection on the transmitter building side of this turn in the transmission line.

We'll start our discussion next time by looking at a central ground or "star" scheme diagram.

Cris Alexander is director of engineering for Crawford Broadcasting Company. The Society of Broadcast Engineers has named him recipient of its Broadcast Engineer of the Year Award, to be presented this fall at the national meeting.

MARKET PLACE

ENCO Adds LiveList to DAD

ENCO Systems is out with Version 8.1d of DAD.

This version incorporates several new features, such as LiveList, which enables multiple editing and voice-tracking on an individual playlist or log. LiveList also allows monitoring of a number of playback machines from a single studio.

Several enhancements to the DAD command language have been added, as well as support for a number of newer professional sound cards and IP audio devices.

The ability to stream as many as 16 audio outputs at the same time from a single workstation makes DAD an asset for multiple HD Radio program channels and Web radio with ad substitution, the company said.

ENCO also is shipping RAMA, the Remote Administered Metadata Appliance, shown.

It is a turnkey solution to managing and manipulating metadata for multiple destinations like RDS, HD Radio and Web sites.

RAMA supports now-playing data, scheduled messagecasting and iTunes tagging for HD Radio, plus store and forward metadata with selected radio network program feeds.

Info: www.enco.com.

SUPPLY SIDE

BEL Wants Your Old Gear

Supply Side is a series of occasional articles about industry suppliers. Broadcast Equipment Liquidators LLC is a new entity based in Sacramento, Calif.; Paul Anderson is president.

***RW:** Who and where are BEL's target sellers and buyers?*
Anderson: We are targeting radio and TV stations throughout the United States as well as globally to aid them in selling their surplus equipment. We are also working with manufacturers in locating buyers for their surplus new and used equipment.
Target buyers are anywhere on the planet thanks to our Web site's online reach. Regions include the U.S., Latin America, Europe, Asia and Africa.

***RW:** Who owns the company and who are the principal players?*
Anderson: I am president; Dale Tucker is senior vice president. We are both long-time residents of Northern California and sole owners of the company.

I have experience in many areas including sales for Chancellor Broadcasting in Sacramento, which I left to found my own ad agency. Dale Tucker recently exited Radio World following a 17 year career with the company. His background includes virtually all phases of radio including on-air, programming and equipment sales nationally and regionally for many years.

***RW:** Why do you feel the industry needs a company like Broadcast Equipment Liquidators?*
Anderson: First, we believe it's a long-overdue service to broadcasters and is a balanced effort to seller *and* buyer.

If you own or manage a facility and have surplus equipment taking up space you would otherwise be putting to good use, we're here to help clean it out and put cash in your pocket at the same time.

We believe it's a long-overdue service to broadcasters.

— Paul Anderson

We believe our approach is unique in that the *station* retains possession of the gear *until* it's sold. Starting with our Web site listing hundreds of available items and continuing with other outlets, we work diligently to assist with the station in a smooth and hassle-free transaction.

Second, except for an extremely heavy piece of equipment that cannot bring a decent price due to age, etc., we pay shipping within the U.S.

***RW:** Do you compete with established vendors?*
Anderson: The short answer is no. While other liquidation firms do exist, we feel that our methodology is sufficiently different to remove us from the serious competitor category.

***RW:** Let's say I have a stack of old gear out in the shed from my previous facility upgrade. What kind of transaction should I expect with BEL?*
Anderson: We need an inventory list from you for us to research. We find the original selling price and discount that based on age and condition. We use a standard formula for this and the percentage of the selling price which we return to you. The seller is compensated once the buyer's payment is secured by BEL.

***RW:** What kind of gear would we find these days at a typical facility, that's going unused?*
Anderson: The blanket answer is audio and RF. With audio, it's everything from the microphone in the studio to the audio processor in the rack. Same with RF — the STL to transmitter and antenna.

***RW:** What's your own personal favorite classic piece of radio gear?*
Anderson: Frankly, I'm not a fancier of radio equipment but certainly appreciate classic designs; Dale says most anything designed by Henry Dreyfuss for Western Electric or any of Harry Olsen's great products for RCA.

Paul Anderson and Dale Tucker

More Info

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INTERNET RADIO

C. Crane Enters the Net Radio Market

Its New CC WiFi Is Intended to Provide An 'American' Style of Internet Radio

by James Careless

California's C. Crane (*www.ccrane.com*) has built a deserved reputation for its commitment to quality radio receivers both in the brands it offers and, more recently, the custom-designed receivers it develops and sells under its CC Radio nameplate.

The company that developed the AM/FM/TV/Weather CCRadio receiver has a similarly-branded shortwave and pocket SW receiver on the market, and has just broken into the Web reception niche with its diminutive CC WiFi Internet Radio.

The company notes on its site: "Well, we couldn't let the Europeans and Brits have all the glory, so we've built a WiFi radio of our own."

Priced at $214.95, the CC WiFi Internet Radio follows the increasingly popular trend of creating a speaker cabinet enclosure first, then fitting the radio's electronics, LCD display and control surfaces into it.

In this instance, the CC WiFi's black plastic cabinet measures 6.5 inches wide by 3.9 high by 3.9 deep. Inside, there is a 2.5 inch full-range dynamic speaker (8 ohms 5 watts) powered by a 1.5 watts RMS amplifier.

Built upon the Reciva Internet Radio control system — using stations downloaded for free from *www.reciva.com*, then allowing the listener to tune through them based on location, genre and other characteristics — the CC WiFi has a two-line LCD display; a large tuning dial that doubles for volume and acts as a selector when pushed in; and six separate control buttons for Power, "Back" (reversing the last selection made) and other functions.

The chassis has a stereo headset output, a Line Out for feeding external amplified speakers or a home entertainment system and an Ethernet network port for those who prefer to connect their Internet radios by wire rather than via wireless. (This last feature is usually found on more expensive receivers such as the excellent WiFi/FM Tangent Quattro; sold online at C. Crane for $349.95.)

Like other Reciva-based Internet radios, the CC WiFi can also play music files stored on any computer that is connected to the same network. It can be operated by its front surface controls, or an included remote control.

Extra features

Like Japanese carmakers, C. Crane's claim to fame lies in making existing radio architectures function better and do more.

The CCRadio Plus portable radio is an example. Its AM radio reception is far superior to virtually all of its competitors, while the radio's onboard presets make it as convenient to use as a car radio.

The CC WiFi Internet Radio appears to have been built along the same lines. As opposed to the six memory presets offered by the Tangent Quattro, the CC WiFi offers 99. Given the sheer hassle of finding stations using the Reciva system — you have to drill down through various menu levels — being able to store 99 stations is a real boon. With any luck, you will be able to rely on those, rather than having to start afresh after you get beyond the first six.

The CC WiFi's remote control is more functional than controls provided by many of its competitors. It makes tuning the radio as easy as changing channels on a television. Again, given how clunky the Reciva interface can be, this is a welcome feature.

The manual is detailed, even including pictorial guides to explain how to walk through the Reciva tuning system. (Evidently I am not the only one to find it clunky.)

Limits

By itself, the CC WiFi's sound seems quite adequate for music listening. The 2.5 inch speaker does cover a decent range of frequencies as far as my ear can tell. This said, it is lacking in bass resonance and sometimes one feels as if you are listening to a "miniature" orchestra when tuning to a classical station.

Turn on the Tangent Quattro and the CC WiFi's audio limitations become apparent. The Quattro's audio is fuller and deeper, thanks to its larger wooden case, 3 inch top-mounted speaker (the CC WiFi's speaker is in the front) and 5 watts RMS amplifier.

However the CC WiFi's audio does not distort even at full volume, and its lightweight plastic enclosure does not impart any tinniness to the sound. When you use headsets, the CC WiFi delivers stereo audio comparable to the Quattro. In fairness, the CC WiFi costs 39 percent less than the Tangent Quattro.

What does concern me, however, is that the radio occasionally emitted a strangled chirping noise while tuned to CBC Radio 2, at which point the audio dropped noticeably before returning to normal. Listening with a pair of stereo headsets, the chirping did not occur but the audio dropouts did.

I did not notice the same problem on the Catalunya musica channel out of Spain, so the problem may have been caused by interruptions in CBC Radio's streaming audio. This said, the problem did not occur on the Quattro. The difference may be due to how much data each set buffers to offset signal delays over the Web. (During subsequent listening to CBC Radio 2 on the CC WiFi, the dropout problem was gone.)

The problem has not happened with any of my other WiFi radios over the last two years. I have no doubt that it was due to Internet congestion, but apparently the CC WiFi's buffering capabilities were not sufficient to cope with the problem.

