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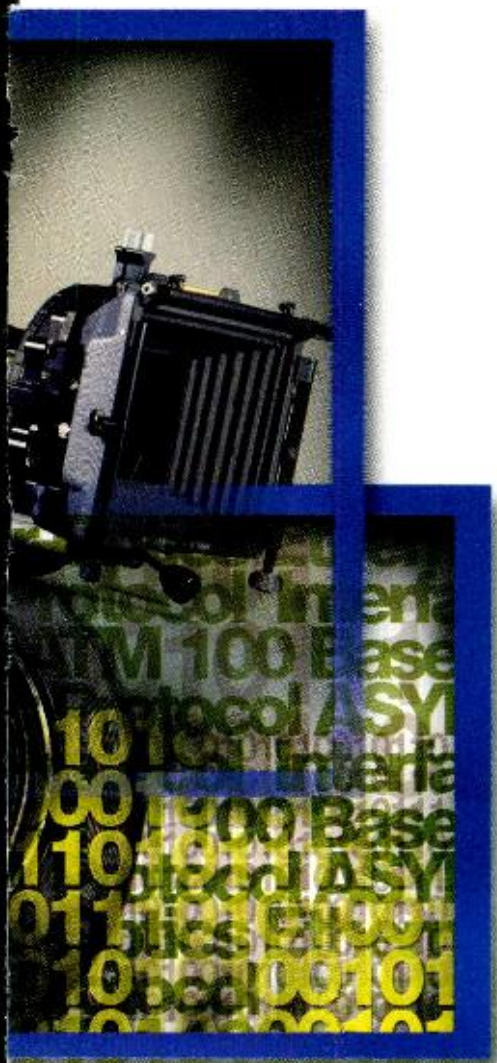
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Sinclair's Nat Ostroff shows off the stability of an SDTV picture on Nokia Media Screen COFDM receiver.



Duel standards

COFDM, 8-VSB proponents square off in the desert

By Glen Dickson

The debate over the U.S. digital transmission standard rages on at this week's NAB convention, where two competing camps—those who support the current 8-VSB standard and those who want a switch to Europe's COFDM scheme—are squaring off.

Caught in the crossfire are broadcasters, service providers and equipment manufacturers who simply want a DTV system that works. "We're in a mess, and we have to get out of the mess," said NAB's chief technologist Lynn Claudy.

Coming into the convention, COFDM champion Sinclair Broadcast Group enjoyed the advantage. Its year-long campaign had succeeded in convincing many other broadcasters that 8-VSB has serious problems and COFDM deserves consideration as an alternative. That campaign culminated last month when the Advanced Television Systems Committee, the U.S. standards-setting body, agreed to take a look at COFDM.

The 8-VSB scheme's biggest weakness is in handling multipath interference. Because of it, early DTV receivers have had problems receiving signals in urban environments, particularly with indoor antennas. COFDM is designed specifically to overcome multipath interference, but critics say it won't cover as great an area as 8-VSB for the same transmitted power. It also accommodates fewer bits in a 6-MHz broadcast channel: 18.6 Mb/s compared with 19.4 for 8-VSB. COFDM supports mobile applications, which broadcasters are becoming increasingly interested in. 8-VSB doesn't support mobile reception today, although its staunchest supporters won't rule it out as a possibility.

"The time for promises is over; the time for progress has arrived," said Nat Ostroff, of Sinclair Broadcast Group, at a Monday demonstration of indoor COFDM reception. Ostroff took a portable Nokia Media Screen COFDM receiver and waved it back and forth as the SDTV picture remained rock-solid. If set manufacturers have come up with a similar capability for 8-VSB, says

Ostroff, then "show it to us now." The signal was broadcast by Sinclair's Las Vegas station, KVWB-TV.

"We are focused on making sure terrestrial, free television survives in the U.S.," said Ostroff.

He is hopeful that COFDM can be quickly implemented as an alternative standard. "The issue is whether there will be roadblock opposition by the 8-VSB players, whether they fight us at every turn. If the ATSC supports both systems, it could be done in six months."

But at the other end of the convention center, set makers and other supporters of 8-VSB were prepared to fight. They said that 8-VSB's problems were fixable and a switch to COFDM would halt the digital television rollout.

Representatives from CEA, Thomson, Philips, Zenith, Mitsubishi and 8-VSB chip maker NxtWave Communications, as well as Capitol Broadcasting Vice President John Greene and former FCC and ACATS Chairman Dick Wiley, cited CBS's encouraging results from reception tests in Philadelphia (B&C, April 10), which claimed higher than 90% NTSC replication for both indoor and outdoor 8-VSB reception.

"The assertions that 8-VSB are broken are factually untrue," said NxtWave CEO Matt Miller. "I think the CBS tests prove that."

The 8-VSB briefing didn't include a demonstration of DTV reception inside a convention center conference room. But it did serve as a platform for some well-worn criticisms of Sinclair and other COFDM supporters.

Bob Perry, director of marketing for Mitsubishi, said 8-VSB was being "challenged by some people who don't have an interest in free over-the-air television." He also suggested that broadcasters who are pursuing data-broadcasting applications with DTV instead of focusing on HDTV have "ulterior motives." When reminded that more than 20 broadcast station groups have pledged part of their DTV spectrum to pursue data services, Perry was dismissive: "That's not the killer app. That's simply a sideshow."

"The only thing switching the standard would do is stop the rollout in its tracks," said Thomson Director of Gov-

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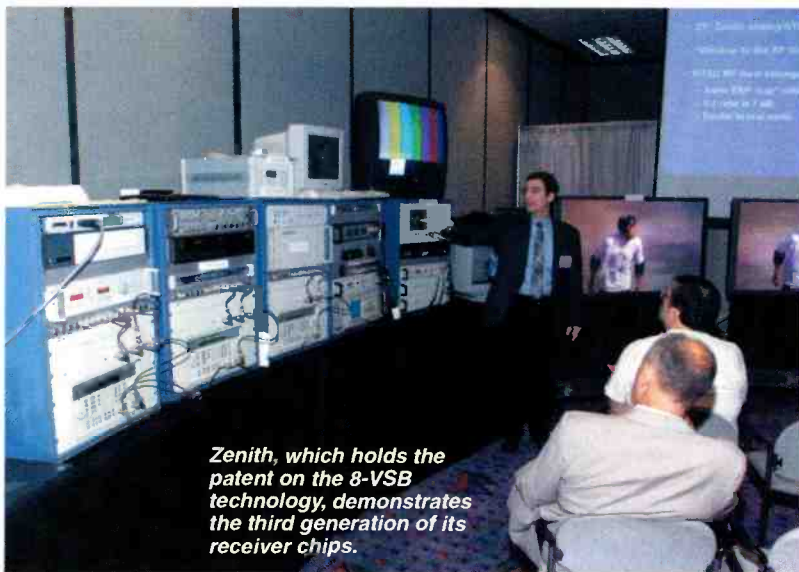
"Right now, I think it would be a terrible thing if we reversed course," said the Consumer Electronics Association's Michael Petricone. CEA presented sales figures for DTV, claiming that 17%, or 34,000, of the existing 200,000 DTV products sold since 1998 are capable of receiving 8-VSB over-the-air signals. More than 24,000 of those set-tops and integrated receivers were sold in 1999.

CEA projects 50% DTV set penetration by 2006, provided broadcasters focus on HDTV and original digital content. If broadcasters continue in an "off-ramp" mode of pursuing non-HDTV business models and debating the standard, CEA said, penetration will hit just 15%. Wiley warned that, if broadcasters remain in a "slowdown mode" with DTV, then they run "some regulatory risk" of losing their digital spectrum.

Although the FCC rejected Sinclair's petition to include COFDM in the U.S. standard, the ATSC knew the issue wasn't dead, says ATSC Chairman Robert Graves. "There was not only Sinclair but also a couple of the major networks, including NBC, that made it clear that they're still concerned with VSB and aren't satisfied with the performance," said Graves. "So we realized the debate was going on in spite of the FCC's decision, and

the FCC made it clear that it wanted to hear more about the topic."

Mark Richer, ATSC executive director, says more than 100 members attended the first meeting of the task force. They agreed to spend the next six months analyzing 8-VSB performance, gauging broadcasters' current and future requirements for DTV, and developing a common testing method-



Zenith, which holds the patent on the 8-VSB technology, demonstrates the third generation of its receiver chips.

ology. But Richer isn't sanguine about a change to COFDM.

"It is very likely to require changes in the allotment table," said Richer. "I couldn't predict how long that would hold things up. First of all, Washington doesn't move fast. The first thing that will happen is you'll have broadcasters fighting with each other. It's not a trivial change."

Such uncertainty worries many industry players.

"We're moving back to an investigatory phase that could have rather seri-

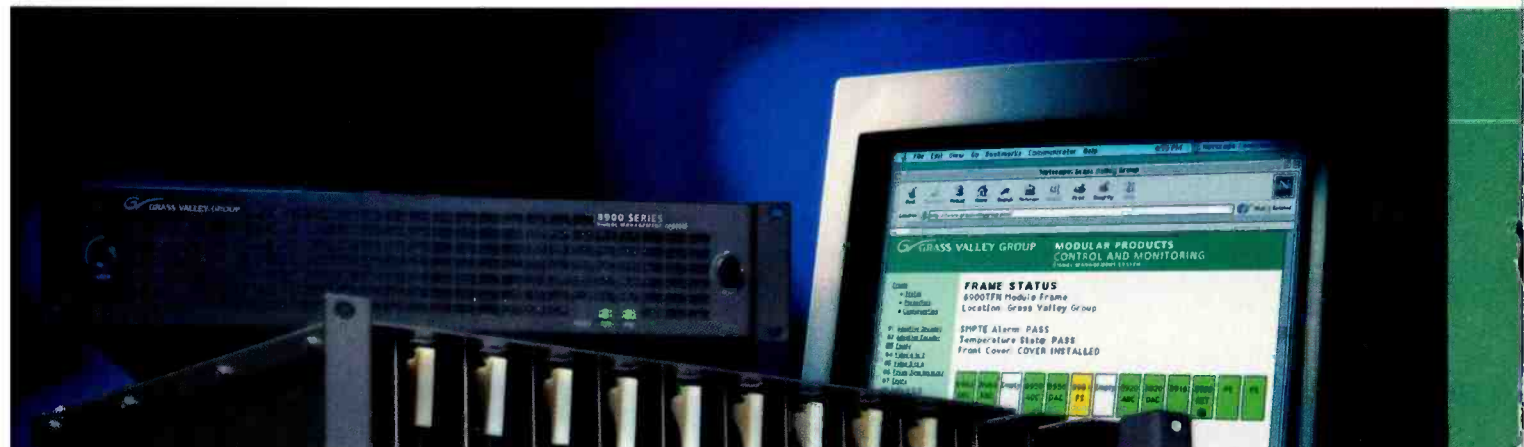
ous consequences," says NAB's Claudy, "and our transition to digital television could indeed be slowed down."

Ken Solomon, president of datacasting consortium iBlast, says the "opportunity cost" of debating the standard is greater than the potential advantage of a switch to COFDM. "It's sort of like 'the Hatfields and McCoys' and 'the

Russians are coming,'" says Solomon, referring to the broadband plans of cable operators and telcos. "We have a great opportunity to give [consumers] what they can't get from cable. We can do that right now if we settle this particular issue."

"It's introduced a level of confusion on the broadcast equipment side," says Warren Allgyer, Panasonic Broadcast president. "The RF conversion has sucked a lot of capital out of that market, but the impact is confusion about what approach to take, what production equipment to buy, and what business we're going to be in."

Sony Broadcast President Ed Grebow says the uncertainty has hurt HDTV equipment sales, and he thinks the industry needs a solution in the next 60 days. "We don't care what standard the FCC or ATSC picks, but they must do it quick or else they will kill digital television as we thought of it in terms of HDTV. Digital television will thrive, but it will be in terms of data, multi-channel and mobile applications." ■



Fort Sumner

Viacom chairman tells NAB crowd to unite, concentrate on big battles

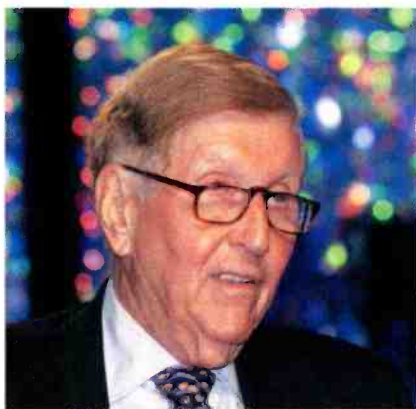
By Steve McClellan

Viacom Chairman and CEO Sumner Redstone told NAB convention attendees Monday that NAB members have to stop bickering about specific issues like the ownership caps and present a united front in bigger battles yet to be fought.

It was a clear reference to Fox and NBC, both of which quit the NAB because it refused to back off its aggressive opposition to raising current TV station ownership caps. Redstone told attendees that the NAB "is not the place for intramural jousting about the market cap or any other issue. We have more universal threats that require all of our united attention."

But during follow-up questions with reporters, Redstone couldn't identify a single universal threat that broadcasters should rally around. "I really don't see one. I see a fantastic future for broadcasting," he said. "But there is a hell of a lot to be done. A little more unification in fighting regulation would be a very good thing."

He also refused to say that Fox and NBC were wrong to quit the organization. "I don't want to judge" the decision by Fox and NBC to leave, he said. However, he stressed that CBS would continue to lobby aggressively to raise the caps for TV station ownership and would do it without quitting the NAB.



Redstone sees a 'fantastic future' but 'a hell of a lot to be done.'

With the notable exception of the station ownership issue, however, "basically we're on the same side [with the NAB] in fighting regulation."

Redstone described current ownership caps as "absurd" given the fact that cable companies can have "500 exclusive voices in one community. It really doesn't make sense." He believes the broadcast ownership caps will ultimately be lifted: "I certainly expect that rule to go away."

Redstone told reporters he expects to close the Viacom-CBS merger this month and to be able to do it without selling off UPN or spinning off syndication assets. "There is no public interest argument that warrants the death of UPN, which is just what would happen if we don't get it."

Redstone also said he doesn't believe the Justice Department would try to force the merged company to divest any of its syndication assets. ■

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Know audience and get a brand

Panel says fragmented market ready for targeted product

By Steve McClellan

Know thy audience and have a brand." That was the advice that Susanne Daniels, president, entertainment, The WB, had for programmers in the digital age, during a panel at a Television Bureau of Advertising conference April 10 in Las Vegas. In the case of The WB, she said, that means staying focused on kids, teens and young adults.

WB also plans to launch a major Web site later this year, WB.com, which will offer the network's cyber-savvy core audience the opportunity to chat with the producers of Dawson's

Creek and even offer them a chance to buy the latest outfit worn by Buffy, the vampire slayer. The challenge for The WB, says Daniels, is to keep bringing in young viewers.

The marketplace is increasingly fragmented, and that trend will only continue over time, says Kay Koplovitz, president of the Working Women Network and founding president of USA Networks. "The marketplace is ready for very targeted product."

Jean Pool, who was recently named president, operations, MindShare, after a 25-year stint at the J. Walter Thompson ad agency, said TV remains the most powerful ad medium. "Advertis-

ers are adjusting to the fragmentation. "There is no usage problem," added, indicating that viewers watching in record numbers. Studies show that the average household has 60 channels of television programming fed into it and viewers watch an average of 12 channels in any given week. The number of channels being fed into the home will only increase, Pool said. "The problem is, every viewer will be watching a different set of channels."

As a result, advertisers are searching for "other contact points" with consumers, she said. Her advice to broadcast stations: "You need to help advertisers find alternative touch points. The digital spectrum can help in that effort, she said, specifically citing iBlast and other spectrum aggregation ventures. "If you come together" in digital spectrum ventures, she told attendees, you could be competitive with any medium: "You are fools if you don't come together, because that is your strength."

Session moderator Barbara Cochran, president, the Radio-Television News Directors Association, asked the four women about their management styles. Pool said she is big on confrontation. "Confrontation," she said, "separates the girls from the women and the boys from the boys." But she also said leadership has to have a "natural" quality to it. It also helps to "enjoy being a woman." "It's not just about being a woman, it's about being a woman."

The WB's Daniels talked about "male answer syndrome." Basically, she said, it boils down to the fact that men tend to take a strong, definitive stand on an issue—at least, that's the posture they take in meetings. Women, on the other hand, tend to admit if they are "on the fence" on a given issue, she said.

Koplovitz talked about "sharing" ideas, as opposed to dictating. A difference in style based on gender, she said, men tend to take a "win-against-them" approach, while women tend to want to talk things through and "partner with as many people as possible to get my company where I want it to be."

In the world of new media, she said, Koplovitz, the perception is, you don't have to IPO and become a millionaire. The reality is, it's a lot harder than that. "You move at warp speed. It's a lot harder than TV. Harder, faster but more rewarding."



Though their TVB panel was about marketing, (clockwise from top left) Barbara Cochran, Susanne Daniels, Jean Pool and Kay Koplovitz also talked about a female management style. Pool suggested 'confrontation' can be a valuable tool.

Fritts sees portals, possibilities

Hearst Corp.'s Frank A. Bennack Jr. receives Distinguished Service Award

By Paige Albinak

While broadcasters face some of the "roughest fights we've ever experienced," they also are looking at opportunities that could make them more successful than they have ever been, said NAB President Eddie Fritts during his state-of-the-industry speech in Las Vegas Monday morning.

"Sometimes we stare so long at the door that is closing, we don't see the one that is opening," Fritts said, quoting Alexander Graham Bell. "Ladies and gentlemen, broadcasting stands before a door that is opening, not one that is closing."

Broadcasters' strong local content is enticing Internet companies that want to team with them on data services, Fritts said.

"The Internet people are coming to broadcasters almost daily seeking partnerships. We're being offered alternative after alternative, possibility after possibility," he said. "What do we have that they don't have? They have investors with money, but they don't have the eyes and ears that broadcasters can deliver. They know how to aggregate investors, but they don't know how to aggregate an audience as we do."

Although technological and business opportunities are opening to broadcasters, they are battling with the government to fight off an FCC plan to inaugurate hundreds of low-power radio stations.

"I don't know what's fuzzier, the static from low-power FM or the FCC's thinking on the issue," Fritts said.

Fritts and the NAB are pushing the government to require cable operators to carry broadcasters' analog and digital stations during the conversion to digital. "Dithering and indecisive," Fritts complained, "the government has failed in its basic obligation to guide this process."

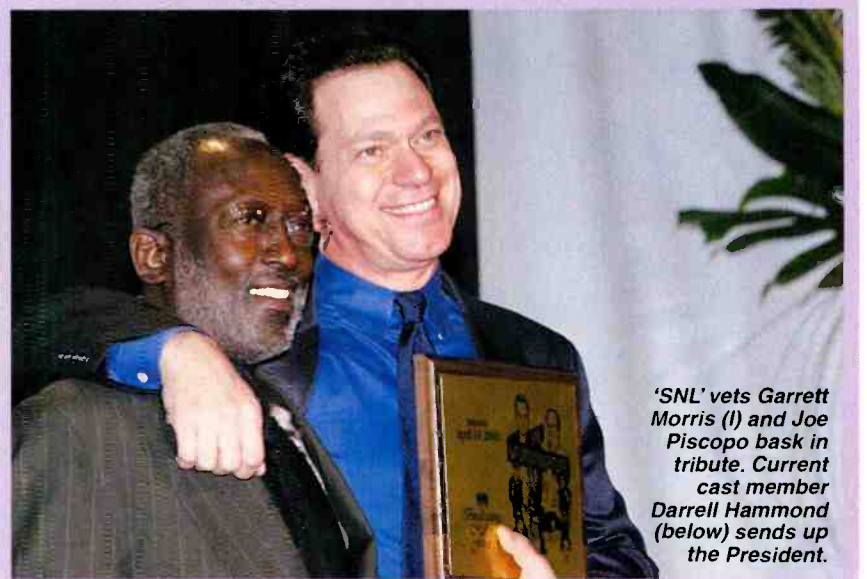
Fritts also asked the government to clarify copyright laws to ensure that broadcasters' content is protected from being freely distributed on the Internet. "If they can patent such things as gene

sequences, surely we can get better copyright protection for the content we create and stream."

Also at the session, Fritts gave the NAB's Distinguished Service Award to Frank A. Bennack Jr., president and CEO of Hearst Corp., who has worked for the company since he was 17 years old, rising through the ranks from clas-

sified ad salesman, to publisher of the *San Antonio Light*, to publisher of all company's publications, to finally head of the entire corporation.

