

## Digital Comes of Age

*By Kathy Wolfe*

Digital TV is the most revolutionary technology to hit home entertainment since color TV. Within the next few years, every TV station in the United States will be broadcasting its programming via digital signals. What does this mean for your rental customers?

It means they will be able to experience TV in a whole new way, with a shift as dramatic as the one from the black-and-white picture to color. This viewing experience will be bigger, sharper and better than anything previously experienced in home entertainment. It also means that rental companies must be poised to capitalize on the new opportunities that digital equipment offers.

While the digital TV standard was being developed by seven companies in the digital HDTV Grand Alliance (see sidebar), exciting new products were also being developed so that consumers could experience everything this technology had to offer. Here are a few of the products that are available now:

### [Integrated High-Definition Television \(HDTV\):](#)

A high-resolution TV that is capable of receiving and displaying both analog and digital signals. With a digital and an analog tuner built into the unit, these sets can receive both NTSC (analog) and ATSC (digital) signals. These TVs typically display images in a 16:9 aspect ratio (see sidebar on glossary of terms) in the highest resolution possible.

### [HDTV monitor:](#)

A high-resolution TV that can display both analog and digital images in either a 4:3 or 16:9 aspect ratio, but does not have a built-in digital tuner. This means that a set-top box (STB) must be added in order to receive the digital signal.

### [Digital TV set-top box \(STB\):](#)

An external device that receives and decompresses the digital signal and converts it to analog (if needed), so that it can be displayed on a digital or analog TV. Most STBs will receive analog, satellite and HDTV satellite signals, as well as terrestrial (over the airwaves as opposed to satellite or cable) HDTV signals.

### [LCD computer monitor with video display capability:](#)

Formerly only available on laptop computers, these HD-capable thin film transistor (TFT) high-resolution displays are appearing as stand-alone units for the first time. Doubling as a computer monitor and a TV, these versatile units' sleek industrial designs make them a showpiece for any room or office. For the consumer, the primary benefits of digital technology are an outstanding picture and enhanced sound. Digital transmission results in crisp, studio-quality pictures that are free from the interference of snow, ghosts and interference. What's more, viewers get four to five times more picture information than with a conventional TV picture. Combine that with CD-quality theater-like audio in the 5.1 channel Dolby Digital format and you've got the ultimate home theater viewing experience.

When all is said and done, however, the most important thing to understand is the value proposition for rental companies and their customers. First, the consumer electronics world is changing rapidly. More than 400,000 digital TV products are expected to sell in the United States this year, according to the Consumer Electronics Association. It is believed that most projection TVs sold will be HDTVs or HD monitors in the near future.

This new technology is now available to mainstream consumers, so it's only a matter of time

before rental customers will be clamoring for the enhanced experience that digital offers. They'll also be pleased to learn that they can have this experience for only a few dollars more than they now pay for analog products.

As the digital world becomes a reality, many new opportunities are emerging for rental companies to jump on. For instance:

- Alignment with and promotion of a new technology can reinvent the image of a rental company. Being viewed as a forward-looking company that understands digital technology - and can share this understanding with consumers - can differentiate a rental company from its competition.
- Digital products in rental stores will increase floor traffic because of their outstanding video quality. When rental customers realize that they can view cinema-quality images in their homes, they'll want to know more about digital products like HDTV and DVD.
- Unlike the mainstream consumer, rental customers will have the opportunity to 'try before they buy.'
- HDTV also gives rental companies new commercial business opportunities by supplying HDTV products for cross-promotional events with local DTV stations and other public venues, all of which help reposition a rental company as a digital leader. For example, a rental company can pitch a story to a local news station about these new digital products and provide demonstrations and then use that news story to pitch the products and the rental company to the public.

The future will bring other new display technologies ranging from flat, wide and thin HD-capable LCD and plasma displays in screen sizes from 10 inches all the way up to 60 inches and larger. Although these products are still not at mass market price points, considering the rapid changes occurring in this industry, they will become much more affordable in the near future.

And let's not forget that analog TV still offers exciting options for rent-to-own customers. Niche products such as colorful translucent TVs, similar to the new iMac computer design, have hit the shelves with features such as front jacks for video games that make them ideal for children's rooms. Game TVs are another category that is booming. These types of products are highly desirable and affordable for owners and rental customers alike.

Best of all, these eye-catching products are sure to put the fun back into the marketing and the gusto back into the renting of a 50-year-old technology. Stay tuned!

