IBM, Apple to Pursue Multimedia Venture

by Frank Beacham

CAMBRIDGE, Massachusetts Apple Computer and IBM are seeking to move video beyond the passive television screen to a host of new interactive multimedia display devices for use in the home and business.

Through a joint venture known as Kaleida, the two companies are looking to usher in a new type of interactive communications that combines video, sound, text, graphics and animation. The new venture will develop, license and make available specifications and technologies to promote the exchange of multimedia information between a variety of computing and consumer electronics devices.

Areas of concentration

Kaleida is expected to concentrate initially on two key areas: development of standards for a distribution network, and creation of a universal scripting language that can be used by people without computer programming knowledge. "Animation, video and sound will proliferate throughout new interactive applications in much the same way graphics and text do today," said Apple's Dr. David Nagel.

The two American computer giants are now involved in a major recruiting effort to sign up key Japanese and American corporate supporters for Kaleida. The goal is to create a strong alliance that will come together on multimedia standardization, company officials said.

According to Japanese news reports, Sony, Matsushita, Hitachi, Toshiba, NEC and Sharp have been invited to join the project. IBM and Apple recently selected A. Nathanial Goldhaber, a 44-year-old California businessman involved in computer networking equipment, to run Kaleida.

Kaleida is entering what could be a highly competitive market. The new venture will compete with multimedia desktop computers from Commodore and planned alternatives from Microsoft, NEC, Fujitsu America and NeXT Inc.

Speaking to a group of international media executives at the Massachusetts Venture Forum in Cambridge, Masaaki Shiiki, IBM's vice president for strategic planning in the consumer products division, said: "We're trying to put together a technology that's flexible enough to be used in many different areas." The goal is to create a "standard" that can be used to make the high-speed, interactive television technology a reality.
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Circle 130 On Reader Service Cord
Comark in Finland

COLMAR, Pennsylvania  Comark recently announced it is supplying IOT-equipped transmitters to the Finnish Broadcasting Company.

The order consists of three Comark 25 kW IOT transmitters using NICAM sound and common amplification. These are the first IOT-equipped transmitters to be used in Europe, and also represent the first use of common amplification with NICAM sound.

Representatives of Finnish Broadcasting had visited Comark's United States factory to confirm the test performance of the EAE IOT in Comark's common amplification system.

The transmitters, CTU-UE-251C, are water-cooled and IEC 215 compliant.

Delivery of the first transmitter to Finland is scheduled for November. The remainder will be delivered by February 1993.

Comark is a Thomson-CSF Company.

For more information, contact Ellen Rainey at Comark:
215-822-0777, FAX 215-822-9129, or circle Reader Service 29.

For more information, contact: O.P. Khusbu, director of the Technical Centre at ABU in Kuala Lumpur, Malaysia at +60-3-2823108, FAX +60-3-2825292; H. Hasmet Esen, chief technical advisor at ITU in Kuala Lumpur, Malaysia at +60-3-2822498, FAX +60-3-2825292, or T. McGann, chairman of the IABM in Slough, England at +44-222-242642.

Judgment in Favor of Snell

LOS ANGELES, California  A patent suit brought against Snell & Wilcox by Laser Pacific Corp. was thrown out of court after a U.S. district judge ruled that a Laser Pacific patent was invalid.

The dispute between the two companies centered around Snell & Wilcox' DEFT (Digital Electronic Film Transfer) system, which Laser Pacific claimed infringed on one of its existing patents.

U.S. District Judge A. Wallace Tashima ruled that, because the Laser Pacific system had been put up for sale more than a year before a patent was applied for, the patent was unenforceable.

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Circle 114 On Reader Service Card
Toshiba, GI and MIT Reach HD Agreement

TOKYO Toshiba Corp. has reached a fundamental agreement with General Instrument Corp. (GI) and the Massachusetts Institute of Technology (MIT) to assist in the development of HDTV for the U.S. market.
Under the agreement, the three groups will jointly develop digital processing circuits, VCRs and televisions for digital HDTV.
Toshiba is expected to formally sign an agreement through its U.S. subsidiary in August.
It is reported that Hitachi is also proceeding with negotiations for joint development of digital HDTV with U.S. manufacturers. However, no formal agreement has been announced.
Other manufacturers, including Matsushita, Mitsubishi and Sony are proceeding with research and development of digital HDTV.
The agreement between Toshiba and GI/MIT calls for Toshiba to develop products using either of the two HDTV transmission formats that GI and MIT have submitted to the FCC for consideration as a national standard. While GI has already developed prototype HDTV decoders, Toshiba will develop the technology to mass produce them, under license from GI, as built-in decoders for television receivers.
Toshiba will be in charge of the production of HDTV VCRs because GI does not have VCR production equipment.

Hi-Vision May Get New Life as Digital Format Using Compression

TOKYO Japan's Hi-Vision HDTV format will not be completely out of date once Europe and the United States adopt digital transmission standards, according to Hisashi Yamada, senior manager of Toshiba Corp.'s Electronics Equipment Laboratory.
Speaking at a technology seminar entitled "Trends of Video Compression Technology," Yamada said Hi-Vision can continue as a digital format by using digital MUSE decoders in consumer receivers.
Currently, full digital hardware is tremendously expensive, so it would be wise to use Hi-Vision as a base to build upon, he said.
Once the digital transformation is complete, a host of new benefits will arise, including an increase in available channels due to digital compression.
In Japan, where HDTV is transmitted via satellite, terrestrial broadcasters are currently fostering widescreen EDTV because no channels are presently available for a terrestrial HDTV channel.
While Yamada said that digital compression might enable broadcasters to provide multichannel service in the future, he also suggested that broadcasters will probably not be the pioneers of the technology. More than likely, he said, satellite and cable will be the first to start splitting individual channels into multiple carriers.
Digital compression should enable a single TV channel to carry four to five conventional channels, while a single satellite channel could carry as many as 10 NTSC channels or two HDTV channels.
With the standardization of the video compression format known as MPEG 2 expected later this year, Yamada said his sample MPEG 2 LSI chips are to be shipped sometime in 1993.
At the seminar, Toshiba demonstrated digital video compressed at 6:1, 16:1 and the MPEG 2 ratio of 40:1. The 40:1 display showed a slight picture deterioration, but provided a significant increase in recording density.
Yamada said that recording density has already seen a ten-fold increase in the past 10 years, and LSI processing (throughput) has increased a hundred-fold.
"In the future, because standardization of video compression technology, such as MPEG, is proceeding, many changes can be expected in the video field," he said. "However, restrictions in the social (legal) system will remain, and we cannot define future trends (only) from a technological viewpoint."

Matsushita, NHK Unveil Plasma Display Panel

TOKYO Matsushita Electronics and NHK have developed a color plasma display panel (PDP) that is reported to have the brightest plasma display to date.
While the 26-inch, 16:9 PDP panel, which is currently at the prototype stage, is still darker than a CRT, Matsushita officials say their model is the next step toward a practical large-screen PDP. Other areas that need to be improved include increasing the display's usable lifespan to at least 20,000 hours.
Matsushita and NHK were able to increase the brightness of the display by 40 percent by improving the panel structure and electrode designs and by using discharge technology.

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Crash course
And, too, a single global television standard that has finally become a reality.
And while we could envision other applications for high definition besides television somewhere down the line, at that particular juncture in time the HD road seemed to be pointing toward one goal and one goal only—“Big TV” for one and all.

Crash course

However, a few things have happened in the interim to repaint that picture. For one, there was the little matter of a stock market crash in 1987, which seemed to bring confusion about the future of many industries and new technologies, including ours.

Then, in 1988, the U.S. Federal Communication Commission involved itself in the development of an “appropriate” U.S. broadcast standard for HD, and the process was quickly bogged down in a quagmire of bureaucratic red tape. Both corporate and governmental noses began to be bloodied in the ensuing global economic and political infighting that is still ongoing.

So, awakened by the harsh light of what is rather than what might have been, our world view of the high definition landscape has been altered. It continues to change. And when all is said and done, perhaps we were naive to think “Big TV” was all that HD could (or should) provide.

In fact, we no longer see high definition as simply a new kind of television. Rather, it is a widescreen, high-resolution electronic media (i.e., HD). We completed principle photography on a show called “Pool’s Fire” for this multiple-episode American Playhouse series. It is a 50-minute drama written and directed by the unique visionary, Julie Taymor. In it, Julie designed and choreographed a spectacular adaptation of an Edgar Allan Poe short story titled “Hop Frog.” This production illustrates how, as the technological tool boxes change, the way stories are told will visibly change as well.

“Pool’s Fire” has a great sense of the fantastical, brought about in no small part by its mixture of live actors and life-size animated characters.

The entire production is at once achingly realistic, yet undeniably surreal. To ensure the illusion would carry through, it was necessary to design the special effects in such a way that the most exacting, realistic results could be obtained, while still maintaining a sane budget. HD was the only answer.

Successful mix
“Pool’s Fire” is notable for being one of the first applications for high definition and film media, where both are crucial to and fully integrated in the production. Under the direction of REBO Studio, we worked closely with Julie to decide how HD would be used in portions and what portions would be filmed. It was decided that the live action work would be shot in HD, while the special effects work should ideally be done in HD, both for creative and technical reasons.

The special effects shots were composited in HD, using one of the tools from our rapidly expanding toolbox—a proprietary product of REBO’s R&D sister company; REBO Research, called the Realize digital compositing system. The HD high definition frame store based on the Macintosh computer platform.

The finished high definition footage was composited into HD, using one of the tools from our rapidly expanding toolbox—a proprietary product of REBO’s R&D sister company; REBO Research, called the Realize digital compositing system. The HD high definition frame store based on the Macintosh computer platform.

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Thus the finished version of “Pool’s Fire” will exist in three forms—a 35mm print, a digital high definition tape and a broadcast television version.

Storytelling changes
It is not difficult to see that there is a marriage being made between video and film. “Pool’s Fire” illustrates the nature of how the technology will change the stories that are told.

And while, so far, traditional computer programs have been the media employed... perhaps we were naïve to think “Big TV” was all that HDTV could provide.

for the electronic special effects in these, sadly, mega-budget films, there is a definite awakening on the part of the film community as to the particularly cost-effective benefits of the film-like resolution and identical 16:9 aspect ratio provided by HD.

In preparation for the coming surge in this type of production work, we are using “Pool’s Fire” as a bed for refining some of our production techniques as well as a way of expanding into this realm of video and film.

Wide is the way
We all run the risk of getting so caught up in forms and technical jargon and the myriad proposed standards for HD production and transmission that it is easy to lose sight of one important fact: all the advanced video systems (both real and proposed), as well as existing film 35mm technology, share the same widescreen 16:9 aspect ratio. As we like to say to the studio, the shape of the world is not round: it is in fact 16:9. And this rectangular, widescreen shape is playing, and will continue to play, an extremely important role in the future of visual imaging.

The producer, the director, the broad- caster, the independent producer as well as the production company should all think widescreen. The medium does not matter: if you want to shoot film, shoot film; if you want to finish in video, finish in video. But if you have a belief in a product that will have an extended shelf life through the 1990s and beyond, be assured that a widescreen format—in, a 16:9 aspect ratio—is the way to go.

Do not be limited by yesterday’s technological constraints. Paint a picture that fills the entire canvas.

Other HD uses
The widescreen electronic canvas that HD has made possible is, however, just one piece of the high definition visual equation. The other critical component piece is image resolution—lots of it. Some may debate whether 1,000-plus lines of on-screen resolution are really all that is needed. But if you have a belief in a product that will have an extended shelf life through the 1990s and beyond, be assured that a widescreen format—in, a 16:9 aspect ratio—is the way to go.

Do not be limited by yesterday’s technological constraints. Paint a picture that fills the entire canvas.

For example, REBO Studio is currently doing a lot of work in the medical imaging area. Much of this work will ultimately involve teleconferencing—long-distance learning and/or long-distance medical examinations, where the medical professionals involved are extremely dependent upon the accuracy of the image in terms of texture, color and shape, etc., in order to make a correct diagnosis. The non-entertainment applications for HD can be cost prohibitive, but, hopefully, will dwarf the entertainment industry.

For HD to survive in the present, and ultimately thrive in the future, we have to focus on common-sense business applications that can justify the investments that have been made and to warrant those that will be required in the near future.

We must think of ourselves as images into the next era of creativity, tempered by financial responsibility. In doing so, we will be in the position to pursue applications that will have been shared by everybody who has ever sat in a darkened room and been thrilled to see a new world appear before their eyes.

REBO Rebo is chairman of REBO Studio in New York City, New York.
SHOW LISTING

Upcoming conventions, meetings and exhibitions:

16-22 September 1992 photoTINA '92
Cologne will host this venue for imaging, sound and professional media. More than 1600 exhibitors from 30 countries are expected, and 500 of those will be manufacturers of professional film, video, sound, lighting and projection systems. For more information, contact Messe-und Ausstellungen, Ges.m.b.H. Köln, Messeplatz 1, Postfach 210760, W-5000, Köln 21, BRD, or call +49-221-821-0, FAX +49-221-821-3415.

30 September-2 October 1992 CAPER '92
This international show, to be held at the Autopista Center in Buenos Aires, Argentina, will feature television, cable, satellite and radio equipment. It is organized by the Argentine Chamber of Radio, Television, Cable and Satellite Equipment Suppliers and Manufacturers. For more information, contact CAPER at +54-1-422673, FAX +54-1-814-2650.

17-20 February 1993
Electronic Media Indonesia '93
Professional sound, film, video and lighting equipment will be displayed at this new exhibition, to be held in Jakarta. The show will take place in conjunction with Communications Technology Indonesia '93, a telecommunications and business communications show. For more information, contact PT Pamerindo Buana Abadi at +62-21-325-560, or FAX 62-21-331-223.

19-22 April 1993
International Association of Broadcasting
IAB will hold its 23rd General Assembly in Las Vegas, Nevada, in conjunction with the National Association of Broadcasters convention. For more information, contact Dr. Hector Oscar Amengual, telephone +596-2-481-29.

