

## Tablet Offers High Risk, High Reward

Microsoft readies its mass-market pen-computing machine, but are Tech buyers interested?

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Microsoft distinguished engineer Chuck Thacker has taken enough stabs at building a super-PC that the customary high-tech hyperbole seems out of place when describing his current pet project--and Microsoft's latest big bet. For the past five years, Thacker has been toiling in Microsoft's research labs and product-development centers to craft the Tablet PC, a new kind of personal computer that Microsoft says could change the way users work with machines. Just as important, Microsoft says, its Tablet PC technology--a platform for building portable systems that communicate wirelessly and recognize users' handwritten notes, drawings, and dictation--could help re-invent user interfaces to all Windows software.

Thacker has been down this road before. In 1973, while at the Xerox Palo Alto Research Center, he helped build the Alto, the first system that used a bit-mapped display to render crisp WYSIWYG text and graphics, was networked via Ethernet, and made extensive use of a mouse. PARC researchers called the machine an "interim Dynabook," thinking it might be a bridge to what they envisioned as a personal, graphically driven system that users could tuck under their arms and take anywhere. "Interim has been about 30 years," says Thacker, who in the early 1990s worked on Digital Equipment Corp.'s Lectrice project, a pen-based PC that was never completed. "Some of us have been taking a run at this every eight or nine years for most of our careers," he says. "This time, it seems certainly possible that we have a winner."

If the Tablet PC succeeds, it could usher in a so-far elusive era of information sharing in which business users tote slate-shaped computers into meetings to jot down notes, edit documents and drawings by hand, then plug in a keyboard for desktop work. The Tablet PC is "the opportunity for Microsoft to go out to a lot of people who say the PC is too hard to use, and for the first time add a new graphical user interface," says David Ditzel, vice chairman and chief technology officer at chipmaker Transmeta Corp.

But the potential for failure is also high. The Lectrice, Apple Computer's Newton, AT&T's Eo, and Microsoft's own Pen Windows are just a few products on the pen-computing scrap heap. Hitachi, Fujitsu, and other vendors sell ruggedized tablet-style Windows computers, but they're bulky, aimed mostly at vertical markets, and sell only a few hundred thousand units a year. It's tough to tell how willing companies will be to spend the \$2,000 to \$2,500 per unit that Tablet PCs will cost, Microsoft says, especially at a time when most are cutting back their IT budgets. "We usually don't purchase version-one models," says Lynn Brenton, director of engineering systems at Lithonia Lighting, a subsidiary of Atlanta manufacturer National Service Industries Inc. She's excited about the Tablet's versatility but says, "we'd probably let it be introduced in a year, wait about six months, then put it in our budget."

Microsoft's market pitch at last month's Comdex trade show in Las Vegas was designed to pump more enthusiasm into customers. Chairman and chief software architect Bill Gates featured the Tablet PC prominently in his customary show-opening keynote address. The speech kicked off a year-long campaign by Microsoft aimed at showing IT buyers why they should consider opening their wallets for a largely untested tool. "Sending E-mail or working collaboratively on a document are instantly more productive and exciting experiences when you can take your PC just about anywhere," Gates says. "Microsoft is incredibly invested in the success of the Tablet PC."

Perhaps because so many of its partners also are invested in the project, Microsoft is sensitive to critics who doubt the company can deliver a mass-market, pen-driven computer after so many have failed. Adobe Systems, Autodesk, Compaq, Intel, and Transmeta are



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screen that covers nearly the entire surface area of the computer. Another concept features a convertible screen that flips up behind a keyboard as on a notebook PC, or folds back over the keyboard like a slate. All are scheduled to ship with built-in or detachable keyboards, and most will include 802.11b wireless network cards.



Gates (left, with group VP Jeff Raikes) featured the Tablet PC during his Comdex speech, kicking off Microsoft's campaign to convince tech buyers to open their wallets for a largely untested technology.

What Microsoft hopes will propel the Tablet PC from a high-tech curiosity to a mainstream business machine is a set of published APIs and a software development kit that let independent software developers tailor their applications to support Microsoft's digital-ink file format.

Adobe, Autodesk, Corel, Groove Networks, and Microsoft's Visio technical-drawing division are among those developing versions of their applications that could let users take notes, edit documents, and sketch simple diagrams using the Tablet's stylus, and then send these documents to users of traditional PCs, who presumably would be able to open them. "Microsoft will make a huge positioning mistake if this is viewed as a specialized information-gathering appliance," says Peter Kastner, an analyst at Aberdeen Group.

Gates concedes that "it's difficult to estimate exactly how quickly the Tablet will be adopted." But the Tablet PC's standard laptop components and ability to run Windows applications without modification "make it incredibly easy and cost-effective for any business to move from laptops to Tablet PCs," Gates says. By the end of 2003, Gates estimates one-third to half of "ultraportable" PCs sold will be Tablet PCs.

Not so fast, says Charles Smulders, an analyst at Gartner Dataquest. "I'm not that excited by the Tablet PC as a concept, but the technologies that underlie it could be powerful in a notebook," he says. PC sales growth won't rebound until the economy improves. Even then, replacement sales won't be as vigorous as when lots of new users were buying PCs--unless a "new, exciting technology" emerges, Smulders says. "It's very difficult to identify in the short term what that technology might be."