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### **How three RTO electronics suppliers helped design our digital future**

The Digital HDTV Grand Alliance was formed in May 1993 when developers of digital HDTV systems agreed to combine their technologies into a best-of-the-best digital TV (DTV) system for North America. Grand Alliance members were: AT&T (now Lucent Technologies),

General Instrument Corp. (now Motorola Broadband) the Massachusetts Institute of Technology, Philips Electronics North America, the David Sarnoff Research Center (now Sarnoff Corp.), Thomson Consumer Electronics and Zenith Electronics Corp.

Over the ensuing two years, the technology developed by the Grand Alliance was integrated and tested extensively in independent laboratory and field tests conducted for the FCC Advisory Committee for Advanced Television Service. The advisory committee unanimously recommended adoption of the Grand Alliance standard in November 1995. Final FCC approval of the Grand Alliance-based standard on Christmas Eve 1996 marked a victory, not only for the Grand Alliance and for U.S. broadcasters but, more important, for America's 100 million TV households. For consumers, digital HDTV will deliver extremely clear, error-free images and CD-quality sound. This exciting technology - the most computer-friendly TV broadcast standard ever devised - will also enable a wide range of information-age applications, because each TV channel will be able to carry 19 megabits per second of data.

The FCC tentatively adopted the DTV standard based on Grand Alliance technology in May 1996, and took the rest of the year to complete its rulemaking process. An agreement in November 1996 among representatives of the broadcast, consumer electronics and computer industries - which retained all of the core technologies of the Grand Alliance system (and simply deleted the multiple video formats from the mandated standard) - paved the way for final FCC adoption of the Grand Alliance-based DTV standard.

Now known as the ATSC (Advanced Television Systems Committee) DTV Standard, the FCC-adopted system mandates core elements of the Grand Alliance system, including Dolby Digital (AC-3) audio, MPEG-2 video compression techniques, the MPEG-2 packetized data transport structure, and the Zenith VSB digital modulation and transmission system. In addition, the video formats specified in the ATSC DTV Standard have been adopted as a de facto standard by the nation's broadcasters and TV set manufacturers.

The Grand Alliance no longer exists. The agreement that formed the Grand Alliance in May 1993 expired with the FCC adoption of the ATSC standard in December 1996.

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### **Three RTO SUPPLIERS and co-founders of the Digital HDTV Grand Alliance visualize the future of video electronics**

#### **Zenith**

For more than eight decades, beginning with the advent of radio, Zenith has been a pioneer in electronics technology. The company has invented countless industry-leading developments, including the first wireless TV remote controls, the first portable and push-button radios and the first HDTV system using digital technology.

As one of HDTV's earliest proponents, Zenith developed a number of key digital technologies, including the VSB (vestigial sideband) digital transmission system adopted by the Federal Communications Commission as part of the ATSC (Advanced Television Systems Committee) digital TV broadcast standard. The company was the first to propose a partially digital signal, pioneered the use of the so-called 'taboo' broadcast channels for the transition to HDTV and was the first to use computer-friendly progressive scanning.

In 1997, the members of the digital HDTV Grand Alliance, including Zenith, earned a technical Emmy for pioneering developments behind the ATSC standard. The company's first HDTV products, digital HDTV receiver/decoders, were introduced in 1998, followed by integrated digital HDTV sets in 1999.

Although Zenith's experience in digital HDTV technology had prepared the company for leadership in the digital age, the company needed a global partner with complementary skills. In November 1995, LG Electronics Inc. (LGE), a world leader in consumer electronics, acquired a majority interest in Zenith.

Zenith launched a major brand revitalization program in 1997, updating its famous lightning bolt logo and creating a new marketing campaign designed to introduce the company and its products to a new generation of consumers. Also in 1997, Zenith began shipments of digital set-top boxes to major telecommunications companies. In 1998, Zenith was recognized as the top consumer electronics brand in a massive customer satisfaction survey in Fortune magazine. In 1999, Zenith completed a broad financial and operational restructuring plan designed to return the company to financial health and leverage its brand, distribution and technology strengths. In November, the company emerged as a wholly owned subsidiary of LG Electronics and a stronger competitor in the consumer electronics and digital technologies of the future.

Today, Zenith's leadership in digital technology continues. Now as in the past, rental companies can count on Zenith to be there with leading-edge, easy-to-use technology that will usher your customers into the digital age.

## Thomson

Throughout the world, an information and entertainment transformation is under way as consumers purchase digital video and audio products and add broadband capability to their homes. Content creators are more readily using digital tools to create new shows and to edit, store and distribute programming. Leading the way in this technical revolution is Thomson Consumer Electronics, which has been at the forefront of the digital evolution since the early 1990s, when it, too, along with Zenith and five other companies, was an integral member of the digital HDTV Grand Alliance.