IBTS Heralds New Technology
By Alan Carter

MILAN, Italy The seventh annual International Audio, Video, Broadcasting and Telecommunications Show (IBTS), 15-19 October in Milan, opens as the Italian government is set to assign network and local frequencies. Broadcasters are anxiously awaiting to learn their fate, and equipment manufacturers and program syndicators are watching for a new boom in the Italian TV market.

However, based on the past record of inaction and political upheavals of the country, the decision could be delayed again. Another new government is being organized, and the minister of the PTT, who sets policy, was not named.

State of affairs
Italy literally has thousands of radio and television stations on the air. The frequencies have become quite cluttered since the Italian Constitutional Court deregulated broadcasting about 15 years ago and stations began broadcasting in an open market.

The frequency plan, designed under a law approved in 1990 but yet to be enacted, would establish nine private national TV networks and between 500 to 600 local and regional networks. The resulting number of stations is estimated between 1,000 to 2,000. All this is in addition to the three chains of the state broadcaster, RAI.

However, that allocation plan could change depending on who is named the new PTT minister.

This is an opportune time for IBTS, which has grown into an international exposition and convention.

The show, to be held at the Milan Trade Fair in Lacciaiarella, also incorporates MediaTech '92 (MEM) for conferences and seminars.

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IBTS in only its second edition, will feature seminars and lectures covering such topics as "TV and the Computer," "Discussions will center on desktop broadcasting; creating videos, the proliferation of formats, manipulating images and desktop editing systems." "Network Images" will review TV video graphics, analyzing the latest examples of promos, logos, chromatic codes, tone and quality of film inserts, and the image of presenters. Another MEM seminar will focus on the organization, function, construction and management of local TV and radio stations.

A final program will review the European production and programming market as related to technological developments. Topics will include: computer animation, 16-9 HDTV interactive television, digital media and computer graphics.

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Thomson Appoints New CEO

CEDEX, France Henri Magnan was recently appointed chief executive officer of Thomson Tubes Electroniques, a subsidiary of Thomson-CSF. Magnan joined CSF in 1965, and then the submarine acoustics laboratory (DASM) at Cagnes sur Mer in 1967. In 1981 he became director of the Technical and Development departments, and in 1990 was appointed CEO of Thomson Sontra Submarine Activities.

Thomson manufactures electron tubes for TV and radio broadcasting, satellite communications, military electronics, medical diagnostic imaging, and more.

Changes At JAMPRO

SACRAMENTO, California JAMPRO Antennas has appointed Frederico Pantosio as director of Latin American sales.

Pantosio has over 10 years of experience in broadcast, beginning in the field as transmission project manager for Radio Caracas TV Network in Caracas, Venezuela, and later becoming a broadcast engineering consultant for Latin America at IRC Enterprises. Most recently he was a senior antenna and sales support engineer for Harris Allied in Quincy, Illinois. Pantosio holds a Masters Degree in Electromagnetics from the University of Colorado in Boulder, and is an active member of the IEEE Broadcast Society.

For information on IBTS and MediaTech '92, contact the organizers in Milan at +39-2-4985541, FAX +39-2-4980330, or write Via Domenichino, 11-20149 Milan (Italy).

Alan Carter is the international editor of Radio World, sister publication to TV Technology.

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IBM, Apple Announce Venture

(continued from page 1)

Institute of Technology's Media Lab, IBM's Robert L. Carberry, who is involved in setting up the Kaleida project, said there is need for a new worldwide multimedia standard that will cross multiple platforms for use in homes as well as businesses. He touted the compact disc as an excellent distribution medium that could handle video.

"Compact disc technology today is large, but tremendously understated," he said. "We are interested in establishing a level of interface interaction that will generate programs that are a cut above any that we see in the marketplace today."

Carberry said IBM and Apple see multimedia as "an excellent business opportunity when we look at the natural forces of the marketplace." But he added that standards are sorely needed.

Multimedia communications

Once those standards are set and distribution systems are in place, Carberry said, multimedia could become a preferred communications vehicle for entertainment, advertising and education.

"The lifed blood of advertising is how to get something in front of a person for 10 seconds and have him remember the message," he said. "We think multimedia can accomplish this goal!"

Another goal of Kaleida, he said, is to make the programming of multimedia so simple that a product brand manager can create his or her own multimedia presentation.

An authoring tool and language currently in development, called Script X, will allow multimedia producers without computer science backgrounds to write programs, Carberry said. Writing a multimedia program with Script X, he said, will be similar to writing a simple stage play:

"You call actors onto a stage . . . they interact with other things. They move around under the direction of a director; and they have varying backdrops," he said. The author is able to draw upon a wider set of content.

Library access

Easy access by multimedia creators to libraries of program content will be a key feature of Kaleida, Carberry said. He noted that program content, as opposed to application software, represents about 80 percent of multimedia production costs today. Video and sound materials used to make programs must be recycled into multiple programs in order to keep production costs down, he said.

One way that Kaleida may transcend platforms is by separating program content from the computer application. Carberry used an audio analogy to explain the concept:

"We could have an infinite amount of music stored in audio form," he said. "One could navigate through and listen to various sequences of it. Or, we could ship the sheet music down the network, and present it as an application, and have a synthesizer actually create the musical sounds."

Multimedia logos

The Kaleida effort seeks to break the logjams holding back multimedia production. With no current standards, it is risky for producers to create expensive programs. Kaleida, with the backing of major electronics manufacturers, seeks to create a standard, along with distribution networks for the data.

Consumer use of an IBM-designed multimedia interface received a major test this summer at the Expo '92 World's Fair in Seville, Spain, Carberry said. Some four million people used 33 IBM interactive multimedia kiosks as computer-age information stations. User feedback from the Seville tests will be used to design Kaleida, he said.

The Seville information stations are tied together on a local area network to data servers that provide video, text, voice and touch-control feedback. Users can leave messages for others, make restaurant reservations and get a variety of information.

A tiny television camera at each kiosk enabled visitors to take their own pictures and attach the digitized images to their voice messages before sending them to other members of their parties.

"If you want(ed) to make a restaurant reservation, you could navigate through the fair, see the outside of the restaurants, see the menu, get a snapshot of the food, see the interior of the restaurant, decide where you want to sit, and then make a reservation," Carberry said.

In addition to the information kiosks, Apple and IBM expect Kaleida to have a major application in a new generation of miniaturized handheld multimedia computer displays that use compact disc software. Carberry used Sony's Data Discman and Bookman players as examples of such devices.

Apple and IBM will contribute resources, as well as license their multimedia technology to the new venture. Kaleida's board of directors, composed of an equal number of Apple and IBM representatives, will name an executive staff at a later date.

The new company will be headquartered in the San Francisco, California area.

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IBM, Apple Announce Venture

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How Long Does Tape Last?

TV TECHNOLOGY

VideoCraft examines the basics of video production, providing information on subjects ranging from camera battery life to location sound recording to tape life, discussed here.

Frank Beacham is a New York-based writer, director and producer.

Tape manufacturers do not like to discuss it and few videomakers bother to ask the question. How long does a videocassette last? Most of us operate on the assumption that the tapes we record today will play back far into the future. But how long can we expect that tape to reliably store and recall our programs? The truth is, unfortunately, that videotape is not forever. Unlike motion picture film, which can last for decades, videotape is a far more fragile medium.

No magnetic recording medium is permanent. Those ribbons of cobalt ferric oxide or metallic particles inside the plastic shell of a videocassette represent very new technology.

Professional have had only 20 years of experience with traditional oxide tapes, and the newer metal tape, introduced with the Video 8 format in 1985, is still in its infancy.

Opened to study

So how long does a videocassette last? Traditionally, tape manufacturers have wafted on the question. Users have been offered some general storage tips and assurances that the issue is not a matter for serious concern. But now, thanks to a new internal study by Sony in Japan, a tape manufacturer has gone on the record with a specific estimate on the life expectancy of its videotape products that should shatter any illusions that video is forever.

Sony's research, which applies to both consumer and professional grades of videotape, was conducted in Japan with the company's Betacam system, the only video recording format that can use either oxide or metal tape formulations.

One of the purposes of the study, Sony noted, was to compare the archival stability of the newer metal tape against traditional oxide formulations. "Some people in charge of tape libraries are seriously concerned about the archival stability of metal videotapes, because essentially, metal materials have problems with chemical instability and corrosion," Sony said in its press release.

Unlike motion picture film, which can last for decades, videotape is a far more fragile medium.

The durability of both the new high performance metal tape and traditional oxide tape was extensively tested by Sony in environmental chambers set at varying temperature and humidity levels. The researchers wanted to find out how environmental conditions affect oxidation, magnetic properties, and so forth.

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In order to see how wear affected the RF output of tape, Sony ran cassettes through 500 playback and rewind cycles at a slow 1/30 speed on a Betacam VCR.

The result, according to the Sony study, is that both metal and oxide tape, when stored under environmental conditions of 25 degrees C and at a relative humidity level of 40 to 60 percent, Sony predicts both metal and oxide tape formulations will last 15 years without significant degradation.

It is important to note the word "constant" when speaking of the environment in which tapes are stored. To prevent expansion and contraction of the base film, Sony recommends there be little fluctuation in temperature or humidity. Because most of us do not always occupy such ideal temperature and humidity-controlled environments, the 15-year figure might be a bit unrealistic for the average user.

For important, irreplaceable tapes, Sony tape product manager Les Burger recommends that videographers make protection copies—preferably to a

Under the rewind durability tests, Sony found metal tape to have less RF output degradation than oxide.

Environmental concern

So what is the bottom line? How long does Sony tell us we can expect a videotape to last? Since environmental conditions are the key to the tape's chemical stability, Sony's answer is based on storage conditions.

If the user keeps tapes at a constant temperature between 15 degrees and 25 degrees C and at a relative humidity level of 40 to 60 percent, Sony predicts both metal and oxide tape formulations will last 15 years without significant degradation.

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Frank Beacham is a New York-based writer, director, producer. Contact him at 163 Amsterdam Ave., #361, New York, NY 10023.
Focus on Videography covers all aspects of shooting good video. Subjects discussed include the role of camera controls, lenses and helpful shooting techniques.

John Premack is an award-winning videoographer and chief cameraman for WCVB-TV in Boston, Massachusetts.

This month, we will take a close-up look at a part of the camera most videographers seem to take for granted: the lens.

The lens is used to grip the camera and to focus on an image, and it is overlooked almost as often as it is looked through.

The first thing we encounter on an ENG lens is the lens hood. If it is not there, it should be. Usually made of hard rubber, the hood's primary function is to protect the lens against hard knocks and to minimize damage to other photographers' heads when shooting in a pack.

The front of the lens also is a great place for dust and mud, salt spray, snowflakes and desert sand to accumulate on new shoots. When there is no lens hood, manufacturers of new videocameras are often likely to wipe the lens with whatever is close at hand—fingers, the back of the hand, or a cloth. The result is a few clear shots at the expense of a scratched front element.

Lens filter

That is why we should find a clear filter under the lens hood. Attached either to the lens hood mount or to the distal front of the lens, this easily replaced, optically neutral glass protects the delicate surface of the front element from bad weather and the abuses of man. No lens should be without one.

The lens hood and the filter are attached to a number of lens elements known as the focusing group. On most lenses, focusing is accomplished by rotating the entire lens group, screwing it in and out along threads in the lens barrel.

Some of the newer ENG/EFP lenses feature internal focusing, in which the front element group moves in and out but does not rotate when the focusing ring is turned. This means that anything touching the front of the lens—for instance, a lens hood or a polarizing filter—will maintain its orientation and be designed for internal focusing lenses. This is not always an advantage, which makes them more effective at blocking glare than the circular hoods.

Pistol grip

If you turn the camera over to inspect the underside of the lens, you will notice a set of holes containing threaded, stainless steel bushings. These are mounting points for a pistol grip, available as an accessory from the manufacturer.

A pistol grip offers a range of adjustments that accommodate different body sizes and convenient remote control of zoom and recorder start functions. It also makes handheld shooting much easier.

But while it may be a pleasure to work handheld, a pistol grip can also be a liability. The lens mounting points are intended to be a convenience, but manufacturers would do their customers a favor by eliminating them.

This is true because, the grip, when attached to the bottom of the lens, becomes a lever by which forces applied to the lens are multiplied. Swinging a 15 or 20-pound camera by a handle attached to the lens or setting it down so the camera's weight is borne by the lens can distort this precision optical system to a considerable amount of unnecessary stress.

You can quickly fatigue metal and loosen a lens in its mount by attaching a pistol grip directly to the lens. If you want the convenience of having your subject to your lens without any adverse effect, use a bracket that mounts the pistol grip to the camera body.

Buttons and switches

When shooting without a pistol grip, the videographer's fingers rest atop a series of buttons and switches. These controls and their associated electronics are all contained within the section horizontally mounted alongside the lens barrel. This enclosure, which doubles as a handgrip, provides a reasonably weather-tight fit for the motor, gear and electronic circuits that control the zoom and iris functions.

Along with a zoom rocker and remote recorder start button, a lens has switches that select iris mode and control what you see in the viewfinder and a lever to disengage the zoom motor. Trim pots, which adjust iris speed and stop points, are accessible under rubber covers, as are connectors for remote zoom and focus controls.

Two switches, located atop the housing behind the iris, are the first switch selected each time, or remote. The remote setting is only used when the camera is connected to a camera control unit, allowing the operator to manually adjust the iris.

The second iris control switch, a momentary push-button, overrides the first engaging the automatic iris function as long as it is held down.

Most lenses leave the factory adjusted to set the iris as quickly as possible when the automatic button is pressed. This rapid response time is desirable only if you engage the auto iris between scenes—causes unsightly iris bounce when bright objects flash through a scene. As a result, the only time most videographers shoot with the iris in automatic mode is when they forget to switch it off.

A little experimenting with the setting of the "speed" trim pot should allow you to slow the response time, effectively sedating a hyperactive iris and allowing it to respond smoothly when lighting conditions change and your hands are busy with the focus and zoom controls.