As well, I wish this radio had some form of battery power capability, either rechargeable or replaceable. Without battery power, the CC WiFi might as well be hardwired to a network, because you cannot move it around as you can a Revo Pico WiFi radio with its rechargeable battery.

Analysis

Problems aside, the CC WiFi receiver is a capable little receiver; one that provides an enjoyable entree into the world of Internet radio. Now if audio quality is a priority for you and you prefer not to use headsets, the Tangent Quattro is a better buy. But if ease of use, memory capacity and the option of connecting either by wire or wireless matters more, choose the CC WiFi.

Don't forget the price: At $214.95, the CC WiFi Internet Radio is a relative bargain.

Clinic Explores Hot Digital Topics

The 2008 Broadcasters Clinic, presented by the Wisconsin Broadcasters Association and SBE Chapter 24, will take place Oct. 14–16 at the Marriott Madison West. The Society of Broadcast Engineers National Meeting will be held concurrently.

Here are selected clinic sessions of interest to radio. For the full program as well as information about SBE events during the conference, visit *www.wi-broadcasters.org*.

Tuesday Oct. 14

9:15 a.m., "HD and 10 dB Power Increase" — Richard Hinkle of Broadcast Electronics talks about the proposed 10 dB power increase in the HD signal and how it may affect implementation for the broadcaster, with an overview of benefits and issues, and the impact on manufacturers' equipment and product offerings.

10 a.m., "HD on AM and Interference Issues" — Jeff Welton of Nautel says although complaints have not been widespread to date, the issues of antenna bandwidth and monitoring of "spectral regrowth" or digital intermodulation products are becoming more apparent as matters that need to be addressed in an AM facility.

11 a.m., "How to Make HD Radio Easy for Broadcasters" — Dave Hershberger, Continental Electronics Corp., says some of the approaches used in digital television can be adapted for use in digital radio. Technologies used to ease the broadcast engineer's experience include embedded exporter, operating system, GUI and remote access, computer-independent hardware subsystems, adaptive equalization technology and performance monitoring.

1 p.m., "How Much Are We Really Saving? New Radio Station Construction Paradigms Examined" — Jim Armstrong, Axia. "Companies offering new technologies often claim increased efficiencies" through cost savings, installation labor savings and savings on maintenance. "But who has actually measured these claims? What data justifies the ad-pitch and anecdotal stories brought before us? And can we quantify how a new approach may be just 'more fun' than an old approach?"

1:45 p.m., "Nuts and Bolts of WebRadio" — Barry Hill, RCS NexGen, discusses how radio can keep step. "Use today's latest technology to reach more listeners in more ways. Dazzle your audience with animated graphics and information from artist notes to RSS feeds. Add visuals synchronized to your audio stream. From CD covers and artist graphics to station photos and sponsor logos, the branding matches your station look."

2:45 p.m., "Metadata Collection and Distribution for Radio" — Patrick Campion, ENCO Systems, reviews what types of data exist and what delivery methods are available. Includes scenarios of how properly gathered and formatted data can enhance broadcasts and lead to alternate means of revenue generation. Included will be details on locally generated data, rebroadcasted data streams from Internet and satellite sources and other scheduled data.

3:30 p.m., "HD Radio (the Next Generation)" — Bob Surette, Shively Labs. This session covers the effects of combining the digital and analog signals at the proposed higher HD power levels in respect to antenna operation, pattern, mask emissions, interference concerns and combiner designs. Time permitting, Surette will address NPR Labs' interference measurements compared to Ibiquity experiments.

Wednesday Oct. 15

8 a.m., "TSI: Trouble-Shooting Investigation" — Gordon Carter addresses trouble-shooting and how to do it more efficiently, using a structured approach and disciplined techniques. "These techniques are applicable to trouble-shooting hardware, systems, software and even (to a limited extent) personal relationships."

8:45 a.m., "Fundamentals of AM, FM and TV Coverage and Interference Considerations" — Jeremy Ruck, D.L. Markley & Associates. Fundamentals of AM, FM and TV coverage and interference considerations based on FCC rules. Ruck explore the topics of coverage and interference bases on the FCC rules and international agreements.

9:20 a.m., "TV White Space and How Spectrum Changes May Affect Wireless Microphones" — Chris Lyons, Shure. The FCC is reorganizing the UHF TV band, which has long been home to wireless microphones, in-ear monitors, production intercoms and other professional wireless gear. This session will examine the results of the recent spectrum auctions, the potential impact of new consumer devices operating in the "white spaces" and the interference protection approaches being considered.

1:30 p.m., "Bend Radius" — Steve Lampen, Belden. What actually happens when you bend a cable? Lampen, who is also an RW contributor, shows what changes inside a cable and, for specific coaxes and twisted pairs, what the effect is as you bend tighter.

2:15 p.m., "How Tower Design Relates to Antenna's Performance" — David Davies, ERI, on causes of signal strength and antenna gain degradation, case studies and solutions to avoid both horizontal plane distortion and vertical plane attenuation scenarios.

3:15 p.m., "E-Scrap" — Jeff DeGarmo, CRT Processing Corp.; Sarah Murray, DNR; and Toral Jha, Cascade. Learn about the general issues regarding e-scrap, the implications of the 2009 digital switchover for television disposal options as well as how to find a vendor for equipment generated by television and radio stations.

USER REPORT

BSI Op-X Serves Cumulus in Oshkosh

System Allows for Easy Addition of More Stations as Your Company Grows

by Steve Griesbach
Chief Engineer
Cumulus Broadcasting

OSHKOSH, Wis. In my many years in the radio industry, I have worked both the on-air and technical sides of the business.

I began my career in radio in the analog days of records and carts and watched as the technology switched to CDs and digital automation systems. The first automation system I used utilized reel-to-reel tape for music playback. Today, that same system which utilized four full racks of equipment comes housed in a few small powerful computers.

Our new system

In 2007 I learned that we were going to be upgrading our aging computer-based automation system to a new model. The new system was called Op-X, and it came from **Broadcast Software International**.

Before the installation was to occur, I was able to see the system in operation. I was impressed. Every software module was well thought out and intended for ease of use. It was designed and built so the engineer was not the only one who could program it. Program directors will find the graphical user interface and setup screens to be friendly. Satellite show setup, as an example, is easy to program.

Our installation was designed to utilize a dedicated file server computer that would house all of the audio for our five stations. Then each station would use an audio server that pulls the station's audio from the file server and is the play engine for that station. We would also use a studio client computer that acts as the interface between the audio server and the user. The user (on-air talent) controls the audio server through an intuitive GUI interface on the studio client machine.

We opted for AudioScience ASI6244 audio cards using AES digital ins and outs, though Op-X does allow the use of almost any audio card. Op-X also will support audio-over-IP using the Axia system for those who want to plug the audio directly into their audio backbone.

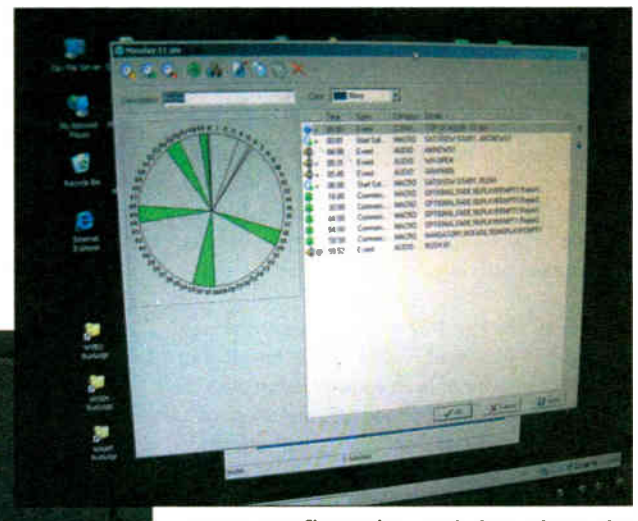
Op-X has several software modules that complete the package. The file server program allows the addition of stations as your company grows, and for adding multiple folders for each station.

