

## Some Booths on the Show Floor

### The IEEE 1394 Pavilion

1394 (a.k.a. Firewire , i.Link - Sony prefers i.Link to 1394 as more friendly. Apparently, they prefer to avoid the term “fire” in connection with consumer hardware.) is used to connect audio, video and control products with a single digital cable, eliminating wires and clutter, and permitting signals to move in the digital domain for better quality. While an accepted standard, there are still important elements, such as copy protection methods, that are not agreed and inhibit adoption.

This booth promoted the technology rather than any manufacturer’s particular implementation. It is a standard - i.e. anyone’s 1394 device should connect to anyone else’s. It should be possible to use one easy-to-understand graphical controller for all devices linked together. “Hot plug and play”, i.e. connecting any device at any time, is possible. Devices can connect in any order. All devices are automatically recognized by other devices.

Physically, the cables are thinner than co-ax and slightly thicker than normal audio connections. 1394 could be used as the basis of a generic or general home network but so far no one is implementing it that way, though 1394 cards for computers to exist. The problem here is that the cables can be no more than 10 feet long to sustain the high throughput needed for digital TV, etc. However, major set-top manufacturers, Sony, Panasonic, etc. are building in the Cisco Networks BIOS and a variety of different buses in the set-top box including USB to support general connectivity. It is possible to support Internet protocols over a 1394-based network, but so far the OpenCable initiative has not specified how this can be or should be done. (Samsung had an implementation of IP on their 1394 net.)

A 1394 network is supposed to be no-maintenance but some booth observers with home network installation experience were skeptical that it could be taken out of the audio/visual domain without difficulty. Most people see different network topologies - some wireless - inside the home so we may end up with clusters -- an entertainment cluster, computing cluster, portable device cluster and intelligent appliance cluster -- all linked together via a hub of some kind that interfaces the different network infrastructures.

### TiVo (Digital Video Hard-disk Recorder)

TiVo was one of two digital video hard-disk recorders being demonstrated at the show. It’s like a VCR in some respects - it will record up to 10 hours, replay the material, fast forward, and play at three different speeds.

It’s much better than a VCR however.

It will record and play at the same time, so it can be used to “pause” a live broadcast while you do something else, or replay a highlight from a sports show, and allow you to return to

the show where you left off. A display on the set shows how much has been recorded, and where you are in the playback. When you want to catch up to real-time, you can play at fast speed or jump directly to the real-time position.

In addition to a program guide, which allows you to select programs for future recording, TiVo features a unique feature. "Thumbs Up" and Thumbs down" buttons on the remote control allow you to tell the box whether you like what you're watching and how much you like it. Using enhanced program guide information about the show, the box stores your preferences and will automatically record programs that match them. When you sit down to the TV set, it has stored ten hours of movies or shows that it reckons you will like.

You can look at the start of each program and either view it, save it, or dump it to make space for more. And of course you can record it out to your tape VCR if you wish.

Certain program providers (HBO, CNN) have special relationships with TiVo and provide extra information and promotional material about their shows for the box to display. This info, along with the program guide, is downloaded on the phone line to the box once a day. At the same time, the TiVo can query the box about your viewing preferences. Your personal information stays in your home, but if you give them permission they will anonymously use the information and sell it to other commercial operations.

The box (available April 1999) is priced "under \$500 US" plus \$10 / month service charges for the program guide data. The first model will record 10 hours, but hard drives can be added and they are shooting for a 40-hour box. Philips and DirecTV will be marketing the unit.

The demo model was taking analog signals and re-encoding them as MPEG at an unknown bit rate. There were few visible artifacts.

## The IDB pavilion

A pavilion, sponsored by the SAE (Society of Automotive Engineers), showcased the work of several manufacturers using the IDB bus, a standardized interface to car electronics. It allows third-party manufacturers to create devices to be fitted into many cars.

IDB stands for ITS (Intelligent Transport Systems) Data Bus. Car manufacturers have created digital networks to connect all the devices in their cars -- but these are proprietary. IDB establishes a kind of API so that developers of other devices and applications can connect in a standardized way to any car manufacturer's internal data bus. The association also does verification of devices and software for the bus.