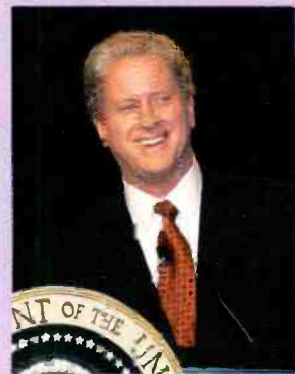
"I am optimistic and hopeful about television's dynamic impact on our local communities," Bennack said in accepting the honor. "Has television changed? Yes. Been displaced? Never." ■



'SNL' vets Garrett Morris (l) and Joe Piscopo bask in tribute. Current cast member Darrell Hammond (below) sends up the President.

'SNL' been 'bery, bery good' to them

The NAB Hall of Fame presentation to *Saturday Night Live* pioneers Lorne Michaels and Dick Ebersol was played all for laughs Monday afternoon, with a few industry zingers included. Appearing on videotape, Michaels, the executive producer of the 25-year-old NBC sketch-comedy landmark, quickly referred to NBC's recent defection from the NAB. Noting his own battles with the network over the years, he cautioned, "No. 1: They often win. And No. 2: You're not the only group they haven't paid." For the most part, in-person guests at the event were the lesser-known past Not Ready for Prime Time Players: Joe Piscopo, Nora Dunn, Tom Davis, Garrett Morris and Don Novello. Current *SNL*er Darrell Hammond starred, portraying President Clinton, praising the Tropicana cocktail waitresses and effusing, "It's nice to have a fresh excuse to give a long speech." But inadvertently (and incontrovertibly), the funniest part of the luncheon was the industry's self-congratulatory video montage to local broadcasting, with background lyrics of the popular Latin crossover hit reworked so that the NAB's version of Ricky Martin was now singing, "Serving La Vida Local." Talk about not ready for prime time.



—P.J. Bednarski

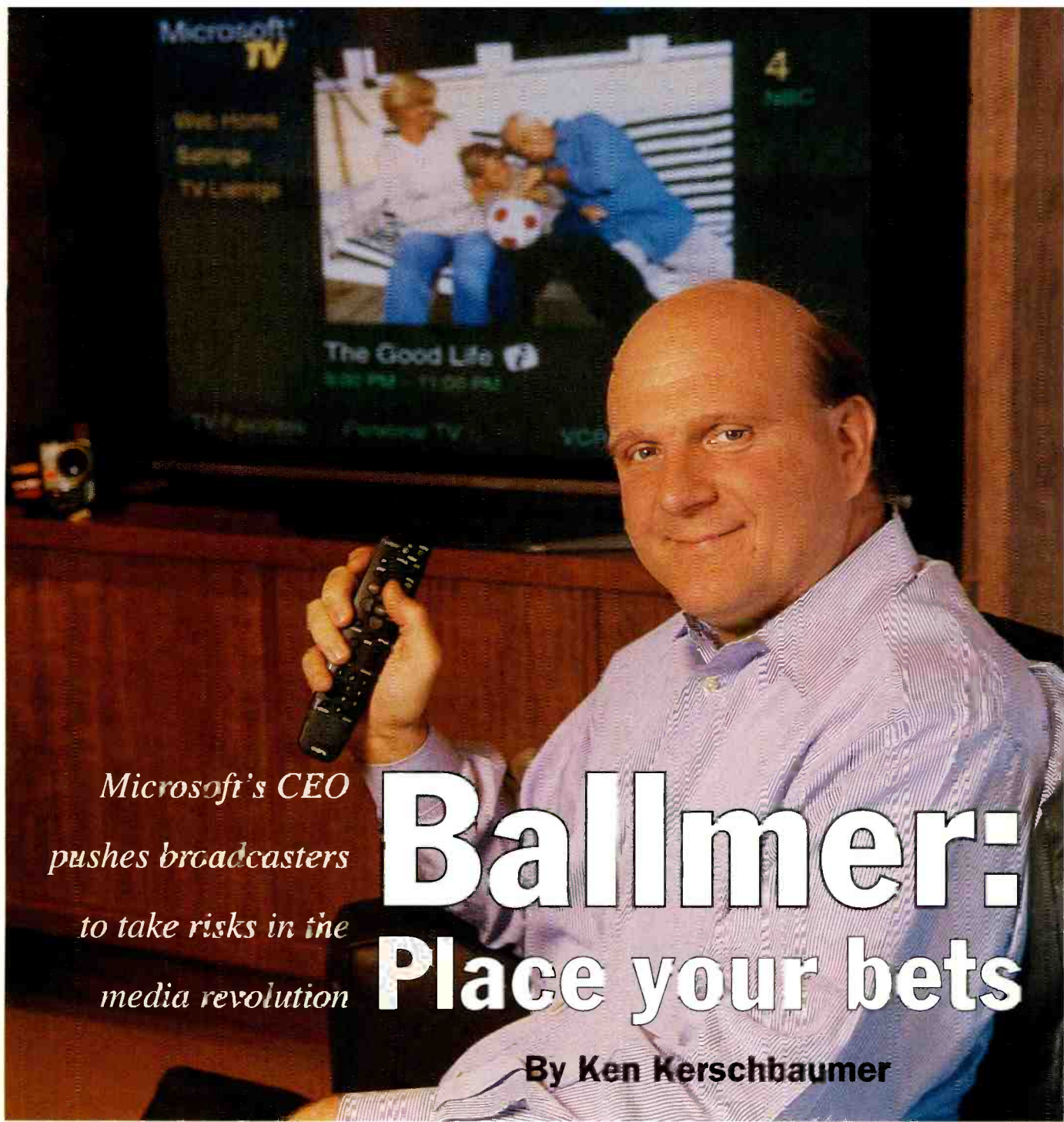


Photo: Doug Wilson / Black Star

*Microsoft's CEO
pushes broadcasters
to take risks in the
media revolution*

Ballmer: Place your bets

By Ken Kerschbaumer

He's not quite as well known as Bill Gates, or as rich, but Steve Ballmer, the newly appointed president and chief executive officer of Microsoft Corp., certainly shares the vision, and the current problems, of taking the software giant into the huge, converging unknown.

In an exclusive interview with *BROADCASTING & CABLE*, the Harvard graduate who started his career as an assistant product manager at Procter & Gamble, challenges broadcasters to get in the game.

"I'd encourage them not to be the last guys to

make some preliminary bets," he says. "Invest and get some experience in what it really means to start the process of changing their operation and content for the new world."

Ballmer, 43, who joined Microsoft in 1980, is now a member of Microsoft's Business Leadership Team and part of the close-knit group that creates the broad strategic and business plan for the Redmond, Wash., giant. He ascended to the CEO spot in January.

An edited version of his conversation follows:

Last June, at a Paine Webber Growth and Technology Conference, you said that the future of TV viewing will evolve. Could you explain that and what you see driving that evolution?

It'll evolve because there are many more video options now than there were years ago. There's going to be new ways people will want to take advantage of the way people are recording and distributing video, and there's going to be a lot more customized viewing of TV. Those things change the experience.

We'll also want to add new communications options into the television. For example, I think voice-activated instant messaging is going to be big. I want to be able to yell at my TV and say, "Hey, Dad, did you see that?" to my Dad half way around the world. And then, of course, the level of interactivity, both for commerce and entertainment, will continue to expand.

So how does that change the definition of broadcast, which is really about pushing content out?

Well, I think there are many aspects to broadcast. And I believe broadcast is segmented out to people who make content and then to people who package, sell and distribute content. I think both of those opportunities will continue to exist, and I don't think anyone who is in that job would say they were involved in just pushing content out. Rather, they would say they're involved in the distribution, packaging and operation of that content as opposed to the sourcing. And I don't think those opportunities go away. But it does mean the guys who are not the originator of the content will have to transform the kinds of skills and technology they use, the business models they'll pursue.

So what would your general advice be to the broadcast industry?

First, pick the right technology, which is obviously a gratuitous comment but I think an important one [laughs]. Second, I'd encourage them not to be the last guys to make some preliminary bets. Invest and get some experience in what it really means to start the process of changing their operation and content for the new world.

How do you see the TV and Internet media working together?

Over time, they'll blend into one seamless experience. Take what we do at

WebTV. We have three levels. There's an Internet-on-TV level, which I'd say is not very interesting in the sense that there's not really much mixing of the experiences. Then you get to the enhanced-TV level, where in some sense you're on the side augmenting the experience with Internet content. And then you get to personal television, where you have fairly full access in an integrated way to Internet facilities and interactivity even built into the TV-viewing experience: participating in the shows, reaching appropriate commerce opportunities, having a chance to manipulate the video streams you're looking at. Those kinds of opportunities are exciting.

That gets to the opportunity that faces broadcasters who are going to have digital spectrum and a chance to push out bits as opposed to programming. How do things like PVRs change broadcasters' focus and approach to becoming datacasters?

I think it's a little more complicated, because it'll depend on where they sit in the food chain. Some things require a large number of bits distributed in a certain way, and they very well might be distributed in a better way than by the broadcaster. On the other hand, bits that go with the video signal are certainly better coming from the broadcaster than anyone else. And the MSOs have another position in that they have a broadband pipe that can be used for a variety of things.

What do you think of the datacasting opportunity?

Databroadcast can make some sense if you understand that it requires a lot of hard-disk space and that the hard disk is used as an important part of the experience. In the PC world, that's easy to do, and, in the TV world, what consumers might or might not be willing to afford could have an impact. In a world where people are buying PVR boxes like ours or the stuff TiVo and Replay are doing, datacasting could make some sense because then you have a big enough hard disk to cache some of that data.

Can you talk a bit about the change in your corporate vision from a computer on every desk and home to information anytime, anyplace, any device?

As I look at the opportunities today, the PC world has not run out of opportunity. But, in some sense, [business] opportunities have been extended by the Inter-

net and a variety of intelligent devices. I think the soul of the information revolution has been the PC, and I think we'll certainly have a "dual soul" next that will be the next generation of the PC and the services that live in the network.

People are going to want to access those services in a variety of ways. I'm going to want to be able to instant-message anyone at any time. Yet, once you say you want to do that, you have to provide the premiere experience on that device, which is why we've put so much effort into our TV platform and the service.

With regards to Internet video, there's a lot of talk about when it will become broadcast quality. How far off do you think that is, and is it attainable given the crunch it will put on bandwidth?

It's certainly an attainable goal, no problem. The question of when, however, is another story. You need the bandwidth, but I think the bandwidth won't be as big an issue initially as putting in an infrastructure that drives the quality-of-service guarantee. You're not going to want to stay on one network; you're going to want to hop Internet-style and yet still have a chance to reserve bandwidth.

How is the work going with AT&T?

It's going quite well. We'll be "trialing" our TV-platforms technology with AT&T this year, and we're excited about that.

Some broadcasters tend to view it as just another distribution medium to get their content out.

There's a level of interactivity and a level of multimedia that I don't think people insist on in a TV-viewing experience. Broadcasters need to think about how they enhance and change the content experience.

How do you see WebTV competing with AOL TV?

AOL TV is a bit of a funny beast in the day of AOL and Time Warner merging. You know what we have today with WebTV, and we're clearly leading the pack with that stuff. And I think we know what's good, bad, etc.

The next battleground will be over what kind of personal-TV experiences can be delivered in the broadband world. There are two satellite players, and we're gonna play with both, and we think AOL is going to play with both.

And then there's the cable world, where, assuming the merger goes through, you can pretty much assume that Time Warner is going to use the AOL box. Then if you look at the leadership group on our side, we have good relationships with AT&T, Rogers, of course Charter. And we're an investor and have a good relationship with Comcast. The proof will be in the pudding...

You mention the AOL-Time Warner deal. I know that even AOL customers were freaking out that there was too much power in one place, that sort of thing. But it seems like the deal is logical.

I don't know if it's logical or not. AOL has clearly said they want to be a media company. They want to compete with broadcasters, and they might want to partner with some, too, but they want to compete with media companies and broadcasters. That's what they want to do. Our strategy is to partner with the industry and focus on providing technology and communications capabilities through software. It's a different strategy but one that I think allows us to be broader. I'm not saying their strategy is ridiculous, but it's not a platform strategy, and I don't understand how AOL TV can get popular as a platform for a lot of operators. I think the operators are going to be important in making the ultimate choices of what kind of platforms and boxes their customers use. I think what AOL has probably helps us in terms of providing the platform for personal television.

Do you think AOL tied itself too closely to Time Warner?

I don't know if it's too closely, but it gives us an opportunity. Anyone who competes with Time Warner is a friend of ours. [laughs]

With regards to the antitrust lawsuit, win or lose, are you concerned that it could make potential partners hesitant?

No. People said that after the findings of fact were negative. And, since that time, we announced major partnerships with Best Buy and Radio Shack that are very relevant to the television space. We continue to pursue new opportunities, and there are a lot of new partnerships that have happened since people have understood that this judge is not likely to be favorable to us. I think it's a risk, and I think we're going to have to work hard, but we've been having good success. ■



Visitors to the Microsoft booth interact with 'Jeopardy' in WebTV demonstration.

Microsoft tunes in to TV

Broadcasters' infatuation with datacasting plays to software giant's interactive ambitions

By John Higgins and Ken Kerschbaumer

After making so much noise in the past over securing a piece of the digital broadcast business, Microsoft Corp. has been moving much more quietly in trying to stake a claim in that real estate.

For two years, Microsoft publicly pushed broadcasters to adopt a digital TV standard that would be friendly to the PC world, enabling programmers to embed data that consumers would be able to play with as they watched TV game shows and sitcoms. Consumer electronics manufacturers fought back for the highest-resolution digital standard, betting that, if the broadcasters provide the highest-quality picture, TV manufacturers would move more HDTV sets.

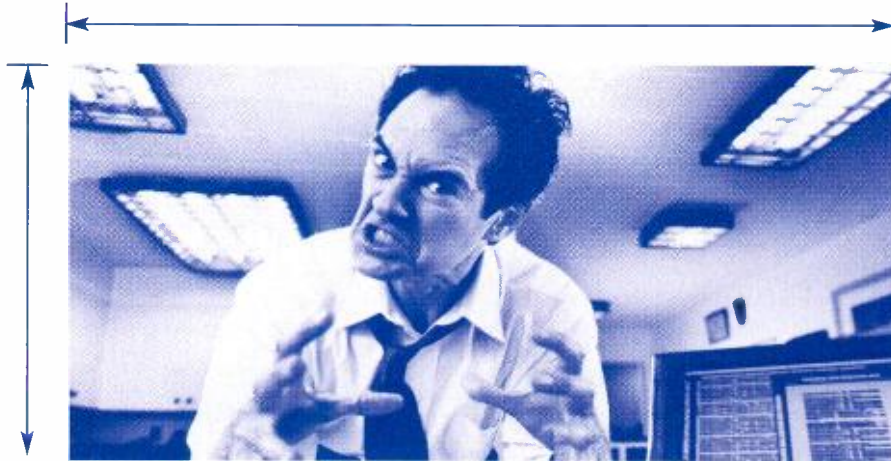
On the cable side, Microsoft executives just as publicly campaigned for operators to employ its operating system inside new digital set-top converters, to

the extent of making multibillion-dollar investments directly in MSOs.

Microsoft didn't quite win that fight, but the broadcast world is moving its way. With no one figuring out a business model for simply delivering HDTV, broadcasters' current obsession is using their spectrum for various datacasting models.

That holds the promise that Microsoft Chairman Bill Gates vision of interactive TV may actually come true, with consumers playing along with *Who Wants to Be a Millionaire?*

The company is primarily trying to win support for its Microsoft TV platform, a series of tools and server software aimed at helping developers create and distribute interactive TV. The goal is to have its hand in the length of the TV production assembly line, production, post-production, transmission and



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distribution. That will hopefully, in turn, prod stations, networks and TV producers to develop interactive TV content more quickly. And that interactive content will make the Microsoft TV platform more attractive to set-top box makers and cable MSOs.

"As fascinating as all the capability WebTV may provide, they need content, proprietary content," says Sanford Bernstein & Co. media analyst Tom Wolzien. Eventually, as TV stations and networks need further assistance, Microsoft sees a revenue stream in "some sort of serious facilitation fees, not unlike the facilitation fees you see with credit cards," Wolzien adds. TV providers will still need help in such areas as heavyweight server farms and backhauling data to and fro across the country.

Microsoft executives had at one point envisioned licensing out cable set-top, server and development software on terms that cable operators derisively dismissed as "a nickel a click." Gates tried to negotiate for a tiny slice of nearly every transaction consumers conducted through their TV sets, from surfing for a Toyota ad to buying through QVC Interactive to even changing the channel.

But that upfront demand is on the back burner. Microsoft's focus is now tools and partnerships with manufacturers of TV technology that stations and networks use.

"The business model for us is simple," says Phil Goldman, general manager for TV platforms. "We want to participate and accelerate this revolution in TV because we think completely new market segments are going to grow and we can't afford to wait 10 or 15 years. We need to make it happen."

Witness the news Microsoft is making at NAB this week. No investments in Geocast, iBlast or other station data broadcasting ventures. Instead, the company has software partnerships with TV technology suppliers like Grass Valley Group, Vertigo Multimedia and Video Design Interactive. Combined into earlier deals with TV tech suppliers such as Chyron, Peak Broad-

casting and Avid Technology, Microsoft wants to ensure maximum interoperability with its Microsoft TV platform.

"In order to promote their software on set-top boxes, they need partners that will create the tools that will permit broadcasters to create the content," says Isaac Hersly, president and CEO of Norway-based Peak Broadcasting's U.S. operations, which distributes the

tal, this is the biggest change that's ever happened in the history of TV," he says. "I think people will laugh when they look back at the turn of the century."

A major part of this change is the concept of enhanced television, something Jon DeVaan, Microsoft senior vice president, consumer group, explains has three major aspects. The first is personal TV, the ability for the consumer to record or receive specific content. The second is interactive, which includes both the content creation side, making new ways to attract viewers, and advertising, making new ways to add value to advertisements. The third is being able to use the Internet through the TV. "We see that as a super convenience," adds DeVaan, explaining that the concept of "hybrid viewing" is on the rise, particularly among teenagers..

When it comes to true opportunities, it is the potential of datacasting that serves as both opportunity and challenge for Microsoft. Microsoft's involvement in browser development, streaming video development and enhanced TV services are just a few of the areas that will play a role in helping maximize datacasting. But first comes the challenge of unifying many visions, both within and outside Microsoft.

"There's a lot of clarity of vision across many parts of the industry, but not all of the players share the same complete vision," says Paul Mitchell, group manager,

Interactive Television, for Microsoft. "What you're seeing is people embracing the opportunity to use broadcasting for more than pictures and sound. They've begun to embrace the notion that the transmitter can be used to create some new business opportunities through datacasting."

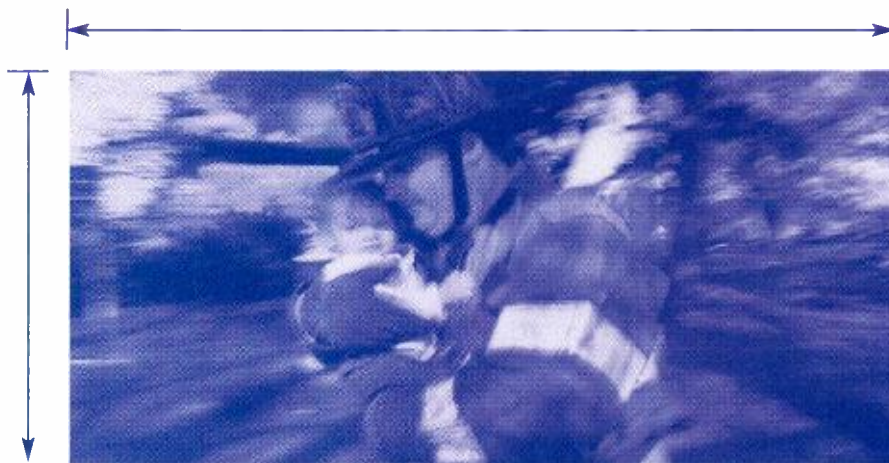
And broadcasters, according to Mitchell, are in the most advantageous position. "Broadcasters will be building business models around their unique asset, which is a wireless tether in a local community, something not matched by cable or satellite." ■



company's TV graphics tools.

Contrast that with the moves Microsoft has made in cable. For example, Microsoft last year pumped \$5 billion into AT&T Corp. to secure a place in the digital set-tops AT&T's cable division is deploying. In Europe, Microsoft has spent almost as much for pieces of Britain's two largest operators, plus cable systems in the Netherlands and Portugal.

Many have likened the move from analog to digital to the move from black-and-white to color, but Goldman sees it differently. "Because of all the services that can come along with digi-



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Beyond digital deadlines

How the industry is putting DTV technology to work

By Andrew Bowser

Digital has arrived, and it's hard not to be overwhelmed with the possibilities. Those ahead of the curve in this global retrofit have had the daunting task of making substantial investments in new equipment and infrastructure long before they are proven—and, more important, long before consumers have decided exactly what they want from digital technology.