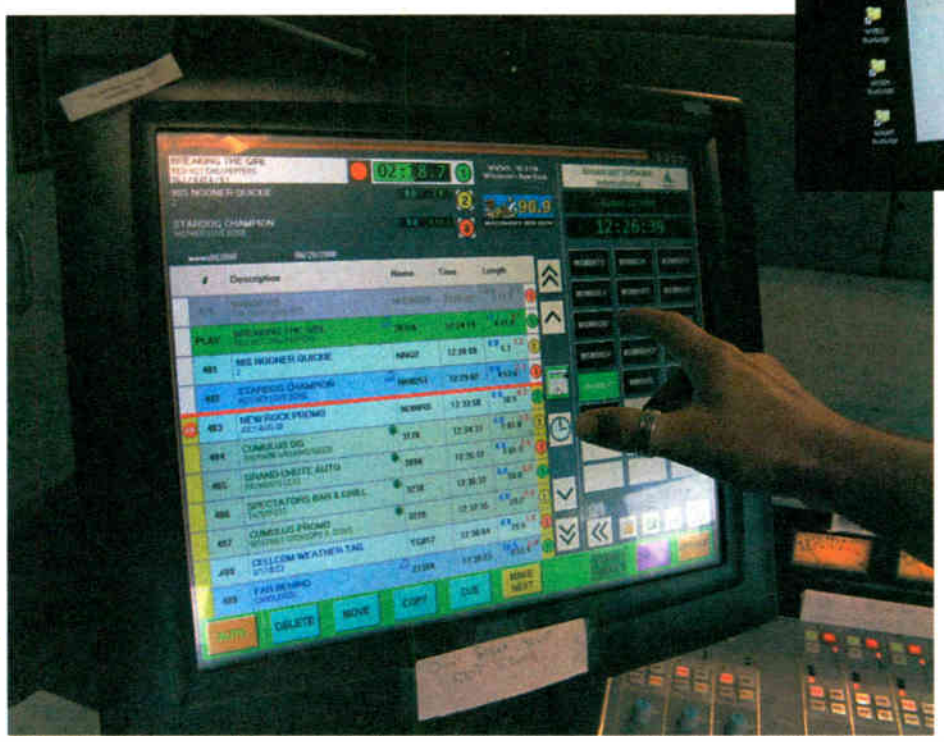
Modular

The audio server program is the nuts and bolts of the station. This little beauty is what plays the audio. It has several settings the user can set to tailor it to the needs of the station. It will also output PAD data.

The audio server also allows for set-up of a serial device. The device is also the input for closures from a satellite service. The user can give each closure real-world names anyone can understand. It will do the same for audio input and output labels.

One of the modules is the "serial server" program, which allows a user to set up our Broadcast Tools serial device in a server configuration and then share the device across several stations. This is a great feature as it allows a group of stations to share hardware resources and cut down on the cost of the system.





(Above) BSI Op-X on a Touchscreen, Complete with Hotkeys; (Upper Right) Op-X Clock Builder Module

The "import-merge" module facilitates merging program logs for the stations and works with virtually any music or traffic scheduling system.

The file manager allows the transfer of audio from a production room machine into the system. File transfers are handled through TCP/IP communication, so there is no need to open folders for file sharing. Files can be transferred to one or more stations at a time and are stored into user-defined folders (e.g., music, spots, liners).

The Clock Builder module is one of the easiest such programs I have used. This gem allows a user to build satellite clocks with the greatest of ease. No more writing macros to get your system to do what you need it to. The satellite show builder walks you through step by step. And by giving your closures, audio inputs and outputs real-world names, it makes building clocks even easier. This

See BSI, page 37 ▶

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BURLI

USER REPORT

AudioVault Aids L.A. Bonneville Station

BE System Smoothes a Big-Market — And Somewhat Clandestine — Format Transition

by Kevin Scott
Chief Engineer
KSWD(FM)

LOS ANGELES In the ever-changing landscape of radio station ownership, Radio One's recent divestiture of KRBV(FM), located in Los Angeles, became Bonneville's most recent acquisition.

With new owners came new call letters, KSWD(FM), a new adult rock format, and some new equipment including a new **Broadcast Electronics** AudioVault station automation system.

A few weeks before the announcement of the transaction, work quietly began in Chicago. The decision had already been made by the Bonneville team, led by VP of Programming Greg Solk, to install an AudioVault system. An AudioVault was operating in Chicago, and in order to provide a quick change in format, the same system would be adopted for Los Angeles. This was great news to me personally, as I prefer AudioVault to the other systems and compared to the one we had in place.

Early experiences

My first experience with AudioVault was around 1995. I have installed several multiserver systems over my career and have always had excellent results. I was looking forward to having another AudioVault.

Kent Lewin, chief engineer for WTMX(FM), WDRV(FM) and WWDV(FM) in Chicago, was tasked with getting things ready there. Existing music inventory that would be applicable to the new Los Angeles format already existed in the Chicago AudioVault and these cuts were selected and prepared for Los Angeles.

However, numerous songs still needed to be secured and recording of this material was accomplished at another facility in order to preserve the secrecy of the new format. Also, as the station launch would not include existing commercial or music inventory, nothing in the current Los Angeles system needed to be kept or transferred to the new AudioVault, simplifying the transition.

New voiceover talent was hired and all imaging was produced by WDRV Creative Director Matt Bisbee. Having all the audio elements preproduced in Chicago permitted auditioning of the new format, just as it would debut.

The format was transferred to a pair of loaner AudioVault computers with all elements ready for air.

Audiovault Screenshot in the Desert Motif

These computers were used initially as the primary and backup for the station's content, while the larger server-based system was being built and subsequently shipped from BE to Los Angeles for installation.

When the loaner equipment arrived, it was largely labeled NEWS 1 and NEWS 2.

All equipment was then secured in a locked room away from prying eyes. This was to perpetuate the circulating rumors that the station would be changing to a news-talk format. The deception was successful.

Following installation, we received a visit from BE field engineer Owen Mekitarian for the final configuration and setup. I have worked with Owen several times and he, like all the BE field engineers, is a pleasure to work with.

With the omnipresent ratings pressure and revenue potential in Los Angeles, redundancy was important and even mandatory to VP and GM Peter Burton and Program Director Dave Beasing. The AudioVault system configuration and interfacing with the digital routing console system had to be worked out and made as resilient as possible. With quality a primary concern as well, we wired everything AES/EBU in and out via the house digital router console system.

Using Digigram VX1222 cards for audio from the AudioVault system, we were able to also wire the analog outputs into the router as a form of redundancy in the event a digital input card should fail.

The VX1222 cards provided by BE deliver both analog and digital, so no additional costs were incurred in providing this redundancy.

Additionally, redundancy was accomplished by spreading out the four channels of audio used for each of the music and commercial workstations over the four audio cards, two in each of the two servers. With this setup if one card should fail, or if one server should fail, we will still be functional.

Redundancy

Having the system split for music and spots provides two workstations in the "on-air" studio giving us the ability to pull up music or spots on both machines, and again, all for redundancy.

With our SAS digital router console system, the interface from AudioVault to the console is accomplished via serial connections. Acquiring custom button panels from the console manufacturer and working with them for some code changes made it easy to provide the operators with most of the features they need directly on the console surface.

Minor changes in the AudioVault INI file facilitated smooth interfacing and communication between the console system and AudioVault. Critical functions such as load, start, stop, cue or preview, and auto-segue-on or -off are readily available on the console surface.

Future plans include additional audio cards and larger drives in the air studio workstations to provide isolation protection in the event of network problems or other problems in the engineering rack room that might take the servers off-line.

We have also installed a redundant system at the transmitter site. This system runs continually and the audio files are updated every night. Programming the update to occur between midnight and 3 a.m. minimizes network traffic on the relatively narrow data path to the transmitter site at Mt. Wilson.

We are in Los Angeles, in earthquake territory, in a 32-story high rise: our transmitter site is on top of a mountain. All of our systems need to be redundant and resilient to the extreme. You never know when you may not even be able to get back into the building, much less access the transmitter, following a natural or man-made disaster.

So far so good, and with the team that helped me put all this together, I would expect nothing less.

For more information, contact Broadcast Electronics at (217) 224-9600 or visit www.bdcast.com.

USER REPORT

WODI Gets Help From Down Under

by Dave Marthouse
Co-owner
WODI(AM)

BROOKNEAL, Va. Being the computer nerd at WODI Brookneal/Lynchburg, Va., back in February of 2007 I was tasked to upgrade our automation system.

After evaluating a few of the systems out there and being stunned by broadcast sticker shock (the better-known systems go for prices beyond the budget of a station in a rural market such as WODI), I selected what may first appear to some as an unlikely candidate.

StationPlaylist (SPL), from a company of the same name, comes from New Zealand. With a price of a bit over $400 rather than the thousands of dollars wanted by the big guys, I was curious.

The program consists of two packages, StationPlaylist Studio and StationPlaylist Creator.