Various devices that could be connected to IDB were on display in a car, including a Web server made by Celltronics. It can connect through various devices (cell modem, wireless modem, satellite modems) to take information from the Internet or your home network and bring it into the vehicle.

An automotive warranty program could then communicate directly to your car through the

Internet and your home network to bring back diagnostic information and advise the owner when maintenance is needed. Mercedes has announced a program like this.

Other applications include

- ◆ the robotic fueler that Shell is working on. Shell stations might in fact have a 2.4 GHz wireless network so that as your car drives by the station it acquires information from the car and advises you that you need to fill up.
- ◆ GPS
- ◆ voice input and output, which plays WAV files through your radio speakers, for example to give you directions
- ◆ pagers (either in-car or mobile pagers that you plug into a standardized connection)
- ◆ cell phones
- ◆ traffic data receivers from local sources, from satellite and
- ◆ SWS (a radar detector)
- ◆ the multimedia display

The big three auto manufacturers have supported this initiative, GM being the most aggressive. They expect it will be appearing in cars in three years since the IDB has not been firmly established yet.

In the meantime, some manufacturers like Celltronics have developed applications that communicate directly through the gateway into the manufacturers bus, until such time as IDB is developed and deployed. The standardization process will speed up the delivery of product since, as it stands now, manufacturers of third party devices must be working on them well ahead of time in order to meet individual car manufacturer's specifications. Writing to a standardized API will considerably speed the development process.

The demonstration car was not equipped with an RDS radio. However, Matt Little of GM tells me that there is activity to link RDS data into the IDB architecture, notably from Cue. While DAB manufacturers come to the meetings in Europe, they do not seem to be actively involved – at least according to the people at the IDB booth – in generating applications.

IDB is a two-wire token ring bus working at 115 Kbps, (a slow serial bit rate). It is not fast enough to pass signals, only control messages to devices. They are discussing IDBM, a high-bit rate version that might use 1394 or other standards, or an optical cable.

## Samsung

In addition to commercially available HDTV sets etc., Samsung was displaying a prototype home network, interesting because it is intended to be a full-fledged network based in 1394.

It's an Internet packet-based network. Each component, whether VCR, CD player or whatever, generates a Web page which is its control interface, displayed on the TV and controlled with the remote. The opening screen showed a list of connected devices. We controlled the digital VCR (a Samsung proprietary format, not WVHS or DVHS.). The browser screen was transparent and allowed the television signal to be seen through it.

This is an Internet system, open to the Internet. Oddly, the TV is the hub – it dynamically allocates IP addresses to the other devices, but all you conceivably could do from the internet into the home net is see the controls of the various devices – so you could, for example, set your home VCR to record while at the office or in the car.

Other home devices could be connected on this network, when ready. The PC in the demonstration was connected with a commercially available Adaptec 1394 card.

## Mediawire

(conversation with Keith Crosley, product manager, Avio Digital)

Mediawire is a frame-based network, not a (IP) packet-based network. Consequently, it can dedicate virtual channels to audio and video signal streams and can also carry a stream of normal IP packets, which are transmitted and received synchronously, but look like normal IP packets to the receiver. This allows it to also deliver ISDN and telephony.

It can work through different kinds of wire, and claims a throughput of 88 Mbps. However, as the wire reduces in quality, Mediawire must reduce the distance between nodes. On “Radio Shack” flat telephone wire, it can do 100 feet between nodes, device-to device. The network can support 100 devices for a maximum length of two miles on good wire (it reconstitutes the signal at each node). The frames stay in phase throughout the network so even over two miles audio will remain in phase.

There is no hub needed, it is a peer-to-peer network. While you can use existing telephone wire, the network will not share a wire with an analog telephone. That signal must run on a separate wire, although it could be the spare pair if the house has two-pair telephone cable throughout. They can solve this problem by digitizing the telephone service where it enters the house, moving it through the house as a digital signal, and putting a digital to analog adapter at each handset, or a media wire phone. (app. \$60 device.)