Return video

An over-the-shoulder, usually located at the rear of the zoom rocker, engages the camera's return video function. Depending on the camera and recorder being used, pressing this button may either switch to concurrent playback of the recording as it is being made or black out the viewfinder.

On most Betacams, pressing the return video button when the recorder is in pause causes the last 20 seconds of the previous scene to be rewound and played back in the viewfinder. Many new videocameras provide such an option any time the camera is powered up with a partially shot tape in the recorder. The subsequent playback automatically cues up the tape for a backspace edit (a scene change that will play back without break, eliminating lock-up problems in the editing room).

Moving further back on the lens, you will encounter a small handle located just below the back focusing lever. This lever engages the built-in extender, a popular and useful option for lenses used by videographers. Rotating this lever flips a magnifying lens into the path of the image, effectively doubling the focal length of the lens. This enhancement is useful when you cannot get close enough to your subject. Its only drawback is that it reduces the light transmission capability of the lens.

The last controls, at the very rear of the lens, are the back focus adjustment clamp and the macro focusing lever. Both controls are available on most lenses. Back focus allows the videographer to temporarily change this setting when it is necessary to focus on an object outside of the lens' nominal minimum focusing distance. Once the macro lever is moved from its detent position, focus is accomplished using the zoom and macro controls in concert. The conventional means of focusing, with the front section of the lens, has little effect when macro focusing is engaged.

Many videographers have accidentally discovered that failure to return the macro lever to its detent setting results in out-of-focus wide shots and causes scenes that appear sharply focused to turn to mush when zooming.

This back focus error, the nemesis of many videographers, occurs when the macro lens group is not properly adjusted when a lens is first mounted on a camera or if the adjustment clamp is not set correctly. When adjusting the lens to the camera to ensure that the image remains in focus throughout the zoom range.

Unfortunately, back focus problems are often difficult to spot in the viewfinder and may only become evident when the tape is screened on a full-size monitor. Minor back focus errors that go unnoticed when shooting outdoors or at long focal lengths can ruin shots made in low light or at wide-angle settings, because the lens is less tolerant of back focus error at short focal lengths and wide aperture (f-stop) settings.

Making adjustments

Fortunately, back focus can be quickly readjusted, even in the field. If your shots are staying in focus as you zoom or are soft at wide angle, first check to see that the lens is secure in the camera bayonet mount and that the macro focusing lever is in its detente position.

If the problem persists, switch to the manual iris and open it to maximum aperture. It may be necessary to use filters or the camera's electronic shutter to avoid over-exposure. Zoom the lens fully out to its widest angle. When shooting on a tripod, focus on a nearby object and, while looking through the viewfinder, zoom out to the image begins to go soft.

Now, loosen the back focus clamp and rotate the collar back and forth to obtain the sharpest image. Temporarily tighten the zoom in, refocus and repeat the procedure several times until there is no change in focus as you zoom out.

Finally, check back focus clamp and recheck to ensure that nothing slipped as you applied final twist to the set screw.

John Premack has been chief cameraman at Boston, Mass., station WCVB-TV for 17 years, covering stories on a daily basis. He may be reached at 1-617-433-4199.
The Time Is Now for R-DAT

Audio Technology examines the trends and developments in audio for video production and transmission.

The story of R-DAT as a consumer format is well known. It was introduced in Japan in 1987, and, while it has not been a runaway success there, hand-held "DAT"-man recorders can be purchased in Tokyo. United States record companies, afraid their copyrights were in jeopardy (perfect promise agreement was reached with the sivie campaign against the introduction of consumer R-DAT in this country. After protracted negotiations, a compromise agreement was reached with the inclusion of "copy once" inhibition in the R-DAT recorder. This permits a single digital R-DAT copy of a compact disc to be made, but does not permit copies to be made from that copy.

Not yet a household word

With this safeguard, consumer R-DAT recorders are on the market in the United States, but they are not yet making their way into every household. The high cost of the hardware and the cassette, and the absence of pre-recorded R-DAT software, have relegated this format to the high-end consumer.

Audio professionals have found many uses for R-DAT, and it promises to totally replace the use of analog cassettes in many sectors of the professional audio world. Most manufacturers have made R-DAT a viable format in audio-for-video as well.

Let us review the characteristics of the R-DAT system. An R-DAT recorder resembles a small video cassette recorder. It records on metal tape that is nominally four millimeters wide. Linear tape speed is 8.15mm per second, or about 0.33 ips (inches per second), which is about one-fifth the linear speed of analog cassette tape. The slow linear tape speed facilitates stopping at around 200 times play speed: a two-hour tape may be shuttled end-to-end in less than 60 seconds.

Two scanner diameters are specified for R-DAT. The large scanner is 35mm in diameter with a 90 degree tape wrap, and this drum is used on the home or studio type of machine. For portable machines, a 15mm diameter drum is used with a 180 degree tape wrap. Both scanners rotate at 2,000 rpm and employ azimuth recording without guard bands.

No control track is used on R-DAT recordings, but automatic track finding (ATF) data is recorded twice in each helical track.

R-DAT machines record and play at the professional digital audio sample rate of 48 kHz and also at the 44.1 kHz sample rate of compact discs. Sixteen-bit linear quantization is used, making this a very high quality audio recording format, equal to or better than the compact disc.

Time code solution

To be a useful audio recording format for video, video time code must be digital. R-DAT has its own time code imbedded in the subcode (the non-audio data recorded on tape along with audio data). R-DAT time code is based on the 2,000 rpm scanner rotation speed and bears no simple mathematical relationship to any video frame rate.

But, as a result of the work of several manufacturer and user organizations, a standard format for the incorporation of video and film time code on R-DAT tape has been developed. This standard calls for the recording of time code on tape in the subcode region in a format independent of a particular type of time code (SMPT 99.4 Hz, EBU 50 Hz or film's 24 fps), with conversion to/from any of the three on input and output.

In this way, external time code may be fed in and recovered as SMPTE, EBU or film time code. The recorder is transparent to the type of time code being input or output, because regardless of the input or output format, the same data goes on tape. Because the time code is recorded and read with the rotary scanner, it may be read while the tape is stationary, and because of redundant recording, it may be read with reasonable accuracy even at very fast search speeds.

Editing considerations

Using this R-DAT time code format, the machines may be used in a time code chase mode in a video editing environment.

The R-DAT format has a characteristic that can be problematic in editing, resulting from the fact that the system uses azimuth recording without guard bands. Instead of separating adjacent helical tracks with buffer zones of unrecorded tape area or guard bands, R-DAT, like VHS, uses an azimuth offset technique to isolate the signals of adjacent tracks. Instead of being perpendicular to the longitudinal dimension of the helical track, as in Figure 1, the gap of one of its two heads is oriented at an azimuth 20 degrees clockwise from the perpendicular, while the other head's gap as the final track will be, and the next head's pass overwrites one-third of that track. This process continues throughout the recording. This creates guard-bandless recording.

Point by point

The problem that arises in editing is that when an insert edit is performed, a track discontinuity is created by the partial overwriting of the area where insert recording starts. The severity of this problem may be enhanced by multiple inserts at the same point on the tape.

The manufacturers of professional R-DAT recorders have "engineered in" some measures to prevent or minimize this problem. The severity of the problem may be reduced, for instance, by increasing the accuracy of edit point location. Multiple edits using a video-frame-accurate location technique on the R-DAT tape are potentially more damaging than if digital audio-frame-accuracy is used to locate that same point, because there are about 10 video frames in a second vs. 48,000 digital audio samples.

Like all other digital tape media, professional use of R-DAT is enhanced by the presence of a buffer memory with the capacity to contain several seconds of audio. The presence of such a buffer provides instant start capability, with output of good audio instantly upon startup of the machine. It also facilitates precise trimming of audio edit points and multiple rehearsals of an edit before it is actually performed.

It has been a long time coming, but professional R-DAT recorders and editing systems are now available on the market. This versatile audio format can now be fully exploited in video production.
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Shown here with our ML bracket. A complete line of mounting studs available.
Multitrack audio plays an integral role in audio-for-video post production and is the foundation of the audio recording business as it exists today. Its use continues to increase and evolve but it is often taken for granted. “Multitrack” refers not only to an audio format and the associated machine, but also to the process of using this format. Audio can be recorded and played back on a multitrack machine, an operation referred to as multitracking. For the purposes of this article, I will limit my comments to traditional analogue multitrack techniques, which are those that use tape.

The primary function of the multitrack machine is to record and play back audio. In order to do this it must be properly interfaced and integrated with other equipment. Provided the audio has been input to the machine in the required electrical form and an appropriate recording medium is used, the multitrack machine will output audio in a form nearly identical to what was input. Multitrack audio can be used to record and play back various audio elements on separate tracks. These individual tracks can later be combined or mixed. In typical audio post production, separate elements such as dialogue, voiceover, music and sound effects are edited and recorded onto a multitrack audio tape. These elements are then combined to produce a balanced mix.

While my intent is to examine how the multitrack audio format is used in audio post production, those not familiar or comfortable with the term “multitrack” will not benefit from the discussion unless some background is provided. For those already familiar with the topic, this column can serve as a review of the role of multitrack audio and how it relates to audio-for-video.

Short, revolutionary history
Analogue multitrack audio has only been in existence since the mid-1960s. In its short history it has revolutionized the audio recording business. Originating in the field of music recording, analogue multitracking was subsequently embraced by the video industry and now is even being welcomed by some in the film community, where multiple strands of sprocketed film are used to serve the same purpose.

The term multitrack implies the use of more than one track. By definition this can mean there are as few as two, but normally the term refers to more than four or as many as 48 tracks on a single medium. Multitrack audio uses tape not unlike that used for video recording. This multitrack tape is supplied in an open-reel design. Standards exist that specify the exact tape dimensions and other characteristics that enable compatibility.

Specifications
I know specifications exist for the manufacturer of the multitrack machine. These include the number of tracks, their size and location for each track width. Reels of tape are referred to by their width measurement. Some standard widths of professional analogue tape are ½ inch, ⅛ inch, 1 inch and 2 inches. The thickness of most professional tape is 1.5 mil, although 1 mil is used in some special situations. (The thinner tape provides longer continuous recording time but sacrifices audio quality and is therefore not normally recommended.) Multitrack audio tape is available on either ⅛-inch (the most common), 7-inch or 5-inch reels. The length of a 1.5mm tape on a ⅛-inch reel is about 2,500 feet (or 750 meters). This allows for approximately 30 minutes of continuous recording, at 15 ips (inches per second). Multitrack audio configurations are usually referred to by the tape width and number of tracks available on the format. (An example of a four-track multitrack tape configuration is shown in Figure 1.) The tracks are assigned numbers, beginning with 1 at the top of the tape. Other examples of common professional formats are: ½ two-track, 1-inch eight-track or 2-inch 24-track.

Do not turn it over
Professional tape recording practices suggest recording all tracks in the same direction. It is not recommended to “flip the tape over” and record other material in the opposite direction, as is done on consumer audio cassettes. Open-reel tape and equipment will allow it, but it should only be done in extraordinary situations, with extreme care.

The reason it is necessary to specify the number of tracks on a tape is that there may be more than one possible number of tracks for a given tape width.

Figure 1. ½ ¼ 4-Track Tape

<table>
<thead>
<tr>
<th>Track 1</th>
<th>Track 2</th>
<th>Track 3</th>
<th>Track 4</th>
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</thead>
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<tr>
<td>W</td>
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</table>

For instance, a 2-inch multitrack tape can accommodate either 16 or 24 tracks. (See Figure 2.) Even though 2-inch tape is used to record either 16 or 24 tracks, the two track configurations are not compatible. The tape width is the same, but the track designations and alignments are not. The physical space allotted for 24 tracks across a 2-inch tape is less for each individual track than the space allotted for 16 tracks across that same 2-inch tape. Track 1 on both the 16- and 24-track format are at the top of the tape and occupy approximately the same physical space. However, track 12 on a 16-track format tape has nothing in common with track 12 on a 24-track format tape, with the exception of the "label." As one could imagine, putting a 16-track tape on a 24-track machine and recording on it can be disastrous.

Custom formats
Further clarification of tape configurations is also necessary because a given number of tracks can be configured onto

Figure 2. 16-Track Format 24-Track Format

<table>
<thead>
<tr>
<th>16-Track Format</th>
<th>24-Track Format</th>
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<tbody>
<tr>
<td>Track 1</td>
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<td>Track 3</td>
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<td>Track 4</td>
<td>Track 4</td>
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(continued on page 26)
Tips for Transmitter Maintenance

RF Technology covers all aspects of television transmission, including antennas, transmitters, towers and cables, as well as transmitter maintenance and operation.

The column is written by RF expert Doug Lung, who is vice president and director of engineering for the Telemundo Group of stations based in Miami, Florida. This month, I will cover some RF odds and ends and also share some tips on TV transmitter maintenance and operation.

However, first the news...

EEV has been swapping out the protective versions of its IOTs with final production run tubes. This will give us a standard IOT in the field. WOUC-TV's Dan Cesario filled me in on the swap taking place at his station. To quote Rick:

"Tube replacement was quite easy, and I took lots of pictures of the assembly. There are a lot more parts with than with klystrons. EEV changed the cathode cooling; for a long time I was under the false impression that I have been told they have not seen much heat dissipation in that area. Plus there are some other minor changes in the cavities. I am still impressed with the technology and the support I am getting from Comark. I hope the IOT technology really has better life than what we have been seeing out of our Varian 9538 klystrons at our flagship station, but only time will tell."

Note that Rick is comparing the parts count on the IOT with the Varian 9538 integral cavity klystrons. Talking to EEV, I confirmed there are fewer parts to disassemble with the IOT than with the conventional or MSDC/ESC external cavity klystrons.

Research pays off

During my research, I found a lot of interesting information on TV receiving antenna design. The "Antenna Engineering Handbook" (McGraw-Hill, 1967) has a chapter by Yuen T. Lo on TV Receiving Antennas. While somewhat dated, it is the most comprehensive discussion of TV receiving antenna design that I have seen. It has excellent information on V-beam and rhombidic designs for wideband, high-gain antennas.