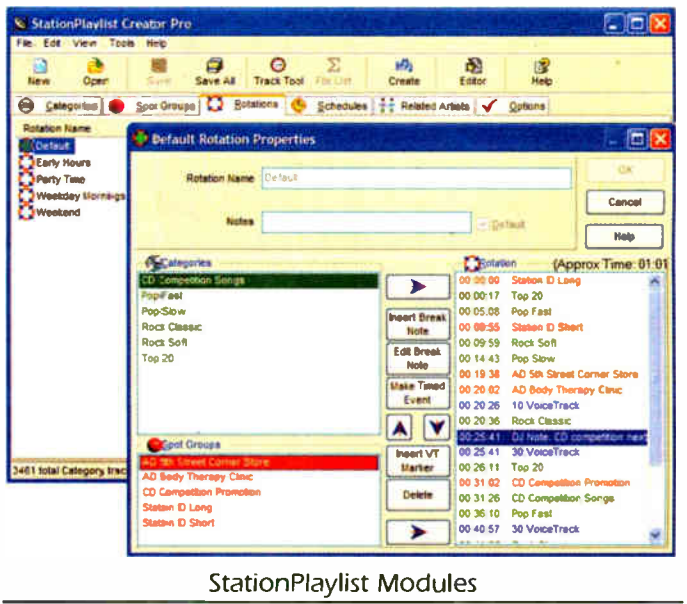
Studio handles music and spot play-out with intelligent crossfading, satellite feeds (in the case of WODI we use CBS and the Virginia News Network), plus 96 "carts" for live assist, as well as automatic time and temperature announcements. The system interfaces with a temperature probe mounted outside our studios as well as weather sources on the Internet.

Creator is the scheduling utility. Creator makes up schedules for all our dayparts. Just as long as our music library is labeled correctly Creator can implement complex but understandable rules for title and artist separation with loads of other schedule criteria. The system is also capable of voice-tracking with tracks talking up song intros.

The software works hand-in-hand with lots of third-party logging and traffic scheduling packages. Tech support is quick and efficient and the programs are being improved constantly. The program authors are amenable to adding features based on user feedback.

In short SPL does 99 percent of what the "big guys" do at a much lower cost. It is the undiscovered sleeping giant of broadcast automation systems. I urge any broadcasters considering automation upgrades to give this package serious consideration.

For more information, contact StationPlaylist.com at 011-64-7-576-2829 or visit www.stationplaylist.com.



StationPlaylist Modules

TECH UPDATE

Radio-Assist 7.5 Expands Options

The Netia Radio-Assist 7.5 lineup of digital audio software programs covers the range of operations in a radio station, from production to broadcast, including acquisition, sound file editing, commercial and music production, newsroom system, scheduling, multicasting and administration.

Radio-Assist 7.5 provides simultaneous access to several products. With one application, the user can record, edit or prepare a playlist.

Netia's new Insider-DS Web-based capabilities allow journalists to browse, access and edit audio clips from their station's database, streamlining the workflow processes of content creation and production.

The company said the Radio-Assist 7.5 Air-DDO broadcast module is the result of several years of research and focuses as much on ergonomics as on the technological. Spread over two monitor screens the GUI displays four broadcast channels simultaneously as well as access to the numerous help and preparation tools: cue, loop and play function and final adjustments of segue ways.

Air-DDO can be configured as required and takes up to four on-air outputs and a PFL playback simultaneously. Four on-air supports are available: the air-playlist which displays the cuts scheduled in chronological order; the air-cart stack, which gives access to a range of various segments; another cart stack system dedicated to jingles or stingers; and a playout reserved to top-priority items. The playlist can be broadcast on up to four channels.

Directly linked to the scheduling workstations, Air-DDO keeps track of changes made to the playlist in real time and the refresh is displayed automatically. The technician is warned by a visual alarm. The Air-DDO workstation has direct access to a scheduling tab and the program can feed a stream of on-air monitoring information to an intranet site.

Three broadcast modes — automatic, semiautomatic or manual — are permanently available and the user can switch from one to another. The semiautomatic mode is useful for integrating slots at a set time (such as a commercial break). The commercial will go on air automatically at the specified time, but a time lag of ±X seconds can be defined for it. Air-DDO in automatic mode comes into its own for overnight music programs.

For more information, contact Netia at (888) 207-2480 or visit www.netia.com.

BSI

▶ Continued from page 34

is something PDs will love.

The Voice Tracker is a simple-to-use module. It will also allow the user to manipulate the level of each audio cut to allow their voice to come through. It will also allow the user to increase or decrease the level of their voice track. Voice Tracker also allows the user to slide each cut to provide good placement of the voice-track over the music, or just to tighten up segues into a commercial break. Hitting posts is no longer an issue.

Redundancy and reliability

For our use, we elected to use a three-computer tiered system. All of each station's audio is housed on the file server. Then each station has their respective audio on their particular audio server. As a backup it is also on their studio client machine for emergencies should the audio server computer fail.

Even though we elected to use this type of setup in my market, Op-X will run on a single machine, but it is recommended to use two machines, one file server and one audio server that also would act as the studio client.

We have been running this system for over a year, and we have had great success with it. Anyone looking to upgrade to a new automation system should give BSI's Op-X some serious consideration. It is a user-friendly system that can find its home at a single station or at a cluster of 12 stations.

For more information, contact Broadcast Software International at (888) 274-8721 or visit www.bsiusa.com.

USER REPORT

Pristine Delivers the Goods for WJNT

CDS32 Helps Mississippi AM to Grow When It Became Part of a Six-Station Cluster

by Stan Carter
Operations Manager/
Chief Engineer
WJNT(AM)

JACKSON, Miss. When the time comes for purchasing a new or replacement automation system, there are more choices than ever. Choosing a system that can handle the day-to-day operations of a news/talk station can be challenging.

When I was hired by WJNT(AM) in 1993, one of the first items that had to be addressed was a reliable automation system. The former chief engineer had a very basic system put together from a batch of RadioShack timers, relays and cart machines. It was not the most reliable or smoothest sounding system.

Reliability

I researched the systems that were available at the time, and decided on CartWorks from dbm Systems.

For more than a decade, it handled our needs quite well. As more and more programming choices became available, we continued to add to our automation system. It did not take long to reach the point where I had to start adding external relays and timers to accommodate our growing lineup. While this solved some problems, it was not 100 percent reliable. Making programming changes on short notice could also be a little challenging at times.

Meanwhile, dbm Systems merged with **Pristine Systems** in 2002; CartWorks was eventually developed into CDS32.

In 2006, WJNT went from a stand-alone AM station to part of a six-station cluster when it was acquired by Inner City Broadcasting. One of the primary items on my shopping list for our new talk studio was a new automation system. The Pristine Systems CDS32 was our obvious choice.

CDS32 had been in use at the other stations in the cluster for several years and handled everything with ease, from music on hard drives, live assist and satellite music formats. I found that the latest version of CDS32 was well-suited to handling our news/talk programming as well.

As with most news/talk stations, the bulk of our programming comes from various satellite sources, so being able to handle multiple audio sources is an absolute must. We chose the CDS32 satellite automation system with two Broadcast Tools ss8.2 audio switchers to accommodate the large number of audio sources we have to deal with. Most of these are satellite feeds with a couple of remote program unit (RPU) and TV feeds for remote broadcasts and TV news simulcasts.

Having the capability to handle 16 separate audio sources allowed me to do away with all of the external timers and relays from the previous system. This simplified things tremendously and improved reliability.

Along with multiple satellite sources, Pristine Systems CDS32 handles multiple contact closures as well. With our previous system, we were limited as to how many closures we could work with. When we ran out of room in the past, I had to add on external timers and relays.

With the CDS32 system, we can accommodate up to 48 individual closures. Not only could we do away with all the external timers and relays, but we could now take advantage of optional closures for things like return drops and liners that we were unable to use because of previous limitations. Being able to add these in made for a much improved on-air sound.

WJNT's Studio, with Pristine CDS32 On-Screen.

Host interfaces

Along with satellite programming, WJNT airs a large amount of live programming.

We air a live morning talk show with different hosts each weekday, along with a fast-paced afternoon drive talk show. Each show host has their own sound clips, effects and music that they are able to access through the CDS32 hotkeys.

Up to 48 individual audio cuts are available instantly for playback at the push of a button. Each show host can have their own individual panel. Hotkeys are also useful for live remotes, high school sporting events — anything that requires fast access to audio cuts can be programmed into a hotkeys panel.

One item every talk station has to deal with is time-shifting programs. During a typical day, WJNT has several short features that cannot be aired live. The background recording feature in CDS32 allows us to automatically record any of our audio sources based on time or contact closures.