Never mind the FCC-mandated DTV deadlines: Today's digital broadcasters are looking

beyond timetables to leverage the digital foundation and exploit new opportunities in multicasting, data broadcasting and convergence with the Internet. For now, many of these wish lists are the "what if" stuff of tech-heads and corporate water-cooler bull sessions.

More tangible are some of the early deliverables in the digital equipment arena. Broadcast engineers have learned that there are no "magic" solutions. Often, it's not the equipment you buy, but how you put it all together. Toward that end, facilities-design issues become crucial,

because the best-integrated systems won't work optimally if the workflow doesn't make sense.

Typical of these newly digital broadcasters is WETA in Washington, D.C. The public broadcaster and producer recently built a multichannel television plant to meet the technical requirements of not only SDTV and HDTV but also of its counterpart public radio station.

"That center services our analog public broadcast mission, our new digital mission, and it's also expandable to do multiple channels. In the future, we expect that our digital service

10 different strategies

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will be multichannel as well as HD," says Lewis Zager, WETA vice president of technology.

As the following 10 case studies illustrate, building a "future-proof" digital facility requires equal parts innovation, money, conviction, knowledge, and a willingness to keep one's options wide open.

Digital hub in Miami

NBC O&O set to cash in on South Florida growth

In the old downtown-Miami theater that housed WTVJ for the better part of 51 years, Operations and Engineering Director Paul Russell sometimes found himself walking half a city block indoors just to meet his station colleagues.

Negotiating the three-story theater will soon be old news. The NBC O&O sold the aging theater property and rolled over the proceeds into a fund earmarked for a brand-new \$7.5 million, 64,000-square-foot digital operations facility in Miramar, Fla., about 22 miles north of downtown Miami and the same distance south of Fort Lauderdale.

The outlook for the Miramar facility, scheduled to be fully operational by mid-summer, goes far beyond architectural design. WTVJ has overhauled its business model, positioning itself as a "hub" for program streams—its own, as well as those sold as a service to other TV stations in the market.

The idea was to spend a "substantial" amount of money up front on equipment that can be "reused" as more streams come online, without having to add more equipment or operators, says Russell. "We looked at the new facility from day one as an opportunity not to do things the way we had been doing them in the past."

Right from the start, the new digital operations facility will be running its own NTSC broadcast, along with an



The interior of the new Miramar, Fla., facility is still a work in progress.

NTSC broadcast for another local TV station.

WTVJ's digital signal is not up yet. An application has been filed with the FCC for a channel change to 31—the current digital assignment is ch. 30—and relocation of the transmitter.

The core of the "hub," built with the help of systems integration and engineering firm A.F. Associates Inc., rests on video servers and automation. Grass Valley Group (GVG) Profiles will hold all the program material—about 18 hours online—for each station. Louth automation will take the program log from each individual stream, bring it into the system and control the switch-

ers, servers and archive retrieval equipment that is online, so that all the program material available is ready to go at least eight hours ahead of time.

For the WTVJ stream, two GVG Profiles are set up in a mirrored configuration so that, if one fails, the other can go on-air immediately. One of

them will ingest everything that's needed from the satellite. Archive material is being stored in DVCPRO using two SmartCart library systems. "If we have a major failure, we can get on the air by sticking it into any tape machine in the house," Russell explains.

It took close to two years to select the new facility's location and another two years to build it.

There are two 4,600-square-foot studios. One is open to the newsroom, so the cameras can easily be turned on the assignment desk or the Internet desk. "The newsroom itself is an extension of our primary studio," says Steve Kaplan, WTVJ's opera-

WTVJ

MIAMI

Owner: NBC Station Group

Architect: Arquitectonica of Miami and Theodore Roux of Coral Gables, Fla.

Systems Integrator: A.F. Associates Inc.

Size: 64,000 sq. ft.

Budget: \$7.5 million

Completion date: Mid-summer 2000

tions manager.

The digital infrastructure wiring can support 1.5 Gb/s and will be operated at 360 Mb/s. The master-control area encompasses a Philips Saturn master-control switcher, satellite integration, camera shading, microwave reception, archive retrieval and remote-camera control.

Eight nonlinear editors will be used for news. In post-production, WTVJ editors chose Quantel Editboxes. Three of them are configured identically and networked together with Picturebox still stores, Paintbox and Hal, along with some Macs used by the graphics department.

One room has been set up for a robotic-camera operator, who will control five Vinten systems set up in both studios. The operator's room will also handle seven external weather cameras and three more robotic cameras to be installed in WTVJ's new "window on the city" live news production studio.

Some equipment is already online at the new facility, so staffers can get some hands-on experience ahead of time. "You are going to have enough trouble finding the bathrooms in the new building," Russell says. "If you throw in new computer systems and newsroom systems and everything else, people are just going to overload." ■



Wtvj wants to position itself as a service center for program streams to other stations in the market.

Fishbowl in the Big Easy

With a digital studio in the middle of a New Orleans shopping mall, all eyes are on WNOL-TV

One can't help but wonder what it's like to work in a fishbowl.

"Several staff members expressed the same concern when they saw the designs," says Gary Furlow, WNOL-TV's director of production and operations. "I assured them that you get used to it, and they have. In other facilities, most people working in operations and production go into a dark, windowless room in the morning, then come out for lunch and to go home. Otherwise, they never see the sun, unless it happens to be on the monitor in front of them." But that's not the case at this Tribune-owned New Orleans station.

Building a new \$5.7 million digital facility for WB affiliate WNOL-TV on the third floor of the upscale New Orleans Centre shopping mall took some creativity and careful planning.

The entire 23,000-square-foot facility is an exercise in adaptive reuse. The tech areas are turned toward the mall, so passersby can check out the broadcast as it's being created. The setup is also nice for tour groups, since there's not that much extra space within the facility proper.

Space is certainly at a premium in WNOL-TV's central equipment room, which includes two rows of 10 racks, placed back-to-back. The racks were custom made by Beck Associates to fit the 1,000-square-foot space. Instead of full-size racks with 2-inch spaces between them, the racks were built "as if they were going into a remote truck," Furlow notes. The racks contain the main



A light and airy shopping-center walkway leads to the third-floor offices of WNOL-TV.

frames for most of the facility's equipment.

Among the pieces of equipment on the racks are two HP (now Pinnacle) media stream servers operating under Odetics automation control. The media streams are mirrored—in case one fails—with 25 hours of storage on each. The racks also contain satellite downlinks, a Sony BVE-9100 editor, Sony DVS-7250 production switcher, RTS

digital intercom, the master-control switcher, digital microwave system, Philips digital router and NVISION AES audio router, a variety of VTRs, and a 1-inch tape machine for dubbing programs and commercials.

Laying cable beneath the racks was one of the biggest challenges for the system integrator—at most, there was about 5 inches of clearance under the floor tiles. All told, the job required 10 miles of cable, most of which is tucked under two rows of tiles, according to Beck's director of engineering, Bill McKenna.

Adjacent to the central equipment room is the production-control area containing the Sony DVS-7250 production switcher, a Chyron MAX! character generator, and a Wheatstone SP-8 analog audio console. "We call this our million-dollar room, because that's about what you're sitting in the middle of," says Furlow.

This "million-dollar room" not only serves as production control for telethons, cooking shows, public affairs



The WB's spokesman Michigan J. Frog adorns a wall of the new digital facility.

WNOL-TV

NEW ORLEANS

Owner: Tribune

Architect: Raes Associates

Systems Integrator: Beck Associates

Size: 23,000 sq. ft.

Budget: \$5.7 million

Completion date: August 1999

and other TV shows but also pulls double duty as a linear editing room. When in editing mode, Furlow uses a Graham-Patten 400 D/ESAM digital audio editing board tied into the Sony editor. The DVS-7250 is integrated with the Sony 9100 production editor, so the board can be controlled completely in edit mode.

The 48-channel Wheatstone audio board is the only analog device in the building, purchased because the digital boards available now "are way too expensive," Furlow explains. "The digital board is a quarter of a million bucks, while an analog board is about \$80,000."

The production control room also has a Videotek VTM-190 multiformat on-screen monitor displaying on a Philips 17-inch LCD screen to measure 601 and AES digital. It is set up with long cables so it can be moved around, depending on how the room is being used.

WNOL-TV's new digital facility has been operational since Aug. 13, although production work began a month prior to that. Most of the equipment at WNOL-TV is new, with the exception of such items as the Chyron MAX! in the production control room, which was reworked and upgraded to serial digital 601 by the manufacturer. The Sony editor was also upgraded from a 9000.



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Operating in a tapeless world

WETA-DT's \$8.5 million automated digital plant has things running a little too smoothly

WETA-DT had more than modest goals for the \$8.5 million digital revamp of its origination and transmission facility for SDTV, HDTV and FM broadcast: create a completely tapeless operation for both programs and interstitials, full automation, and dynamic monitoring of all channels coming out of the facility. And that was just the beginning.

WETA-DT engineers engaged in a lengthy debate over the drawbacks of traditional videotape and the practicality of chucking it, given today's level of video server development. In the end, tape was relegated to the dustbin.

"Our goal was to future-proof the facility," says vice president of technology Lewis Zager. "We feel that the future architecture for broadcast origination facilities is server-based, not tape-based. So that is the architecture we adopted."

With the assistance of systems integrator Communications Engineering Inc., the WETA-DT engineering team designed and rebuilt the plant, which was completed in November. The entire facility, including the TV and radio facilities and supporting infrastructure, occupies approximately 12,000 square feet.

Currently, the facility is transmitting NTSC channel 26 and HDTV/SDTV channel 27 using its new digital infrastructure. But the wiring and gear is in place to add additional channels. "They could easily go from two to six additional standard-definition channels, and even multiple

HD channels, should it be desired," says Lawrence Brody, president of CEI.

To support the anticipated large volume of SD and HD programming, possibly from new program streams or services for broadcast clients, WETA specified both 270-Mb/sec and 1.5-Gb/sec SDI video, along with AES/EBU audio routing and distribution. Two Grass Valley Group Profile servers, each with about 720 Gb, or about 70 hours of storage, provide ingest and payout of program content from network satellite

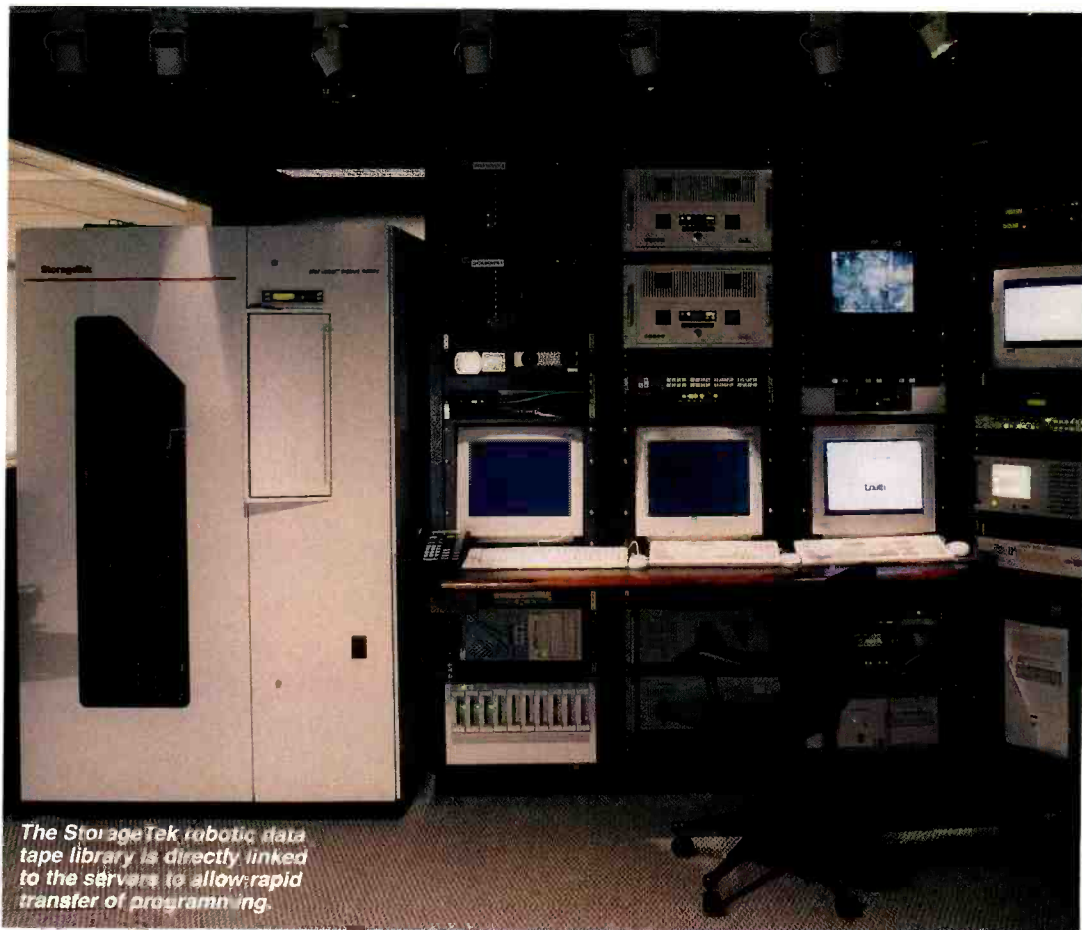
feeds or external videotape. The video servers are also set up for redundancy to protect the on-air broadcast.

HDTV programming currently originates from Panasonic HD D5 and Sony HDCAM VTRs, which play back to a Grass Valley HD master-control switcher. The HDTV signal is then fed to a Harris/Lucent FlexiCoder ATSC encoding system with a PSIP+ generator. A Sencore AT951R 19.39-Mb/s disk server is used for replay of pre-encoded HD streams.

Besides servers, WETA-DT

engineers wanted to keep a significant amount of material in nearline storage using a StorageTek robotic data tape library with 17.3 terabytes, or approximately 3,500 hours, of storage. A direct Fibre Channel link to the servers allows for rapid, simultaneous transfer of programming—as fast as four hours—programs in 14 minutes—with all four StorageTek tape drives activated, according to Brody.

The audio infrastructure includes a Tektronix AES/EBU synchronous routing system. It is shared with radio station WETA(FM) (90.9), although both have



The StorageTek robotic data tape library is directly linked to the servers to allow rapid transfer of programming.

WETA-DT WASHINGTON

Owner: The Greater Washington Educational Telecommunications Inc.

Architect: Robert & Vardell of Arlington, Va.

Systems Integrator: Communications Engineering Inc.

Size: 12,000 sq. ft.

Budget: \$8.5 million

Completion date: November 1999

separate routers.

Engineers also wanted an optimized monitoring system that could be easily reconfigured depending on how many channels were being broadcast at any given time, whether two or eight. Rather than use fixed monitors, the solution was a custom monitor wall and oper-

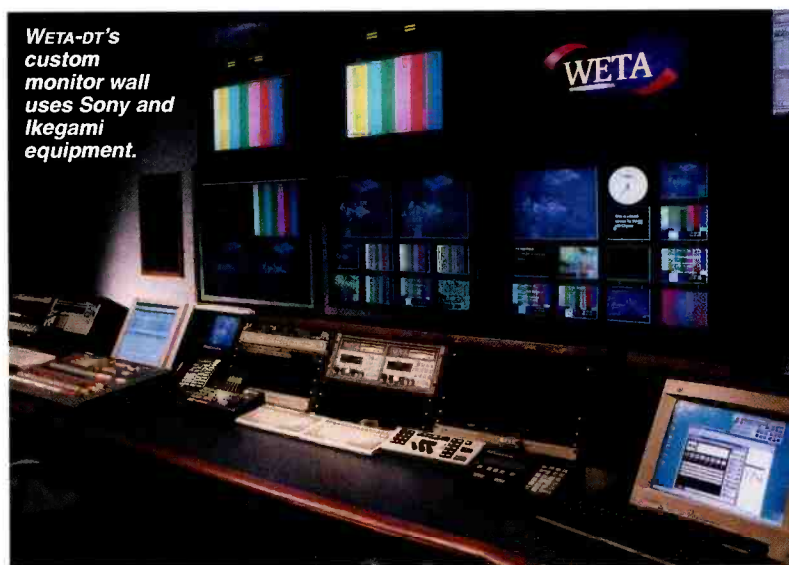
ator's console. Everything that appears on-screen is user-definable, from the size of the monitor to the aspect ratio. The monitor wall is an amalgamation of large displays by Sony (one 42-inch plasma display panel, three 50-inch LCD rear projection displays, and three 34-inch wide-screen HD monitors), along with smaller monitors (9- and 14-inch) from Sony and Ikegami and flat-panel computer monitors. They are all integrated with a Miranda multi-image display system.

The graphics system incorporates a Chyron Maxine! graphics system and an HD Duet character generator. A source ID system is used to help operators—one to four, depending on program schedule and complexity—keep track of all the program sources.

WETA-DT is one of the first users of Louth's Global Media Transfer (GMT) technology, according to Brody. Louth GMT can find program or interstitial information existing anywhere on the system and, if it's needed, transfer it to the server and get it ready for playback.

One thing that is not digital is WETA-DT's nearby analog production facility, located about a city block away. This production studio is linked to the new facility using a WETA-owned 60-strand fiber-optic bundle. Signals from the analog production studio can be called up transparently via the control system in the new facility.

New digital studios and pro-



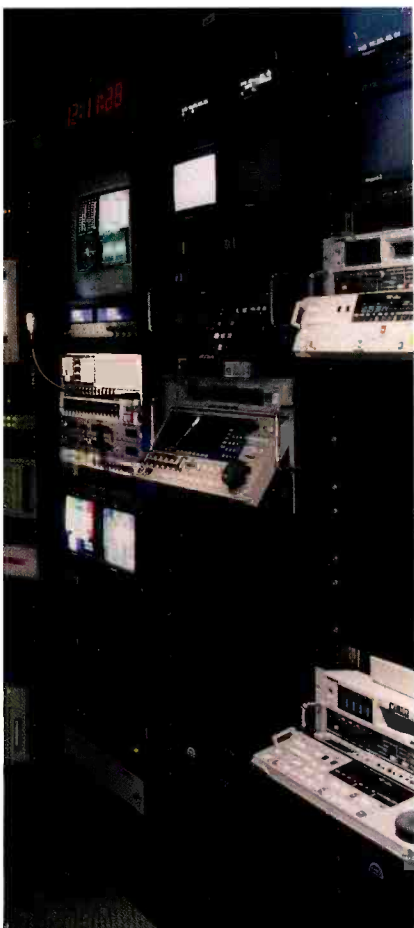
WETA-DT's custom monitor wall uses Sony and Ikegami equipment.

duction sites are being considered but may have to wait. "The primary mission was to be able to operate a tapeless environment, and that's pretty much what we have accomplished," Zager says.

Tape is primarily used for overflow. And tapes are sometimes pulled from existing archives or brought in from the outside. But ultimately, everything is fed into the servers. What actually goes on air in SDTV is

almost never from tape.

Zager recently asked one of his staffers what he thought of a broadcast facility that's so automated that there is no tape to physically handle and load. "He said he's happy to be here, but he's bored," Zager says. "We will find something for him to do. But in the meantime, I am happy for somebody to be bored, because it means things are running as designed." ■



The WETA-DT shares its audio infrastructure, including a Tektronix AES/EBU synchronous routing system, with radio station WETA(FM) (90.9).

DTV/radio/Internet union

Technology convergence is the focus of WHYY's new TV station

WHYY's Bill Weber has a new title that barely fits on his business cards: vice president for content distribution and corporate technology development.

The new title reflects a reorganization that is blurring the lines between traditional IT and broadcast engineering. The impetus is the completion of WHYY's \$25.4 million, 60,000-square-foot "Technology Center," part of Philadelphia's Independence Mall and built to accommodate DTV and other digital services.

"The main theme is the convergence of the technologies," says Weber. "We overlaid the construction of the digital infrastructure for television and radio broadcast with the emergence of the Internet and the arrival of DTV. We built a common core of technology within this new building that supports all the services in a merged concept."

Nobody at WHYY "works in TV" or "works in radio" anymore. Instead, says Weber, the focus is on organizing content from any source and around "service strands" for the community. That includes regional news and public affairs, arts and culture, early childhood education, distance learning, entertainment and information for seniors, and workforce training.

"We are attempting to use the digital distribution platform as a way to accelerate the delivery of new products and services to strengthen the delivery of our educational mission," says CEO William J. Marrazzo.

The technology focus is evident in the transparent



The high-tech theme pervades every area of the building.

glass façade of the new building, which architects saw as a giant open notebook computer with an 80-foot-long ticker that broadcasts a continuous stream of news.