To present users as compelling a product as possible, Microsoft has set a list of requirements that systems vendors must meet. Besides running the Tablet edition of Windows XP, the machines must toggle between landscape and portrait views, include a digitizer that lets the stylus trigger menus by hovering above them, resume from standby in less than 2 seconds, and dock to

among more than a dozen vendors preparing their wares for the Tablet PC's planned launch in the second half of next year.

"We're definitely interested in the technology," says John Thomas, CIO at Parsons Corp., a Pasadena, Calif., engineering and construction company with 10,000 PC users. "Let's face it, the keyboard and mouse input is cumbersome." Thomas envisions field engineers, constrained by the small screens of their PDAs, carrying Tablet PCs to job sites to view drawings and on-site managers entering inventory updates on the fly.

But Parsons has been burned by other Windows-based tablet computers with clumsy interfaces and "pathetic" handwriting recognition, Thomas says. "Once the handwriting recognition is where it needs to be, most people would rather carry around these Tablet PCs instead of a notebook," he says.

Prototypes of the Tablet PC measure about 8-1/2 inches wide, 11 inches tall, and 1 inch thick. They weigh about 3 pounds and run standard Intel and Transmeta chips and a version of Windows XP Professional tuned to recognize input with a digital stylus on an LCD

A confluence of lower-energy electronics, software advances in displaying and repurposing text and sketches written with a stylus, cheaper LCD screens and high-density magnetic storage, and the proliferation of wireless networks helped launch the Tablet project 2-1/2 years ago. Gates says these trends will "transform the way people think about computing" as forcefully as low-priced memory and chips did during the desktop PC era.

Microsoft's ambitions for natural-language computing extend beyond the Tablet hardware. Gates says all Microsoft applications, including Office, will be able to read handwritten notes and annotations when Tablets PCs start shipping from manufacturers such as Acer, Compaq, Fujitsu, and NEC. Microsoft plans to release add-ons for Office XP that integrate digital ink support for annotations and E-mail, Gates says. "What we can do with digital ink is limited only by people's imaginations," he says.

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peripherals without powering down.

"I give Microsoft a lot of credit for having the fortitude to set some requirements," says Transmeta's Ditzel, who calls the Tablet PC "probably the biggest hardware collaboration we've done" with Microsoft. Transmeta's Crusoe chips power a batch of 200 or so prototypes built for Microsoft by contract manufacturer Flextronics Inc. The Crusoe TM5800--now running at 800 MHz--will most likely appear in Tablet PCs, Ditzel says. Intel will aim its low-voltage 700-MHz Pentium III-M chip and 830 chipset at Tablet PCs.

Making portable PCs run cool and efficiently has proven a tough engineering challenge, chip vendors say. Besides sporting battery-sucking LCD screens, the Tablet PC's wireless 802.11b connection--designed for desktop systems--costs users about half an hour of battery life, because it's continually pinging the network, which means Tablet PCs can't go to sleep the way conventional notebooks do.

"It's a fabulous technology, but you have to eat into your power budget to use it," says Donald MacDonald, director of marketing for Intel's mobile platform group.

Assuming its partners get the power kinks worked out, Microsoft still has only a short list of cooperative systems vendors. Compaq is the only major U.S. computer manufacturer committed to shipping Tablet PCs next year. "Our aim is to come out with an evolution of the notebook category," says Ted Clark, Compaq's VP for Tablet PCs. "It's been a while since anyone's said, 'We're going to target classic business customers with a new form factor.' "

The product could interest many of Dell's customers, but the company has no deal with Microsoft yet. Hewlett-Packard and IBM are uninterested. "Is there enough customer demand for us to invest heavily in this space? I don't think it's quite there yet," says Lara Kahler, HP's worldwide marketing manager for mobile PCs.

One challenge for IT buyers who are assessing the Tablet PC is that there's precious little hardware to see--and none to take home. That's partly because the prototype is a good development tool, but "not a very usable machine" for customers, says Leland Rockoff, Microsoft's Tablet PC marketing director. Microsoft plans to begin a test of Tablet PCs next spring.

It's going to take IT departments a while to warm up to the product, admits Microsoft Tablet PC general manager Alexandra Loeb. After all, the Tablet PC is more expensive than regular notebooks, and it introduces new ways of working that, while portending the future of personal computing, will definitely take some getting used to.

Meanwhile, ultralight notebooks are falling in price, and PDA vendors are packing more functions into their tiny packages. But some IT buyers are fed up with handheld computers' small screens and stripped-down functionality in business settings. They say the Tablet PC could fill a void.

"The industry thought we could download a lot of things to handheld devices, but there are a lot of applications that just aren't feasible on them because they're so small," Lithonia Lighting's Brenton says. She envisions running Autodesk's Streamline, an online collaborative environment for mechanical drawing, on a Tablet PC, and says the machine's flexibility could offset its premium price. "Everybody's cutting costs and watching their money," she says, but the Tablet PC's ability to function as a desktop, a notebook, and an on-the-go notepad means "we could put a good justification together." First, though, Microsoft and the PC industry have to deliver on long-promised technology.