The background recording feature is exactly that; normal automation programming continues to run while whatever source you need is being recorded without affecting on-air programming. Users can record anything from short features to long-form programming for later playback. No more worrying about that sponsored feature being recorded at 4 a.m. for playback during morning drive time.

As everyone in broadcasting is aware, programming changes can be made at the very last minute. News/talk radio is no exception.

CDS32 makes those short-notice changes easy to handle with its powerful but easy-to-understand script-based automation programming. Input sources, contact closures and script commands have user-defined labels, which makes it easy to see at a glance what you are programming.

The flexibility made available in the CDS32 script editor is among the best I have worked with. Items like hourly time syncs, floating network breaks and those last-minute programming changes can be handled quickly.

One of the biggest challenges CSDS32 has been able to handle is automating college sporting events. WJNT is the local affiliate for the University of Southern Mississippi, and airing their football and basketball games in the past required having a board operator in the studio. With CDS32, we are able to transition from regular programming to a sporting event and back without operator intervention. The script-based automation programming in CDS32 makes it easy; just add one command in the automation script and you're ready to go.

WJNT receives nearly all our local and national spots by e-mail or Internet-based spot delivery. In the past, it was necessary for us to directly record each spot into the automation system due to file compatibility issues. With CDS32, the process is now a snap.

CDS32 handles multiple audio file formats with ease. It does not matter if the agency sends an uncompressed WAV file and the station across town sends a mono MP3 file. Just load the files into the audio directory, add the cart info and the file is ready to go. Spot changes at the last minute are no longer a problem.

Since we are one of a six-station cluster, many of our audio files are used on more than one station. The network file transfer feature on CDS32 makes it easy to share audio. Users can produce a spot (or any type of audio for that matter) in one studio and send it to any or all the other CDS32 systems on the network. Other useful network features include remote spot set and script automation editing over the network. Need to delete or change a spot in the studio while you are in the production room? Not a problem with CDS32.

Other features like 24/7 technical support, RDS and Internet text support, auto spot set fill, etc. ... CDS32 is a great choice if you are looking for an automation system that can handle the demands of a news/talk station or music formats.

For more information, contact Pristine Systems at (310) 831-2234 or visit www.pristinesys.com.

TECH UPDATE

NexGen Digital Stays Ahead of the Curve

RCS said it continues to improve its NexGen Digital system to meet the demands of broadcasters moving to HD Radio and automated spot placement.

The NexGen delivery system for HD Radio gives broadcasters greater control of their HD-R channels and more compelling information to the listener.

The enhancements in the NexGen Digital release include dedicated channels in the RCS HD Importer code for data. The Importer also supports iTunes Tagging, which not only gives each listener a way to buy music easily, but may also be a source of revenue for stations who have deals with Apple.

RCS has empowered NexGen Digital automation with Google's AdSense for Audio program. AdSense for Audio provides stations access to previously undiscoverable advertisers who are new to radio marketing by allowing them to place radio spots themselves.

Once a spot is purchased via the AdSense for Audio program, the request is sent to the station's automation system, NexGen Digital. NexGen automatically pulls the spots from AdSense for Audio and then slots the spots into the appropriate day's log, providing a seamless integration. RCS is one of the first automation companies to use the Google AdSense for Audio API.

Also added to NexGen Digital is a Web service, allowing for audio change notifications and the ability to retrieve and add an audio file into NexGen. This extends the NexGen product, making it easier to interface with other products, including your own internal systems.

Additionally, users now can add audio into a macro and then fire that macro at the start/end of a spot block. Other added features include enhancement of the automatic music file loading routines to be more dynamic and an expansion of the number of supported Play devices on a single machine.

For more information, contact RCS at (914) 428-4600 or visit www.rcsworks.com.

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USER REPORT

Automatronix Shines for Florida Station

All-in-One Package Keeps It Simple for Local Oldies Broadcaster

by Tom Connolley
Owner
WITG(FM)

OCALA, Fla. RealOldies 104.7/WITG (FM) is a local nonprofit LPFM radio station that operates 24/7, providing local community programming, oldies music and an inspirational message every hour.

We broadcast specialty programs, as well as a simulcast program from another LPFM station from the area. In the fall of 2008, we are broadcasting live football from select community high schools. We also broadcast sponsorships, as well as local public-service messages to the community.

Helpful features

WITG started out just playing music and an inspirational message hourly. As we grew, the need to provide additional features to our programming are also grew.

After shopping around and looking at various software packages we settled on Automatronix from **JT Communications**.

In our research we found that many companies sell separate utilities to accomplish what Automatronix bundles into one product. We also liked that there are no licensing issues with Automatronix — the license is for the user, and not the individual computer.

WITG's studio, (inset) Screenshot of Automatronix

Considering that WITG is a small operation with a skeleton volunteer staff, Automatronix's two years of free product upgrades and 60 days of unlimited product support are helpful. Furthermore, customer support personnel were outstanding. It is also helpful that there are no "proprietary" databases or files to be concerned about.

It was particular reassuring that the demo was not "cripple-ware" but represented the full features of the product and, finally, after installing the demo and creating playlists, etc., transition to the licensed version was performed within five minutes. The program took over where the demo left off, with no changes in settings, playlists or event scheduler.

What a relief.

The Automatronix package was able to connect to our Broadcast Tools RS-232 controlled switcher. This gave us the ability to select between our simulcast link, Marti remote receiver, Internet stream and the audition output of the air console. With the use of Automatronix QuiKeys hotkeys, the switcher was able to be controlled from a control panel on the desktop, a nice feature.

Also handy: The ability to access the system remotely; networking drives to share resources; and the ability to output song information via TCP/IP.

Other useful features include simplified playlists and randomization of songs without the need for scheduling software. There is no need to create long playlists with randomization of songs within the main playlist.

For example: For our Doo-Wop and '80s programs, we simply insert "segments" into a playlist and schedule it to air at the designated time. To return to the main playlist when done, we simply add the name of the main playlist at the end of the segments. Automatronix transitions from one program to the other seamlessly. It couldn't be easier.

For more information, contact JT Communications at (352) 236-0744 or visit www.jtcomms.com.

TECH UPDATE

BroadView Introduces Management Information Software

BroadView Software, a developer of broadcast information management solutions, unveiled its newest product, offering integrated traffic and sales management for radio.

According to the company, this represents a next-generation approach to radio management solutions and sets standards for efficiency and economy. By design, information is shared throughout operations, realizing workflow gains and market intelligence unattainable by traditional broadcast systems architecture.

BroadView's announcement at this month's NAB Radio Show follows product development and customizations launching at approximately 50 radio stations.

It is a modular, scalable system that operates as an end-to-end management information system. Alternately, individual elements such as traffic can be integrated within an existing information infrastructure. Functionality includes tools such as roll-up reporting; it is scalable from standalone stations to large radio networks, supporting an unlimited number of channels.

Radio Sales Director said BroadView's roll-up reporting points to a fundamental difference in the system. Rather than being offered as an expensive add-on, it is a core function. The tool gives managers both a tactical perspective for day-to-day operations at the station-level and a strategic view showing station performance within a market, as well as across markets.

Along with BroadView's new radio functionality, the company offers turnkey services including workflow analysis, integration, implementation and data migration. BroadView's data conversion service from legacy systems (including Deltaflex) provides historical contracting and finance information, current and future contracts and A/R information.

For more information, contact BroadView Software at (435) 652-2015, or visit www.radiobroadview.com.