While this is a generalized network, its throughput is high enough that it can be used for digital audio and video. A device on the network with sufficient processing power can reconfigure the capacity on the virtual channels to meet demand.

Avio is licensing the Mediawire technology. This was developed at Interval Research, and spun out into a separate company. Product will probably appear in the first or second-quarter of the year 2000.

Compared to 1394, Mediawire:

- ◆ is not a standard
- ◆ has lower but still pretty high bandwidth
- ◆ permits longer cable runs so it can be used as a complete home network
- ◆ has lower latency

## SHOW ANNOUNCEMENTS

CBS and Time Warner Cable announced an agreement through which Time Warner would carry the DTV signals of CBS owned-and-operated stations "unaltered". The implication is that multicast channels and data enhancements would be passed through to the cable consumer. For now, Time Warner will carry the 8 VSB high-definition signal on its cable systems but the plan is to convert it to 256 QAM in the next six to 12 months. The signal will only be carried on upgraded parts of the cable network: in New York City and Los Angeles, upgraded sections cover approximately 50% of the subscribers. No other agreements have been announced, but the National Cable Television Association used this agreement as a "clear indication that the marketplace will work and there is no need for government-mandated must-carry regulation."

Sarnoff Labs is licensing a DTV receiver design that should allow manufacturers to offer standard definition DTV sets under \$1,000. The cost of the electronics will be \$400 to \$550, and the standard definition display will bring the price up to \$1,000. A true high-definition display is still a much costlier item.

EchoStar announced a new satellite receiver that will combine WebTV and an on-board digital video hard drive recorder (8.6 GB) to create "a whole new interactive world for viewers, at a fraction of the cost of buying a computer." The service will include the WebTV plus service, including Internet surfing, electronic program guide, online banking, shopping, email and game playing. The hard disk recorder will allow the viewer to "pause" live video programs for up to 30 minutes, and to record television programming for later playback (available toward the end of 1999). The model 7100 receiver will be offered for \$499 including the EchoStar satellite dish, while the WebTV Plus service will be \$24.95/month. EchoStar has 1.8 million subscribers on its DISH network, while Web TV has nearly 700,000 subscribers. EchoStar technologies manufactures DBS equipment for DISH network and various international customers including ExpressVu. In a related announcement EchoStar said that it would be adding the interactive "television-style" programming of Pseudo.com to its lineup in the summer of 1999.

DirecTV announced plans to offer Wink interactive enhanced broadcasts free of charge to its 4.46 million subscribers. It also announced an alliance with Philips electronics and TiVo which will match or, according to some observers, exceed the capabilities of EchoStar's hard-disk digital video recorder. This recorder will allow the viewer to "pause" live TV programming, and store their program preferences so that the recorder will automatically record programming that matches user tastes as well as programs chosen by the user from the program guide. Wink-enabled set-top boxes are expected in the second quarter of 1999. High-definition programming will be expanded with pay-per-view movies from New Line Cinema starting in May. High-definition set-tops for DirecTV are expected by mid-year.

Columbia TriStar Interactive, the interactive division of Sony Pictures, announced new services for hand-held devices. Most of the services are simply promotion for movies but the

upcoming "the Daily Dose" from Soap City will send daily soap opera updates. The service will work with Palm Pilot and Windows CE devices by downloading information whenever the device is synchronized with the host computer. Lynda Keeler of Columbia TriStar noted, "as mobile computing involves into wireless delivery of Web content, we expect this process to be even easier for the consumer."

AT&T has been awarded a contract from @Home network to create a new backbone that will give @Home the capacity to support five million broadband users. This move is seen as part of a push from @Home to meet the demand for high-speed connections to the Internet over the next ten years.

Over the holiday season, @Home carried special interactive advertising for Kraft, which allowed Internet users to view video commercials, download recipes and access holiday fun ideas from the Interactive Kitchen website. In a section called the Kraft/Second Harvest initiative, families learned how to get involved in helping the hungry in their community. Kraft has been a leading proponent of targeted and interactive advertising to build one-to-one relationships with consumers.

