

Convergence Clash: PC Versus TV as the Ultimate Browser

The PC versus TV controversy has received incredible exposure. There are valid business reasons for this having to do with control of the distribution channel. The arguments fly over which is better to access the Internet—a PC or the TV. While most couch potatoes side with TV as the ultimate browser and PC makers respond that the Internet was created by and for computers, the real answer has to do with control of the consumer.

The people who bring you entertainment, including the broadcast and cable companies and supported by the consumer electronics industry, are telling you that the television will be your window to the world at large, including the Internet. But many television viewers don't have (or want) personal computers. If the "programs" are available via the TV, that's fine with them. They will watch whatever is on. The Internet represents a new kind of VCR, except they don't have to rent the tape and take it back. In this way, the Internet is similar to interactive television.

This is one of the reasons cable companies are hot on new modems that deliver information over the cable wire already coming into your home. They assume that you will pay a monthly charge to use the high-speed modem plus additional charges for the content (information and programs) delivered through it. Cable modems run fast enough in trial tests to deliver full-motion video and other programming delivered today on tape. They don't care if you watch it on your TV or your PC—they just care that you watch it so they can charge you.

The PC makers see the multimedia PC as the ultimate vehicle for delivery of content. The PC gives you almost unlimited control over what you view, including the ability to store the program for later reference. They are correct, up to a point.

The first personal computers that act like televisions have arrived, but they are expensive (\$3,000+). The NetTV and Gateway Dimension products are high-powered multimedia computers

that use special big screen (30") monitors and display TV channels as well as computer applications. Infrared devices (a keyboard for NetTV and a remote control for Dimension) allow you to sit on the couch and do things, but they are complex computers at heart. The first televisions capable of "surfing the 'Net" will be available from Mitsubishi this fall, but they are also expensive, with the Internet components adding about \$300 to the price, and driving the cost to consumers over the \$1,000 price point. Not bad for the big screen market, but certainly not for the rest of us. As with any other new product, acceptance will result in lower price points and/or more features. No sales, and they get discontinued and become footnotes along with the Beta VCR.

More likely to succeed is the Internet Appliance, or the \$500 Networking PC as it is sometimes called. The reason it will succeed is the low price point (under \$300 is a reality), and the fact that it can be used with something you already have—a television. The circuitry is optimized for display on a television, and the software tries to correct for the differences between a TV and a computer screen. Units will also be available to plug in to video games, and SEGA has already announced an attachment for its SATURN machine. Others are close behind.

The "networking computer" version of this being touted by Oracle and Sun use the Internet (or Intranet) for storing programs and information. This is already a common practice in business, where computers are networked together. Two benefits evolve from this approach. Studies (by the proponents) show that the "cost per user" is much lower, given the lower cost per unit (\$500 without monitor) and the simplicity of the system which save downtime and training costs.

The second benefit has to do with portability and ubiquity. The Internet Appliance is a telecommuting device that attaches to a network,

sometimes through wires (local area network), sometimes through a modem, and sometimes via wireless (cellular phone or personal communications service). The circuitry is compact, and can be portable. Cards to connect to the network are already available and reasonably inexpensive because they are used in laptop computers. Eliminate the disk drives and display, and most laptops can be reduced in both cost and size to become Internet Appliances. Build in the programs necessary to connect to the network, and the browser becomes the user interface. If you need storage, a cheap high-density unit can be added at minimal cost. The key is that most storage is consumed by applications, not data. Download the applications (the death knell of bloatware), and the problem is solved. Can't download because you're traveling? The basic applications you need can be stored on a card that plugs into the same slot the network interface occupies, at about the same cost.

Now you have a mass market device. Simple and cheap enough to have at home (about the price of a VCR), with a remote control that includes a small keyboard (it's amazing how little typing you do surfing the 'Net). If it plugs into your video game, the price should be around \$200, including a place to attach a printer. For \$300, you can get a stand-alone unit that hooks up to the TV or VCR (and uses the VCR as a storage device) and can be upgraded to include local storage. Consider that the kids can research their homework, explore far-off places, participate in multiplayer events (video games, challenges, and skill contests, etc.), you can do your shopping and banking (you have changed banks, haven't you?), get involved with hobbies and on-line learning...whatever appeals to you, including turning it off and watching TV. The programs you use and watch will be available on the Internet, both for free (supported by advertising, just like the TV shows) or at a small cost compared with today's software prices. Even if you already have a PC at home, you'll want this because it will offer some interesting services over time such as controlling other appliances and maintaining home security.

The business version is a little more expensive (\$500 tops) because it supports more attachments and is rugged for portability. For everyone but the power users and developers, it has enough horse-

power to handle all your computing needs. The low cost and portability outweigh the need to have a laptop or full-blown computer on your desk.

The fact that these units will support high-quality audio and video as part of the basic package will be very appealing to consumers at large. They will have an audio jack that accepts headphones (for privacy) or attaches to self-powered speakers or a high-fidelity sound system. The video output sends the monitor signal to a TV modulated as a standard signal, and the business version will drive a standard monitor. The consumer products will be based on cheap chips (computer and memory), while the business versions will use highly-integrated architectures such as Motorola's 821 PowerPC and upgradeable memory modules. Today's units will have four Megabytes of memory (plenty for applications that don't consume Megabytes and efficient operating systems to run them). Memory chips as dense as 16 Gigabytes are on the horizon, and 64 Megabyte chips are becoming available. These high-density chips can be segmented to provide full storage (the 64 Megabyte chip yields 16 Megabytes of addressable memory on a single chip). nto