USER REPORT

ENCO Reigns at Detroit Cluster

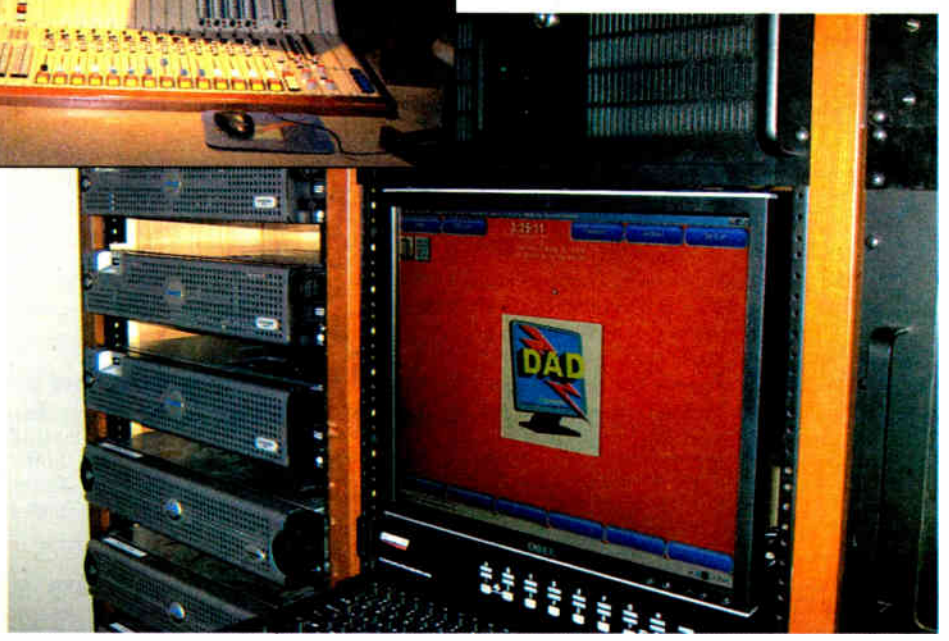
Station Cluster Has Never Used Anything But ENCO DAD

by Paul Roy
Engineer
WJR(AM), WDVD(FM) and WDRQ(FM)

DETROIT Back in late 1999, WJR(AM), WDVD(FM) and WDRQ(FM) were building new studios, and the switch was being made from carts (yes, carts) to a new digital delivery system. ENCO Systems' DADpro32 won hands down.

With its flexible options and easy configuration, what more could you want? ENCO's DAD was able to handle our two FM stations as well as our news/talk station, all three using different configurations.

Our operators had only one issue when switching from carts to the new ENCO system and that was the issue of timing. DADpro32 was much faster than the pinch roller on a cart deck.



(Above) WJR's Studio, and (Right) WJR Master Control Room

Upgrade time

It is now 2008 and time for an overdue hardware upgrade. Again, with past system stability and excellent software support there was no question we would go with the latest incarnation of the ENCO DAD.

Patrick Campion, our ENCO sales representative, and others on the ENCO staff made sure we had everything we needed for this upgrade. This was no small task, considering our three stations, four servers and more than 19 workstations. Even so, everything went smooth as silk.

How to describe the ENCO support team? In a word, they are excellent. Every question I asked about off-site backups, RDS and IBOC data, and system configurations was answered on the spot. They even walked me through changing drives on our main RAID, which was done through a remote connection over the Internet.

To illustrate DAD stability, a few months back we had a RAID failure. A SCSI cable had broken on our main RAID due to cable stress, causing havoc in our studios. How did we sound on the air? We did not miss a beat. In the event of a server failure ENCO DAD can be configured to move over to a different server, or in our case, a local drive on a workstation.

On air no one knew there was a problem of any kind, but behind the scenes I was working to restore the RAID. It was soon discovered that the RAID stripe was corrupt and all data was gone. The RAID needed to be rebuilt. Since it was late we were not able to get the cables we needed. I took down our other backup from another studio.

So there we were with our main studio on the air and no more backups. With the RAID configuration restored, the one on-air ENCO computer running had to play everything on the air, have production recorded to it to replace spots and had not been backed up yet, all while the server was copying the lost data back to the main RAID

When all was said and done we had only lost a few bumpers and show opens. No one on air knew we had any problem. Again, this lone workstation running DAD did more than its job. In fact, it was more than a workstation, it was a work horse. This was a workstation that had not been updated as yet, a little Pentium III 500 kHz that was bought from ENCO back in 1999 and installed in 2000. Other than hard drive replacement and a memory upgrade it was still the same.

If this doesn't show how much effort ENCO goes to in researching the hardware they use, the trust they place in their software to run on, nothing does.

For me ENCO has always been the Excalibur of automation systems. If you can imagine it, DAD can do it. If you need a digital delivery system that will last, you can trust that ENCO has done the research on their equipment, and it will last.

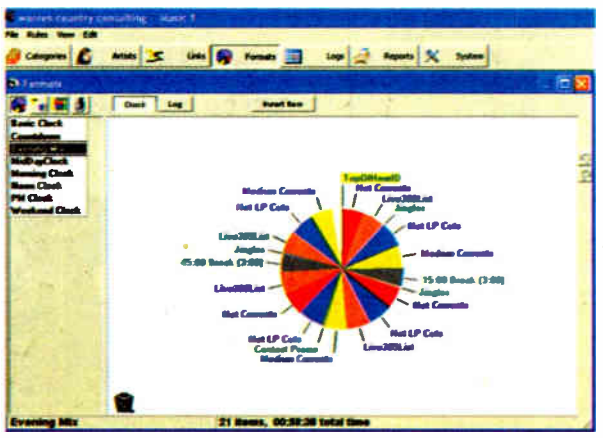
I wouldn't run anything else.

For more information, contact ENCO Systems at (800) 362-6797 or visit www.enco.com.

TECH UPDATES

Music1 Adds Webcasting

The latest version of the Windows-based **Music1** automated music scheduling software, version 6, includes redesigned "view" functions for both Categories and Clocks providing for more user customization in how they arrange and view their library data on the screen. Improved coding speeds performance.



Also added is a built-in auditioning player. The music director can click and hear any song as they work with Music1. The player is incorporated into the M1 scheduler and is not dependent on any automation system. An enhanced function of the player allows the music director to click and hear only the "hook" of the song, as well.

Also released is Music 1 SE Version 2, scheduling software for Webcasters. SE is based on the source code of the full Version 6 with some scaled-down functionality, thereby providing Webcasters with an efficient scheduling tool that meets their needs at a low-cost, buyout price. SE is also an attractive option for broadcasters' HD channels or standalone Webstream stations.

For more information, contact Music1 at (512) 392-2415 or visit www.gomusic1.com.

Google Looks to Reinvent Radio Automation

Google Radio Automation is now shipping, designed by the team that developed DCS, Maestro and Scott Studios.

The company says the system delivers the ease of use of SS32 and the power of Maestro in one product.

Google said it incorporated a powerful SQL database at the core and separated the user interface from the actual application to provide ease of use, flexibility and third-party integration options.

Google Radio Automation offers a customizable user interface. It breaks out the displayed content into individual elements that can be resized, added, moved or removed from the screen, allowing each user to personalize their interface according to their preferences. It also lets users span their display across multiple monitors.

The manufacturer said this is the only automation system that lets users add custom functionality to the software. Users can create software functions that can provide integration with other broadcasting equipment or software programs to address special needs and requirements. Taking these options a step further, Google Radio Automation allows third-party companies to write widgets extending the functionality of their products into this flexible system.

The system also provides remote access, real-time synchronized logs, content sharing, remote voice-tracking, touchscreen interface and integrated revenue programs.

For more information, contact Google at (800) 726-8877 or visit www.google.com/radioautomation.

BROADCAST Equipment Exchange

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WANT TO SELL

Symetrics A-220 stereo amplifier, $75 as is + shpg. mraley@bbnradio.org or Mike, 704-523-5555.

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Radio World Equipment Exchange

AUTOMATION EQUIPMENT

WANT TO SELL

Now available, radio automation for the Linux operating system. Schedule music, voice track, create shells, auto or announcer assist mode, set intro and ending cues, hit the vocal every time with your voice tracks, execute exact time events, join networks, and more. The software is free, there is a small duplication fee. For more info call 406.665.1832.

COMPLETE FACILITIES

WANT TO SELL

CONSOLES/ MIXERS/ROUTERS

WANT TO SELL

(2) Auditronics 110A Grandson audio consoles w/full compliment of modules, $2000/both; Sparta AS-30B 5-chnl stereo mixer, $100; Shure M67 mic mixer & 2 Shure M63 audio mixers, $50 for all 3. towerjim@aol.com.

WANT TO BUY

RCA BC7B, need parts for old but still working RCA BC7B, junkers will be considered for small Christian station in NH. Pastor Brian, 603-742-8575.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

(2) Shure SM-5 mics, gd cond, foam wind screens just replaced. 316-682-9429 or rwcramm@google.com.

Shure SM-5 (2) microphones, gd cond, new foam windscreens, $700/ea. R Cramm, 316-682-9429 or rwcramm@google.com.

WANT TO BUY

Collector wants to buy old vintage speaker & amplifier, McIntosh, Marantz, Electro Voice, Jensen, Altec, Tannoy, Fisher, Dynaco, Cash- pick up 773-339-9035

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com

Comstream CM701 & DAC700, gd cond, pulled off line when network feed was discontinued, $5000/both. D Rboinson, 252-223-4600.