I found Mr. Lo's antenna gain numbers interesting. Because manufacturers tend to count every piece of tubing as an "element" instead of counting actual active elements, it is tough to compare models. Mr. Lo found the measured gain (with reference to a tuned dipole) of an all-channel VHF yagi, using a tri-pole driven element and five parasitic elements, to be 5-2 dB below VHF and from 6 dB to 9 dB at high VHF, with the higher channels showing more gain. At UHF, he shows that a single bowtie corner reflector has a gain between 8 dB and 12 dB, increasing with frequency. A two-bay bowtie gives 8.5 dB to 12.5 dB gain.

A decade hence

About 10 years ago, Radio Electronics did a study of consumer TV antennas. I do not remember if it covered VHF antennas, but the results of their tests on UHF TV antennas support Mr. Lo's findings. They found that the Channel Master parabolic with a twin bowtie feed was the best UHF antenna, followed by eight-bay and four-bay/bowtie reflector designs and then the corner reflector.

In the study, UHF all-channel yagis exhibited gain advantage over the UHF TV band—on some channels gain was less than 11! I was disappointed when the U.S.-based electronics store, Radio Shack, discontinued its corner reflector antenna, which I remember sold for under US$50. I had found it worked better than the yagi antennas and was smaller and sturdier than the four-bay bowties.

Every now and then I get a report of a viewer who claims to receive every TV station from the transmitting site except ours. My first recommendation is to disconnect the antenna and try again. Usually, an "all-channel" antenna or lead-in is the problem.

Transmitter masters

Now onto another subject: "Zen and the art of transmitter maintenance." Perhaps you have noticed some engineers can walk up to a dead transmitter and, within minutes identify the problem and have the transmitter back on the air. You have also probably noticed these engineers do not have their transmitters go off the air too often.

What is their secret? Start talking to them about their transmitter and I bet you will find they talk about it like a person, saying things like "It made me or", if it is running well, "It is happy." That gives a clue to the secret.

Knowing how the transmitter works, the logic flow and the interlock locations is certainly important. But knowing when the transmitter is unhappy can be just as important.

While my comments here will be familiar to many of you, I hope they will help some engineers who are getting into transmitter maintenance for the first time.

Stalking the blues

How do you know if your transmitter is unhappy? Here are three clues that might help you make a diagnosis:

- Does the sync less than 39 ure units? Does it have large spikes on it? Is it impossible to get reject power? Is the output power erratic?

- Here are some solutions: Reduce power until the transmitter can both make sync and produce video with reasonable linearity.

- Also, check the power meter and if the power is erratic, a linearity corrector may be needed. If, reflected power changes wildly, there may be a problem with the downtower, transmission line or antenna. Check the diplexer reject load—many transmitters will continue to work if this fails but it will not be real happy.

Misadjustment of the exciter or tube can turn a happy, easygoing transmitter into a troubleshooting nightmare.

Unfortunately, most transmitter maintenance is done in the middle of the night when the mind is not in top form. The technician here is to go slowly and leave yourself a way out. Linearity correctors in TV exciters are especially tricky to adjust: the output level and the lower sideband response. If you find an adjustment is too touchy that even the slightest change results in ousting the signal, go out of tolerance, find out why that is so before proceeding. Usually, this is caused by another adjustment.

In exciters, I have learned from experience that the RF levels within the exciter are critical. Use a spectrum analyzer to set levels inside the exciter to the proper level before starting a major adjustment. Check them again after adjustment to make sure they are still correct. If the RF level is too low or inadequately corrected, you will not be able to get correct rejection at black that you need. Conversely, if it is too high it may become unstable and difficult to adjust.

Know your transmitter

Finally, get to know your transmitter. When adjusting an exciter, that means knowing how the adjustment will change when the exciter is inserted back into the transmitter or when the tube has warmed up. Spend some time listening to and smelling the transmitter.

That is the only way you will be able to catch the sound of a fan bearing starting to go bad or the smell of a resistor overheating. Record all of the meter readings, or, better yet, use a grease pencil to mark the meter glass.

How do you know if your transmitter is unhappy?

Viewers will never see the difference between 100 percent power and 85 percent power. If the GM complains, remind him of what happens when the transmitter is unhappy—more down time! This might also be a good time to ask for that new exciter or transmitter upgrade.

Also, check the power meter again. If the power is erratic, a linear corrector may be needed. If reflected power changes wildly, there may be a problem with the downtower, transmission line or antenna. Check the diplexer reject load—many transmitters will continue to work if this fails but it will not be real happy.

When old cutbacks in engineering staffs, it is easy to forget about the transmitter until it fails. Don't. My recommendation is a weekly visit to the transmitter that should include a cleaning schedule and full visual inspection of the transmitter and cooling system as well as monitoring the operation of the transmitter under power, looking for hot spots in the RF system and any unusual sounds or smells.

Depending on the size of your transmitter, this may take four hours or more. Do not forget that all mechanical components are important, including those on the air conditioner outside.

Here is hoping you and your transmitter have a long, happy relationship!

"Palm-top" computer

A few final notes: I found out about an interesting product from Hewlett Packard, the HP 95LX "palm-top" computer. While not an RF product, it is one of those things that is ideal at remote sites. The HP 95LX includes a serial port. It is good for programming those new pieces of test gear with RS-232 ports. I have tested my calimeter power calculation program on it and it runs fine.

The HP 95LX has a 40-character screen, but it can be scrolled to view the full 80x25 line DOS screen.

Doug Lung is vice president and director of engineering for the Telemundo Group of stations. He may be reached by calling either his Los Angeles, California (+1-310-502-5739) or Miami, Florida (+1-305-884-9664) office. If he is on the road, the Los Angeles number's twice mail goes his current number. Ideas, circlets, comments, newsworthy if it applies to RF, he is interested in hearing from you!
Conversion: The Crowning Touch

(continued from page 1)

that time, the U.K. had 405 scanning lines per frame, Ger-
mans had 625, and France and 819. I guess the French and Ger-
man wanted to watch to re-
mind themselves that the Queen was descended from their
people.

The last grun

Anyway, I guess the line con-
version worked, because the Brit adopted 625 lines them-
selves and converted to 405
until the last grunny gave up on
the last old "telly" as it was explained to me. Then someone
get the brilliant idea to exchange programming with us colonists of
the similar dialect. The line from 625 lines to 525 wasn’t so
tough, but going from 25 frames per second to 30 was, and, un-
til this system was never ter-
riably successful.

Lookie: Suppose someone
throws a ball. In one 625/50 frame it’s on the left and in
the next it’s on the right. If a
525/59.4 frame happens to
coincide with the left frame,
that’s a fairly easy line conver-
sion, but that guaranteed
there will be another 525 frame
before the 625 frame with
the ball on the right. You can do all
the counting you want, but you
ain’t gonna come up with
the ball in the right place.
The best converters would actu-
ally give you two balls, a light-
ning one on the left and a
darker one on the right. Bleech!

Okay, I lied chauvinistically. Everything didn’t change
over again for the next frame. And that’s not simple!

My chauvinism comes in be-
cause this year CBS got hold of
some Visitek standards con-
vectors with vector motion comp-
ensation, and NBC got Thomson
to build some using a
slightly different technology (as
for vector Thomson). I got a
theory relating to the fact that
NBC used to be owned by RCA, but
when GE bought RCA they
traded the latter’s consumer
electronics business to Thom-
son (for some medical stuff).
Anyway, each network used
both its own and the other net-
work’s standards converters for
their Olympics coverage, and
everyone seemed quite happy
with the results.

A giant leap

Whoop-de-doo. So Ameri-
cans got to watch the Olympics
again. Big deal. The standards
converters ain’t perfect. Certain
patterns do make it through
the process intact, and I ain’t too
sure I’d like to convert a pro-
gram containing already con-
verted segments, but that’s just
upping the industry.

The industry took a
giant leap this year, but who
cares? Like I said at the begin-
ning. Americans usually don’t
give a hoot about standards
conversion, and maybe you don’t either.

Installing frames

AVS adopted the Thomson
technology in its Cyrus con-
vector, and Snell & Wilcox went
for another form in their Al-
chemist with Pn.C (Phase
Correlation Motion Estimation). Someday maybe I’ll explain
the pros and cons of the different
approaches. What I want
to make sure you understand
this month is that standards conver-
sion with motion compensation
ain’t just standards conversion—

...and standards conversion with motion compensa-
tion isn’t just standards conversion—it’s magic...

by Mario Orazio

Masked Engineer

by Larry Albert

When mounting equipment
on an existing wall, positioning
the required mounting holes ac-
curately is difficult, especial-ly
if the wall is concrete or cement
block. Center punching makes
it easier to drill holes where you
want them, not just nearby.
If yours is like most facili-
ties, you probably cannot always
find that expensive center punch.
Or maybe you just do not
want to use it for marking
concrete.

Here is a cheap solution to

the problem: Get a masonry
nail and drive it into the wall.
Remove the nail. You now have
a pilot hole to guide the drill bit.

Masonry nails can be bought,
by the pound, at most hardware
stores. The price keeps you
happy (even if one gets lost or
broke), and the extras will also
do a fine job of center punching.

Larry Albert is a U.S. television
engineer who believes cheap en-
geering is an acceptable term and
is a self-proclaimed "cheapskate." He
can be reached at 1-502-762-4664.
Media Methods Relies On AmiLink for Editing

by Paul Smolen and Terry Dyke

Media Methods

AUSTIN, Texas AmiLink from RGB Computer & Video (Riviera Beach, Florida) is a software-based edit controller that runs on the Amiga personal computer. It joins a growing trend in video production, one that sees more and more functions moving from traditional hardware into computer software. The payoff is increased ease of use, greater flexibility and lower price.

AmiLink is a telling example of where this trend may be leading. Together with NewTek's Video Toaster and some fairly basic video hardware, an individual or group of modest means can now own a sophisticated on-line editing and post production facility. Before long, the much-heralded idea of "desktop video" may become a fact of life.

AmiLink is not quite there, though. Video Toaster, for example, does require an external time base corrector, which is a stretch for small budgets, and the price tag on Amiga's professional version is $6,000—inexpensive compared to what it replaces, but not quite consumer level. However, somewhere between the professional high-end and the consumer level, there is the so-called "prosumer"—a growing middle ground whose potential opens up greatly with the availability of these cost effective production tools.

No muss, no fuss

A natural candidate for this league is the local cable TV facility. Indeed, it was in just such a setting that we tested AmiLink, and word spread quickly among the producers there. If you have ever tried, for example, to coax an A/B roll out of very basic equipment, you will appreciate the way AmiLink lets you get this done with a minimum of fuss.

The fact is, software is generally just easier to use than hardware. AmiLink's user interface follows the Windows/Macintosh style, with pull-down menus, on-screen "buttons" and a pointing device such as a mouse or trackball.

The on-screen "control panel" shows three VTR status windows, two for the deck and one for the record deck. Each window consists of a series of time readouts that show the in-point, out-point and duration for the cut. You deal directly with these readouts to set the edit points, pointing to each readout in turn and then (continued on page 17)

LA GVG-GSD BENEFICIA A GE

por David Rochlis
Prod. Principal GE-GESD

MOORESTOWN, New Jersey ¿Gráficos de mejor calidad a precios bajísimos? En el Departamento de Operaciones Video GESD de GE Aerospace, hemos encontrado una solución.

INFORME DE LOS USUARIOS

Al realizar cambios en nuestro departamento a fin de realizar un mayor número de funciones en nuestra empresa, uno de los ingredientes más importantes en nuestro Departamento de Video es el suministro de gráficos de alta calidad, con efectividad de costos para nuestra clientela. Habíamos recibido gráficos de video como parte de nuestro servicio de transfuer advertisement, pagando a otras empresas hasta US$250 la hora. Creíamos que podríamos prestar un mejor servicio a un costo menor para todos, excepto los gráficos más complejos para nuestras producciones.

¿La solución? Un sistema gráfico con base en CP. Muy bien, en el mercado existen muchos sistemas de gráficos para video basados en CP, Mac, y Amiga. Pero nuestro grupo ha estado usando gráficos digitales "caja de pinturas" (paintboxes) de instalaciones de transferidoras durante años. Nuestro personal reaccionaba negativamente a estos sistemas tradicionales basados en CPs, por estar acostumbrado a producir gráficos de alta calidad en un periodo corto. Hace dos años hablamos con Dubner sobre una Fábrica de Gráficos (Graphics Factory). La configuración que queríamos costaba más de US$90,000, una cifra inalcanzable.

Una alternativa prometedora

En el año pasado Dubner se aglo-meró con su empresa matriz y se convirtió en Grass Valley Group, una división de Grass Valley (GV-GE). Observe que la "diferencia" entre "prosumer"—una creciente categoría—y "productor"—un producto bien definido—es un producto bien definido—un producto bien definido.

Habíamos oído que Grass Valley estaba trabajando en un sistema de gráficos basado en CPs y uno de nuestros productores principales, junto con nuestro ingeniero, se trasladaron a Grass Valley N.J. para echar un vistazo. Los resultados fueron prometedores. El sistema consistía de dos tableros de gráficos Grass Valley y programas en paquete que operaban en una CP 386 o 486.

El sistema, que se ofreció a la venta en la última convención de NAB, es el primer sistema de gráficos basado en CPs presentado por una empresa de difusión. No sólo nos gusta el sistema como parece, porque la empresa que respalda este producto se encontraba en un punto crítico en su selección. Grass Valley conoce el negocio de "video" y el producto cumple con su cometido.

El videoDesign es el sistema total a colores con una paleta de 16.7 millones de colores. La entrada y salida de video es una combinación analógica y D-2 digital. Actualmente estamos captando imágenes de Becam, 1 pulgada, y una cámara.