The high-tech theme continues inside with exposed cables in a suspended encasement that runs throughout the building. Besides looking "techie," the cable serves to insure "future-proofing." When the facility needs a major infrastructure upgrade, it can be done without having

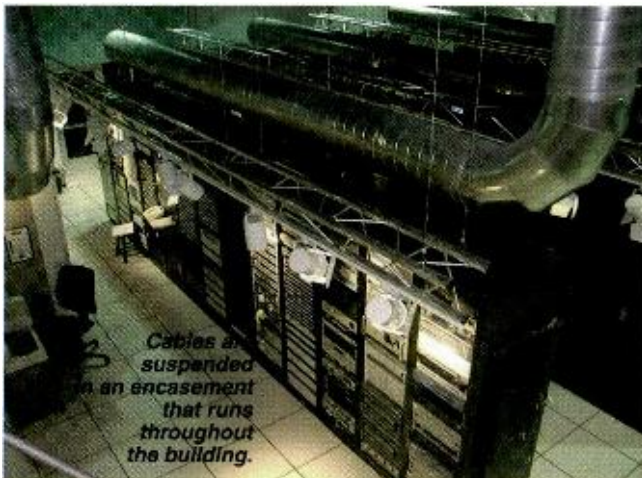
to tear apart the walls and rebuild the shell.

The plant has been fully operational since November. One of the biggest challenges in erecting the new facility was the juggling act required to keep WHYY on the air. "We purchased the land our old facility was on," Marrazzo explains, "and we have been razing and rebuilding it in stages to keep our video and radio services operational."

Systems integrator Communications Engineering Inc. worked with WHYY's technology team to come up with solutions, all the way through implementation and testing. The infrastructure of the Technology Center is serial digital at 270 Mb/s with AES digital audio networking.

The Technology Center houses five multimedia studios and control rooms designed to accommodate production for TV, radio or the Internet. A substantial chunk of the Technology Center is broadcast-ready civic space for theater, music, lectures or special events.

WHYY has purchased an



Cables are suspended in an encasement that runs throughout the building.

WHYY

PHILADELPHIA

Owner: WHYY Inc.

Architect: Burt Hill Kosar Rittelmann Associates

Systems Integrator: Communications Engineering Inc.

Size: 60,000 sq. ft.

Budget: \$25.4 million

Completion date: November 1999

Odetics Roswell database-management system to keep track of the reams of content the new facility is expected to generate. AudioVault will be used to provide the same functionality for audio services and content.

Weber is also investigating very low-cost techniques for capturing and producing content to fill the four digital channels the station expects to operate. One potential solution is Play's Trinity "control-room-in-a-box" coupled with standard or low-cost robotic cameras. WHYY recently purchased two ParkerVision camera control systems. "The cost of video production is astronomical," notes Weber. "If we want to create a lot of content, we need [to lower the cost]."

WHYY ch. 55 will initially broadcast at 40 kW ERP [effective radiated power] and will reach 80% of the station's NTSC analog transmitter coverage.

Ch. 55 will originate satellite-delivered DTV from PBS, augmented by a local Sencore HDTV/SDTV video server, directly from the transmitter site. By Jan. 1, Weber expects to install a multiplexer/encoder and link fiber and microwave from studio to transmitter.

At that time, WHYY plans to launch two channels of SDTV from the new Technology Center. ■

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Sound from the skies

Launching a satellite radio service means XM Radio is creating the largest studio of its kind in the U.S.

As one of two companies with an FCC license to provide subscription-based digital satellite radio, XM Radio—formerly American Mobile Satellite Corp.—has a lot of planning under way.

By second quarter 2001, XM expects to transmit up to 100 digital channels directly to cars and homes via two high-powered satellites produced by Hughes Space & Communications and Alcatel. To supplement the signals, XM will erect a terrestrial repeater network designed by wireless engineering and design firm LCC International. Chip sets for XM-compatible radios will be manufactured by STMicroelectronics.

The lease has been signed for XM's 120,000-square-foot digital-distribution center at Eckington Place in Washington, D.C., leaving station engineers and associates the task of building the underlying technical distri-



Consumers will soon be able to get subscription-based digital satellite radio.

bution infrastructure.

"I wouldn't say it's going to be the largest digital facility for radio in the world," says XM Vice President of Broadcast Operations Tony Masiello. "But in the United States, this will be one of the largest digital radio facilities, if not *the* largest."

The center will contain 56,000 square feet of studio space in 82 separate rooms, from performance studios that are over 2,500 square feet, to 84-square-foot "assembly rooms" for XM's automated "virtual channels." For virtual channels, the music in the database is programmed in

advance and the production elements are pre-recorded. XM is careful to point out that these virtual channels will sound "very live."

Masiello says XM will have at least 14 full-blown production studios, including eight air studios dedicated to live DJ programs and six talk studios that can handle a host, six guests, call screeners and producers. There will also be a 2,500-square-foot performance studio for live music.

The central nervous system of the facility, according to Masiello, is a digital routing system made by Klotz Audio Interface Systems. The system features work surfaces that look like traditional radio audio consoles. Components such as routing switcher control heads and intercoms can be plugged into the frames, which will be distributed throughout the facility.

Another key piece of the digital infrastructure is a Radio Systems Inc. Studio-Hub, a digital-ready pre-wired cabling system that utilizes CAT-5-rated shielded twisted-pair cables to rout both analog and digital audio, although all of the audio at XM will be digital, AES/EBU-compliant.

Renovation of the facility started in November and should be finished by the end of this year. The technical operations center is already constructed, and pre-manufactured studios should be delivered for installation at the end of this month.

XM is purchasing modular studios from Acoustic Systems Inc. of Austin, Texas. Modular studios are being

XM RADIO WASHINGTON

Owner: American Mobile Satellite Corp.

Architect: Eckington Place—Studios Architecture of Washington, D.C. XM's Programming Center studios—Northeastern Communications Concepts (NCC), New York City

Systems Integrator: XM Broadcast Engineering (in-house)

Size: 120,000 sq. ft.

Budget: Not available

Completion date: year-end 2000



XM expects to deliver over 100 digital channels directly to cars by second quarter 2001.

used because they can be delivered quickly but also because they will provide consistent quality of sound.

Choosing the Klotz digital routing system has been the most important equipment decision to date, Masiello says. What has not been decided is the storage and management system for the XM music library. All of the music and production elements will be stored digitally and triggered by a DJ or played back based on a schedule in the virtual channels. XM is looking at storage of approximately 3.5 terabytes of data, or 700,000 titles.

Most day-to-day editing will be handled by the digital-audio system to be specified by XM. Each of the 14 production studios will be equipped with high-end ProTools NT digital-audio workstations in addition to the Klotz console. ■



XM Radio will use satellites produced by Hughes Space & Communications Alcatel.

Broadcasting & Cable

P R E S E N T S T H E

DIGITAL

**PIONEER
AWARDS**

M O N D A Y , A P R I L 1 0

T H E B E L L A G I O H O T E L

L A S V E G A S , N E V A D A

ROBERT GLASER

WOO HYUN PAIK

RICHARD E. WILEY

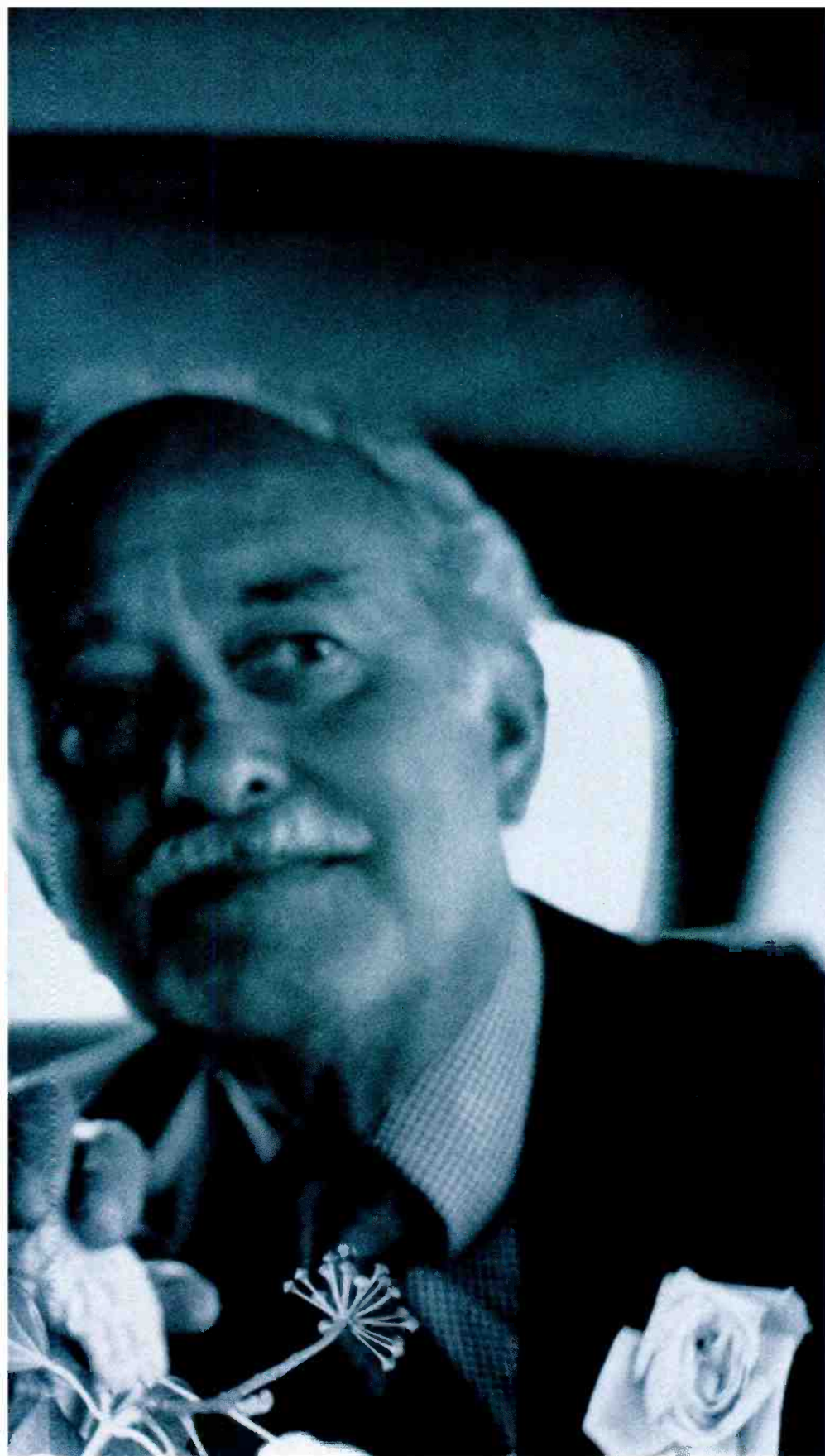
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THE THIRD ANNUAL

DIGITAL TELEVISION PIONEER AWARDS

THE 2000 DIGITAL TELEVISION PIONEER AWARDS HONOR MEDIA LEADERS WHO PLAYED A KEY ROLE IN ADVANCING DIGITAL TELEVISION. THEY WILL BE PRESENTED BY **BROADCASTING & CABLE** MAGAZINE DURING THE NATIONAL ASSOCIATION OF BROADCASTERS CONVENTION TO THREE EXECUTIVES REPRESENTING MAJOR SEGMENTS OF THE ELECTRONIC COMMUNICATIONS INDUSTRIES:



To **Robert Glaser** of RealNetworks, for his pioneering work on audio and video streaming

over the Internet through the development of RealAudio, RealVideo and other technologies. His efforts are transforming both the traditional media of radio and television as well as the new medium of the Internet. [page 6](#)



To **Woo H. Paik** of LG Electronics, for his leadership in the development of digital compression

and of a digital high-definition television transmission system. His work on General Instrument's VideoCipher compression system and then its DigiCipher HDTV system were groundbreaking steps in the birth of a new medium. [page 10](#)



To **Richard E. Wiley** of Wiley, Rein & Fielding, for his ongoing leadership in shepherding the development of a digital high-definition television standard through his work as chairman of the FCC's Advisory Committee on Advanced Television Service and in other capacities. [page 16](#)

**Okay, new
Millennium.**

**Your television's
ready.**

**Congratulations
to**

**Woo Paik
Richard Wiley
and
Robert Glaser**

**Thanks to you,
the view's never
been better!**



zenith 

Enjoy the view.

**PIONEER
AWARDS
2000**

ROBERT GLASER



**THE NEXT TRANSFORMATION OF TELEVISION—
FROM A PASSIVE VIEWING EXPERIENCE
CONTROLLED BY PROGRAMMERS TO ONE IN
WHICH THE CONSUMER HAS ALMOST UNLIMITED
CHOICES OF MATERIAL—IS COMING TO FRUITION
BECAUSE ROB GLASER HAD THE IDEA OF
BRINGING RADIO AND TV TO THE INTERNET. . .**

HIS Seattle-based RealNetworks Inc. is a pioneer in streaming media over the Internet and the gamble that he made in 1994 when he started his company (then known as Progressive Networks) was that the narrowband Internet's early success had "set the stage for rich media." RealNetworks' content partners now generate 350,000 hours per week of such content, with 250 broadcasters and cable networks participating. And the company's RealJukebox, which

"allows consumers to build and manage extensive digital music collections by recording songs from their CDs or downloading them from the Internet and play them back from a PC, portable music player or stereo," has grown to 29 million users in less than nine months.

The company's Web site offers a succinct description of its founder/CEO's philosophy: "Mr. Glaser has long been intrigued with

the nexus of media, computing and communication. As television and radio transition from a broadcast to an online medium, he envisions turning the Internet into the next mass medium.

RealAudio and RealPlayer were introduced in 1995, merging audio with the 'Net. According to the company, more than 95 million RealPlayer users have been registered and the download rate tops 175,000 per day; more than 85% of all streaming media-enabled Web pages use RealAudio, RealVideo, RealFlash, RealText or RealPix; and each week more than 350,000 hours of live RealAudio and RealVideo sports, music, news and entertainment programming are broadcast over the Internet. These programming efforts include exclusive content deals with established media companies such as ABC, CNN and Viacom, as well as partnerships with MCI and others.

Glaser got his start in business at another innovative company. From 1983 to 1993 he worked at Microsoft, first managing Microsoft Word, then moving to the networking group and, finally, becoming vice president of multimedia and consumer systems, working on multimedia, computer networking and desktop applications.

"The Internet phenomenon," he says, "has been like when cable hit its stride" with the creation of new types of networks like CNN and ESPN. "If cable created channels 6 to 30 [for the consumer], this is like channels 101 to a million." And he predicts that Internet and broadband content will have the same sort of "share-shifting impact" that cable has had on broadcasting over the past 20 years.

New ideas and products flow regularly out of RealNetworks. Recently, it made a series of deals with music retailers to offer customized versions of RealJukebox through some 3,300 retail stores and their Web sites. It gives the retailers links to the 25 million registered RealJukebox users and lets them promote specific artists. The company has demonstrated broadband advertising applications, including rotating banner ads and ad created with computer-generated graphics that give a video-like experience at 50-100 kilobits per second. Then there's RealGuide, an electronic program guide with active links to Web sites.

And journalism hasn't been left out of Glaser's vision of the future. In February, RealNetworks and the Associated Press launched AP Streaming News. Subscribing newspaper Web sites receive a one-minute video news summary with a voiceover, a news-on-demand feature that provides 20 video and audio clips to accompany major breaking stories plus live video coverage of one news event daily.

When you started the company as Progressive Networks five years ago, did you imagine the business of streaming would develop this quickly and become as extensively penetrated on the Internet as it has become?

Glaser: I was optimistic about the long term. You can write down [a prediction] on a piece of paper. You can look at how fast things grow and you can look at the analytical reality of how fast the Internet propagates. But I had no idea that it was going to actually work in practice like it sounded like it ought to work in theory, much less as fast as it ended up. I think it's a combination of things, not just the self-propagating viral nature of the Internet. The thing that would have been impossible to predict was how the fervor—one might even say frenzy—to make it a self-fulfilling, self-sustaining phenomenon grew at such a fast rate.

How do you view your competition now? Most people see Microsoft as your arch-rival, but there are also numerous network streaming providers emerging. Do you see a growing circle of competitors in different aspects of your business out there?

Glaser: There's nobody that does everything that we do across the board. There's nobody who has the same model that we have, from a partner standpoint or from a revenue and a business standpoint. When you're number one, there are always people out there trying to say, "I'm number one in this ingredient" or "I'm number one in this part of the business." From our standpoint, we've never felt more optimistic. Just take, for instance, the way the digital distribution market has developed. Streaming was the entirety of what we did until just a year ago when we introduced RealJukebox. And in that year, we already have 20 million users who have played or recorded one billion songs. The volume alone is incredible. Microsoft's not really in that space. They've introduced some technology, but it doesn't even support MP3 recording. As far as the broad market is concerned, [others offer] "me-too" components instead of really satisfying the market need.

Through the auto-update mechanism in our distribution system and the messaging that we built into RealPlayer 7, we have these totally new ways of reaching consumers that no one else has, and we make them available to our partners. Just since the introduction of what we call the Real.com network four months ago, we've driven more than 200 million visits to partner programming. And then our partners have the ability to monetize with sponsorship or advertising or what have you. Sure, every once in a while people will put out this press release or that press release. And if you talk to the product manager at Microsoft or the product manager at another company, they'll say, "Yeah, we compete with RealNetworks." But the facts speak for themselves in terms of the unique things that we build, the unique way our model works in terms of opening up opportunities for broadcasters and our deep fundamental commitment to the market.

**PIONEER
AWARDS
2000**

Recently RealNetworks licensed Windows Media technology for use with RealJukebox. Is that an indication of some movement toward a common streaming standard?

Glaser: I would say no. The unified standards that are important are things like RTSP, which is the transport protocol; SMILE, the synchronized media integration language; and obviously, a bunch of compression standards like MPEG and MP3 that are world standards. That's the path for standard interoperability, and we've already demonstrated our interoperability with people who support those standards. And it's really to Microsoft's detriment that they don't support those standards, particularly RTSP and SMILE. Microsoft's claim about our use of its proprietary codec, that was just some low-level Microsoft person trying to put a spin on it. The Jukebox product supports nine different codecs that, in turn, have seven different rights managers. The way we provide interoperability at a consumer level is by integrating all the different pieces together. But it's clear that any path to unified standards is not going to be through Microsoft proprietary technology. It's through worldwide standards which we're very, very committed to, and sadly, not everybody else is.

How do you see the streaming space developing from here?

Glaser: I think obviously a lot of innovation is in front of us. There's going [to be a move] from narrowband to broadband everywhere. There are the build-outs of infrastructures, like the development we're doing with PanAmSat, which is a leader in providing downlink infrastructure to cable headends. I think that's an example of how these worlds will continue to converge and come together. And I believe that over time, every video experience, every audio experience, will be either based on Internet delivery or enhanced by the Internet. As awesome as the last five years have been, that's just the very beginning of a huge transformation that's taking place that's going to open up huge opportunities for broadcasters. And it's going to open up challenges for those who aren't on their toes and who aren't really looking at differentiation of their offerings and aren't looking at embracing the new technologies. I look forward to working with all our partners as we drive forward to that future.

What are the biggest opportunities you see for broadcasters right now in terms of video streaming?

Glaser: It depends on what category they're in. For the broadband market that's coming, when you think about the fact that there are so many people who have broadband on their business desktop and are also consumers when they go home, doing crossover broadband programming

is a huge opportunity for broadcasters. There are applications like business news or underserved specialty programming like foreign language programming. There have been a lot of trends that the Internet has driven. For instance, 50 million people in this country who are direct participants themselves in the financial markets. As good a job as the CNBC and CNNfn guys have done, that's an underserved area and a particularly hot area.

The entertainment areas are huge opportunities. Look at what ABC has done with *Who Wants to Be a Millionaire* on the TV network and then doing crossover interactive content on computers. I think that's a great example of the ways that hybrids can be created.

When do we get to the point where people start to confuse video streaming with broadcast quality video?

Glaser: Talk to any kid under five years old. They already do. Little kids who didn't grow up with these being different worlds, they just grew up seeing it as all the same thing. Little kids aren't obsessed with what protocol it uses, what transmission method it uses, whether it's satellite or terrestrial delivered, even what screen it's on. They're just enjoying the experience and they have a lot to teach us all.

If you weren't doing this right now, what would you imagine yourself doing?

Glaser: At this historical moment, I feel incredibly lucky to be doing what we do. And I can't imagine anything now that's going on that would be more exciting. (If you gave me a 95-mile-an-hour fastball, I'd like to be closing out a Cy Young Award-winning career in the major leagues. But I think I'm about 25 miles an hour too slow for that one.) This is Italy during the Renaissance. I can't imagine something else I'd rather be doing or that I'm better prepared to be doing.

What's the next stage of development for RealNetworks?