Technics SP-9 MK2A turntable w/SH-10 PSU, A-T tonearm & Stanton cartridge & ATI Encore preamp, $250; Assante HUB1012 10baseT 12-port Ethernet hub, $50; TFT 8041 lo-band modem, $50; McMartin SDR-1 IF demod, $50; misc NPR Netcue equip, free if picked up. towerjim@aol.com.

MISCELLANEOUS

WANT TO SELL

(5) yellow strobe lights, $10/ea; ON Air light, $100; Bulk demagnetizer, $10 + shpg; Sound Enhancer IS 5022 professional ISP, $325 + shpg; BBE 362NR sonic maximizer + NR, $100 + shpg; CRL Dynafex DX-2 audio NR, $50 incl shpg; (2) Matchbox II interface amps, $50/ea + shpg; (2) USDA Utility Summing & DAs, $50 + shpg; (5) RPL FPBUC2 balance to unbalance converter, $80/ea incl shpg; (4) Burk GSC 3000, used but in gd cond, call for pricing. mraley@bbnradio.org or 704-523-5555.

WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035

Donations Needed: **All Volunteer, Non-profit Low Power community radios stations need Equipment.** Will offer tax deduction letter, You determine donation value, We will pay shipping. Equipment shared between three Wisconsin stations. Looking for Mics, Mixers, field equipment, etc. You name it. Email: Dan@WIECradio.org

Equipment Wanted: obsolete, or out of service broadcast recording gear, amplifiers, preamps, outboard, radio or mixing consoles, microphones, etc. Large lots acceptable. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

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(3) Belar RFA-1 amps, 88.9, 92.5, 89.5, gd cond, will let go as is for $115/ea + shpg. mraley@bbnradio.org or 704-523-5555.

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East Texas FM for sale. Contact forsale@mystar96.com.

FM's in NY, WA, GA. CPRradio@bellsouth.net.

SWITCHING, PATCHING, DISTRIBUTION

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Studio Hub plus large quantity of adapters, DA, hubs, call for info. 646-660-2651.

CBS Labs distribution amp, looks good, 19" rack, solid state, 1-1/2" tall, brushed aluminum, $325/BO; $295 firm. D Rushing, 813-789-9403.

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RE-OPENED: Station Engineer - Radio Kansas of Hutchinson Kansas seeks a broadcast engineer to assist the director of engineering in transmitter, microwave, studio and computer maintenance for its 3-station public radio network. Minimum of an AA degree in Electronics and/or 5 years of broadcast engineering experience with either SBE certification or FCC General Class License. Information at 1-800-723-4657. To Apply: www.hutchcc.edu or: HUMAN RESOURCES, HUTCHINSON COMMUNITY COLLEGE, 1300 NORTH PLUM, HUTCHINSON, KS 67501. 620-665-3522. mantoothb@hutchcc.edu. AA/EOE.

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Are you a small market station needing a good nuts & bolts engineer in the LA area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 917-324-8466 mitchellrakoff@yahoo.com

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Extremely friendly, personal, very natural on-air ability, punctual & reliable, focused, industrious & dependable, seeking on-air, production, copywriting or promotions. Merideth Peterson, 469-223-6103 or meripete@sbcglobal.net.

Good on-air relations, really able to connect to listener, fresh energy, friendly and enthusiastic, extremely motivated, and dedicated, detail-oriented and bilingual. Gloria, 214-315-6862 or gmoney79@tmail.com.

Great audio editing talent, Cool Edit, Cool Edit 2.1, Fruity Loops, strong boards plus producer skills and beat mixing, positive attitude. Sylvester, 214-554-5241 or dunte_henderson@yahoo.com.

Great sense of humor, extremely personable, proficient at tasks, motivated, good technical skills, boards/on-air talent, creative copy/strong news writing ability, helpful and caring. LaVaughn, 972-491-7274 or lavbraddy@verizon.net.

Warm and relational, with quick wit, experience with broadcast equipment/software Cool Edit, Adobe, ProTools, DRS, great copywriting ability, and strong board skills. Terri, 817-723-4903, matlock.terry@yahoo.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com or www.rubbinsracingshow.com for samples. Call 214-384-5812 or email: adam@rubbinsracingshow.com

Awesome on-air presence, production and vocals, astute show prep, and strong copywriting skills. Passionate, dependable, with exceptional work ethic. Classic Rock/Oldies, Dan Marquess, 817-808-0078 or danmarquess@aol.com.

TAX DEDUCTIBLE EQUIP

(3) Marantz PMD-340 CD plyrs, $100/ea; (2) Nakamichi MR-2 stereo cassette decks, $100/ea; (3) Technics M65 stereo cassette decks, $50/ea; Teac V-385 stereo cassette deck, $50; Otari MX-5050 stereo reel tape, $250; Tascam BR-20 stereo reel tape, $75. towerjim@aol.com.

TAPES/CARTS/REELS

WANT TO SELL

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.

Schnader telescriptions 16 mm musical films produced in the early 50 s. Bill Cook, 719-687-6357.

TRANSMITTERS/EXCITERS/TRANSLATORS

WANT TO SELL

RCA BTF3E1 for parts or could be put back on the air, $500. J Twilley, 410-219-3500.

FM Translator at 104.5 – Manchester, KY Call Joey Kesler 606-843-9999.

1985 Continental 5 kW xmtr, gd cond, $4800/you pick up. 606-598-2445 or 606-813-1207.

2002 **Dmnitronix 10kW AM solid state xmtr**, taken out of service due to a power increase, freq 1090 kHz, xlnt cond, pictures avail upon request, xmtr is in Pensacola, FL, $14900 + shpg or BO. Art White, 770-632-1295 or whitearthur@bellsouth.net.

Radio World
Equipment Exchange

Used Harris Gates MW-f, 5k day 1k night xmtr, seral # 90939, $800/BO plus buyer responsible for removal; Moseley PCL 600 STL xmit & receive, freq is 949.00 & was constructed in 1/88, $1500 + shpg; TFT type 8301 319-8 on 949.00, $1200 + shpg; QEI Type 675 exceiter, serial #6751272 at 88.7, $450; QEI Type 695 exciter, serial # 695008 at 90.3FM, $550 + shpg; (2) QEI 600 watt xmtrs, $1000/ea, on 88.1 and 91.9, email for pics. mraley@bbnradio.org or 704-523-5555.

CCA AM 10,000 D – Call John KQSS **928-595-0263** between 10 & 6 PM Pacific Time.

WANT TO BUY

A TU for new 1450 AM in NH or parts for same, will consider parts, also need Rohn 25 tower coax meter, etc or trade for FM xmtr. Pastor Brian, 603-742-8575.

AM Phasors, Phasor Parts, Phase Monitors, Rf Switches, AM Transmitters. Continental Communications 314-664-4497, Contcomm@Sbcglobal.Net

TUBES & COMPONENTS

◆READER'S FORUM◆

Radio Heard Here

I have a simple idea I wish somebody would "put wheels" on and roll with it.

Radio World published a photo of the neat bright "Radio Heard Here" sign. I would love to have bumper stickers — or car magnet signs — just like this retro signage that I could put on my vehicles and that stations could give away too.

The NAB ought to be giving them out, and local stations could have the bright lightning bolt Radio Heard Here logo on the left side of the sticker/magnet, and their station logo on the right side!

John Pavlica
ICON
Toledo, Ohio

Ed. Note: A package of marketing materials for Radio 2020 landed on our desk as we finished work on this issue. It includes stickers with the logo as part of the campaign. A few are on their way to John Pavlica.

Just a Taste

Reading "A Steep Climb for Auto HD Radio" in the Aug. 1 Radio World, it occurred to me where the $200 million that the HD Radio Alliance is allegedly spending to market and promote HD Radio can be best spent:

Find the "automile" in every city, the road where there's six to 12 auto dealerships, and buy four or five billboards on it that are really simple. Flat black background, big "HD Radio" logo and the text "Ask for it in your next car!"

That's it. Nothing fancy, no extra info. Just a taste to get people wondering.

The point being to get people who're about to buy a car to ask their dealer about HD Radio. More than likely the dealer won't have a clue, but you can bet that'll change fast if they start regularly getting paying customers that want to know something about it.

I suspect that the auto industry is in such a slump, that they're not going to spend the millions to research, develop and install an unproven concept (like HD Radio) in their cars without demonstrated customer demand ... no matter how much pressure Ibiquity and the alliance put on the corporate level.

Aaron Read
General Manager
WEOS(FM)
Fried Bagels Broadcast Consulting
Rochester, N.Y.

The author is a contributor to Radio World; opinions are his own.

Correction

The photo on page 36 of the Aug. 1 issue was captioned incorrectly. Shown is Timothy McGee, student general manager of WLOY.

