# the Future of the Tablet PC
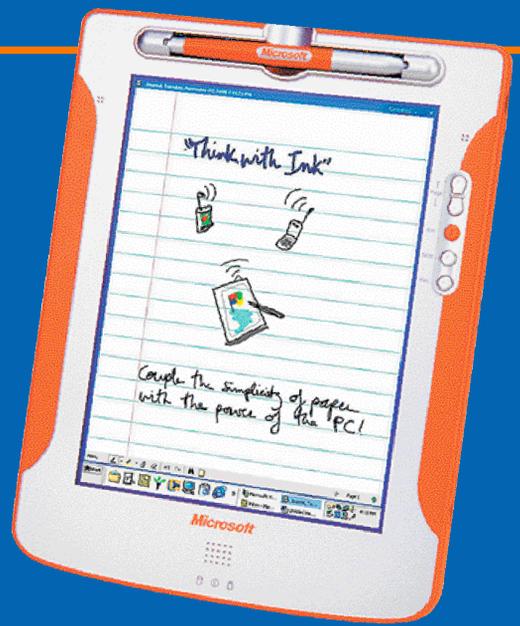
by Geoff Walker

It's very common to see the Tablet PC depicted in the media as an "unmitigated disaster" because current sales are less than 1% of laptop sales. This is simply wrong. From Microsoft's point of view, the Tablet PC is *not* a disaster. They were quite happy with the ~450K units shipped in 2003, and they'll be quite happy with ~800K units in 2004.

What's missing is an understanding of *why* Microsoft created the Tablet PC in the first place. It was *not* intended to be a "totally new mobile platform", regardless of what their public relations and ad agencies said. Those messages were just to get the product started. Already Microsoft's messaging is starting to move away from the theme of extreme portability towards mainstream usage of the pen.

Microsoft has a simple to describe but hard-to-achieve goal: add a third input device to the PC. Today the two primary input devices are the standard keyboard and the mouse/touchpad/pointing stick trio. But these devices aren't very good at certain things, such as (a) sketching, (b) annotating documents, and (c) taking digital notes without making noise. These three activities highlight the value of the pen. Without a pen, you can't do these activities very well, especially while mobile.

So, how should Microsoft go about add another input device to the PC? Just tell the PC OEMs (original equipment manufacturers) to add it like Firewire? It's not that simple. The pen needs software support from ISVs (independent software vendors). FireWire and most other new hardware additions don't need support from ISVs when the hardware first appears in laptops — OS support is often enough to motivate ISVs to get started. But without support for the pen in applications, it's not useful. This means that Microsoft can't just cram the pen down the OEMs' throats like they normally do with new hardware.

Pen pushers

As a solution to the problem, Microsoft created a mobile platform where the pen makes sense (the Tablet PC). The role of the Tablet PC is (a) get the world used to the idea of a pen on a personal computer, and (b) motivate ISVs to modify existing software and develop new software to take advantage of the pen interface. An example of the latter is Adobe Ac-

robat, often used in enterprise for annotation of documents. Acrobat doesn't currently support Microsoft's digital ink standard, but it will eventually.

Microsoft doesn't sell personal computers. They don't have any allegiance to any particular hardware form-factor. They don't care how many OEMs get burned creating new hardware platforms that never go anywhere. (Just think about the three generations of Windows CE hardware that were born and died before the iPAQ hit the sweet spot!) To Microsoft, the Tablet PC is just a means to an end. If the sales stay in the "few percent" range over the next few years, that's perfectly OK with them. They are gradually accomplishing their longterm objective. They take a *much* longer view of this than most people realize, especially the mainstream media. Reporters typically believe that if a new product doesn't take the market by storm and rack up more than 10% penetration in a year or two, it's a failure. With a consumer product such as the iPod, that's probably true. But the Tablet PC isn't an iPod. It's a different beast with a different purpose in life and a different lifespan.

The Longhorn piece of the pen puzzle
The next piece of the puzzle is Longhorn, the next major version of Windows. Today, to write a pen-enabled application you have to do special stuff — you have to use the Tablet PC SDK (software development kit). The pen isn't integrated into the OS, it's really just an add-on to Windows XP Pro. Longhorn changes that situation drastically. Take a look at an architecture diagram of Avalon (Longhorn's presentation subsystem) and you'll see that the pen (digital ink) is fully integrated

everywhere. When Longhorn is released at the end of 2006, there will no longer be a separate Tablet PC OS because it won't be needed. Microsoft believes that the four years of Tablet PC hardware development (2002-2006) and the steadily increasing number of pen-enabled applications from ISVs will pre-dispose the market towards accepting the pen in Longhorn. After all, if the pen is totally integrated into Longhorn, and if OEMs know how to build a pen into a laptop (which they will have

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been doing for four years), why wouldn't both ISVs and OEMs seriously consider how & where their Longhorn-based products can take advantage of digital ink?