Glaser: We made some fundamental bets early on that the Internet was going to be this huge driving force. As we went from narrowband to broadband, we anticipated this virtuous circle where there would be more programming. Now we're seeing the emergence of all these Internet appliances. As fast as the Internet is growing domestically, internationally it is developing even faster. So it's riding forward on several different trends, and continuing to infuse RealNetworks with the same entrepreneurial, pioneering spirit that's been driving us for the past five years. In a world of six billion people with 30 to 40 hours a week of audio and video listening, we've only just scratched the surface.



Broadcasting & Cable

Salutes

the winners of the

**DIGITAL
TELEVISION
PIONEER
AWARDS**

Robert Glaser

RealNetworks

Woo H. Paik

LG Electronics

Richard E. Wiley

Wiley Rein & Fielding

at the

**Bellagio Hotel
Las Vegas**

Monday, April 10, 2000

WOO H. PAIK



IT'S NO EXAGGERATION TO SAY THAT BEFORE THERE COULD BE HIGH-DEFINITION TELEVISION, THERE HAD TO BE DIGITAL COMPRESSION. AND THAT TECHNOLOGICAL ADVANCE IS SYNONYMOUS WITH WOO PAIK. . .

THE genesis of compression was cable signal theft. In the early 1980s, pirating HBO and other services off satellites had become more than just an annoyance to the programmers, it was costing them revenue. HBO decided to do something about it and issued an RFP for a signal scrambling system. One of the companies interested in the job was M/A-Com, which had hired a young Korean engineer in 1978. Woo Paik was told to develop a scrambling system the company could present to HBO—and he

had just three weeks to do it. His plan to use a digital system was accepted and the VideoCipher descrambler for cable system headends was born. Next, HBO wanted set-top boxes that would let subscribers with home earth stations unscramble the signal and Paik and General Instrument (it bought M/A-Com in 1986) came up with VideoCipher II which became the de facto standard for C-band satellite video encryption now used by most cable programmers.

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THIS WEEK'S MAGAZINE



UPN may reduce programming. Sinclair Broadcasting President, Barry Baker says that UPN has privately admitted its error in going to five nights this season before getting its first three nights firing on all cylinders. Baker told a gathering yesterday at the Paine Webber Media Conference in New York that he wouldn't be surprised if the network - which is down 30%-40% in the ratings this season - cut back by a night or two to shore up its schedule. Sinclair operates seven UPN affiliates.



Speaker-elect speaks out on LMA. House Speaker-elect Bob Livingston (R-Va.) has signed a letter telling the FCC to drop a proposal that would eliminate local TV marketing agreements (LMAs) because it is contrary to the 1996 telecommunications Act. "Most broadcasters who invested the time, money and resources in LMAs will face financial hardship if forced to walk away from their investments," the letter says. "This is a harsh message to send to broadcasters who now face the multi billion dollar challenge of absorbing the infrastructure costs in the transition to digital television."



AT&T waits on Time Warner. Cable operators being wooed by AT&T to cut telephone joint ventures are waiting for Time Warner Cable to do its deal first. At least that's what cable executives were saying in the hallways of the Paine Webber, Inc. annual media investment conference in New York, Tuesday. Even after buying Tele-Communications Inc., AT&T needs to line up other MSOs as telephone affiliates to fully execute its strategy of finding a way around the Baby Bells' monopoly of funneling long distance calls to the home.

BREAKING NEWS

TOP OF THE NEWS

With the cancellation of the NBA All-Star game, NBC becomes yet another casualty in the basketball lockout. NBC planned to air the game during the key Feb. sweeps.

CENTURY UP

The New Canaan, Conn.-based Century Communications Corp., expects cash flow to increase 12.5%.

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PIONEER AWARDS 2000

After solving the problem of pirated VideoCipher II chips in the late 1980s, the company was faced with another problem: the introduction of Muse, a Japanese-developed analog HDTV system. Paik realized that the Muse high-definition signal required so much more bandwidth and power than a conventional NTSC TV signal that satellite reception of the signal would require a dish at least 20 feet in diameter. It also would mean changing the satellite transponders used to transmit the signals since they were only 6 MHz wide and Muse needed much more bandwidth. In short, Muse could kill the satellite business. So in 1988 Paik was given the task of coming up with a better system of HDTV.

He led his team of engineers with really only one sure thought: it had to be a digital system to do all that was needed. He found a way: it was based on the idea that a large part of a TV picture doesn't change very often. His idea was to transmit only the portions of a frame that change, with a line of code saying that the rest was the same as in the previous frame. This meant that the amount of information sent was much smaller than if the whole picture was created in each frame. To do all this Paik and his team had to write the mathematical equations—the algorithms—necessary to digitize the picture, transmit it and put it back together as an analog picture for the viewers. They did it.

The DigiCipher system was announced in 1990 as the world's first all-digital HDTV system. A second system produced by DigiCipher in conjunction with Paik's doctoral alma mater, the Massachusetts Institute of Technology. The company's two systems were half of the four all-digital systems that competed to become the U.S. standard. In 1993, with the creation of the Digital HDTV Grand Alliance, the four competing systems were merged into one. Paik was a member of the Grand Alliance Technical Oversight Group and various other specialist groups.

At the same time, Paik also was continuing his work on satellite compression. In 1991, GI demonstrated a prototype of a multichannel NTSC satellite system that since has been adopted by Primestar and other satellite services (and, in 1996, by terrestrial cable systems).

In 1996 he left GI's Communications Division (now Next Level Systems) and worked for Qualcomm Inc. and Tiernan Communications before his current position at LG Electronics as president of U.S. operations and chief technology officer.

What attracted you to this field?

Paik: I became interested in electronics from my elementary school days. I became fascinated by the fact that you can send sound and pictures using invisible electromagnetic waves. I started playing with radios, hi-fi amplifiers, TVs and so on.

When did you start working for M/A-Com? Talk about your early work experiences and how you first heard about the project for HBO?

Paik: I joined a company called Linkabit [later M/A-Com] in 1978 right after I received my Ph.D. Linkabit was founded by Dr. Irwin Jacobs and Dr. Andrew Viterbi, and their main business

was digital communications mainly for military applications. I started working on the development of high-speed digital communication equipment for commercial satellite applications. I first heard about the HBO project from Dr. Jerrold Heller who was my boss.

You had just three weeks to design a system. How did you turn it around so quickly?

Paik: Dr. Heller mentioned to me that our competitors had already demonstrated their systems to HBO and we had to come up with one fast. Sometimes you get lucky and come up with a good idea fast.

“The idea of digital video transmission is now widely accepted in products from DVD and DBS (direct broadcast satellite) to digital cable television. And now terrestrial digital television broadcasting is finally taking off.”

Next you became involved in the development of VideoCipher II. Why do you think that was so important? What was the hardest part in developing it?

Paik: As it was to be used in the distribution of the cable programming not only to cable head-ends but also directly to consumers, including the backyard dish owners, I saw the enormous business potential. Making the security and the authorization system bulletproof was by far the hardest part because there were so many incentives in breaking the encryption system, which allows the reception of the valuable programs without paying. The other challenge was making the system inexpensive.

Next you developed the DigiCipher system. The idea to transmit only the portion of pictures that change sounds so simple but what made you consider it?

Paik: Much of the concept already existed, but it was believed not to be practical. We kept refining the algorithms and raising the bar to

PIONEER AWARDS 2000

the point where the whole concept of digital transmission of video started to make sense in terms of performance, feasibility and cost.

How many other people were involved in writing the algorithms?

Paik: About two or three.

What are your thoughts on how HDTV has changed from your early involvement to today?

Paik: I am extremely happy about the way it turned out. The idea of digital video transmission is now widely accepted in products from DVD and DBS (direct broadcast satellite) to digital cable television. And now terrestrial digital television broadcasting is finally taking off, providing people with studio-quality video and audio that, in addition to including HDTV, has the potential as well to deliver many value-added services.

Do the biggest challenges for HDTV lie ahead (dealing with consumers) or are they behind it (getting it actually accomplished)?

Paik: I believe most challenges are behind us and it is now the time to enjoy it. We are working very hard in reducing the cost of HDTV and

I believe HDTV will become very affordable in the next few years. In fact, much of the high cost today is due to the high cost of high-resolution displays and the cost of such displays is coming down.

How much more do you think compression will improve? How much bandwidth will we be able to compress a 1080i HDTV signal into in, say, five years?

Paik: I think that the DCT-based MPEG2 compression technology is about the best you can get for real-time video compression and I don't expect to see any significant improvements in the future. You can compress a 1080i HDTV into 10-15 Mbps now for most contents and it will stay that way, which is more than acceptable because one 6 MHz terrestrial channel can support about 18 Mbps.

You're now at LG Electronics. What do you see as the opportunities and challenges for your new company?

Paik: Providing a total service based on the hardware platform we make—such as digital television sets and Internet appliances—where both consumers and manufacturers benefit gives us the opportunities as well as the challenges.

INTERVIEWED BY KEN KERSCHBAUMER

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FOR Richard E. Wiley, however, that position was but the starting point in a continuum that has led (A.) to being senior partner in Washington's largest communications law practice and (B.) to being a founding father of the digital and high-definition future. Typically for Wiley, he did them simultaneously.

For his work as chairman of the FCC Advisory Committee on Advanced Television Service—which delivered DTV and HDTV to the FCC for ratification—Wiley is considered by many to be the individual most responsible for guiding digital television past a variety of technological and political pitfalls.

An Illinois native, Wiley earned law degrees

from Northwestern University and Georgetown University laws schools. During the 1960s he worked at a Chicago law firm and paid his Republican dues by campaigning for Sen. Charles Percy and the Nixon-Agnew ticket.

Dick Wiley's telecommunications career began at the age of 36 in 1970 when he was named FCC general counsel by President Richard Nixon. Even then, he believed that federal regulation should not be "so pervasive as to amount to federal control." He carried this philosophy with him in 1972 when he became an FCC commissioner and two years later when he was named the agency's chairman. As head of the FCC, he advanced a deregulatory philos-

ophy and agenda that continues to carry the day in government and industry.

Wiley left the FCC in 1977, but stayed in Washington as managing partner of the capital office for Chicago-based Kirkland & Ellis. In 1982 he formed Wiley & Rein (it became Wiley, Rein & Fielding in 1986) and put it on the road to becoming a preeminent communications law firm, with Wiley representing a who's who of clients including CBS, Viacom, Paramount and Comsat, to name just a few.

In 1987 Wiley was asked by then FCC chairman Dennis Patrick to head the Advisory Committee on digital TV that pushed the industry to create technical standards for the new industry. The pro bono job took eight years. "I had to find a way," he recalled in a 1998 interview, "to make broadcasting and cable work together. You have to have a solution that works for both or the American people are going to be shortchanged. At that point...DBS really wasn't even a player. Nor was the computer industry. I figured the set manufacturers would take care of themselves, so I was thinking of the transmission industries, the industries regulated by the FCC. When we turned in our report in late 1995 I think we had accomplished that goal."

After the committee's final meeting—on Nov. 28, 1995—when it recommended the FCC adopt the ATSC digital television standard of 1,080 lines developed by the so-called Grand Alliance, BROADCASTING & CABLE asked Wiley where he would rank his work with the Advisory Committee among his career. "First. Without a doubt," he answered. "It crowns it all."

Since then Wiley has continued to work for the development of HDTV. His many honors include induction into BROADCASTING & CABLE's Hall of Fame (1993), the Electronic Industry Association's Medal of Honor (1996), an Emmy award for his work on digital television from the Academy of Television Arts and Sciences (1997) and inclusion in BROADCASTING & CABLE's listing of the First 100 Fifth Estaters of the 20th Century (Dec. 20, 1999).

What are your thoughts on the state of the digital TV transition today?

Wiley: I'm concerned about the way the transition has gone. It's been slow and uncertain because some of the important standards issues haven't been agreed upon. Cable com-

patibility wasn't settled until very recently; labeling didn't get settled until recently; copy protection still isn't settled. And then there's the modulation technique [8-VSB vs. COFDM] that continues to percolate out there. As long as those things are unsettled, the effect is to slow down's people's desire to develop programming, to develop low-cost consumer equipment and it slows the whole transition to the detriment of the public interest.

What should be done about these problems?

Wiley: We needed more leadership out of the FCC and more vision out of the industry to get these issues settled. I'm glad that finally the commission is taking a more active role. I've been urging that for a long time.

As far as the 8-VSB issue, I would stay the course because I fundamentally believe—if we're talking about a video and data service—that we're talking about a receiver issue, not a standards issue. And I think future generations of receivers are going to solve this problem just as a year ago we were arguing about interlaced and progressive scanning and we found out that computer chips can solve that problem. Now if we're fundamentally changing our concept to where this is going to become primarily a mobile data service,

than that's another matter. But that was never the goal of this program and there's a question in my mind as to whether you can have high-definition television and sophisticated data on a mobile basis within the same 6 MHz.

I think the indoor reception problem [of 8-VSB] is a legitimate problem that needs to be solved by future generations of television sets and there ought to be some pressure put on to get that done. But if we're talking about mobile data as being the goal, and that's why we need COFDM, then that's something that was never contemplated for this 6 MHz and I wonder if Congress and the FCC would have made the same decision as far as spectrum if it was designed to be a mobile data service primarily.

And broadcasters have to think about that because they got that spectrum to give the American people a better video service with data overlay and not to become mobile data providers. I'm not saying mobile data is a bad idea and that broadcasters shouldn't be involved in it, I just don't know if it's feasible in this spectrum band. I'm not against data. I think the data consortia like Geocast and iBlast are fine.

“Despite all the expense and uncertainties, this is going to be a big opportunity for broadcasters because they’re getting a much more flexible—and ultimately much more valuable—6 MHz.”

It was always my view that broadcasters could get into another revenue stream from data. It was always contemplated that data would be a part of this as long as it doesn't foreclose the delivery of high-definition television in all formats, including 1080 interlace. And my understanding from the people involved in those consortia is that it won't prevent it.

If COFDM is adopted, what would the affect be on broadcasters and consumers?

Wiley: Well, you've got a hypothetical there that I'm not sure is going to come to pass. The FCC has voted 5-0 to turn down the Sinclair petition, and while the commission will continue to look at this issue, it expressed concern about the delay and problems that may be involved in adding to the [current] standard. I think what would happen would be a starting over again and I wonder how much time is going to be involved in this. And where are broadcasters—who are building out on a very demanding implementation schedule—going to be? We'd basically be starting the whole standard over again.

The reason we selected 8-VSB was because we were going for service replication, it had a higher bit rate and was a stronger signal and would basically duplicate the NTSC signal coverage so that people in the outlying regions could get it.

Problems of indoor reception (the original problem that the COFDM proponents had) clearly have to be solved. But I don't think that's today's problem because I don't know how many people are watching expensive digital television sets through rabbit ears. I think the Sinclairs and NBCs who have raised the issue have raised a legitimate issue that needs to be dealt with. And the way I think it needs to be dealt with is by improving our receiver designs and chip sets. We're going through an evolutionary process [with digital TV]. You don't just start with an instant transition where everything works just right. It's going to take time. But if we're fundamentally changing the concept and the reason is not indoor reception, it's being able to receive the Internet in cars and vans in this 6 MHz band, that may just be a different thing than the FCC or my Advisory Committee contemplated.

Talk about your work on HDTV after the Advisory Committee delivered its report to the FCC in 1995.

Wiley: Largely I've been a cheerleader—writing articles, making speeches, trying to help the process along and, behind the scenes, urging the commission and the industry to solve these remaining standards problems. I also represent a number of broadcasters—including Belo, CBS, Gannett and Hearst-Argyle—who have been very pro the development of digital television. And I've been hoping that

the programming would be developed. I have been pleased to see that some of the networks—both broadcasting and cable—have begun to produce programming, backed by underwriting from some of the set manufacturers.

Where do you see broadcast TV going after the transition is complete?

Wiley: It won't be only HDTV. It will be data and some multicasting. I think broadcasters will learn how to develop a business plan that will include multicasting in some parts of the day. I always believed that HDTV would be one of the major driving forces of the move to digital simply because it is such a spectacular picture and sound. I think that eventually prime time viewing, movies and sports in high-definition will be a winner. I think data will be a winner and I think

broadcasters will find a way to use the much more flexible 6 MHz system for some sort of multicasting. Despite all the expense and uncertainties, this is going to be a big opportunity for broadcasters because they're getting a much more flexible—and ultimately much more valuable—6 MHz. They can make money out of data, they can make money out of multicasting and they can attract a lot of eyes and ears to a much-improved video service. I think the tie-in with the Internet—the compatibility with computers, the interoperability—will be important for broadcasters.

Broadcasters have a big advantage in that they can still go to 100% of the houses. People who have hung the black crepe for broadcasting have been wrong in the past and they are going to be wrong in the future because the

“People who have hung the black crepe for broadcasting have been wrong in the past and they are going to be wrong in the future because the industry has a lot of good years ahead along with other delivery systems. I think broadcasting is going to be a strong player in the video future.”

industry has a lot of good years ahead along with other delivery systems. I think broadcasting is going to be a strong player in the video future.

How do you see cable in the future?

Wiley: Digital will be important for cable too. One of the hallmarks of our Advisory Committee is that we had to have a solution that worked for broadcasting and cable alike because they serve the same audience. I think the industries drifted away from each other a little bit since the Advisory Committee stopped and I'm glad to see them coming back together again. We've got that cable compatibility issue solved and that's very important because cable serves 70% of the audience.

Of course, satellite has been digital and I'm glad to see that they're going to be providing some HDTV in addition to their overall improved signal through digital.

The big thing is that we have to realize that we're going through a huge transition. What we always foresaw was a 10-year transition. And we're really just at the very start of that. So we're talking evolution. And what has slowed down the evolution is the failure to get these final standards issues solved. We still don't have copy protection solved. That needs to be done yesterday. The FCC could be an important vehicle to at least bring the parties together. I think they've missed some opportunities in that regard, but I'm glad to see the chairman taking a leadership position now; I applaud that.

Broadcasting as a free service is competing against a lot of pay services with a lot of capacity. If we want to have that free over-the-air service, we have to make sure it's competitive. I think the FCC has made some wise decisions to allow both television and radio to become more competitive.

What does the Internet hold for broadcasters?

Wiley: Audio and video streaming are going to

happen and get stronger as the Internet becomes faster and more powerful. I think that broadcasters, instead of seeing it as a risk and a danger, ought to look at it as an opportunity because who's got the programming content? I think the idea of repurposing your programming content for different times of the day or different media means broadcasters will be number one. Hopefully, the government will give broadcasters the tools to modernize their plant, their capacity. They're doing it with digital. Having digital TV means interoperability with the Internet is easier. That was always one of the goals of my Advisory Committee.

What other tools does the government need to give broadcasters?

Wiley: To allow some reasonable consolidation to give them efficiencies. The industry has done that to a degree, but there's more work to be done. There are still some existing rules that need to be looked at, like newspaper-broadcast crossownership; I think the commission should start a rulemaking in that area. The cable-broadcast crossownership rule ought to be looked at carefully. And the dual network rule is one that I think is an anachronism.

One thing I don't agree with the government on is to have additional public interest responsibilities at the outset placed on digital broadcasters. I think we ought to take a wait-and-see attitude on that until this technology gets a chance to get started. Broadcasters already are making huge investments in this and they need an opportunity to let the technology get its place in the marketplace before we suddenly start regulating them.

I'm not horribly critical of any entity in this, including the industry or the commission, but I am a little frustrated or disappointed that this has taken the turns that it has and I'm hoping that the modulation technique issue can be resolved soon.

INTERVIEWED BY MARK K. MILLER



Advertising
Antitrust
Appellate
Aviation & Aerospace
Communications
Corporate
Education
Election Law
Employment and Labor
Energy
Environmental
Food & Drug
Franchise
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Congratulations
on winning the
**Digital Television
Pioneer Award!**

We are proud to salute our
Managing Partner,
Richard E. Wiley,
for his outstanding contributions,
leadership and vision
in the field of digital television.

Carrying news of Japan

International network switches to digital to expand programming



The control room uses a Pinnacle MediaStream 700 server to record programming and interstitials for TV Japan's schedule.

Whether it's a sumo-wrestling match or a rebroadcast of today's *Good Morning Japan* wake-up show, Japanese expatriates are increasingly turning to TV Japan for round-the-clock news and information.

That used to mean more work for Studio Manager Tommy Sakon, who had the thankless and often precarious job of ingesting and rebroadcasting hours of direct feeds from Japan using aging, tape-based equipment.

In response, TV Japan decided to buy digital equipment and set up shop in a newly renovated 10,000 square-foot facility located on the 15th floor of a 100-year-old office building on Broadway in Manhattan. Systems integrator IMMAD ECVS began installing equipment in November and finished on Dec. 30, one day before the job's New Year's Eve deadline. After extensive training and debugging of the systems, Sakon and the TV Japan crew moved in on March 15.