America Online announced that it has selected CBS News to be the exclusive provider of broadcast news on AOL and CompuServe and the premier provider on AOL.com. CBS News will have a major presence throughout AOL-related services. CBS has committed to extensive on-air promotion within each of its news broadcasts, and to the active involvement of its personalities in production and promotion of AOL live chat events. The two companies will share advertising revenue generated through CBS News programming. A recent study commissioned by AOL indicated that 75% of users go online to get news. America Online and CompuServe together have approximately 16 million members.

AOL also announced a pact with Bell Atlantic to bring Bell Atlantic's Infospeed service to AOL subscribers. Bell's Atlantic's implementation of DSL, using standard residential phone lines, is said to transmit online content at 640 Kbps -- permitting improvement in Internet video performance, although this bit rate is far short of the MPEG2 bit rates used in DBS and digital cable set-top boxes.

Cisco Systems, General Instrument Corp., and AT&T announced their intention to develop and trial a seamless, end-to-end IP solution that would allow AT&T to offer voice, video, and data services over the network now being deployed by AT&T and TCI. John Chambers, CEO of Cisco Systems, said, "By combining broadband Internet home and video services over a single cable line, we're taking a major step towards implementing the future integrated data, voice and video telecommunications on a mass-market scale." The primary gateway to this network would be the GI DCT-5000+ plus advanced consumer digital set-top box, which contains a cable modem, broadband telephony interface and digital video tuner and decoder. Cisco also announced that a coalition of 33 telephone companies, cable companies, ISPs and consumer electronic companies will support their strategy to extend high-speed Internet services and products to the consumer market.

In a pre-CES announcement, eight consumer electronic companies agreed to establish a licensing program to permit easy interoperability of their digital audio-video appliances. The

program, be called HAVi (home audio -- video interoperability), would be Java-based and would provide hot plug-and-playing connectivity so that, one manufacturer's DVD player, for example, could be controlled from an interface on the television set of another manufacturer. This program would fill in gaps in the IEEE1394 digital interface, and could be a major step forward for home networking. The eight companies are Sony, Thomson, Sharp, Philips, Toshiba, Hitachi, Matsushita, and Grundig.

Many of the same companies were included in the Sun Microsystems announcement that key consumer electronics companies would be involved in the development of a Java TV application programming interface. The Java TV API (the first draft is expected by end of the first quarter, 1999) is intended to allow manufacturers to introduce new product without fearing obsolescence -- since new features can be enabled from downloadable software working with Java. Software developers will also benefit since they will not need to rewrite their programs to get them to run on many different set-top boxes, digital televisions, and other AV devices.

An interesting post-show announcement came from Broadcast.com, who plan to offer a box capable of receiving and storing large amounts of data from the DTV signals of over-the-air broadcasters next to the user's television set. The box would contain the functionality of a computer and a massive hard drive, so that the user could use the TV set to access various kinds of interactive data. The box sounds like a combination of the WebTV/Replay/Echostar or Wink/TiVO/DirecTV idea, but with less emphasis on television and more on data.

## NEW PRODUCTS AT CES

(a listing of a small number of new products from the thousands introduced at the show, chosen because they show new features or significant movement in the market. Performance is as claimed by the manufacturer.)

### Category: DTV

Name: RCA DTC100 set-top decoder

Maker: Thomson

Price: \$649

Features: A set-top box that receives ATSC high-definition and standard signals from antennas or from DirecTV, for output to current television sets or new HD sets, at a price that can't be beat.

Available: shipping.

Name: DTV/DBS set-top

Maker: Philips

Features: Like the Thomson DirecTV unit, this Philips ATSC digital receiver will also decode Echostar DBS and HDTV broadcasts.

Available: 3Q 1999

Name: HD-DVD-Divx player

Maker: Thomson

Features: the first high-definition DTV player.

Available: prototype only, introduction in 2000

Name: PDP-501MC flat-panel plasma display

Maker: Pioneer

Price: \$25,000

Features: A 50" 16x9 high-definition (1280x768) plasma display at a premium price. Other plasma displays, in the 40 in. range, are usually 480 lines maximum.