El sistema ofrece numerosos instrumentos de pintura, dibujo y diseño. Pedimos a cuatro artistas gráficos externos que lo revisaran y evaluaran y sus comentarios fueron sumamente favorables. El sistema se parece al sistema Dubner Turbo Paint, pero es aún más veloz.

Importaciones y exportaciones

Un artista independiente que trabaja en nuestro sistema estuvo sumamente impresionado con los 70 efectos disponibles en Image Plane. Grass Valley ofrece esto como una opción de programa para modificar rápidamente una imagen con efectos de "pintores".

Otro aspecto muy deseable es la posibilidad de importar y exportar imágenes a una variedad de plataformas de computadoras. Hace poco exportamos una vista fija de nuestra base de archivo TARGA para ser usada en una estación de Silicon Graphics que operaba un programa de modelación 3-D desarrollado por GE. La última versión del programa Grass Valley ha anadiendo importar archivos de archivo directo para imágenes Video Toaster junto con otros formatos de archivos. Somos de la opinión de incluyendo GIF, JPEG, TARGA, TIFF y la serie de Grass Valley Dubner y Graphics Factory.

Hasta la fecha, Grass Valley nos ha prestado un amplio equipo de cuando los profesionales tienen preguntas sobre el sistema. El consenso de nuestro personal es unánime: con el videoDesigner continuamos produciendo gráficos de alta calidad para nuestras producciones de video, a un costo más bajo para nuestra clientela. Es un gran producto a un precio fantástico.


Las opiniones expresadas en este artículo son únicamente las del autor. Para obtener más información sobre videoDesigner, llame a Evelyn Brossman al teléfono 201-845-8900 o mire el No. 9 en la Reader Service.

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COMPUTER VIDEO

F O R T H E M O S T
C O M P E T I T I V ELY
P R I C E D
Q U A L I T Y
L P T V A N T E N N A S
C A L L
por Bruce Goodchild-Wood
Gerente de Video Graphic
Forefront Graphics Corp.

DOWNVIEW, Ontario, Canadá
Los cambios que se han suscitado en los últimos 18 meses en gráficos para computadoras y en productos para la producción de videos para computadoras personales, han sido nada menos que milagrosos. Con toda esta publicidad con bombo y platillos, es fácil perder de vista los beneficios y las posibilidades que presentan algunos de estos productos.

Un ejemplo que viene al caso es la tarjeta video Matrox Illuminator 16 que, para muchas personas, no representaba más que un chino barato de un tablero Targa. A pesar de ser completamente compatible en registro con un Targa 16, es capaz de muchas otras cosas, que continuarán creciendo en importancia.

Versatilidad
Las recientes revisiones de los modelos ISA de el tablero han extendido aún más su capacidad. En la nueva versión, llamada Rev. 3, un conjunto de tableros Matrox permite la captación de una imagen apropiada de fuentes inestables de video tales como de cámaras tipo "Zapshot." Las funciones de configuración incluidas en el modelo Rev. 3 también permitieron la selección de entrada A o B de Y/C 3.58 ("F") o NTSC.

COMPUTER VIDEO

MATROX A LA VANGUARDIA

¿En términos prácticos, cuál es el significado de esta capacidad? Un tablero con indicador de imágenes de gráficos (hardware) que puede funcionar bajo cualquier sistema de operación, incluyendo aplicaciones de gráficos (software) del Matrox Illuminator.

En casos Imprevisibles
Hechos determinados que, una vez que se aprenden a configurar y usar el Illuminator Matrox, pueden derivar muchas aplicaciones, simplemente cambiando las configuraciones y/o los escáneres. Sin embargo, el software del Matrox Illuminator diseñado para nuestro entorno no se puede tocar en ningún caso, entendiéndose por esto el Matrox Illuminator.

Informe de los Usarios
En Forefront Graphics usamos los tableros Illuminator primordialmente para la creación de gráficos para video, títulos y presentaciones. Hemos determinado que uno de los mejores programas (software) para esta aplicación es el Inscriber de Image North Technologies. El Inscriber, aunque no es un producto que se encuentre en el mercado para las masas, tiene una excelente reputación para los profesionales en radio y en las tarjetas Targa y Vista.

Sin embargo, existen versiones específicamente para los tableros Matrox Illuminator. Las versiones Matrox del Inscriber toman en cuenta las adaptaciones para efectos especiales de estos tableros. En el tablero 1024, el Inscriber opera en la resolución 640x480, comparado a la resolución de 512x480 de los tableros Targa. También hemos determinado al compararlos uno con el otro, que preferimos la calidad video de ciclo completo (pass through) y la configuración de los programas (software) del Matrox Illuminator.

Ultime novedad
Por un costo de menos de US$200, Matrox ofrece paquetes de programas denominados HotDVE. HotDVE permite al usuario trabajar con más de 45 transiciones distintas entre una imagen única y un separador de imágenes de ciclos (frame buffer image) similar a las funciones del DME 450 de Sony. Constituye un método que controla con gran exactitud el estampado de la imagen, la solarización, el efecto de mosaico, el destello electrónico, la clave de color, y las imágenes múltiples. Para las aplicaciones de DOS, el HotDVE es sencillo de operar y puede ser activado por GPI. Cuando se usa con el sistema de video Sony, EVO-9700 H/H, se puede convertir un dispositivo simple de corte recto de edición en un paquete de producción de alta calidad para transiciones y efectos especiales.

Estos efectos especiales también han sido integrados en un programa que está a punto de ser lanzado al mercado por Future Video de Laguna Crypto.

El Producto Personal
De gran interés para los que usan Windows, Matrox hace poco introdujo un paquete revolucionario de programas denominados Personal Producer, que combina la aptitud del tablero Matrox Illuminator con control de Windows, compatible con un tablero audio y control de VCR.

Personal Producer es el primer programa de su clase que controla gráficamente los elementos de la producción de video de manera que el programa de publicación de escritorio. Cada etapa de producción se representa en una serie de pantallas sencillas y lógicas que controlan cada uno de los elementos de producción.

Incluye la selección de repartos de video y de las imágenes, control de los programas y la importación de gráficos de otras fuentes. Todos los elementos nuevos se presentan en una línea de tiempo a múltiples niveles que permiten al usuario modificar y controlar la secuencia de cada evento. Este producto promete simplificar la parte técnica de la producción de un video, para que cada evento pueda ser operado por cualquier persona que tenga un cierto conocimiento de computadoras.

Bruce Goodchild-Wood es gerente de gráficos de video de Forefront Graphics, distribuidor especializado en productos video y gráficos a base de computadoras. Ha trabajado en la industria de producción de video por más de 20 años, y en los últimos siete años ha trabajado en sistemas computarizados de producción de video.

Para servicios de consultoría en equipo y programas de producción de video y dicta cursos de videojuego intermedios en la Facultad de Educación Continua en Maisnah College, Hamilton Ontario, Canadá.

Para mayor información, envíe un FAX a Marc Nadeau al 514-685-2853 o marque el No. 28 en el Reader Service Card.

Veamos algunas de estas capacidades:

1. Entrada y salida RGB NTSC Y/C 3.58 (senal S-VHS/18 con clave de croma ( chromatkey) superposición, y captación de imágenes.

2. Ventanas de tiempo real, lo que significa una compresión de una pantalla video completa en 1/2 1/3 1/4, 1/5 1/6 1/7, y 1/8 del tamaño normal en horizontal o verticalmente o ambas, con excelente calidad.

3. Salida a monitores VGA o NTSC.

4. Configuraciones de presentación visual, ya sea en una o dos monitores VGA.

5. Resoluciones de presentación variables. El tablero 512 (0,5 meg) tiene capacidades de resolución pixels de 512x480 y 512x480. El tablero 1024 (2 meg) tiene capacidad de hasta 128x768 SVGA de presentación visual y 640x480 con una salida de NTSC/VC.


7. Compatibilidad con 3D Studio y AutoCAD, pudiendo realizar operaciones de gráficos de imágenes y superposición video

8. Operaciones bajo OS/2 con un excitador opcional OS/2.

9. Modelos ISA y MCA (microcanal) en versiones NTSC y PAL.

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* Based upon dealer sales figures. Windows is a trademark of Microsoft Corporation.

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Circle 113 On Reader Service Card
Focus on PC Graphics takes a look at emerging graphics software and hardware based on the Amiga, IBM, and Apple Macintosh personal computer platforms.

John Spotford is an audio/visual specialist and videographer based in Newfields, New Hampshire.

The Video Toaster, developed and manufactured by NewTek, Inc. in Topeka, Kansas, is a plug-in card and software package for the Commodore Amiga 2000/2500 series computers that transforms the Amiga into an easy to use, multipurpose video "appliance."

It was introduced in 1990, and recently, NewTek released a major software upgrade. The software greatly enhances the capabilities of the Toaster while still using the original hardware. The Video Toaster is presently only available as an NTSC device, although plans are underway for a PAL version.

The Video Toaster has done much to solidify the Amiga's claim as an effective low cost video platform. More importantly, the Video Toaster creates a user-friendly video system that explores the middle ground between those who understand computers and those who understand video.

NewTek's Video Toaster was originally designed for the "prosumer" market ("prosumer" is a U.S. term used to describe the video equipment user who crosses the low-end professional and high-end consumer video markets). Continuously improved during its long development process, the Toaster has become a product with several professional/consumer contradictions.

Sophisticated effects, but...

For example, it produces sophisticated digital video effects (DVEs) but it provides composite NTSC through BNC connectors.

The Video Toaster has done much to solidify the Amiga's claim as an effective low cost video platform.

With a list price of US$2495 (including software), the Toaster has a prosumer video price, yet requires time-base-corrected input.

It is a high quality device. The composite NTSC output is excellent, whether measured on a waveform monitor or with the naked eye.

Physically the Video Toaster consists of a large PC board that plugs into the Amiga's internal video slot, giving it direct access to the computer's display signals. Four VLSI (Very Large Scale Integration) computer chips form the heart of the Toaster, making it a powerful graphics computer designed to work in concert with the Amiga's own custom display and animation chipset.

When installed, the Video Toaster is completely invisible except for a vertical row of six BNC connectors protruding out of the back of the computer. Four of these connectors are the video Inputs 1 through 4.

While the Video Toaster generates its own RS-170A sync internally, it is programmed to synchronize itself to Input 1. The two bottom BNC connectors are outputting a "Preview Out" for a composite monitor and a "Program Out" that is connected to the recording VCR.

Impressive software

The Video Toaster hardware is impressive, but it is NewTek's software (included on 14 diskettes) that makes it work.

Depending on which software program is running, the Video Toaster becomes either a video switcher (with nearly 200 built-in DVEs), a comprehensive character generator, a frame grabber with disk storage of video stills, a luminance keyer, a chroma effects generator, a 16 million color monitor (continued on page 22)
... highlighting the latest products available to professionals in the television industry.

Digital effects system

CEL's Meridian-fx system is a 3-D digital effects system intended for the broadcast and production facilities markets. A modular system, it features an all-digital 4:2:2 core, and is able to accept a variety of interfaces to the user's environment.

The basic model is a single channel unit capable of 3-D effects, page turns and shatter effects. More channels can be added and brought together with an integral component digital mixer.

For more information, contact CEL at +44-799-523807, FAX +44-799-520801, or circle Reader Service 15.

Pan and tilt head

Vinten's new Vision SD12 pan and tilt head was designed to accommodate one-piece ENG camcorders and dockables, but is able to carry additional payloads of larger viewfinders, heavy batteries and larger lenses.

The SD12 incorporates the new Serial Drag system, as well as the Vision line's "true balancing" system.

For more information, contact Mike Martin at +44-286-752121, FAX +44-286-750560, or circle Reader Service 32.

Portable satellite system

Harris Allied's S-1 "Flyaway" portable satellite uplink system is contained within 13 cases, each weighing less than 100 pounds and conforming to international baggage requirements.

The system may be checked as excess baggage on domestic and international flights.

The S-1 was designed for setup in less than 30 minutes, and features a 1.8 meter Vertex antenna with a transmit gain of 46.6 dBi.

The unit also includes a TWTA-type HDA system, an Intelsat-approved Ku exciter, a Ku receiver and LNB, a spectrum monitor and an audio and video baseband package.

For more information, contact Davina Frost at +44-223-245115, ext. 212, FAX +44-223-20441, or circle Reader Service 94.

Vision mixer

Snell & Wilcox's DVS 1000 is a compact 4:2:2 vision mixer designed for use in telecine bays, graphics suites and special project applications where simple mixes and wipes are needed between component digital sources.

The DVS 1000 enables facilities to maintain the integrity of the signal path without using expensive specialized equipment. It provides internal black and background generators, fades and a selection of wipe patterns with variable edge softness between all sources.

For editing, it may be controlled by an externally standardized bus utilizing RS-422 protocol.

For more information, contact Joe Zaller at +44-0-705-268-827, FAX +44-0-755-241-252, or circle Reader Service 53.

Audio test system

Audio Precision recently introduced a new audio testing technique, FASTSTRIG, for stereo or monaural channels with less than one second's interruption of programming.

The 1/4 second FASTSTRIG burst provides 160 measurements on a stereo channel, response at 22 frequencies on both, phase at 22 frequencies, distortion spikes in 22 frequency bands on both and more.

For more information, contact Bob Metzler at +1-503-407-0892, FAX +1-503-641-8906, or circle Reader Service 76.

Transmitter control

Logica's Transmitter Master Control (TMC) is a system for the remote control and monitoring of a transmitter network. Originally developed as part of a project for National Transcommunications Ltd., the system enabled operators at regional control centers to monitor the status and performance of any single transmitter. It also permitted changes to be made in the operating parameters.

In addition to alerting operators to technical problems and potential transmitter failures, the system assists in planning routine maintenance.

For more information, contact Maggie Owen at +44-71-577-9111, FAX +44-327-362072, or circle Reader Service 62.

Audio monitoring

Wohler Technologies introduced the AMP-2, its latest addition to its series of rackmount stereo audio monitoring systems. It contains three power amp and driver combinations, two handle the midrange and high frequencies in stereo, while summed low frequency information is fed to a center channel.