"We need to have a flexible operation over here," says Sakon. "If something happens in Japan—like a terrorist bombing—we will have a satellite news broadcast come in from NHK. We have to switch to that live broadcasting pretty quick."

TV Japan started small about nine years ago, offering only five to six hours of programming a day. That gradually increased to 23 hours a day. Several hours of news are broadcast bilingually. The English version is available to

EchoStar customers as a secondary audio channel.

Sakon gets nearly 24 hours' worth of feeds daily from public broadcaster Japan Broadcasting Corp. (NHK). The feeds are recorded, edited to include commercials and rescheduled for American viewers. The service is available via subscription from DISH Network and 18 affiliated cable companies, mostly in New York, California and Hawaii. A seven-hour abridged version of the daily programming is delivered unscrambled to EchoStar and select cable homes.

DISH Network is the main carrier, contributing 14,000 of TV Japan's 46,000 mostly Japanese subscribers who are either permanently or temporarily living in the United States. A close second is Oceanic Cable of Honolulu, which has 12,000 subscribers.

According to Lou Coppola, senior engineering supervisor with IMMAD ECVS, the new TV Japan facility is designed to optimize the ingestion, turnaround and archiving of that material using video servers, automa-



IMMAD ECVS' Lou Coppola (l) and TV Japan's Tommy Sakon check out the digital equipment.

TV JAPAN NEW YORK

Owner: Japan Network Group Inc.

Architect: New York Design Collaborative Inc.

Systems Integrator: IMMAD ECVS

Size: 10,000 sq. ft.

Budget: \$2 million

Completion date: March 15, 2000

tion and lots of backup.

Previously, TV Japan was ingesting all programming and interstitials onto tape. Now that material is recorded on one of two Pinnacle MediaStream 700 servers, where it's shuffled around to fit TV Japan's programming schedule. The other MediaStream serves as a backup. In addition, a Flexicart with four Betacam SX VTRs (Sony DNW-A75s) is used to back up the MediaStreams and to archive NHK programming for later rebroadcast.

Everything that's received and transmitted within 24 hours goes directly into the servers. Material that must be archived goes to the Flexicart, which can also be used to play out the nearly 5,000 regular Betacam tapes from the old TV Japan library.

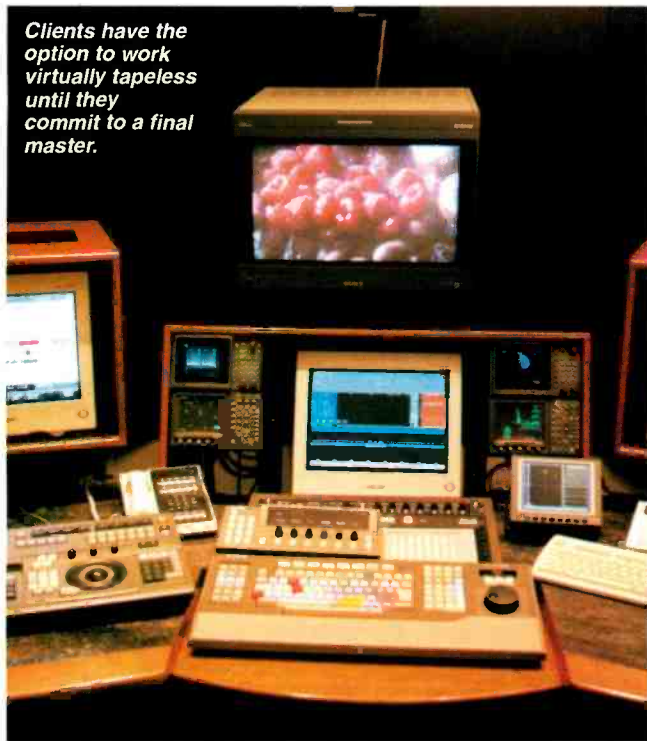
A traditional online editing room utilizes a Philips DD-10 production switcher, an Editware DPE-531 editor, a Sony MXPS-390 mixer and a Chyron Maxine! character generator using the Japanese message compose feature. The room has been wired so that the edit room can double as a control room for multicamera video shoots in the office area.

Currently, TV Japan does no news production, but the facility is linked using fiber-optic transmit-and-receive equipment with NHK Studios in New York so that breaking news on Wall Street can be transmitted from there. ■

Post house goes digital

At Rhino's studios, HD technology is catching up to demand

Clients have the option to work virtually tapeless until they commit to a final master.



Walter Lefler has been waiting a decade for high-definition technology to catch up to post-production demands. And now, manufacturers have equipment for doing post-production in HD "as quickly and easily" as in standard resolution, says Lefler, creative director for New York City editorial, graphics and post firm Rhinoceros.

Rhinoceros recently took delivery of a Sony HD edit suite and HD transfer suite. "The advances are such that [HD systems] are very creative-process-friendly and able to give producers the opportunity to optimize quality in virtual, working real time," Lefler says.

The basic infrastructure of the HD-edit suite and film-

transfer suite was completed in March at Rhino's 27,000-square-foot facility on East 42nd Street. Sony Electronics Inc.'s systems integration arm spent three to four weeks building the rooms, for which Rhino spent around \$4.5 million total.

Choices for an integrated solution were limited, says Lefler: going with Sony or piecing together systems from a variety of manufacturers. Rhino opted for the former.

"It's really an upgrade path from our [Sony] component high-end suite," says David Binstock, CEO of Rhino's parent company, Multivideo Group. "The learning curve was almost nothing. It became pretty transparent, and everything was vertically integrated."

There is equipment from

manufacturers besides Sony, and Rhino is about to acquire tape formats other than Sony HDCAM, such as D5 and D6. "I understand coming down the pike is DVCPRO HD," Binstock says. "There is going to be a lot of competition, price-wise and otherwise."

Rhino's existing edit suite contains a Sony DVS-8000 digital switcher with two channels of Sony DME-3000 effects; D1 and Digital Betacam decks; Beta SP decks with A-to-D/D-to-A converters; a DME-7000 digital multieffects generator; and a Sony 9100 editor. The suite also contains a Chyron Maxine! character generator.

The HD edit suite has the same high-end 9100 edit controller and an HDS-7300 3 M/E production switcher with HDME-7000 two-channel DVE. "The control panel is similar to the SDI [switcher], so if you know it, it's easy to use," says David Kuklinski, systems integration manager with Sony.

Rhino's new edit suite also has an Antero HD 3-D character generator from RTSET, Graham-Patten audio boards and a Post Impressions SpiDDR disk recorder with integrated storage, I/O and networking. An animation stand next to the HD room will be outfitted with Sony's HDCAM camcorder.

The HD transfer suite contains Sony's new Vialta HD telecine, plus a da Vinci 2K color corrector, a Digital Visions noise-reduction unit, Digital Visions image enhancer, another Sony SpiDDR and a smaller Sony HD production switcher—the HDS-7100—along with a 601

RHINOCEROS

NEW YORK

Owner: Multivideo Group

Architect: None

Systems Integrator: Sony

Size: 27,000 sq. ft.

Budget: \$4.5 million

Completion date: March 2000

switcher running parallel to the high-def path. The display surfaces are Sony and SGI flat-screen monitors. Five HDCAM VTRs are assigned to both the edit room and the film-transfer room.

Together, the new rooms will give Rhino's clients the option to work virtually tapeless until they commit to a final master.

Though Rhino didn't formally begin booking HD projects until the week of March 27, Lefler says he's "blown away" by what he can accomplish with the new stuff.

"We had some elements we shot on film and elements we shot in HD, and we had to match the color correction of the two," he explains. "We had a tremendous range of color correction in the edit room—more than I've seen in any edit suite." ■



Creative director Lefler says post can be as quick and easy in HD as in standard definition.

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Digital for a New Age cable net

'Workplace as set' was the principal design goal of Oxygen's broadcast facility as the company homes in on convergence



The Oxygen design team calls this area 'The Zipper,' a corridor with producers working on either side.

Oxygen's quest for convergence is clear in the design of the on-air backdrop used for live shows filmed in the cable network's 64,000-square-foot Chelsea Market complex in Manhattan.

The backdrop is a high-ceilinged, loft-like working office space with broadcast service panels strategically located throughout. So in the middle of a two-hour live *Pure Oxygen* sequence, for instance, a camera operator can unplug from one BSP, run to the other side of the building and quickly patch in again.

This setup can get hairy with office workers scurrying by, balancing coffee on top of piles of photocopies. But that's the desired effect. "The 'workplace as set' was really one of the principal design goals we were going for," says David Higgins of The Systems Group, project manager for the installation.

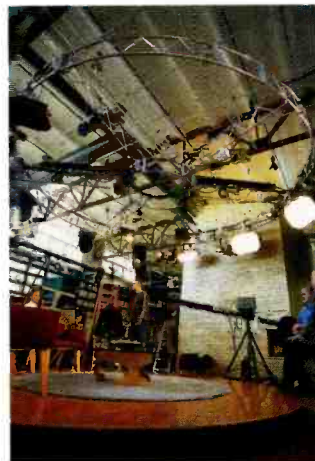
Oxygen's digital facility, in its original iteration, was to end up looking more like "a DV-oriented desktop pro-

duction facility" rather than a live studio production facility, according to Tom Burns, Oxygen's vice president of broadband technology. But as the network's ambitions ramped up to include four hours of network-level live

TV a day, the equipment became more varied. The plant has a main core of 601 routing, but also a Fibre Channel storage-area network, a high-bandwidth internal LAN, WAN connections "out the wazoo" and three in-house CATV channels inserted into the Time Warner CATV feed, says Burns.

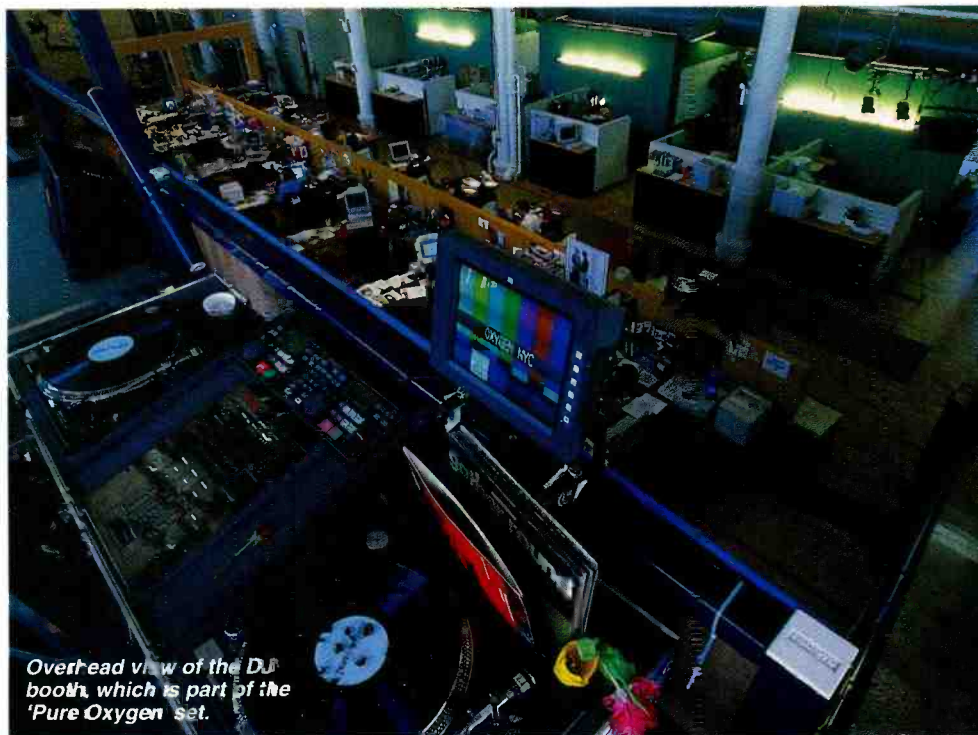
"It's the overlay of all the networks—some of which are designed for video, some of which are designed for video as data, and some of which are designed for pure IP data—that's where the convergence really hits home," he adds.

Tying these networks together is complex and has not been fully worked out yet, Burns acknowledges.



'Pure Oxygen' interview set, with lights suspended from a circular grid.

But already, the Web technology and production groups can pull video off the CATV feed, edit it, compress it and embed video clips in Web pages. In the future, Oxygen will have low-resolution browsing delivered via



Overhead view of the DJ booth, which is part of the 'Pure Oxygen' set.

OXYGEN

NEW YORK

Owner: Privately owned by investors including AOL, ABC, Geraldine Laybourne, Oprah Winfrey, Marcy Carzey, Tom Werner, Caryn Mandabach and Pau Allen's Vulcan Ventures

Architect: The Phillips Group

Systems Integrator: The Systems Group

Size: 64,000 sq. ft.

Budget: \$3.7 million for equipment and system integration (does not include construction costs)

Completion date: February 2000

100 Base-T Ethernet to all desktops—not just the ones hooked up by Fibre Channel.

The facility has a Sony 128 SDI router with stereo audio, a DVS-7200 production switcher and a DME-7000 CORE 2 DVE for digital video effects. Also in place are two Ultimatte 9 chroma keyers, a Sony BE 9100 editor and a Mackie SR 40-8 mixing console. There are five Sony BVP-500 cameras and nine BVP-570's using a Sony MSU 700 Master control setup system and Sony RCP-720 remote control joysticks.

Oxygen uses Pinnacle FXDeko character generator and Pinnacle Lightning as the still store system. The primary tape format for the facility is Digibeta, while fieldwork is done with a mixture of MiniDV, DVCam and Sony Beta SP. The audio control room uses a Wheatstone SP 8 32x4x2 mixing console.

Editing gear for three of the four TV shows produced in-house is Apple Computer Inc.'s FinalCut Pro software running on G4 Macs with 512MB RAM and 200GB

local storage, Fibre Channel interface cards, SANergy SAN OS software and Aurora Designs Igniter cards.

"Each show has a Web component as well as a TV component. And FinalCut has the best flexibility in combining low- and high-band versions of the same clip," Burns says. "Quite frankly, it was very inexpensive." The animation department uses a Media-100, a real-time non-linear editor. Oxygen's teenage-girl show, *Trackers*, uses an Avid MediaComposer.

What's more, FinalCut Pro can be easily networked on the Fibre Channel network with Oxygen's Drastic VVW 3000 and VVW 3500 digital video servers that gets played back into the shows, according to Andrea Cummis, vice president of engineering.

The one thing the Drastic does that no one else we know does, says Cummis, is translate Avid files, Media-100 files, or FinalCut files in real time and play it back in an SDI system without the



Overhead shot of the interview area with camera at right.

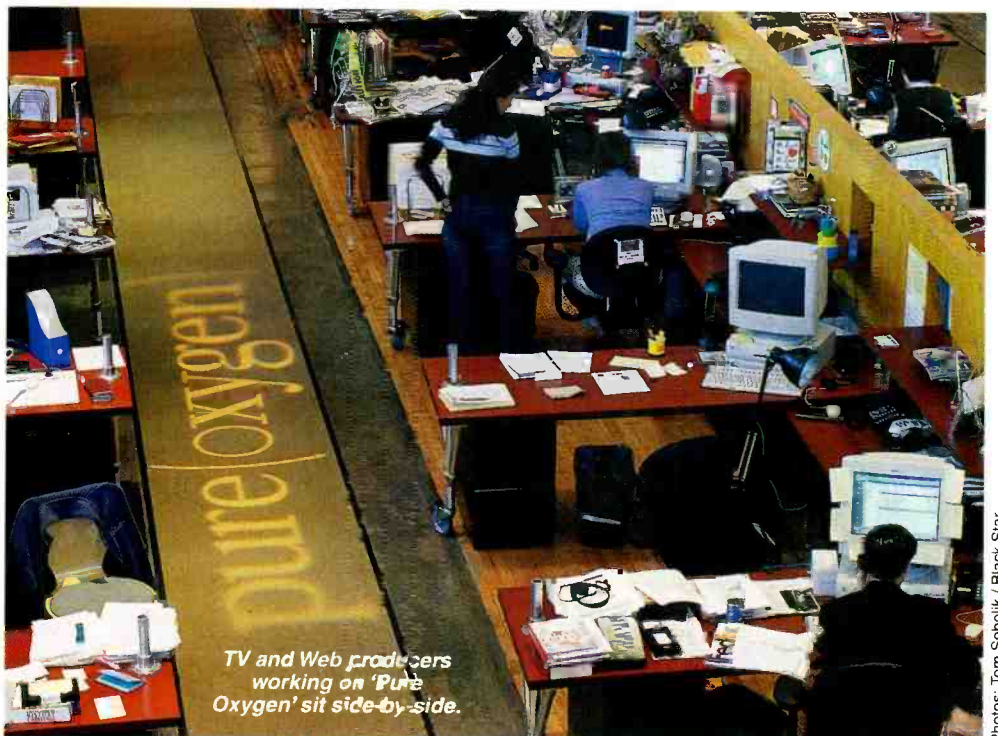
need for time-consuming re-rendering.

While the Drastic has some internal storage, it's hooked up to an EMC Clariion disk array. Editors can finish a piece and save out a segment, and the control room can play it to air immediately.

A portion of the day's schedule is streamed by Real Broadcast Networks, and there are plans to direct text from the rundown software

(AP's ENPS) into the vertical blanking interval.

Oxygen's setup favors open networking of "a bunch of jumped-up PCs" rather than dedicated, black-box computer equipment. "By going with more-open systems, the learning curve has been a little harder," Burns says. "But long term, the flexibility is there to change our minds weekly, if we can stand it." ■



TV and Web producers working on 'Pure Oxygen' sit side-by-side.

Photos: Tom Sobolik / Black Star

Plug 'n' play post setup

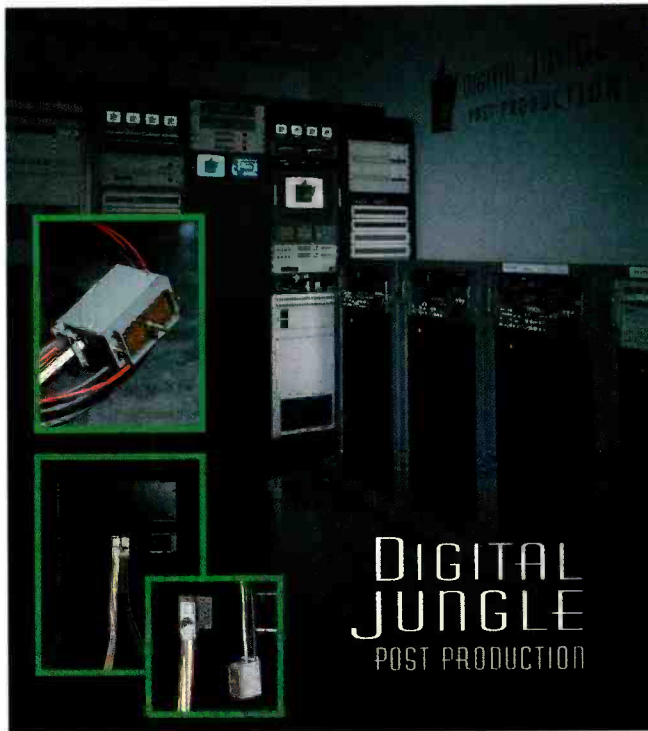
Building a digital plant for the tapeless future

Dennis Ho has built his latest post-production facility to be ready for the day when conventional videotape is a thing of the past. However, his 24,000-square-foot Hollywood facility, Digital Jungle, isn't going tapeless anytime soon. Right now, he says, the equipment he would need is too expensive, unreliable and, in some cases, nonexistent.

However, he understands the need to engineer Digital Jungle's three machine rooms and five component digital editing suites to be ready for the time when all outside tape elements are digitized and stored as files as they move through the various stages of the post-production process.

The solution was a system for keeping each bay independent while allowing it to share resources, a concept Ho refers to as "plug 'n' play post." As part of this strategy, all of Digital Jungle's tape machines are set up on 25 different mobile carts, so that any one can be used in any position, in any bay, without having to route or reconfigure the bays for any given session. Changing out a machine takes at most 90 seconds, according to Ho.

"It doesn't matter if the machine is analog or digital,



Digital Jungle has put all its tape machines on mobile carts to make sharing resources— analog or digital—a snap.

composite or component," he says. "All signals needed for it to work are there without throwing a switch, plugging a patch, or changing a menu setting."

The plug 'n' play post setup will enable Digital Jungle to purchase complete bays without worrying whether they conform to the engineering of the rest of the facility. Likewise, removing an old or out-of-date bay won't disrupt any of the other bays.

When it opened on Jan. 1, Digital Jungle's technical footprint was about

10,000-square feet and included component digital-edit suites, graphics suites, a telecine suite, and a 5.1-channel surround-sound audio mix and mastering bay.