Available: shipping.

### Category: Television

Name: Replay TV

Maker: Replay Networks Inc.

Features: A digital video hard-disk recorder/player. Permits user to "pause" live television, easily record series programs or programs chosen from program guide; 6 hours current capacity

Available: 1Q 1999

Contact: [www.replaytv.com](http://www.replaytv.com), 1-800-266-

1301

Name: TiVo

Maker: Philips (under licence)

Price: "under \$500" plus \$10 monthly service fee

Features: A digital video hard-disk recorder/player. Permits user to "pause" live television and will record programs automatically based on the user's preferences and information about the programs; 10 hours current capacity (see Some Booths on the Show Floor)

Available: 1999

Name: 360-degree television

Maker: E.S.P. electronics

Price: \$40,000

Features: A television set which allows viewers all around the display to see a "heads-on" view of the 19 in. image.

Available: Collector's edition now shipping

Name: GR-DVL9500 camcorder

Maker: JVC

Features: Progressive scan (480x500) camcorder with high speed recording mode (120 images/second) permitting



smooth slow motion playback. Capacity 100,000 frames of video or 600 still pictures on single Mini-DV cassette. 10x optical and 200x digital zoom. Digital stereo audio. Connectivity comes from i.Link (IEEE1394) connection to other Firewire devices or JLIIP terminal which connects to the serial port of a PC running Windows.

Name: NewsGuide  
Maker: Thomson  
Features: A new feature of RCA and ProScan TVs with Gemstar Guide plus+ program guides, to provide news-on-demand.

Name: TVGuardian, the "foul language filter"  
Maker: Principle Solutions  
Price: 149.95  
Features: Monitors closed-captioning of movies or TV series and mutes audio when offensive word is found.  
Contact: 800-967-7884

### **Category: New Media**

Name: Cyberworld  
Maker: Cyberworld  
Features: Development software to create 3-D way of environments that work in low bandwidth conditions. Compatible with Explorer and Netscape; modular system allows creation of large environments through Link modules.  
Available: shipping  
Contact: 905-502-9690,  
[www.cyberworldcorp.com](http://www.cyberworldcorp.com)

Name: Device Mail 1.0; Device Mosaic 3.1; Micro-server 2.0  
Maker: Spyglass, Inc.  
Features: Embeddable thin email, browser, and server technologies created by Spyglass for Internet-connected small devices.

Available: shipping

### **Category: Mobile Electronics**

Maker: Alpine  
Price: \$1,200  
Features: DVD player which plays CDs and video in car.  
Available: Summer, 1999

Name: Command Audio  
Maker: Thomson  
Features: Radio add-on service which monitors and records programming selected by user, then plays it back at the user's convenience.

Name: AVIC-505  
Maker: Pioneer  
Price: \$2,000 with display  
Features: a route guidance navigation system built around GPS with speaker-independent voice recognition.  
Available: early 1999

Name: TME-M750  
Maker: Alpine  
Features: Television tuner with 16x9 screen; part of Alpine's mobile theater system, which is part of their mobile multimedia integrated system platform, including navigation, email and Internet access, audio, video, emergency alerting (Mayday system) etc.

Name: AutoPC  
Maker: Clarion  
Features: "In-dash personal assistant", voice activated, email, GPS directions, news, traffic, weather, address book, CD, radio, and cell-phone.  
Available: shipping  
Contact: 1-800-GO-CLARION,  
[www.autopc.com](http://www.autopc.com)

## Category: Personal Devices

Name: PC-Unite

Maker: Casio

Price: \$199

Features: A watch which downloads appointments and contacts from Microsoft Outlook through IR port on PCs.

Available: Feb. 1999

Name: GPS watch

Maker: Casio

Features: Combination watch and GPS device, 5.2 oz., battery life 10 hours.

Available: 3Q, 1999

Name: Walkabout Quest

Maker: Dictaphone

Price: \$449

Features: Digital voice recorder with 40 minutes recording time, that sends voice email messages based on contact list when the device used in PC docking station.