Bill Sacks & Optimods

Paul, great article ("What It's Like to Refit a Masterpiece," June 4).

I recall a similar story in RW by Buc Fitch and his love of the CBS volumax.

The earlier Optimod units still shine even though they were analog, and really to my ears sounded the best.

Dick Tyler
Burlington, N.J.


What It's Like to Refit a Masterpiece

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NewBay Media

Staying the Digital Course

Default Status Is the Goal, and It Will Take a While

The current election season promises change in many sectors, but there is one we believe simply needs more of the same. It is the HD Radio conversion process. While certainly slower to date than most would hope, things are at least heading in the right direction, and momentum appears to be building gradually.

Taking stock, we observe that initial HD Radio receiver penetration in the United States has arguably grown as fast or faster than FM's — or even DAB's in other countries — over the same amount of time from their respective introductions.

Even in the U.K., where DAB has shown strong recent success, those results did not occur until a decade after its debut there, when a massive retooling of strategy was launched. A key component of the latter was the provision of exclusive new content streams on DAB (as opposed to earlier simulcasts of AM and FM programming), something that HD Radio has included essentially from its origin.

There also has been no Sirius XM-style satellite radio competition in the U.K., so HD Radio's current penetration in the face of such competition here could be seen as even more impressive. (Some might also point out, however, that the presence of satellite radio stimulated U.S. broadcasters to convert to HD Radio sooner and in greater numbers than they otherwise might have.) Conversely, in the U.K., satellite television has carried DAB broadcasts, further increasing consumer awareness. Again, no such help from other media in the U.S. for HD Radio.

Yes, there are still problems to be solved (AM interference, for example) and improvements yet to be developed and/or deployed (increased digital power, data services, content protection, EPG), but most are already on the road map. Even more imminent are new HD Radio form factors (portables by Christmas 2009?) and continually reducing receiver costs — which, some might point out, are already relatively cheaper than FM or DAB receivers were in similar timeframes.

Meanwhile, some reasons for the sluggish transition cannot be attributed directly to HD Radio. Consider the intrinsic slowness of any voluntary broadcast transition — particularly one that occurs one station at a time, rather than via a more coordinated nationwide rollout.

There's also the fact that much radio content itself may not be as appealing as it might be to today's audiences, with its heavy commercial loads and aggressive audio processing. And, as noted, there are the many new competitive services developing simultaneously.

Nevertheless, we believe broadcasters should hold firm to their commitments on the transition, and continue to innovate with new multicasts and other services. The emergence of more "fine-grained" audience measurement systems should be timely and helpful tools. Meanwhile, as receiver costs drop and component availability broadens, HD Radio can continue to move toward the ultimate goal of attaining default status in all new receivers.

If HD Radio continues to get better, cheaper and more widely available, we believe the odds favor it eventually becoming a true success story.

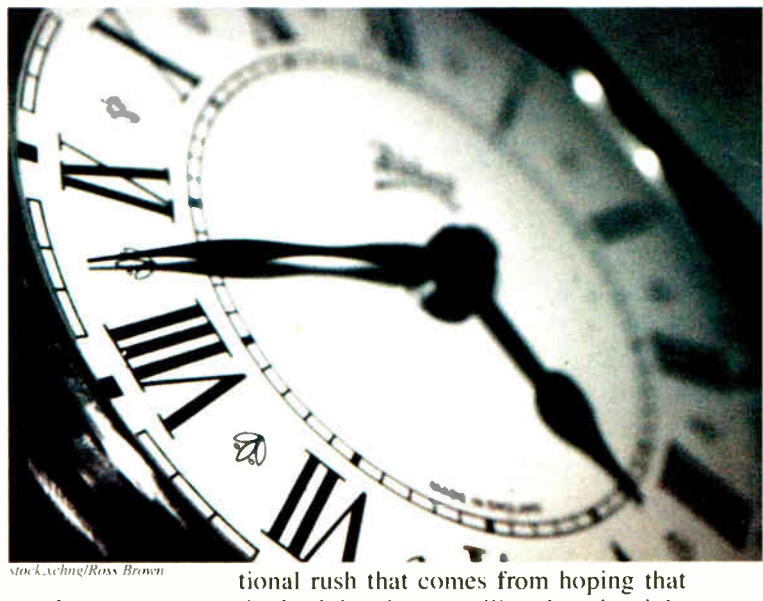
— Radio World

GUEST COMMENTARY

The Lost Art of Backtiming

When You Got It Right, the Feeling Was Sublime — Up to Once an Hour

by Stephen Winzenburg



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Settling in for a relaxing dinner, I turned on the local corporate-owned adult standards radio station to listen to some classic mellow music sung by long-ago vocalists. As the clock approached the top of the hour, something different suddenly appeared: an instrumental.

Ah, I thought, just like the good old days of radio when the backtimed instrumental signaled it was almost time for news. The theme from "Hill Street Blues" began and my emotions drifted back 25 years ...

Until just as the orchestration swelled past the introduction to its up-tempo section, the song was rudely interrupted by a station ID and the CBS radio news theme. The song quickly faded after airing for only about 45 seconds.

Obviously the station's automation system didn't understand the importance of backtiming.

We're living in the age of the lost art of radio backtiming. It wasn't so many years ago that the DJ had to cue up the instrumental recording, subtract the cut's time from the top of the hour and start the music off air. Then when the hour's final vocal song ended, the announcer would gently fade up the instrumental in the background so it would conclude just before the top-of-the-hour news.

Some of us even tried to make the transition sound smooth by finding an instrumental that blended into the same key as the previous vocal piece.

It was, truly, an art. One that gave incredible feelings of triumph when it worked and pure panic when the backtimed song came up a short and allowed seconds of dead air.

Backtiming was an important part of announcer training when I started teaching college 25 years ago. I would watch as students' hands would shake when they placed the needle on the record, disengaging the turntable to cue up the song and then tentatively wait until the last possible moment to push play.

I empathized because I was once a novice myself on the 100,000 watt FM station where I famously started a popular LP in 45 rpm mode The hit song was playing Chipmunk-style before I suddenly shifted it into 33-1/3 gear with a loud "clunk" that was heard live on the air.

Just not the same

Today's automated stations no longer need a live body to cue up songs. Modern announcers voice-track over computerized ramp countdowns or send MP3s voiced from another state. Even some "live" music announcers sit in the control room while playing back their own pre-recorded, error-free "ad-libs" to make sure that they sound perfect.

The canned chatter may be tighter but the content is mediocre. It has lost that fly-by-the-seat-of-your-pants adrenaline-pumping sound that often brought out the best (and the worst) in radio professionals.

Contemporary air talent on a music station is no longer required to feel the emotional rush that comes from hoping that the backtimed song will end at the right time. Few take the time and energy to creatively finesse music introductions, which has resulted in fewer listeners sitting around their radios admiring DJs for their amazing timing or wondering what is going to happen next.

Most music stations today don't carry news anyway and don't have to worry about announcers hitting hard breaks. The few that do appear to not care if a well-known instrumental gets cut off in the middle of the song, making the station sound amateur — they're just happy that the corporate automation system was working properly so that no human body was required to be paid!

The lost art of backtiming is just one reminder that even in today's computerized world, announcers and owners need to continue to take pride in every second that a radio station is on the air.

Stephen Winzenburg has worked in radio since 1972 and teaches broadcasting at Grand View College in Des Moines.

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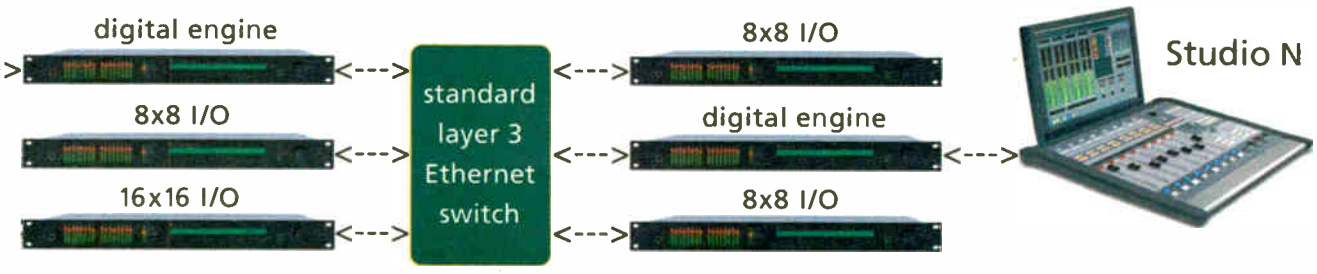

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