Digital Jungle's two linear D1 editing suites include GVG editors, Abekas A8150 and A83 component digital switchers, a Dveous dual-channel DVE and K-Scope dual channel DVE, an Abekas Diskus DDR, a Delta character generator, and a Graham-Patten D/ESAM digital mixer. For nonlinear editing there is an Avid Symphony with 180 GB of storage. Digital Jungle also has a Media 100 digital video editing system.

The telecine suite contains a Rank Cintel Turbo 2 telecine and a Da Vinci

DIGITAL JUNGLE

LOS ANGELES

Owner: Dennis Ho

Architect: In-house

Systems Integrator: In-house

Size: 24,000 sq. ft.

Budget: more than \$4 million so far

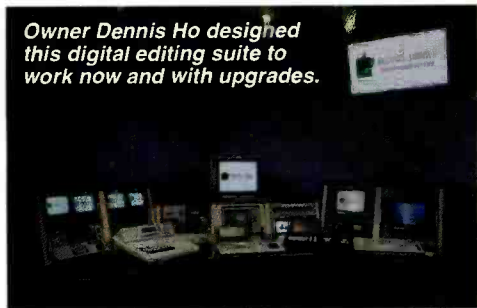
Completion date: Part of the facility began operating in January; fully operational by year-end.

Renaissance 8:8:8 color enhancement system. One graphics suite contains a Quantel Henry Infinity effects editor. The other is set up with a G4 Mac for Adobe Illustrator, Photoshop and AfterEffects and Avid Elastic Reality software. The 5.1 surround-sound mix and mastering bay includes a 24-track Pro Tools workstation, a Studio Dyaxis workstation, a Panasonic DA7 5.1 mix board, Genelec 1030A bi-amplified monitoring system, ADR/Foley Stage, and a Sennheiser MKH 416 shotgun microphone.

Ho sees himself as something of a contrarian in the Hollywood post-production business. At a time when many facilities have consolidated, closed or relocated to the west side of Los Angeles, Digital Jungle was built from the ground up in Hollywood. The total construction cost was \$2 million. Ho would not disclose the equipment cost, but admits that it was more than the construction budget.

Digital Jungle supports tape formats including D1, D2, Digital Betacam, Beta SP, æ-inch, VHS, DA88 and DAT. No high-definition services are currently available, but with the plug 'n' play setup, the facility will be high-def ready. ■

Owner Dennis Ho designed this digital editing suite to work now and with upgrades.



The Studio System
Movie Magic Scheduling
Movie Magic Budgeting
InHollywood.com
Planetpoint.com
AnimationWorldNetwork.com
CinematographyWorld.com
MediaTechnology.com
DesignInMotion.com
DirectorsWorld.com
PostIndustry.com
TVIndustry.com
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APPLICATIONS
RESEARCH
DEVELOPMENT
SCHEDULING
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COMMUNITY
DIRECTORIES
DISCUSSIONS
NEWS
EDITORIAL
AND MORE...

Creative Planet.com

The Network for Creative Professionals

Morning Zoo's new cage

New owners spring for all new studio, office space for Z-100's sales and production staff



Newly designed Z-100 facility includes (clockwise from top left) on-air booth, reception, and sales offices. Digital consoles allow flexibility for on-air and remote production.

Last year, New York CHR/pop-formatted station WHTZ-FM (better known as Z-100) was operating out of a cramped facility with what chief engineer Josh Hadden charitably describes as a “well-aged infrastructure.”

“They were living in a state of deferred maintenance for 12 or 13 years,” Hadden says of the station, now owned by AMFM Inc. “No joke, there were college stations that looked a lot better than what we had.”

Z-100's eight-person “Morning Zoo”—the crew of the station's popular, morning-drive-time show—worked in a 120-square-foot air studio with no soundproofing and no room for guests. Certain

equipment was kept air-worthy with fixes on top of fixes, none of which had been documented, according to Hadden.

The sales staff had to work from a satellite office, making a weekly trek back to the 12,000-square-foot Secaucus, N.J., studios.

After evaluating new sites, Hadden and his colleagues secured a 17,200-square-foot space, right on the Hudson River in Jersey City, N.J., with 30 feet of floor-to-ceiling glass along two walls that provide sweeping north-to-south views of the Manhattan skyline. The facility was completed in September at a cost of \$3.5 million.

Hadden had carte blanche to buy everything new, from studio consoles to the funky

purple-and-blue carpet lining the hallways.

The new work environment was the first priority. The two on-air studio spaces are surprisingly spare, containing perhaps two half racks' worth of mounted equipment. Even the JBL 4412 monitors cranked in the studios are hidden in the ceiling behind acoustically transparent, fabric-wrapped panels.

Bice C. Wilson, co-CEO of Meridian Design Group, said the furnishings were designed as part of the new Z-100 facility—reflecting the changing trend in modern radio studios.

“More and more, the shape of the studio is determined by the way people need to relate to each other and how it allows them to create the best product,” Wilson says.

Next was equipment. Initially, Hadden wasn't sold on going digital.

Not until he delved into planning did he realize that analog consoles wouldn't give Z-100 the versatility that digital could to handle a large morning show and the number of complex remotes done regularly. After bypassing many of the digital consoles on the market today, Hadden

**WHTZ-FM
(Z-100)**

JERSEY CITY, NJ

Owner: AMFM
Inc./Clear Channel

Architect: Meridian
Design Group

Systems Integrator:
Harris Corp.

Size: 17,200 sq. ft.

Budget: \$3.5 million

Completion date:
September 1999

picked Zaxcom's DRC 2024 digital audio console.

Thinking more about how he might leverage digital, Hadden coordinated phone calls and e-mails with his core vendors. They included Zaxcom; ENCO, which provided six DADpro32 audio broadcast control systems; and Sierra Automation Systems, which provided Z-100's SAS 64000 series digital and analog router (a lot of Z-100's equipment is still analog). The goal was to integrate console, router and servers as if they were one.

Now, the console can call router selections as easily as it changes configurations. If morning-show production wants to call up external sources such as cable TV or ISDN, the console sends the request to the router, which connects the appropriate input to the console. The console then updates an eight-character LED display above that particular fader, based on information sent by the router. Likewise, jocks can load a song into a particular position on the console and then keep track of what's on each fader, because the LED displays the first eight characters of the song title.

Despite the “beta” nature of much of the equipment in Z-100's new facility, Hadden has found the transition a smooth one. ■

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Chyron converges

Pursues new opportunities in Internet and interactive TV

By Glen Dickson

Although it comes to NAB with several improvements to its broadcast graphics and routing products, Chyron is clearly more excited about potential business in interactive TV and the Internet.

At the company's NAB press conference Sunday, Chyron executives spent far more time talking about the interactive graphics applications they're developing with Microsoft and RespondTV than on new features in Chyron's Aprisa graphics line or Pro-Bel's family of routers.

"Convergence is giving rise to many different delivery mechanisms," said Chyron CEO Roger Henderson, who explained that the "mediacast" market Chyron is trying to serve can include everything from HDTV to postage-stamp-sized images delivered over low-speed Internet connections. While Henderson did say that Chyron's existing customer base is "crucially important to us," he said the Internet presents a wealth of opportunities, primarily because it is an "unregulated market" compared to broadcast TV. He added that Chyron has just closed a \$20 million private stock placement and plans to use the proceeds for interactive services.

Ken Schwenk, Chyron Graphics president, said that his division's goal was to give Chyron products "Internet-ability," which he defined as the ability to take broadcast-quality video and pump it onto the Internet.

One area Chyron has focused on is developing interactive links for traditional broadcast graphics. Since December 1999, Chyron has been working with Microsoft to develop such "hot-linked" graphics for WebTV, which Microsoft is showing this week in its NAB booth. Chyron is also demonstrating an enhanced TV service in conjunction with interactive firm RespondTV and The Weather Channel.

Pro-Bel has developed a software add-on to its Compass and MAPP automation products called the Digital Content Controller, designed to manage enhanced program content and synchronize it with a broadcasters' primary video feed. Pro-Bel has also picked up another U.K. customer for Clarinet, its new streaming-media coder, in U.K. online gambling service William Hill. Clarinet, which supports Real Networks' and Microsoft's streaming formats, has also been purchased by the BBC and Virtue Interactive TV Ltd. for Internet use.

To be sure, Chyron did have a range of improvements to its existing broadcast products and some product introductions. It has released Version 2.0 software for its Aprisa graphics-oriented digital disk recorders, introduced a new low-cost still store aimed at broadcasters, the Aprisa SSX, and developed a new approach to graphics networking called AprisaSAN. Chyron has also closed a contract with NBC to provide graphics systems for the next four Olympics. ■

Omneon delivers

By Glen Dickson

After talking about its network-based video server technology for the past year, Omneon Video Networks has finally delivered a working system. Internet news service, The FeedRoom, a venture led by ex-CBS News VP Jonathan Klein and other broadcast TV veterans, has installed Omneon's FireWire-based "Video Area Network" to help record, edit and store video content for broadband distribution.

The FeedRoom has been beta testing the Omneon system for about three weeks, said Craig Thomas, director of information technology for The FeedRoom, speaking at a Saturday press conference. It is used to record news feeds in the DV (digital video) compression format, which can then be accessed as QuickTime clips by desktop editing software and cut into news segments. The clips are then encoded for Internet streaming using Media-Cleaner Pro by Terran Interactive.

Thomas first investigated Omneon's technology on the suggestion of Jay Fine, The FeedRoom's Chief Technology officer and CBS's former senior VP of operations and engineering. He said a big selling point for Omneon servers was their ability to handle multiple formats, such as different streaming standards. "It gives me the ability to make crazy right-hand turns" depending on The FeedRoom's changing applications, Thomas says.

While Omneon has yet to sell its technology to a traditional broadcast station or network, Omneon CEO Larry Kaplan said the next two beta sites will be "well-known, large networks." Kaplan did say that Fox and Warner Bros. have advised Omneon on its product. Omneon's first commercial shipment is scheduled for July 1.

Omneon is demonstrating its Video Area Network at NAB this week, working with a variety of applications including Louth automation software, Avid's NewsCutter nonlinear editor, AP's ENPS newsroom computer system and Media 100's FINISH 3.0 production system. ■

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Avstar Nets news

By Glen Dickson

Avstar Systems has sold its newsroom computer system to WebFN.com, a global financial online news service set to launch in May. The WebFN.com deal is the second

Internet sale in as many months for Avstar, a 50/50 joint venture of Grass Valley Group and Avid Technology. Last month, Yahoo! used Avstar's newsroom system to launch FinanceVision, its financial programming service.

WebFN, a co-venture of Bridge Infor-

mation Systems and Weigel Broadcasting Company, aims to deliver both a continuous financial news telecast and video-on-demand.

"The barriers of entry to newscasting are going to get lower than they ever were in the past," said Avstar President and CEO Matt Danilowicz, speaking at a press conference Sunday in Las Vegas.

Avstar is also looking to target the radio market, where its predecessor, BASYS, once played a heavy role by forming an integration and strategic business partnership with radio management software provider Netia. Avstar has been demonstrating the integration of its newsroom system with Netia's RADIO ASSIST software at NAB this week.

Danilowicz also said ABC's *Nightline* will this week begin beta testing Media Browse 2000. Avstar's new low-resolution browsing system for journalists. ■

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CBS buys Panasonic DNA

CBS Television has purchased more than \$3.2 million of Panasonic DVCPRO News Automation (DNA) video server systems for WCBS-TV New York and KCBS-TV Los Angeles.

"We needed a system that can store the video data as a DVCPRO data file so we don't need to convert it," says Paul Puccio, CBS TV stations' VP, operations and engineering. "The DVCPRO material is transferred into the NewsByte at four times speed and stays in the DVCPRO format for editing and playback."

Incoming news feeds will be recorded by an AJ-HDR150 ingest server cluster, comprising two AJ-HDR150s interconnected by a FibreChannel-based Storage Area Network (SAN).

The DNA systems will be configured with the Newsbyte nonlinear editing systems. Puccio says WCBS uses three and will add another six, while KCBS will have a total of six Newsbytes. Dual-mirrored Silicon Graphics (SGI) Origin200 GIGACHannel servers working on a Prisa Fibre Channel network will also be part of the system. Play-to-air control is through interface to AvStar Newsroom Computer System (NRCS) by Crispin Corp.'s Virtual Cart play-list application. —Ken Kerschbaumer

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House likely to rein in LPFM

Senate action on FCC is less certain, NAB panelists say

By Paige Albiniak

The House of Representatives is likely to pass a bill this Thursday that would severely limit the FCC's plan to assign licenses to low-power radio broadcasters, members of Congress and their staffs told attendees at NAB panels on Monday.



McCain aide 'Pete' Belvin: 'FCC reform is long overdue. We need to speed the process by which the agency makes decisions. But chances of passage this session are probably not terrific.'

from issuing low-power licenses. The measure has approximately two dozen co-sponsors, including Senate Majority



Tauzin aide Ken Johnson: 'Bill Kennard has turned out to be our worst fear: He's Reed Hundt reinvented with a charisma bypass.'

Leader Trent Lott (R-Miss.), Appropriations Committee Chairman Ted Stevens (R-Alaska), Banking Committee Chairman Phil Gramm (R-Texas), Budget Committee Chairman Pete Domenici (R-N.M.) and Communications Subcommittee Chairman Conrad Burns (R-Mont.).

That news is music to ears of broadcasters, who say the FCC's plan will interfere with existing stations.

What will happen in the Senate remains less certain, although Senator Judd Gregg (R-N.H.), who is chairman of the appropriations subcommittee that oversees the FCC, has sponsored a bill that would forbid the FCC

merce Committee.

Although the Senate bill has powerful support, it takes only "one Senator to put a hold on the bill," said Ken Johnson, spokesman for House Telecommunications Subcommittee Chairman Billy Tauzin (R-La.). Johnson also pointed out that the effort has a great deal of grass-roots support from community and civic groups, which makes it politically difficult to oppose.

It's also unclear how the Clinton administration would react should Congress ban the LPFM efforts. The administration has said it supports the plan, but it has not said it would veto a bill.

Even if the administration does choose to veto, enough members of Congress may be in support of the measure to override it, Johnson said.

Although the House and Senate bills looked very similar upon introduction, the House bill has changed notably since House subcommittee and committee votes last month. The bill on which the full House of Representa-

tives will vote would cut the number of possible LPFM licensees from as many as 400 to as few as 100, according to a compromise ironed out by House Commerce Committee Ranking Member John Dingell (D-Mich.), Rep. Heather Wilson (R-N.M.) and the House bill's original sponsor, Rep. Mike Oxley (R-Ohio).

Hill Republicans look at the FCC's LPFM efforts as proof that the agency needs to be reformed, but they don't expect any legislative action to occur this year because of elections.

"FCC reform is long overdue," Belvin said during the panel discussion. "We need to speed the process by which the agency makes decisions. But chances of passage this session are probably not terrific."

Republicans also see LPFM as one specific arena in which FCC Chairman Kennard has overshot his authority.

"Bill Kennard has turned out to be our worst fear: He's Reed Hundt reinvented with a charisma bypass," said Johnson. ■

Barrett: Courts unlikely to stop it

Broadcasters shouldn't count on the federal courts to block the flood of new low-power FM stations, said former FCC Commissioner Andrew Barrett at an NAB panel session. Because the U.S. Court of Appeals in Washington tends to defer to the FCC on technical issues, he said, it is unlikely to strike down the FCC's new LPFM service as broadcasters have asked. "The court views the FCC as the expert agency."

The service creates two classes of new FM stations with limited coverage (3.5 miles in radius for one; one to two miles in radius for the other) for non-commercial groups. Broadcasters have objected to the service, arguing that it will cause significant interference to existing full-power stations.

Attorney Don Verrilli, of Jenner & Block, who is leading the broadcasters' legal assault on LPFM, still likes the broadcasters' chances. They challenged the service not solely on technical grounds, he explained. Their complaint is that the LPFM rules represent a "dramatic shift" in agency policy that is not adequately justified. "If you make a shift of that kind, you need a darn good record to support it."

In particular, he said, the FCC has failed to show how the benefits of the service outweigh the costs—that is, increased interference, he said. "The FCC has grossly underestimated the costs and grossly overestimated the benefits."

Keith Larsen, one of two FCC officials to defend LPFM on the panel, said the benefits are clear. More than 1,000 schools, religious and community groups wrote the FCC in support of the service, he said. They expressed a "strong need" for the service that will introduce "new voices" in a time when ownership of full-power stations is consolidating.

—Harry A. Jessell



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Avid intros NewsCutter XP

By Ken Kerschbaumer

Avid Technology introduced its NAB product lineup on Sunday night, including an under-\$25,000 addition to its NewsCutter nonlinear editing system.

The NewsCutter XP uses standard DV25 compression but will have an upgrade path to upcoming releases of NewsCutter DV50 or MPEG-2 nonlinear editing in the fourth quarter.

"The speed and flexibility of NewsCutter XP will complement the news-

production process, enabling customers to get content on air and on the Web faster," says Director of Workgroup Solutions David Schleifer.

In a related NewsCutter announcement, Avid says users of the NewsCutter version 1.5 system will be able to upgrade to version 2.0 at no additional cost. Version 2.0 will offer DV50 and MPEG-2 format support later this year. It's also expected to offer Web publishing, user-interface enhancements, faster file transfers, additional real-time effects and an option for SDTI transfers.

Avid also has launched Avid-ProNet.com, a new business-to-business Web-services portal (www.avid-pronet.com) that will offer such features as "Review and approve," which allows users to receive client approval via the Web. According to Chief Technology Officer Mike Rockwell, clients and users will soon be able to attach verbal comments to the project to be approved. The simple graphic interface, which replicates VCR controls, is designed to be intuitive for even the most non-technical clients.

The portal is designed to offer a number of other services as well, including commerce, a community area for news and discussions, as well as a content area and services. Stock footage libraries like Image Bank and Energy Films will be available, along with stock audio from companies like Sound Dogs and news feeds from iSyndicate.

Avid also introduced upgrades and new versions of a number of products, promising to deliver both Mac and PC versions of software jointly and with the same features to create "parity." In the way of new features, Media Composer Version 10 allows users to import moving graphics and animations with text from third-party applications like Adobe After Effects and 3-D applications and key them over a video background in real time. Other features include real-time hardware multicamera play for as many as nine source angles, plus the record/client monitor, and video archive, allowing users to archive selected footage to videotape. ■

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TELESTREAM

Lucent radio debuts Multi-streaming

Three FM radio stations successfully demonstrated Lucent Digital Radio's Multi-streaming technology, a system LDR says counters the effects of degraded channel conditions, including interference and fading. This allows its In-Band On-Channel (IBOC) system to provide a digital signal of equivalent broadcast coverage to analog FM stations.

"This blows away the belief that IBOC is an incremental technology," says CEO Suren Pai. "IBOC ensures that low-power signals in the sidepack offer value for consumers."

The three stations in the demonstration were WBJB-FM Lincroft, N.J.; WPST-FM Trenton, N.J.; and KNPR-FM Las Vegas. Pai adds that the IBOC Multi-streaming technology can make AM sound like FM stereo, a significant value to listeners. "This will accelerate the adoption of digital radio by consumers because it offers more choice."
—Ken Kerschbaumer



WPTV will be the first facility to install the Seraph HD35 production switcher.

Philips intros lightweight HD camera

Philips officially introduced the LDK6000 camera series on Monday, bringing to market the lightest HD camera to date. The 11.2-pound multifunction camera uses three 9.2 million-pixel CCDs to capture its images, making it suitable for SDTV, 1080i or 720p.

In a related introduction, Philips rolled out the Seraph HD35 series HD production switcher. The multifunction-selectable HD 1.5-Gb/s switcher includes 90 HD inputs and from one to four mix-effects banks.

Philips also announced two sales at the show, one to WPTV West Palm Beach, Fla., and the other to National Mobile Television (NMT). WPTV has purchased more than \$8 million in equipment, including LDK 6000 studio and LDK 100 portable cameras, an EditStream nonlinear news editing system, Media Pool video servers, DD-35 production switchers, Venus 2001 routing switchers, JupiterPlus control system, and Saturn master control systems. The equipment will play a prominent role in the station's new 70,000-square-foot facility expected to be completed in December.

The NMT deal calls for the retrofitting of 15 NMT trucks with more than \$5 million in DD-35, four-M/E production switchers and Venus 2001 routers. "With product formats still undecided for the longer term," says NMT president and CEO Joe Heitzler, "we required products with flexibility and agility to take us into an uncertain future."
—K.K.