Available: December

Name: Telmail

Maker: Sharp

Price \$150, plus \$9.95/month for Pocketmail service

Features: Hand-held email appliance with PIM features that can send email through analog phones by holding the device up to the handset.

Available: shipping

Name: HC-E100 Portable email device

Maker: JVC

Price: \$129.95 plus Pocketmail service at \$9.95/month

Features: Hand-held email and backs fax device that communicates through analog telephones by holding the device up to the handset. Can send to any email-enabled pager.

Available: shipping

Name: NavTalk

Maker: Garmin

Price: \$625 plus monthly rates for assistance programs

Features: A full featured GPS device and wireless telephone. Users can buy "first assist" service at \$8.95/month which gives one button access to emergency services using GPS location. For additional \$11.95/month, program will use GPS to give directions.

Available: shipping

Name: Bébé Sounds

Maker: Unisar

Price: \$29.99

Features: Amplifier, headset, and recording cable for listening to baby within mother's womb.

Name: Memory Stick

Maker: Sony

Price: \$29.95 for 4MB; \$39.95 for 8MB; \$99.95 for 4MB with PC card adapter

Features: Portable digital data storage in very small form factor; used in cameras VCRs, and computers. Allows user to easily transfer images to PC. Supported by many camera manufacturers.

Available: shipping

Name: Concertmaster

Maker: Baldwin

Features: Acoustic midi-controlled player grand piano with internal hard drive, pre-loaded with 20 hours of performances. Floppy disk and CD input allow music to be played from many sources and to be recorded from the piano. Baldwin notes possibility of CDs that combine normal video and audio with midi track to create "play-along" performances.

Available: shipping

### **Category : Telephony**

Name: Long Distance Manager Telephone  
Maker: Uniden America  
Features: gets lowest price on long distance calls by automatically searching competitive long distance suppliers.  
Available: Spring 99

Name: Internet Screenphone 2840  
make : Alcatel  
Price:?  
Features : Colour browser-enabled telephone with advanced telephony features.  
Contact: [www.alcatel.com](http://www.alcatel.com)

### **Category : Audio**

Name: JVC KD-MX3000 CD/MD Player/Receiver  
Maker: JVC  
Price: \$749.95  
Features: Plays both mini-discs and compact discs.  
Contact: Barbara Brown 973-331-1070

Name: MD-C2 Mini system  
Maker: Sharp  
Price: \$499.95  
Features: One-touch dubbing from 3 CDs to 3 mini-discs.  
Available: made 1999  
Contact: [www.Sharp-USA.com](http://www.Sharp-USA.com)

Name: PD-R555RW  
Maker: Pioneer  
Price: \$835  
Features: Records CDs from audio sources.  
Contact: Chris Walker, 310-952-2401  
[cwalker@pioneer-usa.com](mailto:cwalker@pioneer-usa.com)

Name: CDR765  
Maker: Philips  
Features: Automatically copies CDs at 2x recording speed.

Name:TuneBase 100  
Maker:Escient  
Price:\$2,500  
Features: Auto-builds database of CD information on Sony, Pioneer, and Denon mega-changers, by identifying discs and downloading information via modem from Escient's Website.  
Available: January, 1999

Name: Super Audio CD  
Maker: Sony etc.  
Features: New CD audio format that promises 100 kHz response through new recording and disc manufacturing techniques. Super CD disks will play on current CD players, but at old frequency response rates.

### **Category: Computers**

Name: Clio  
Maker:Vadem  
Price: \$999  
Features: Pen-based 3 lb. 11"x 8 " notebook computer with 9.4" color display. Runs Windows CE with bundled Microsoft office software.  
Available: shipping

### **Category: Connectivity**

Name: Leapfrog Wavemaster,  
Homenetwork  
Maker: Terk systems  
Price: \$179.95 for 1 transmitter and 1 receiver  
Features: Uses wireless 2.4 GHz signals or the home's telephone wiring to transmit video/audio signals from VCRs, CD and DVD players to other receivers in the home.  
Contact: [www.terk.com](http://www.terk.com)