Frequency response of the AMP-2 is 100 Hz to 16 kHz ±5 dB. The two stereo amps are rated at 20 W peak and the center channel amp at 32 W peak.

For more information, call +1-415-285-5462, FAX +1-415-821-6414, or circle Reader Service 50.

Still store system

Thomson Broadcast's Pixto is a modular still store system capable of holding 340,000 images.

It is comprised of a 386 microcomputer connected to a multi- or digital or analog broadcast video input/output channels, with an internal 4:4:4 structure.

Data compression enables the Pixto to store several hundred pictures. One picture can be loaded in less than 1.5 seconds.

For more information, contact Thomson at +33-1-34-20-70-00, or circle Reader Service 45.

News control system

Louisiana's NEWSTRAK system provides control for the fast-paced news and sports. It works within your existing newsroom system to control switchers, multiple camera machines, effects devices, still stores, character generators and VTRs.

The playlist can be used in any mode, and you can move, add or delete events within seconds of going on-air, or even while on-air.

The device control is frame accurate for instant response.

For more information, contact George Fullerton at +1-415-329-9409, or circle Reader Service 30.
A Look at NewTek's Toaster

(continued from page 20)

Frame buffers

Integral to the operation of the Video Toaster is its dual 24-bit frame buffers. In general terms, a frame buffer is a piece of hardware (mostly memory chips) that stores all the data necessary to display a picture. In the Toaster, each frame buffer stores a 768x480 pixel picture.

By storing 24 binary digits (bits) in memory for each pixel displayed, the computer can calculate a palette of 16,777,216 possible colors. Amiga hardware can only display a maximum of 4096 colors, therefore the Video Toaster converts its 16.7 million color display to composite NTSC, which is displayed on a monitor or sent directly to tape.

Although 24-bit display boards have been available for the Amiga for quite some time, the Video Toaster is unique in the way it uses two frame buffers to manipulate live video during DVEs by digitizing video and animating two 16 million color displays in real time (60 frames per second). The output of other graphic sources, such as the paint program, character generator, or video monitor, can also easily be combined with live video through the built-in video switcher.

NewTek recommends using three monitors: one RGB computer monitor to display the software interface and two composite monitors (one for the "Preview" and one for the "Program" output). Loading the software consists of booting the Amiga and clicking on the Video Toaster icon, at which point the main control screen will appear on the computer monitor.

A click of the mouse

Buttons are "pushed" by clicking on them with the Amiga's mouse. A bank of 32 effects buttons fills the top half of the screen. Five more banks of effects can be selected. Included are cuts, wipes, keying and fades; effects such as push/pull, squeeze, zoom, split, swap, tumble, compression, blow, cli
cle, and tile; and switcher DVEs such as digital trails and snow fade. The digital video effects can be timed by the computer with one of three preset speeds or performed manually by moving the "T handle" with the Amiga's mouse.

On the lower left-hand side of the control screen is the three input bus. Each input bus consists of seven video source selection buttons: the four video inputs, DV1 and DV2 (the frame stores) and a background generator. Four directly above these are a row of access buttons to "Chroma Effects," "Toaster Paint," the character generator, LightWave 3D and a configuration menu.

The configuration menu allows the user to set up global defaults such as background and border colors, termination settings for the four video inputs and setup for a GPI trigger. The GPI allows signals from an outside device, such as an editing controller, to trigger a video effect.

The remaining controls on the main screen are for the freeze frame. The Video Toaster captures a video frame over a span of four consecutive fields for maximum color fidelity. Video still frames are normally stored on the Amiga's hard drive.

The character generator features a full 16 million color on-carrier palette and its ana
ciucated fonts are equivalent to 35 nanosecond resolution. With 25 supplied fonts and a variety of style choices, this character generator is one of the best available for the Amiga but can only be used in conjunction with the Video Toaster hardware.

The character generator is organized into pages, books and projects. The basic unit, a page, can be either a blank, key frame, freeze, scroll or card. The first three are based on a single displayed screen: a blank is simply a blank page, a key (usually text) is a page intended to be key framed over live video and a frame store is usually a video still or a 24-bit graphic.

The scroll and crawl pages are somewhat different; they are "virtual pages," much taller or wider than the screen and only limited in size by the available memory. Both scroll and crawl move at a very smooth 60 frames per second rate. One hundred pages are stored in a book, which can contain up to 20 different fonts. Only one book can be resident in the Video Toaster at a time. Books are key framed, created along with their setup information such as the Toaster preferences.

Toaster Paint is a 24-bit paint program. The paint program interface, which has a family resemblance to NewTek's DigiPaint III, is displayed by the Amiga hardware on the RGB computer monitor. The final output is a 24-bit picture displayed on the Preview monitor, but the picture you actually work on is an AmigaHAM mode (4K6 color) equivalent. This HAM interface measures 384x240 pixels, showing only about one quarter of the finished picture.

"Autoscrolling"

The work screen "autoscrolls," allowing the picture to remain centered under the cursor, even with busy oversized keys. Working with a complete palette of paint tools, the picture is reworked on the Amiga monitor. The changes are then updated on-screen and displayed on the Preview monitor.

For most types of work, such as creating background and cutting and pasting elements together, this arrangement works fine, but because the work display is only an approximation of the final product, pixel by pixel retouching is nearly impossible.

Chroma Effects controls on-screen color. Included are global effects such as monochrome, negative, posterization or chroma inversion, as well as many more sophisticated correction tools of a processing amplifier. In addition, it is possible to create custom effects such as color vignettes or gradual filter effects.

LightWave 3D is NewTek's modeling and rendering software. While using a two-dimensional paint program such as Toaster Paint can be compared to painting on canvas, creating a picture with a 3-D modeler is analogous to building and photographing a miniature set. But in this case the model, the lights and the camera are imaged by the computer. Animations are built up by changing the scene and recalculating frame after frame. Much of the animation seen on television is created this way—although generally on computer systems much more expensive than the Amiga.

LightWave 3D can produce a 24-bit output at a maximum resolution of 3072x1920 pixels, which compares favorably with dedicated systems. The trade-off is rendering speed. While the software can output at maximum resolution, it may take several seconds, at full resolution the same frame might take many hours to render. At 30 frames per second, even a relatively short animation will tie up the Video Toaster (and your Amiga) for days at a time. However, this limitation holds true for 3-D animation on any microcomputer.

With a somewhat smaller final output is sent to the preview monitor a few scan lines at a time. This gives you the option of interrupting the rendering process if the results are not what you hoped for.

Key framing

The LightWave 3D software also animates scenes by the key frame method. With this method, "key framing," the action of an animation is specified, and the computer will calculate the "in between" frames. As many key frames as are specified to complete an animation can be employed.

Because of the high quality 24-bit output, animation playback in real time is not possible. Rendering an animation takes a transport controller and a video deck capable of single frame recording. This last requirement greatly exceeds the cost of the Video Toaster. Of course, LightWave can still be employed to manipulate background stills for use with the character generator, Toaster Paint and other programs.

The Video Toaster is designed to work in an Amiga 2000 or 2500 with a large hard drive and at least 5 megabytes of memory, although 9 or more megabytes are highly recommended. Presently, the Video Toaster cannot be installed in the Amiga 3000 series.

Video equipment requirements are a bit more complicated, but one point is clear: The Video Toaster requires a reliable, stable video input. It will look onto live camera feed, including most consumer cameras, but any type of prerecorded video requires time-base correction. Fortunately, the Video Toaster has created an entire market of low cost TBCs, many of which plug into the AT expansion slots.

An important distinction needs to be drawn between traditional hardware-based video production and this newer trend in computer-based video equipment. In the past, adding new digital effects to a hardware switcher usually meant redesigning the product, retrofitting and manufacturing a new electronic switcher. Adding these new effects to your studio required throwing away your old switcher.

NewTek, and other digital effects with a software upgrade, the Video Toaster hardware remained unchanged! My experience with computer software suggests that it might be premature to judge whether the Amiga is truly a more expensive solution or not, but certainly showing us less than half of its true potential. Better yet, it will be many years before the Video Toaster is obsolete.

John Spotfond is an audio video specialist/videographer at Harvard Industries in Newfields, New Hampshire. He may be reached at 1-603-772-3777.

For more information about the Video Toaster, contact NewTek at 1-913-354-1146, or circle Reader Service 89.
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Autodesk Refines its 3-D Studio

by Bruce Goren, Owner
Cheap Computer Graphics

VAL VERDE, California Release 2 of Autodesk's 3-D Studio was widely reported on at the National Association of Broadcasters convention in Las Vegas, Nevada in April. It is not your everyday bug-fix, handful-of-features enhancement. 3-D Studio release 2 has so many speed-ups, refinements and new modules that Autodesk might just as well have renamed the product instead of incrementing its version number.

Grand opening
3-D Studio versions 1 and 2, operating on IBM or compatible 386-486-based computers, already have begun making an impact on network television. James Hyde from Media Of Exchange in Dallas, Texas created a spectacular basketball-themed network ID piece for MTV's Richard Sher, an independent animator in Los Angeles, California, worked with Seth Levinson of DiC to animate several minutes of video for NBC's "Chips and Pepper Show."

3-D Studio also has non-broadcast applications, including scientifically accurate simulations and recreations for civil litigation and the criminal courtroom.

The shape of things
Creating an animation in 3-D Studio means stepping through a logical sequence of linked program modules. Usually, the 2-D shaper is the first place you work. This is where just the outline of a shape or logo is drawn.

Next, the contents of the 2-D Shaper can be imported into the 3-D loft er module where 2-D outlines can be extruded, spiraled and revolved to a surface, much as a child's loop and wand turns a 2-D shape into odd-shaped soup bubbles.

The resulting 3-D mesh objects, once built, are imported into the 3-D editor module where they are arranged and lit, assigned surface attributes and framed for the camera that you place anywhere in x, y, z space. Surface attributes are defined and stored in a library using the materials editor module.

The materials editor facilitates the design of the objects' coloration, texture, opacity and bump mapping, as well as simulating physical properties of shininess, reflections and special case procedural shading techniques that can approximate dents and erosion.

All together now
Finally, in the keyframer module, objects, cameras and lights are choreographed and set in motion.

Real time previews in wireframe or shaded faces can be viewed to assist in adjusting the action prior to invoking the renderer and committing to tape or disk.

For TV people, the keyframer module has a safe frame and safe zone overlay, but it is unclear exactly how these relate to broadcast standard safe title and safe action areas.

The learning curve admittedly can be kind of stuff with a feature-packed program like 3-D Studio release 2, but I congratulate Jack Powell at the Yost Group (which developed 3-D Studio for the Multimedia division of Autodesk) for the finest set of reference documentation and step-by-step tutorials I have ever seen in either a consumer or professional product.

New and Improved
There are more than 100 new and improved items I could talk about in this release, none of them trivial. Shining brightly in this treasure trove of new and improved features are items like automatic environment mapping and generation of cubics.

I still have a minor beef about the environment mapping. The background is mapped under the reflections of the objects in the environment. The background is in back of the reflective object, what should be reflected is what is in back of the imaginary camera.

3-D Studio needs a way to select an alternate bitmap other than the background in its automatic mode. There is a work-around: You can surround the environment with a giant sphere or cube and map any picture onto it.

Hurrah for Booleans!
There is a standout generator, field render option, freehand two-dimensional spline drawing, automatic texture coordinate generation, "banked" paths for moving objects, exploding objects and even the much coveted Boolean operations of Union, Subtraction and Intersection.

But wait, there is more! There is now the automatic use of Postscript Type I fonts by the Shaper. That means you will no longer have to spend hundreds of dollars for a handful of new fonts.

IPAS jewels
In my estimation, the most important of the new features is a cluster of jewels called IPAS. The acronym grows from the four basic types of add-on external processes that 3-D Studio's newly opened architecture allows the Yost Group and third party developers to offer for sale in the immediate future. Those four program group components are Image Processing, Procedural Modeling, Animated Stand-in and Solid Pattern.

Image Processing routines, which are called from the new Video Post module within the Keyframer, can currently be used to composite multiple image files. It resembles a very slow frame-by-frame nightmare or simply impossible to morph and keyframe.

Third party software
You can already purchase another fascinating Procedural Modeler style application program. Schroiber Instruments, Inc. has the distinction of being the first with a line of IPAS-based third party software for 3-D Studio.

Schroiber's most intriguing software is a geometry generator called Nursery. Nursery apparently uses a database of 58 tree biology morphologies and fractal growth code to create smooth, texture-mapped mesh objects that are "render ready."

The price is US$149, as are the company's other two offerings, Imagine, which is a DOG command line front end for 3-D Studio, and 3D Surf, a terrain generator.

Animated Stand-in procedures replace a simple mesh objects geometry (a cube, for instance) with a complicated set of geometries whose behavior is partly ruled-based and partly random. A particle systems generator example procedure is included with 3-D Studio release 2, along with instructions for making a Tornadic cone.

I will bet that third party developers will jump on this opportunity to provide users with procedures that invoke flocking and schooling behaviors, as well as gravity procedures to allow particle systems to simulate evolving galaxies, waterfalls and even wind-blown leaves, rain, snow, etc.

"Fudge ripple" feature
Solid pattern procedures are very similar to what most people think of as Renderman-style Shaders. Included with 3-D Studio are solid pattern procedures for things like wood grain. Unlike texture maps, which are strictly surface
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demonstrates how a specific product performs and what it means for the user. The audio and video quality usually diminishes as the number of tracks increases on a given width of tape. The larger the area designated to individual audio tracks, the higher the audio quality performance.

So be advised that interchange of tapes between facilities can be problematic. The video industry is not alone in this dilemma. As its share of incompatible formats has increased, so has the number of tapes receiving important specifications. Indicate when you label or otherwise refer to your tapes.

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The audio quality usually dimin...
Acrodyne Transmitter Goes on Air

by Moe Strout
Director of Engineering
Lone Star Broadcasting Inc.

NACOGDOCHES, Texas It was about this time last year that more than two years of planning had become reality. We were ready to build our second station, KLSB-TV in Nacogdoches.

