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*A broadband industry pioneer, Dave has worked on residential broadband for nearly 20 years. In the 1990s he directed several of the earliest residential cable modem trials, and later helped MSOs plan and deploy broadband services. When Dave is not busy consulting for clients or co-writing the Report on the Broadband Home, he tests new broadband-related products and maintains the multiple Web sites he's created.*

# Two Sides to

## Dave Says: Networked PC Video Is a Big Threat to MSOs

**A**ll the elements are now falling into place for the PC to play a major role in home video. Over time this threatens to reduce MSOs' revenue from cable video entertainment and increase their costs for high-speed Internet services.

Microsoft, Apple, Intel and AMD are all now promoting using PCs as the home's central media repository, and are making it easier to use PCs for video. Windows Media Center is bundled into the standard consumer version of Windows Vista. (It was a separate "edition" of Windows XP.) Intel and AMD are running aggressive branding campaigns positioning PCs based on their processors as the home's center for digital media.

PCs already receive many forms of Internet video, ranging from pirated movies carried over P2P networks to user-generated content on YouTube and its competitors. They're starting to get program episodes from the likes of ABC.com and emerging Internet TV networks such as Joost and Babelgum.

PCs increasingly receive broadcast video. Windows Media Center supports a variety of tuners for analog and digital TV, including high definition. Some Vista PCs already on the market include a built-in tuner with CableLabs' OpenCable unidirectional receiver (OCUR) technology that accepts a CableCard to receive premium cable content.

Video content streaming through or stored on the PC can be viewed on large HD screens in the home. The latest home networking technologies (such as 802.11n and HomePlug AV) are designed to handle multiple streams of HD video. These technologies are being packaged into a variety of media players designed to connect to home theater systems.

As these new networking technologies mature, many media devices will be integrated into the home network, including digital cameras and cam-

orders, portable media players such as the iPod, and smart phones such as the iPhone. Many companies now offer home media servers capable of storing terabytes of data, and prices are dropping fast.

The PC and consumer electronics industries are working together to implement new standards such as DLNA to facilitate the operation of media servers and players. Their vision leaves little room for a cable set-top box, and threatens to eat into MSOs' video revenue and increase their costs for providing high-speed Internet services.

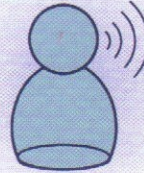
MSOs could say, "Why should we worry about this? Suppose the PC does come to play a major role in video. To use a PC for video, the consumer needs to subscribe to both our high-speed Internet and sub-

scription video services. The CableCard in a new PC is useless without a subscription to one or more of our premium services. We're working on providing a PC-based OCAP user interface (UI) to organize the video experience. We'll get all the revenue we have today and keep our user interface. What's the threat?"

The threat is incremental and over time. MSOs can't force their subscribers to use the PC's OCAP user interface. The Media Center UI has evolved and improved over several releases, and many other companies are developing media UIs. It's likely that the MSOs' control of the PC's video user interface will erode over time.

Many companies are already offering movies over the Internet, including the big studios and other aggregators. And many consumers have already taken advantage of movies offered through P2P channels. This will only expand as new home networks allow viewing on the big HD screen rather than on the PC screen. So the MSOs' pay-per-view and premium channel revenue will drop over time.

The entrance of the PC into the video world is a Pandora's box. It's starting to open, and the whole game will change.



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# Every Story

## Sandy Says: Deeply Ingrained Habits Don't Change Overnight



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*A telecom industry veteran, Sandy spent 18 years with AT&T before moving to the broadband world. She joined her husband Dave Waks in their consultancy, System Dynamics, in 1996 and has been focused on consumer broadband ever since. Sandy splits her time between consulting, co-writing a monthly report on new broadband developments, and being a Skype video-addicted grandmother.*



**Consumers are properly  
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**T**here are two major reasons — both related to human behavior — why video to and through the PC won't be a major threat to MSOs' video business any time soon. Consumers desire video quality, simplicity and ease of use. Their deeply-ingrained habits don't change overnight.

After shelling out big dollars to buy big screen HDTV sets, consumers want to see video on those screens right away. Getting an HD cable box makes it easy for them to relax on the sofa and enjoy the experience. If they're depending on a PC and the Internet as their main video source, they have to figure out how to get the video from the PC to the TV set. That requires setting up a new home network and buying digital media adapters.

Today's home networks based on 802.11g and HomePlug 1.0 have neither the bandwidth nor QoS required for video traffic. While the next-generation technologies promise sufficient bandwidth for multiple channels of HD with appropriate QoS, they have just started reaching the market. Past experience with new home networking products suggests that several years of experience will be needed for these technologies to fulfill their promises.

Digital media adapters, which provide the network connection to the TV set, have been available in the market for several years, but have had limited consumer adoption. Web reviews by consumers who have purchased these devices frequently complain about lengthy install times, erratic performance, frequent driver upgrades and poor customer support. They'll get better over time, but they're not ready for the mass market.

Internet video content is no match for cable. Although gobs of Internet video is available today, very little is HD and most is much lower quality than cable SD. That's fine for watching YouTube on your PC, but unacceptable for a movie on a 60" HD screen. ABC has started a beta test of its "high-defini-

tion" Internet-TV channel, but there are many caveats. ABC's video is compressed down to about 2 Mbps — OK for a PC display but not a large screen.

A "best efforts" Internet connection isn't adequate for high-definition video content. Without quality of service on the connection going to the home, the picture will experience degradation, including visible pixilation and other artifacts.

Finally, consumers are properly apprehensive about bringing their mainstream TV programming through PCs. I've recently seen Microsoft's "blue screen of death" on a number of public display screens (supermarkets, control systems in model homes, airports, hotels) based upon PCs and I'm sure my experience is not unusual.

Now let's look at the implications that come from the slow pace with which consumers change ingrained habits. There will be a long cycle during which only early adopters get the full panoply of services to their HDTV sets. They'll have to buy new PCs with TV tuners and CableCards, install next-generation home networks and digital media adapters, and select the fastest high-speed Internet connections. While they are doing these things, they still are paying the cable operator (or other broadband service provider) for their high-speed connection and video services.

High value video content will be slow to move to Internet channels because Hollywood has been burned in the music business with services like Napster and Kazaa. New P2P-based services like Joost and Babelgum don't have an established track record in content protection the way MSOs have.

Dave is right that the technology is all happening. But we need to keep reminding our "inner engineers" that just because something is technically possible, or that we could do it ourselves, doesn't mean that everyone will be doing it next week. If we see someone getting ready to eat our lunch, we'll figure out how to beat them to it.