Thomson confirmed its position during the past decade as a primary digital decoder company and as a principal furnisher of digital satellite receivers for digital TV in the United States. In the context of the evolution towards digital TV for the year 2000, Thomson multimedia launched the RCA-brand DTC100 in August 1998. This device allows viewers to enjoy digital programming on an analog TV. In January 2000, the company presented a new generation of decoders that allow DirecTV subscribers to receive local digital TV programming.

Before the end of 2000, Thomson multimedia will launch a new RCA DirecTV satellite reception system in the United States that will support Microsoft's UltimateTV service. This new decoder is equipped with dual tuners as well as a hard drive allowing digital recording of programs broadcast on DirecTV.

With the recent creation of Thomson's Digital Media Solutions, the company will provide digital video networking systems for the secure delivery of the content from the studio to the consumer, along with a host of other digital media services. Microsoft, DirecTV and Alcatel are just a few of the companies that have endorsed Thomson's Digital Media Solutions strategies.

And if that wasn't enough, Thomson multimedia was the first major consumer electronics company to enter the emerging electronic book market with the introduction of the RCA-brand eBook line of dedicated electronic reading devices. An e-book is a 5.5-inch monochrome LCD touch-screen with nearly six times the screen resolution of a typical hand-held personal digital assistant that can store approximately 20 novels or 8,000 average paperback pages with 8MB of memory. It weighs just over a pound with a rechargeable battery that lasts up to 40 hours.

While the idea of marketing e-books to rental customers may seem just a little far-fetched, remember that the concept of renting from a store online seemed impossible just a year ago. Sold under the RCA brand name, the new ebook devices will be the first products introduced at retail with technology licensed from Gemstar-TV Guide International Inc.

### [Philips](#)

Philips Electronics was also fully involved with the digital HDTV Grand Alliance, including the generation, implementation, testing and approval process for the ATSC standards recommendation. The company was pleased to be a part of shaping the current standards for the both the broadcast and manufacturing industry. Philips continues to make waves in the digital electronic sphere by introducing myriad digital products ranging from TVs, DVD players/recorders and digital receivers. In addition to a wide selection of digital wide-screen TVs, ranging from its 64-inch rear projection TV to its new 30-inch HD-ready, direct view model, Philips is one of the leaders in design-conscious product design with its latest wide-screen digital-ready FlatTV. Using an advanced plasma technology, the Philips FlatTV monitor is famous for its 'painting-like' design. Less than 6-inches thick, the FlatTV monitor has a 160-degree viewing angle and advanced video display features that create a high-quality digital image that can be seen with a constant clarity and brightness from virtually anywhere in the room. The FlatTV frame comes in five designer colors (silver, crystal blue, crystal green, crystal rouge and champagne) that compliment any decor.

Another cutting-edge development is the announcement of Philips' new DVD-video recorder (DVD+RW), which will be available later next year in the United States and Europe. Developed from the start to be compatible with both existing and future DVD-video and DVD-ROM equipment, consumers will have the ability to create their own DVD and play the bare disc back on both existing and future DVD-video and DVD-ROM equipment. This means, for example, that consumers who record something on a camcorder can copy it onto a DVD+RW disc with the Philips DVD-video recorder, edit it on a PC and play it back on their own DVD-video player.

A leader in digital set-top boxes, Philips introduced a receiver offering DirecTV with TiVo service that combines an easy-to-use receiver with access to more than 210 digital-quality channels from DirecTV. With TiVo, the most advanced and easy Personal TV service available, consumers can digitally record TV shows without videotape, have full control of live TV programs with the ability to pause, instant replay, rewind, fast-forward and playback in normal speed, slow motion or frame-by-frame, backward and forward. Viewers can also create customized program searches and schedule recordings based on category, title, actor, director or even keyword combinations, plus much more.

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**Aspect Ratio** >> Refers to the shape of the video image. Current analog TVs have a 4:3 aspect ratio, which means that the viewing area is 4 units wide by 3 units high. High-definition TVs have a 16:9 wide-screen aspect ratio, which simulates that seen in movie theaters.

**HDTV (High-definition television)** >> Features a wide-screen format, crystal-clear images and CD-quality audio. To truly be high-definition, the TV must display images in a 16:9 aspect ratio, be able to decode and display all of the 18 ATSC (Advanced Television Systems Committee) formats and be capable of passing through/receiving the Dolby Digital 15.1-channel stereo signal.

**HD-capable** >> Televisions that are capable of decoding and displaying (with the help of a set-top Box) the HDTV signal. These units do not have a built-in digital tuner and, therefore, an STB is required. **LCD (liquid crystal display)** >> A device that displays text and graphics on a flat screen with no projected light or illumination. Since it doesn't use a traditional cathode ray tube (CRT), this type of display is very flat and very lightweight