After talking with several transmitter manufacturers and visiting with all of them at the (U.S.) National Association of Broadcasters show, we chose the Acrodyne 10 kW with a 500 watt solid state driver and the Thomson CSF TH-362 tetrode final.

USER REPORT

The factors we considered in going with Acrodyne included parts availability and service, performance and overall reliability. After a great deal of research, we determined that Acrodyne satisfied all our concerns and more. We feel we got the most transmitter for our dollar.

Self-installed

We opted to do our own installation, so we were provided with all the drawings and manuals prior to delivery.

BUYERS BRIEF

Browning Labs, Inc. of Miami, Florida, carries a line of modest-priced RF products, including VHF and UHF TV and FM transmitters and translators in power levels from 2 watts to 25 kW, and microwave links.

Rounding out its product line is a 25 kW VHF transmitter, the TTV-2500W. This transmitter is all solid state except for the final tube. The tube used in the output stage is a high efficiency tetrode. The transmitters are constructed by paralleling ultra-linear amplifier modules to obtain the power level required. Parallel operation provides redundancy and eliminates lost air time.

The company also can custom build transmitters for special frequencies and applications. It can provide PAL, SECAM and NTSC modes of operation. Options such as over-the-air scrambling and switching from one standard to another are easily accommodated. The company can supply a complete turnkey system.

For more information, call +305-885-3356, FAX +305-885-0426, or circle Reader Service 65.

Documentation on the transmitter was excellent.
With suggested layout, we were able to do the installation very easily. Acrodyne provided all the parts necessary for a typical installation.

Once the transmitter was installed, an Acrodyne field engineer came in to turn it on and do the proof of performance.

The start-up went very well. We operated into the dummy load for a couple days, making nothing more than minor adjustments.

The transmitter has been on the air since 1 September 1991. It ran about 20 hours a day until 3 November, when we were 24 hours a day.

Since going on the air, we have experienced only minor failures, such as an air flow sensing switch in the PA, a fan in the PA and a metering module.

Basic operation of the transmitter is very straightforward, as are the logic displays and metering, which are also available for remote monitoring and control through any standard remote control system.

Vertical heat exchanger

The heat exchanger, which we built vertically to occupy less floor space, is simple, efficient and very loud (but not as noisy as air-cooled transmitters on the market). All of the flow and temperature indications can be remote.

The Acrodyne transmitter has made it very easy to maintain on-air quality. However, it tends to be a little sensitive to video levels and changes in DC levels, so good input processing is a must.

With just over 5,000 hours on the final, it is a little early to predict tube life, but we expect to get 20,000-plus hours.

At approximately 20-21 kW including the heat exchanger, power consumption is about what the manufacturer's specifications state, maybe a little better. We based our projected operating costs on these figures and have been consistently within budget.

We got a well-built transmitter for our money. And we have had very few problems, at least when I compare them with some other installations I have been involved with.

And I believe that because Acrodyne's package consisted of the antenna, line and transmitter, things seemed to go much more smoothly.

Patience is a virtue

As for the company and its staff,Acrodyne stuck with us for almost two years while we kept promising we would actually build this station. I think that says a lot about the company's commitment to the customer.

Acrodyne delivered the transmitter when promised and did everything it said it would. The company's field engineer was great; we had problems getting power to the transmitter building, which caused delays in the start-up, but all the while he remained extremely patient.

We had an air date that had been set a year prior, and Acrodyne saw that we made it. We also had the usual weather that you get when you plan tower work (rotten), but the crew got it done in spite of some rain. We literally flew the cable up the tower on Saturday morning and went on-air Sunday at 6 a.m.

I guess if I had the station built to do over again I would do some things differently. But choosing an Acrodyne transmitter is not one of the things I would change.

Editor's note: Moe Strout has worked in television for 20 years and has been chief engineer at various Texas stations for 16 years.

The opinions expressed above are the author's alone. For more information on Acrodyne transmitter products, contact Steve Bisetti at Acrodyne: +1-215-542-7000, FAX +1-215-540-5837, or circle Reader Service 73.

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Harris Allied Stresses World Vision

By Charles Taylor

QUINCY, Illinois Quincy, Illinois, has one terminal at its airport. Much of the terrain in this Midwestern U.S. town is defined by farms and fields.

SPECIAL REPORT

But drive up North 30th Street and take a right onto Hilmer Swanson Drive, and you will face the 250,000-square-foot headquarters of Harris Allied Broadcast Division, a world-class competitor in television and radio transmission equipment. Since its founding 70 years ago, this division has generated technology that literally changed the way the world transmits audio and video. In recent years, much of the credit goes to Senior Staff Scientist Hilmer Swanson (thus, the street name), whose contributions to RF science lend a significant hand in shaping the company's success.

Beyond manufacturing transmission equipment, Harris Allied is a leading distributor of more than 5,000 broadcast products from more than 240 manufacturers worldwide, and integrates fixed and mobile broadcast, video and satellite communications systems.

But company leaders also stress teamwork along with global vision. Inside the plant, 400 employees implement the steps for success, from design to manufacture to service and training. In all, the Broadcast Division employs about 800 throughout its plants in Quincy, Richmond, Indiana, Highland Heights, Kentucky; and Cambridge, England.

State of the art

On the floor of the Cambridge plant, formerly TVT, now a Harris Allied property, workers are scurrying about in state-of-the-art assembly line fashion, working on the new pride of the television transmitter line, the Sceptre.

Developed two years ago, the all solid-state UHF transmitter is available in power levels from 3 kW to 30 kW. Models are designed to meet every world standard, using negative visual modulation, with BTSC, IRT or NICAM multichannel stereo sound.

Such world vision is a key to Harris Allied's long-term business plan, according to Roy Ridge, vice president and sales product line director. "We all have to think global to survive," he says. "You can't build a transmitter that only works in the U.S. anymore."

Development of the Sceptre came as a result of the industry's movement toward solid-state operation, according to John Willis, managing director for Harris Allied in Cambridge and television product line director for the division.

"The trend in technology was improved reliability and efficiency and reduced maintenance," Willis says. "With the progressive introduction of solid-state, we had established what was missing was a UHF solid-state transmitter capable of more than 1 kW of power."

Already in place

The solution came by utilizing solid state "power block" technology already in place with Harris Allied's popular Platinum Series 1 kW through 60 kW VHF transmitters and other product lines. The Sceptre features a broadband solid-state design, completely replacing tubes with fullband (470 to 886 MHz) modules and combiners. Since visual and aural modules are identical, any Sceptre module can be used for either video or audio in any Sceptre transmitter on any channel.

Various power levels are attained by assembling a series of identical modules and power supplies in a parallel configuration. Simply, as power requirements increase, these power blocks are added to produce the desired output. Each Sceptre power block module is essentially a self-contained solid state generator, with its own supply voltages, RF drive, audio and power control and fault protection.

If an amplifier module or power supply fails, the transmitter reacts with what the people at Harris Allied like to call "graceful degradation." The transmitter continues to operate at slightly reduced power until repairs are made. Amplifier modules can be removed and replaced safely while the transmitter operates, assuring 100 percent on-air time.

The air-cooled Sceptre is designed for unattended operation, incorporating a processor-based central monitoring system with a VDU display. Analog measurement and status from the exciter, transmitter, cooling system, etc., are digitized and fed to the processor, which monitors data continuously and stores it in memory. Each parameter has software-determined "windows," which detect if it is within satisfactory limits, high, low or failed.

The processor provides outputs that enable the transmitter to be connected to a maintenance base. Software supports a modem, which permits the equipment to initiate a telephone call to report a failure. Users also may access data remotely.

Sceptre sales record

To date, eight of the new Sceptre transmitters have been shipped—two Harrington, Stockland and Walthin, all in the U.K., and to Cyprus. Shipments to Canada are expected soon.

Marketing efforts for the product essentially span the globe, Willis says.

For one, the privatization of radio/TV in many regions has created an urgent need for new and modern equipment on channels that did not exist a year ago. As well, there are nations where network operations are mature.

Among Harris Allied's other key manufactured television products are its Platinum Series 1 kW through 60 kW solid state VHF TV transmitters (introduced in 1988); high efficiency multistage one and two collector (MISO) VHF transmitters, a complete range of VHF and UHF antennas.

Also prominent is the company's wide array of video and satellite communications systems and vehicles, manufactured and marketed from Harris Allied's Highland Heights plant.

For all Harris Allied products, 24-hour telephone technical service and parts assistance is available.

With its constantly burgeoning product line and list of services and support, it is apparent that Harris Allied intends not only to keep up with a rapidly changing industry, but to help set the pace.

"Broadcasting is changing dramatically, so our mindset has to be radical," Ridge says. "Basic technology will stay the same, but you have to be willing to be flexible in your thinking and radical with your mindset to be world class."

Fifteen Skymote Cranes and forty Hot Head pan and tilt units joined together as a winning team for the '92 Summer Games. To get the winning edge for your future productions contact us for information.
by Everett Helm
Chief Engineer
KATU-TV

PORTLAND, Oregon Television broadcasters today are facing with improving their signals or losing their audience. At KATU-TV in Portland, Oregon, we must maintain our audience coverage by providing not just an on-air signal presence, but a quality signal. Translators using over-the-air signals are subject to ghosting and co-channel and power line interference. A direct microwave feed eliminates most of the problems in outlying service areas, but, since many translator associations rebroadcast our signals, we wanted the clearest pictures possible for them to use.

Transmitter feeds
We decided to install a statewide 7 GHz microwave radio system radiating from Portland, Oregon, and including parts of southern Washington state. This allows us to feed translators and cable systems directly eliminating pictures rivaling the quality of those delivered by satellite. When shopping for new translators to operate with our microwave radio system, we had to have high reliability and low maintenance. We chose a solid state transmitter since a couple of tube changes would easily make up the difference between the purchase price for a tube and a solid-state model. After reviewing the choices, we selected Television Technology Corp. (TTC) XLS1000 Series translators because of their simplicity of design, multi-output device redundancy, brute force, ferro-resonant power supply and the use of an output isolator.

The XLS1000 solid state transmitter is more efficient than a tube type model. Not only does it save money on electricity, but it lowers the heat load in the building.

USER REPORT
TTC's dual input system gave us a cost-effective alternative to a redundant microwave system. The dual input feature uses the video signal from the microwave radio system for the primary video and audio source. Should the microwave system fail or the video be lost, the TTC transmitter automatically switches to the translator mode and picks up the nearest on-air signal to maintain programming.

The simplicity of the TTC design allowed us to go into sites where other models with external diplexers mounted top on the cabinets would not fit because of the ceiling height. The ferro-resonant power supply gives us automatic power line regulation and protects the base back circuit reduces the output power to a level that can be sustained by natural audible air flow through the output module. This is important to us since some of our sites are not instantly accessible during certain portions of the year. Many of the 13 sites where we have expanded required us to rent space in existing two-way radio buildings, some of which were owned by local law enforcement agencies. These agencies were extremely concerned about the possibility of interference production problems caused by our 1,000-watt transmitter broadcasting from a site that had two-way radio repeaters operating with only 100 watts per channel.

Isolated signal
However, the 2 kW isolator used in the TTC transmitter has made our installation very site-friendly. The bandpass filter in the transmitter output assures that out-of-channel signals will be attenuated below the point of causing de-sensing to the two-way radio receivers.

For our central Oregon area, we purchased a two-way radio combiner for the site owner to allow tower space for our antenna installation. This also improved the two-way radio coverage area because of its higher location on the tower. And it further isolated the UHF-TV signal from the two-way system by nature of the bandpass characteristics used in the combiner.

KATU is improving its coverage in cooperation with other Portland broadcasters, requiring us to transmit two transmitters into one antenna at various sites. Having an isolator in each TTC transmitter allows us to feed the combiner without any possibility of one transmitter interfering with the other.

Salt air
At our two coastal sites, the tube transmitters have the potential for high-voltage arcing caused by corrosion and lowered air dielectric voltage. However, the low voltages used in the TTC solid state design eliminate this problem, as well as the potential for tarnishing in the tube cavity.

The XLS1000 uses 16 output devices to generate 1 kW output power. At one site an output device was drawing too much current, so the transmitter automatically turned the device off.

Since there is plenty of headroom in the transmitter design, we are maintaining the kilowatt output power with only 15 devices operating. Because of travel time, a transmitter is needed to keep the fold-over transmitter up as long as we maintain our next routine trip to the site.

With the Burke ARC16SA Remote Control and the TTC transmitter remote monitoring capability, we can check each output device for its voltage and current if we get a master alarm indicating a transmitter problem. We also built our own battery backup system so we can call up the site to monitor microwave battery voltages as well as transmitter status if there is a power failure.

Having TTC XLS1000 serial numbers 1, 2, and 3, we expected to have a few problems with a new transmitter design. The redundancy in the XLS1000 has allowed us to stay on the air with a minimum of 300 watts when problems occur.

When problems do occur, TTC sends service and engineering personnel to our site to help resolve them. And to TTC's credit, it has issued two field bulletins to correct initial minor engineering problems. One bulletin changed metering resistors to monitor device currents accurately and added TTC-supplied parts to eliminate voltage regulator oscillations. The other eliminated a second fuse in one power circuit. TTC also redesigned the RF power metering module to eliminate Average Picture Level (APL) influence on peak visual output readings, and it shipped new modules to install.

We are pleased with our decision to purchase four TTC XLS1000 UHF transmitters. When one viewer complained that her picture was snowy, we learned she had no UHF antenna on her TV and was picking up our signal with the set's internal wiring. She was elated when a coat hanger bent into a loop brought her crystal-clear picture.

And many other viewers have called the station to compliment KATU on its improved on-air signals.

Editor's note: Everett Helm has 25 years of broadcast experience and has worked for Motorola Semiconductors as a lab technician.

