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# Vision of Personal Computers as Heart of Home Entertainment

**By JOHN MARKOFF**

**S**ANTA CLARA, Calif., Nov. 15 - If [Intel](#) and [Microsoft](#) have their way, the personal computer will soon be moving out of the office and den into the living room, kitchen and bedroom.

The two companies have been thwarted for more than a decade by Hollywood, as well as the cable and satellite television industries, in their efforts to put a wired PC at the center of home entertainment. But now, competing directly against many companies in the consumer electronics industry, Intel and Microsoft are mounting a new charge to try to make the personal computer the hearth of the information age.

That vision is on display here in a faux teenager's bedroom just off the lobby at Intel's headquarters, where the sleek all-in-one PC has become part television tuner, part video game machine, part stereo jukebox, part DVD player, part digital photo archive - and the great hope of the nation's computer makers, who are looking for a bright Christmas sales rebound to help lead them to a longer revival.

"This is not your grandma's PC," said Louis J. Burns, the executive in charge of Intel's desktop computer division.

The arrival of the more flexible personal computers, Silicon Valley executives argue, is aimed at permitting the industry to make big inroads into the consumer market as digital television replaces conventional analog TV, a move that is expected to lead Americans to spend hundreds of billions of dollars over the next few years on things like new big-screen displays and home-theater-in-a-box sets.

"It will define a whole new category," said Jen-Hsun Huang, chief executive of Nvidia, a maker of PC video cards also based here. "In five years it will absolutely reshape the consumer electronics industry."

Leading the computer industry's invasion is a new device known as the Media Center PC, with a processor designed by Intel and software created by Microsoft. It was introduced last year, and new and improved versions are being marketed this season by personal computer giants like Gateway, [Dell Computer](#), [Hewlett-Packard](#) and [Sony](#).

Microsoft's chairman, Bill Gates, in a speech prepared for delivery on Sunday evening at the annual Comdex computer show in Las Vegas, underscores the company's Media Center strategy; Mr. Gates describes the idea of "seamless computing," emphasizing the importance of software to tie together different consumer and office systems.

The new machines are not just the biggest hope for a computer industry that has been plagued by flat sales and eroding profit margins. They are also the standard bearers for an all-digital crusade the PC industry is waging to break open the satellite and cable industries, undermine powerful consumer electronic giants and restructure both Hollywood and the recording industry.

But consumer electronics makers question whether the PC industry's grand vision is one that many Americans will want to embrace. Even family-friendly personal computers are still far more complex than today's home electronics devices, they argue.

Others challenge the PC makers' centralized "mainframe in the home" vision of the personal computer as a hub for controlling all of the data expected to be flowing into houses to provide information, entertainment and other digital services in the years ahead. Instead, they say that wireless networking will level the playing field by letting any electronic device communicate with any other, allowing the current cable and satellite providers of television signals to control not just how movies are viewed in the home but also to some extent how video games and music are played.

"The seminal change in the home hi-fi market is not whether the console will be replaced by the PC," said Andrew Lippman, associate director of the M.I.T. Media Laboratory. "The real change will be a home wireless network that will make it possible to put computer intelligence in every device."

And not surprisingly, many consumer electronics companies have a very different vision than Microsoft's and Intel's PC-at-the-center world view.

"PC's come in all sizes these days," said Rob Fish, director of the Panasonic information and networking technologies laboratory in Princeton, N.J. "The view that every application in the home will rely on one box, it seems, does not really match the way most people live their lives."

The new computers have yet to win widespread endorsement from digital content providers. Despite extensive additional copy protection features in the machines, Hollywood studios remain worried that the systems, because they are connected openly to the Internet, could lead to widespread pirating of movies and songs.

The campaign is also exposing fault lines within the industry and highlighting differences in strategy between Microsoft and Intel. Both companies, long joined at the hip in a symbiotic "Wintel" relationship, are jockeying for the upper hand.

Microsoft recently ended its dependence on Intel to provide processor chips for its Xbox video game

machine, entering into an alliance with [I.B.M.](#) instead. "The Intel-Microsoft marriage has plenty of cracks in it because they both want to be king," said a Silicon Valley chief executive who has done business with both companies.

Until recently, Microsoft's efforts to enter the home entertainment market have gone nowhere, in part because the products proved disappointing and in part because its prospective allies have rebuffed Microsoft's advances for fear of falling prey to the tactics that established its monopoly control over PC software.

Indeed, Microsoft has made repeated unsuccessful forays into the living room since 1982 PER MARKOFF, when it briefly introduced Modular Windows, designed for an interactive CD player. In 1993 it created a cable set-top box that failed to win adherents. And it has little to show for its \$425 million purchase in 1997 of WebTV, which the company has converted to its UltimateTV system.

Now, however, Microsoft and Intel think that the technology has matured to the point that they will be able to win over consumers and encourage their rivals to make peace.

So far, the computer industry's latest effort to move beyond the desktop PC market has not made a significant dent in the market. The new machines, which were introduced late last year at prices often twice as expensive as conventional PC's, captured 1.9 percent of all desktop computer sales in the United States in the 12 months through September, according to the NPD Group, a market research firm.

But the initial disappointment has not dimmed Silicon Valley's enthusiasm. Last month, Microsoft introduced a refined and more powerful version of the Media Center software and Intel has designed a new all-in-one system, with a built-in TV tuner, that is being sold by Gateway.

But skeptics within the personal computer industry question whether the Media Center PC's - with an average price, according to NPD, of \$1,367, compared with \$731 for a conventional PC - will ever really catch on, except with a tiny niche of the most upscale buyers.

Asked at a recent financial analyst conference whether [Apple Computer](#) would introduce a Media Center version of its Macintosh computer, Steven P. Jobs, Apple's chief executive, responded sarcastically, saying that it would make no more sense than Apple introducing a computer also capable of making toast.

"We're not going in that direction," Mr. Jobs said. "We've always believed that this convergence between the computer and the television wasn't going to work."

Microsoft's software designers disagree, arguing that they have cracked the code that will make television viewers comfortable with the idea of controlling a personal computer wirelessly from across the family room. They have already created a remote control with a green Windows start button intended to mimic the start icon in the corner of a Windows PC display.

"I would contend that the Media Center all-in-one approach is a lot simpler than the not all-in-one alternative," said Joe Belfiore, a Microsoft software designer who has led the development of the Media Center.

What Microsoft and Intel have yet to prove is that there will be significant consumer demand for the concept. Indeed, the notion flies in the face of the traditional consumer electronics industry, which has long been built upon modular products from multiple manufacturers that plug together.

Currently, most of the Media Center PC's are shaped like traditional tower PC's. Next month Gateway plans to introduce a computer in an "audio-visual" format that will make it easy to add the system to a standard home stereo or television cabinet. Industry analysts said that a number of Taiwanese manufacturers planned to introduce versions of the Media Center PC in a variety of home-friendly designs at the Consumer Electronics Show in January.

But as long as they remain considerably more expensive- and more complex - than other systems, Media Center devices face an uphill battle. Microsoft could lessen that price disadvantage if it decided to add Media Center functionality to its Xbox video game system.

Mr. Belfiore acknowledged that his E-Home division had been talking to Microsoft's Xbox executives about the idea of adding such features.

Such a move would be a dramatic shift for Microsoft, which has shied away from competing directly with its hardware partners.

But if it wants to keep up with Sony, which has just announced an all-in-one version of its Sony Playstation for the Japanese market called the PSX, it may conclude that it has no choice.

"Bill Gates," said Richard Doherty, president of Envisioneering Inc., a computer and consumer electronics consulting firm, "wants to have a PSX beater in the United States."