Sony presents mixed message for NAB

Touts HD buys by moviemakers, SD sales to broadcasters

By Glen Dickson

Sony President Nobuyuki Idei rode in on a golf cart, symbolizing Sony's role in producing the Masters golf tournament in HDTV. Sony Corp. of America Chairman Howard Stringer spoke of the need for program development in the broadband world. And Cablevision President Jim Dolan described new interactive services that his company will deliver in New York using Sony digital set-tops.

But Sony's big news at its NAB press conference Sunday wasn't in the broadcast or cable markets but in Hollywood. After several years promoting the idea of using high-definition video to replace 35mm film, Sony is finding acceptance for its 24-frame progressive HDTV equipment, now branded CineAlta, in the filmmaking community.

Panavision, Sony's partner in developing a 24P camcorder, has purchased \$18 million of 24P equipment, including 100 HDW-F900 camcorders. After spending four months testing the Sony/Panavision system, George Lucas has formally announced that he will use the 24P gear in lieu of film to shoot most of *Star Wars: Episode II*. And German

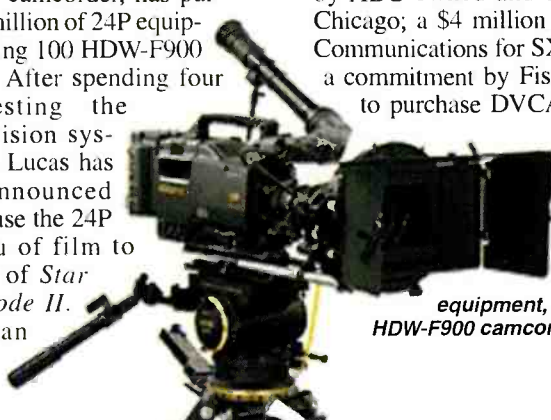
director Wim Wenders was in Las Vegas to give a sneak preview of *The Ground Beneath Her Feet*, a U2 music video that he shot using the 24P camcorder.

"It makes a lot of sense to be in the right format from the beginning," says Wenders, noting that he is eager to use the 24P gear for long-form production.

In other Sony 24P news, the company has delivered a 24P post-production truck, "Cinetour," to All-Mobile Video, New York City, and netted a contract from Canadian post firm Stonehenge to build a 24P facility in Toronto.

Sony's only new high-definition broadcast sale in the U.S. was to PBS member station KRMA-TV in Denver, which has purchased 1080i HDCAM cameras and an HDTV post suite for local HDTV production. Instead, most of its sales announcements were standard-definition buys by station groups: a \$2 million investment in Betacam SX gear by ABC owned-and-operated WLS-TV Chicago; a \$4 million deal by EMMIS Communications for SX equipment; and a commitment by Fisher Broadcasting to purchase DVCAM and SX tape equipment for its 13 stations. ■

Panavision has purchased \$18 million of 24P equipment, including 100 HDW-F900 camcorders.



Kennard pushes on DTV

FCC will undertake must-carry study; says broadcasters are 'squandering goodwill' in opposing LPFM

By Paige Albiniak

FCC Chairman William Kennard gave broadcasters less than good news on the digital must-carry front, while taking them to task for their opposition to low-power FM and the pace of their transition to digital.

Kennard indicated to an NAB breakfast crowd that the agency soon will begin a proceeding to examine how much capacity cable operators feasibly can dedicate to carriage of broadcasters' signals during the transition to digital.



Despite the smile, the FCC Chairman chastised the industry for digital TV delays.

Kennard said. Tom Power, Kennard's senior legal adviser, told other gatherings that the commission would issue a report by this summer.

Broadcasters have been pushing the FCC to take up digital must-carry, but they are not likely to be satisfied by a proceeding that merely examines cable operators' channel capacity. "The FCC is thwarting the transition to digital more than it is assisting it," said NAB President Eddie Fritts after the speech.

"There's a high degree of frustration among the small-market stations who have to invest more than the value of the stations to make the transition to digital," Fritts said. The stations want the FCC to guarantee that cable operators will carry both their analog and digital signals during the transition, but so far the FCC has been reluctant to get involved.

The commission will take up two digital television issues at its public meeting on Thursday, Kennard said: labeling digital TV sets "cable ready" and protecting digital content from copyright violations.

The overall tone of Kennard's speech

was frustration with broadcasters, particularly because they fiercely oppose his efforts to launch a low-power FM service. That service is intended to allow civic groups access to the FM band to create small, community radio stations.

"Why have you squandered your goodwill to fight churches and schools and community organizations?" Kennard said. The House of Representatives on Thursday likely will approve a measure that will severely limit the FCC's LPFM plan.

Kennard also is unhappy with what he sees as broadcasters' unwillingness

to cooperate with the FCC on a smooth digital rollout.

"I become frustrated when I hear broadcasters say they cannot or will not be innovators when it comes to digital television. I am frustrated when I hear broadcasters say they want to delay the transition. And I am very, very frustrated when I hear people say a successful digital transition lies with government micromanagement," Kennard said.

"All these views are wrong-headed. It will happen; it will happen as surely as day follows night. Why? Because the broadcast industry has absolutely no choice in the matter. All of broadcasting's competitors already have gone digital. ... Analog is over. Delay is simply not an option. Resistance is futile." ■

FCC aims at kids ads

Program-length commercials could draw \$100k in fines

By Paige Albiniak

Broadcasters who make the mistake of including program-related ads in their kids' TV programming face FCC fines higher than \$100,000, said Washington attorneys on an NAB panel on Monday.

"Fees likely to come out soon will be in the \$100,000-plus range," said Barbara Gardner, an attorney with the Washington law firm of Leventhal, Senter and Lerman.

The FCC will publish several fee notices soon, Gardner said, mostly because the agency is completing its latest review of TV-station license renewals. Just because the FCC approves stations' license renewals doesn't mean it will stop paying attention to violations of kids TV rules. The agency has been paying even closer attention recently with the creation of its Enforcement Bureau, she noted. The FCC's field offices frequently tape a local broadcasters' programming, monitor it and report back to the main agency.

What gets broadcasters into the most trouble, panelists said, are program-length commercials (PLCs). Any television show that is targeted at kids, is

associated with a product or service, and contains commercials for that product or service within the program falls into this category, said Michael Berg, attorney with Washington law firm of Verner, Liipfert, Bernhard, McPherson and Hand.

"PLCs are the most important thing the FCC is going to protect against," said Valerie Schulte, an NAB attorney.

What trips stations up, panelists said, are unusual items, make-goods or unscreened programming that surprise broadcasters with a reference to a character or slogan within the program. For example, if a station airs a 30-minute program starring Pokémon characters and then runs a McDonald's advertisement that includes a four-second shot of a Pokémon character found in a McDonald's Happy Meal, the entire 30-minute program will count against the station.

A station quickly can find itself up to its ears in fines if it doesn't pay attention. The FCC will fine a station \$2,500 per PLC whereas, on average, it will fine a station \$250 every time the limit is surpassed on commercials aired during kids' programs, says Anne Lucey, a lobbyist with Viacom and a former FCC staffer. ■



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Industry image is a problem

Panel of investors and advertisers raise questions about broadcasting's growth

By Steve McClellan

For TV stations, doing well in 2000, an election year with a summer Olympics, is almost a no-brainer. But executives on Wall Street and Madison Avenue have serious concerns and questions about the industry's growth beyond this year.

A TVB panel of analysts, investment bankers and ad executives on Tuesday agreed that perception and image are just as important as the tough challenges of identifying new revenue streams for broadcasters in the digital age. And one area where local stations have fallen down on the job, they said, is perception: telling their story to investors. That's why TV-sector stocks have lagged for almost two years.

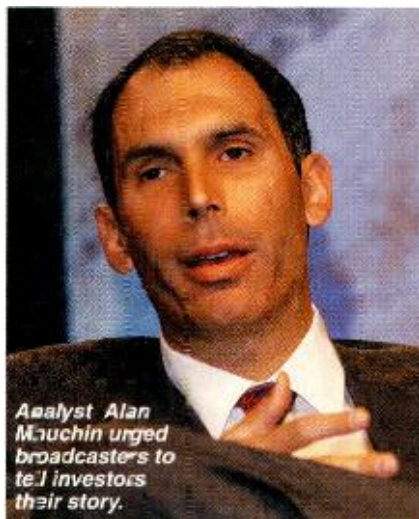
"I find it a bit surprising that the industry has been mired in this low-multiple trading range for some time," said Alan Mnuchin, managing director, Lehman Brothers. "There are some really compelling growth prospects out there," he said, citing the potential of such new ventures as Geocast, iBlast and Internet Broadcasting Systems.

Mnuchin compared where the TV industry stands today with where the cable industry was in 1996. Like broadcast stocks today, cable stocks were out of favor.

What cable did, said Mnuchin, was focus investors on their competitive advantages in their core business. The industry also convinced investors it had tremendous growth opportunities from new revenue sources, like telephony and data, and generally did a great job convincing the outside world that all the money being spent on plant upgrades would pay off.

Suddenly, new players like Microsoft started investing in the business. Cable also worked for and got regulatory relief. The industry also consolidated in a way that better positioned the major players who bought or swapped for major regional clusters.

"I think broadcasting needs to do the same," Mnuchin said. "You have to make the case that the digital upgrade is investment spending, not just expense. Develop new opportunities around the



Internet and digital spectrum."

Mnuchin also said stations and their networks have to make peace. "The programming relationships with networks are really the lifeblood of the industry. It's up to the industry to reach out to the networks and find a way to work more productively."

Jessica Reif-Cohen, top entertainment analyst at Merrill Lynch agreed. She noted that, five years ago, cable stocks were trading around seven times cash-flow multiples, not unlike where many TV companies are trading today. Today, though, cable stocks are trading in the high teens. "What cable did is tell their story," she said. "The broadcast industry hasn't done that at all."



Broadcasters said they are aware of the challenges. "The TV station business is trapped in an old model," said Ward Huey, chairman of Belo Broadcasting. "The challenge is to go beyond commodity selling."

Huey said Belo is focused on developing a strategy of selling multimedia packages that include TV, radio, newspaper and the Internet and also offering advertisers regional packages where Belo has multiple outlets.

Huey also said Belo has specialists who are talking to clients about "not just cost-per-point but how can we solve marketing problems on a broad basis. That is where the industry is headed."

Bob Marbut, chairman of Hearst-Argyle Television, agreed that 2001 is a question mark. But, he said, "we're mindful of the transition and the issues that face us," which he described as developing new sources of revenue, finding new ways of doing business and keeping a sharper eye on costs.

Michael Lotito, president of Initiative Media North America, a major media-buying firm, said it is crucial that stations "show us how you can move product for our clients" and stop being merely commodity brokers. "I don't want to fight over CPMs [cost-per-thousand rates] for the rest of my life. It's boring as hell. If we can solve problems, clients will spend more money," and both agencies and stations will generate more revenue.

Lotito also said he'd be willing to pay "considerably more" for station-generated advertising/marketing packages that move clients' product off the store shelves. But he'd expect to pay less for packages that didn't move product.

Tony Cassara, president of Viacom's TV station group and chairman of the TVB, agreed that broadcasters had their work cut out for them. He said Viacom stations will spend more than \$150 million to switch to digital. "At this point in time, we don't see a revenue stream from that, but we do believe in digital, and we believe there will be services that we can develop as digital broadcasters that will change our business model so that we're not solely dependent on advertising." ■



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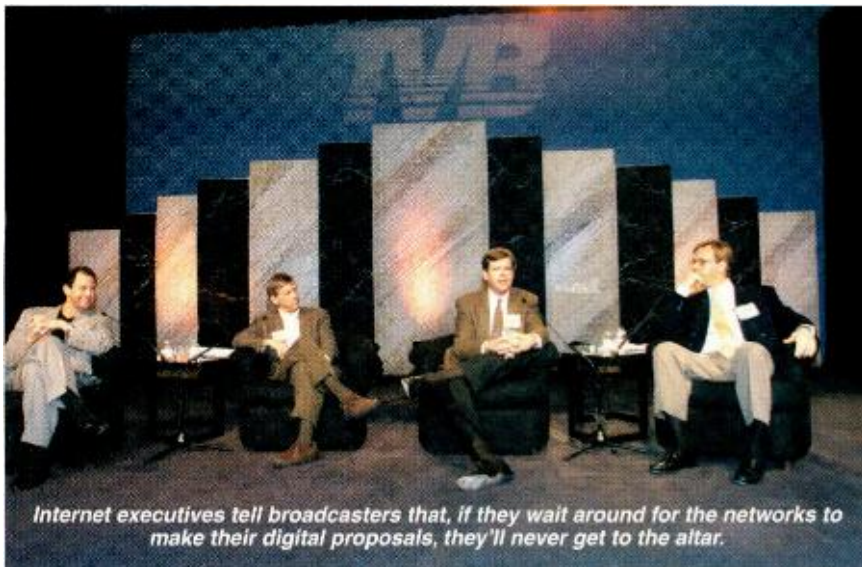
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TVs told to pick Net over nets

Internet players woo broadcasters as potential partners

By Steve McClellan

The TV networks are concerned about digital-spectrum-coveting Internet players partnering with their affiliates in various projects, such as Geocast, iBlast and Internet Broadcasting System. Given the hot and heavy pitches being made by those players in Vegas this week, there is reason to be worried.

Much of that worry stems from the fact that the networks are still drawing up their own digital blueprints and don't want affiliates giving or leasing spectrum to third parties that might put a crimp in those developing plans.

But in presentations made by some of those start-up companies at the TVB conference in Las Vegas this week, Internet companies urged stations to go their own way and to join them in forging digital and Internet strategies before it's too late.

"We're building the new network," said Tolman Geffs, CEO of IBS, a national network of TV station Web sites. Geffs went so far as to say that stations generally perceive their network's digital-Internet plans as "Trojan horses." The

implication: The networks are promising the unlimited potential of the digital world, but with the ulterior motive of pocketing the profits for themselves.

Geffs said local stations "can win online" because they can tap into an online advertiser base that is projected to grow more than fourfold, to \$11 billion, by 2003.



Jim Moroney of Belo urged broadcasters to move quickly into digital.

CBS executives have expressed particular concerns about the iBlast proposal, suggesting that the amount of spectrum stations have to ante up could prevent them from airing the Super Bowl and other big events in high definition TV. "Don't

give your spectrum away before you see what we have to offer," is the message that CBS and the other major networks are sending to affiliates.

But Ken Solomon, co-founder of

iBlast, returned fire this week, urging stations to "take control of your destiny" and join forces—and spectrum—with other stations around the country, "rather than give it away to somebody else," like the networks. The major networks, he said, "are not quite as friendly as they used to be," a reference to network strategies to kill compensation and require affiliates to contribute to costly programming.

Solomon also said that most of iBlast's station partners—143 of them covering 80% of the country—asked their networks to give them a digital plan. None were forthcoming, he said, adding: "We'd love to have them."

It wasn't just the spectrum hunters urging stations to move fast. Jim Moroney, head of Belo Interactive, the digital arm of Belo Broadcasting, urged stations to "do it now, while we still have a 28.8 world," a reference to the relatively slow modem speed by which most consumers still connect to the Internet. Belo is a founding investor in Geocast. And contrary to some of the signals being sent by the networks, Moroney said, stations don't have to choose among HDTV, multicasting and datacasting. All three can be accommodated in the digital spectrum. "We're committed to HDTV," he said, as well as to Geocast.

iBlast's Solomon said it is unlikely stations will generate a lot of extra revenue from HDTV pictures, though he conceded stations will probably "have to give it to consumers. But you [stations] can still add a second revenue stream" with services like iBlast, he said.

Scott Carlin, president, media group, DigitalConvergence.com, said stations



iBlast's Ken Solomon reminded broadcasters of the vaunted second revenue stream.

were behind the eight ball in the new media world. "Broadcasters have the biggest voice in media but haven't used that voice to build new media."

Carlin said stations have an opportunity to dramatically boost ad sales with their digital spectrum. "It's a classic paradigm shift," he said. DigitalConvergence downloads Web pages to viewer's computers, putting them "just one click away from buying the specific product." ■

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◀ *Woo Hyun Paik (l) is presented the Digital Television Pioneer award by Bill McGorry, head of the Cahners Television Group.*

Three digital television pioneers—"an engineer who helped make DTV possible, a statesman who brought digital order out of chaos and an entrepreneur who is taking the medium to new heights"—were honored by BROADCASTING & CABLE Monday at a Bellagio Hotel reception in Las Vegas. Woo Hyun Paik, president of U.S. operations and chief technology officer of Korea's LG Electronics, was cited for developing the compression technology that makes DTV possible. Richard E. Wiley, the former FCC chairman and Washington lawyer (Wiley Rein & Fielding), was honored for heading the national advanced television project that created the DTV

DIGITAL PIONEERS



◀ *B&C Publications Group Editor-in-Chief Don West (l) with Pioneer Award winner Richard E. Wiley.*

and high-definition standards. Rob Glaser, chief executive officer of RealNetworks, was recognized for the development of audio and video streaming techniques that put DTV on the Internet.



▶ *RealNetworks CEO Rob Glaser notes that his award comes on the company's fifth anniversary.*

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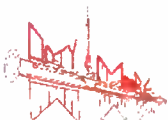
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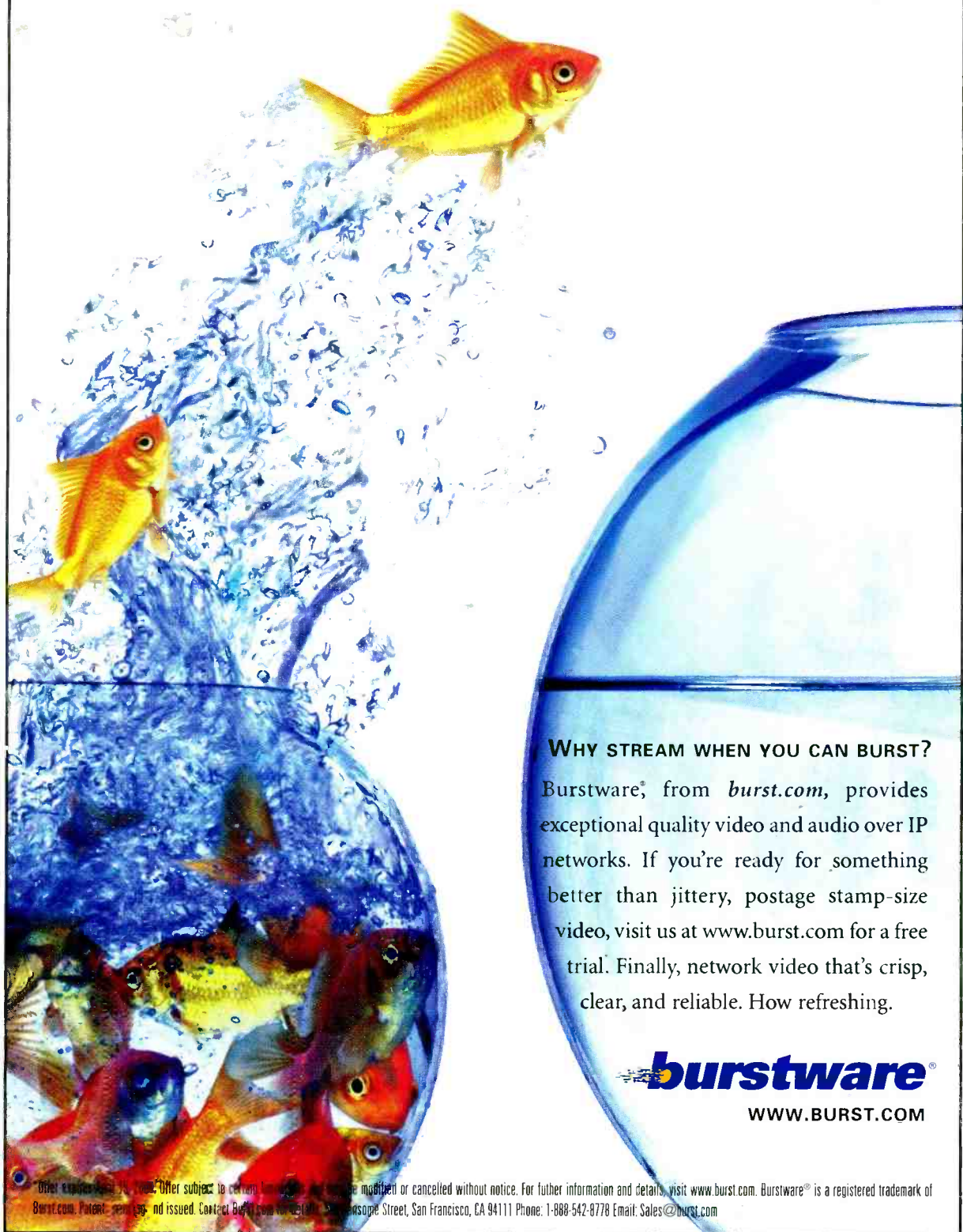
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