The opinions expressed above are the author's alone. For more information on the ITS Exciter Plus package, contact the author at: 412-941-5500, or circle Reader Service 110.
Station Opt for LDL's Solid State

by Roy Mitchell

TUCSON, Arizona When the Provid-

dence Journal Company decided to up-


grade the transmission facility at its

KMSB-TV (Tucson, Arizona) mountain-
top station, we opted to work with LDL

Communications Inc.

USER REPORT

We required a 100 percent solid state

transmitter with 44 kW output power for

reliability and ongoing cost savings, a new

directional panel antenna and a complete

new tower installation. LDL was selected

because we felt a single turnkey supplier

should provide the entire transmitter site

upgrade package.

The centerpiece of the package was the

Larcan 44 kW all-solid-state transmitter.

After careful evaluation, Larcan was

selected because of its straightforward,

strip-line circuitry and its ease of main-

tenance. It was clear that it was the only

solid state transmitter designed with the

engineer in mind.

Strip-line circuitry

The strip-line circuitry used in the Larcan

transmitter is an adaption of technology

that has been around for many years at

higher frequencies. Strip-line is used in the

transmitter power amplifier for RF combin-
ing.

A strip-line is a transmission line con-

structed using printed circuit techniques.

Its propagation mode is similar to the trans-

dverse electromagnetic mode of coaxial

transmission line.

We engineers work with many types of

transmission lines. Coaxial is the most

common and waveguide is used for the trans-

mission of microwave signals and some high-power UHF appli-
cations. Strip-line is less common, but is

becoming more widespread in RF

Amplifiers and splitters because of its

inherent simplicity, reliability, stabil-
dy and less required maintenance.

Because of the transmitter's mountain-
top location, access to the site is difficult

and time consuming. That is why we

look favorably upon the ease of main-
tenance and built-in redundancy of the

Larcan transmitter. We now have the

ability to maintain the transmitter while

it is on the air, and we can also carry out

on-site replacement of the solid-state

device.

As far as the antenna and tower part of

our project was concerned, this all went

without any problems. We are

receiving coverage in our market from

the antenna, and revenues have in-

creased as a consequence.

The transmitter has lived up to all of

our expectations for performance, reliabil-

ity and maintenance.

On-air maintenance

Maintenance, which consists largely of

changing air filters or an occasional FET,

is conducted during the day while we

are on the air. This has resulted in a

significant savings over our previous trans-

mitter.

As for reliability, our off-air record

speaks for itself. In the last two-and-one-
half years, our down-time attributable to

transmitter faults has been zero.

On the few occasions when we have

needed factory support from Larcan, we

received it promptly and effectively. It is

very comforting to know that such

backup is always available.

In summary, we are still pleased with

our Larcan transmitter after three years

of operation and would have no hesita-

tion in recommending the purchase of

another one for one of our other facili-
ties.

Editor's note: Roy Mitchell has been a

broadcaster for 20 years, the last five of

which have been spent as chief engineer of

KMSB-TV.

The opinions expressed above are the

author's alone. For further information on

Larcan transmitters, contact Joseph Addalia

of LDL Communications: +1-301-498-2200,

FAX +1-301-498-7852, or circle Reader

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Animation controller

Lyon Lamb has completed an interface that allows its VAS series of animation controllers and the MacVACS software animation package for the Apple Macintosh to operate with the new Sony EVO-9650 Hi8 animation tape recorder.

The company's VAS controllers operate with all major computer platforms to record single-frame animation onto videotape. Recordable video formats include Betacam and Betacam SP, U-Matic and U-Matic SP, D-1, D-2, 1" Type C, HDTV, recordable laser disc, and now Hi8.

For more information, contact Sheldon Pines at +1-818-843-4631, FAX +1-818-843-6544, or circle Reader Service 32.

Battery/charger system

Anton Bauer's Interactive battery system features a communication channel creating a network of charger, battery and camera. The Logic Series digital battery indicates actual remaining battery capacity. Through a special circuit developed with the cooperation of camera manufacturers, remaining battery capacity is communicated to a "fuel gauge" in the viewfinder of many cameras.

For more information, contact Anton Bauer at +1-203-929-1100, FAX +1-203-929-9935, or circle Reader Service 56.

Computer video board

TruPicture's Videog/KGA II is a single slot 16-bit board capable of integrating video input and output with VCA capabilities. Thus, for example, computer-aided design (CAD) users who want to take their files into applications such as Autodesk 3-D Studio and Animator Pro and then output to video, need only this board to do so.

Videog/KGA II has simultaneous output of non-interlaced VGA display and interlaced composite and S-Video video output in either NTSC or PAL. The interfaced video output can be recorded onto videotape or displayed on a monitor.

For more information, contact Techexport Inc. at +1-617-229-6900, or circle Reader Service 33.

Scanning converter

I.Den Corporation's line of computer graphic VGA and Macintosh video scan converters (IP-X10, IP-X50 and IP-X200) are hardware-based and require no supporting background software. Thus they are compatible with all PC and Macintosh software packages on the market.

With the Pixel Resizing feature, the IP-X50 and IP-X200 take VGA vertical resolutions of 200, 350, 400, 450 or 480 lines and convert them to either 625 or 525 lines of video, keeping the original picture aspect ratio.

For more information, contact I.Den in Tokyo at 81-3-3447-2252, FAX 81-3-3447-3440, or circle Reader Service 8, or in the U.S. +1-203-827-8900, FAX +1-203-827-8999, or circle Reader Service 79.

Character generator

Aston Electronics' Motif character generator features on-line resizing, smooth movement in roll and crawl, and full color outputs. Other notable features include full color preview, logo compose with the Aston Wallet Syquest drive interface, networking of up to eight Motifs, shapes plane, Vector and Super Vector display effects, a serial port protocol, video frame grab option, and a gateway interface to Apple Macintosh graphics.

For more information, contact Alison Redman at +44-252-836221, FAX +44-252-837923, or circle Reader Service 54.

Camera crane

E김/SKY-KING is a camera crane capable of safely supporting both a cameraperson and an assistant (as well as their equipment) at a maximum platform height of 21 feet, 8 inches. This renders an approximate lens height of 23 feet, 4 inches without the use of camera risers.

The standard package can be adapted to suit individual needs.

For more information, contact Keith Bailey at +1-818-787-4295, FAX +1818-787-6195, or circle Reader Service 61.

Waver/letter monitors

Tektronix recently introduced a family of half-rack analog video waveform/letter monitors. The 1790 series offers the highest weight and largest feature set. The 1790A series offers the same features as the 1740A, plus SCH and color frame verification capabilities. The 1760 series is designed for mixed format applications. All feature eight loop-through video inputs, plus letter and waveform cursors and more.

For more information, contact Donna Loveland at +1-503-627-3124, FAX +1-503-627-5446, or circle Reader Service 71.

Broadcast vehicle

BAF Communications Co. has a full line of broadcast vehicles, including the 7000-8 pictured. Custom-built features include an all-aluminum, aircraft-grade, welded structure, acoustic and thermal foam insulation, and six custom racks with console. Four frame-mounted, hydraulically-operated leveling jacks provide a stable frame in a deployed position.

For more information, contact BAF at +1-508-535-1969, FAX +1-508-535-1441, or circle Reader Service 72.

Video workstation

Pinnacle Systems has introduced enhancements to its Prizm video workstation. Among these are a compact control panel and computer processor unit for broadcast vans and small studios. There also has been a software upgrade and optional CCIR digital I/O option.

The compact control panel provides all the functions of the full-size panel.

For more information, contact Walter Werdnmler at +1-408-395-1161, FAX +1-408-395-0544, or circle Reader Service 23.

Send new product press releases along with black and white photographs to:
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Joseph Addalio, Jr. is director of engineering at WKCF-TV in Orlando, Florida, and can be reached at telephone 407-645-1818, FAX 407-647-4163.

For more information on Astre Systems products, contact George Ledaou at telephone 209-575-1000, FAX 209-575-0322, or circle Reader Service 43.

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PHONE: (305) 885-3356
by Arthur Cole

COLMAR, Pennsylvania Comark Communications Inc. is positioning itself to be the leader in HDTV transmission equipment, devoting significant resources to the development of IOT-technology-based transmitters.

With about 50 EEO ITO either on the air or under construction, and about the same number of Varian klystrones in the field, Comark President and CEO Nat Ostroff is very optimistic about the digital future.

"Comark is making plans for a significant increase in business," Ostroff said. "We are extremely optimistic about the second half of the 1990s."

Long road

The company has come a long way since it was founded in 1972, primarily as a supplier of transmission line components, filters and waveguide equipment. Its first full transmitter was not built until 1978, but Ostroff said even that product was based on the design of other transmitters that were already available.

By the early '80s, Ostroff said the company had decided to stop following and start leading.

"EEV and Valvo (a Philips company) had developed a high-efficiency, four-cavity klystron that provided a quantum increase in efficiency (about 50 percent) and a reduction in price," he said. "In 1982, Comark introduced the first U.S. supplier of the EEV wideband, high-efficiency klystron in its S Series transmitter. By 1987, the wideband klystron transmitter had become an industry standard.

By this time, Ostroff said, the company was already looking to the next generation of RF technology.

"Innovation tends to drive more innovation," he said. "We had to again look above our product line because the competition was igniting what we did."

Enter the klystrone

The result was the first transmitter equipped with Varian's klystrone, which was installed in the Georgia Public TV network in 1990.

"The klystrone transmitter offers an increase in efficiency by a factor of two to three times over the best that klystrons could produce," Ostroff said.

While Comark was working with Varian on the klystrone, however, EEO was busy developing its Inductive Output Tube (IOT), which Ostroff said is "based on the same technology as the klystrone," but is "more user-friendly" than the earlier klystrone products.

The first IOT went on the air in June 1991 at WGBY-TV in Springfield, Massachusetts.

Ostroff said Comark's commitment to IOT technology, along with several other innovations, has put Comark at the starting gate in the race to get HDTV on the air.

Unlike the klystron, which draws a continuous DC current to provide power, klystrones and IOTs draw power in direct proportion to the output. Thus, they are ideal for HDTV, he said. "HDTV will not be low-powered, that is a false impression," Ostroff said. "HD power is measured at the average because there is no peak sync power reference. The peak power of these digital signals are running 10 dB or greater above the average power. When you are talking about a 5 kW average, you could have a 50 to 100 kW peak."

"The klystrone would have to be drawing DC power as well as it was delivering the peak power all the time. This would be tremendously inefficient," he added.

Ostroff said Comark is anticipating the dual NTSC/HDTV broadcast environment through its development of common amplification. The method combines visual and sound output and transmits them through the system together. In other words, each tube can handle both vision and sound together.

"In the future, the system could be split apart, so an IOT or an klystron could be transmitted through one half while NTSC could be transmitted through the other," Ostroff said. "Each half could feed separate antennas.

"Stations using the common amplification/IOT technology will merely have to plug in the HDTV exciter and they will be on the air without modifications to the transmitter," Ostroff said.

Comark was recently notified that a Comark dual-use IOT common amplification transmitter was selected to be the test standard for the D-HDTV field tests next spring in North Carolina. The selection of the Comark transmitter appears to be confirmation that the IOT transmitters from Comark represent the state of the art in D-HDTV and NTSC transmission.

Owned by Thomson CSF in France, Comark currently employs about 100 people at two facilities: its corporate headquarters and advanced development center in Colmar, Pennsylvania, and a manufacturing facility in Southwick, Massachusetts.

Ostroff said about 40 percent of Comark's business is overseas, where the company concentrates on the market for transmitters 25 kW and higher.

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The company's primary foreign markets are in the Middle East, South America and the Far East.

"We are also working very hard at developing business in the former Soviet Union," Ostroff said.

Comark recently received an order for three IOT transmitters from Finland.

"We expect IOT common amplification technology to play an ever-increasing role in international markets," Ostroff said.

Altronics Research's OMEGALINE 5800 Series self-contained heat-exchanger dissipate power in a water-cooled load, maintaining stable RF characteristics while water is circulated through the internal cooling system.

Features provide quiet operation, interlock, compact size and casters for mobility, with options of remote load operation and calorimetric measurement.

The 5800 Series is available in continuous power ratings of 10 kW, 25 kW, 50 kW and 80 kW power ratings.

For further information, contact Doug Starkey in the U.S. at +1-501-449-6000, FAX +1-501-449-6000, or circle Reader Service 37.

Richardson Electronics, Ltd., has a new offering for the UHF-TV market—a new 1 kW transmitting tube and cavity amplifier combination.

On the solid state side, Richardson has teamed with manufacturer MMD/Specator to offer five wideband UHF power blocks for 870-860 MHz TV transmitters.

The 1.1 kW Class A linear amplifier operates at a frequency between 465 and 870 MHz.

Also offered is the NL347 power tube, which provides 1 kW of output power when common amplification of visual and sound more information. Higher power levels are possible if video and audio are transmitted separately.

UHF power blocks, which are manufactured using surface mount technology, the company currently offers the UHF46A (4 watts), UHF151-A (50 watts), UHF151-A (15 watts), UHF600-AB (60 watts) and UHF200-AB (200 watts) off-the-shelf. The blocks may be configured for 1 W to 30 W transmitters of said.

For more information, call in England +44-20-246-2831, or circle Reader Service 4, in France: +33-1-33-26-4000, or circle Reader Service 40; in Italy; +39-1678-62378, or circle Reader Service 52; in Germany; +49-89-80-14-2313, or circle Reader Service 91; or contact headquarter's in the U.S. +1-708-208-2200, or circle Reader Service 55.

Plante, based in Rio de Janeiro, Brazil, features a line of RF equipment, including STLs, exciters, CATV modulators and demodulators, and TV distribution systems.

Among the line is the 443 CATV modulator, a plug-in unit designed for NTSC and PAL for CATV and VHF television.

It features a change-up converter modulator 800 MHz, front panel adjustments for IF, audio and visual levels, and an economical price, according to the company.

For further information, contact Nils Manzieri in Miami at +1-305-594-6664, FAX +1-305-477-9133, or circle Reader Service 40. Or contact the main office in Brazil at +55-21-581-3047, FAX +55- 21-581-4288, or circle Reader Service 118.
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