By the end of 2009 (three years after the Longhorn launch), Microsoft expects that the percentage of standard laptops that incorporate a pen in some form will be somewhere between 25% and 50%. There won't be any "convertible Tablet PCs" in 2009 because a laptop with a pen will be

a mainstream product. That's not to say that all laptops will become convertibles, not at all. Consider that if all you need to do is sketch and annotate, why not have your laptop screen open 180 degrees and lie flat on the table? If the laptop has a wide-angle screen (160 degrees all around), using the pen is perfectly OK for short periods of time with the laptop flat on the desk. That's one of the reasons that Microsoft is pushing the LCD vendors and OEMs so hard towards wide-angle screens.

End of 2002 to end of 2009 — that's seven years! Do you see why I say that Microsoft is taking a very long-term view of the Tablet PC? And why I say that the Tablet PC is *not* a new form-factor, but instead simply a vehicle to help drive the pen into all PCs?

Why does Microsoft care about the pen?
Why does Microsoft care about adding the pen as a third input device in all PCs? Listen to some of Steve Ballmer's speeches and you'll hear him say, "We want people to use the PC 16 hours a day!" He doesn't mean sit in front of a screen for 16 hours, he's talking about integrating the PC (in many different form-factors) into every aspect of life. In the office, in the car, in the living room, in the recreation room, in bed, on the road, on your wrist, in your pocket, everywhere. What's missing that's needed to enable this integration? Actually, many things, including OS reliability, simplicity of operation, solid security, and so on — but that's a different story. What's also missing is "more input devices". You simply can't do everything with a keyboard and a mouse if you're going to com-

pletely integrate the computer into your life. Pen and speech are two critical input devices that Microsoft has been working on for many years. Speech is coming along well, but it will still be 5-10 years before it meets the average user's expectations. Pen is much closer to being ready. There are still some issues, such as the cost of the required active digitizer, but Microsoft is working hard at solving those problems — for example, by pushing other digitizer vendors into the market, to break up Wacom's current monopoly.

The stylus will not replace keyboards

Most computer reporters and pundits see handwriting recognition as the key aspect of the pen They often write about "doing away with the keyboard and using the stylus for input", assuming that PC use will be based entirely on handwriting recognition. That's *not* Microsoft's vision or goal. The pen is *not* a replacement for the keyboard, and it will never be. Handwriting recognition is steadily improving, but it's still nowhere near accurate enough, fast enough, and easy enough to correct. Nobody will consistently use the pen instead of a keyboard, except in two special situations. The first is taking notes in a meeting when it's rude to use a keyboard. The reason for using a computer rather than paper in this situation is simple: take the notes in digital form so they can be searched later. It's not necessary to explicitly convert them to text — after all, how often do you transcribe notes from your spiral notebook into Word? Probably less than 10% of the time. As long as your notes are searchable (via the "magic" of background recognition, of

which the user is unaware), that's all that's needed. Wouldn't you love to be able to search the notes in your last ten years' worth of spiral notebooks? I certainly would!

The second situation is when you're surfing the internet on the couch, reading in bed, or using the computer in any other non-
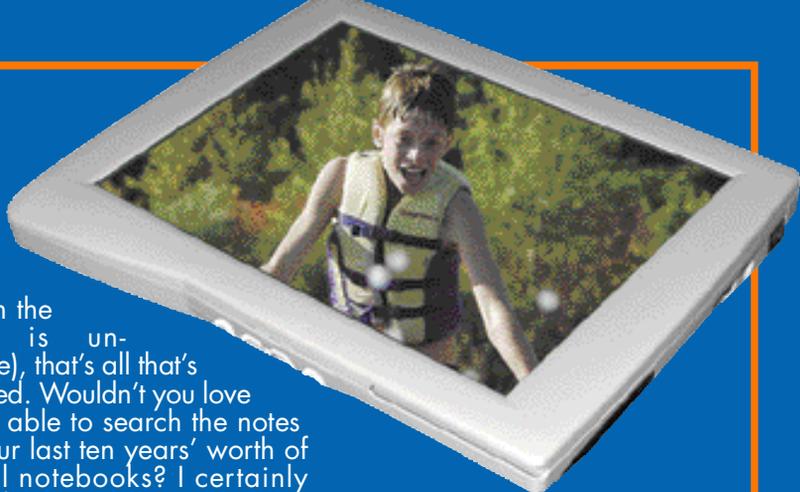
> "WHEN LONGHORN IS RELEASED AT THE END OF 2006, THERE WILL NO LONGER BE A SEPARATE TABLET PC OS BECAUSE IT WON'T BE NEEDED.

traditional situation. If you need to enter a URL, write the name of a file in which to save some sketches, or scribble a very short handwritten email or instant message, the pen is more convenient than the keyboard. This activity uses explicit handwriting recognition, and it must work very well for users to accept it. But it is not replacing the keyboard. It's just a convenience for when the keyboard isn't readily available or convenient

to use. Look at Microsoft's ads on the Tablet PC. You won't see much mention of handwriting recognition. You'll see lots of mention of digital ink, which is what the pen is really all about. Sketching, annotating, and note-taking are three of the most important applications for the pen. I'm talking about horizontal users (knowledge workers and consumers) here, not today's vertical users such as nurses and insurance claims adjusters.

"Tablet monitor"

So far, the Tablet PC has been the only form-factor on which Microsoft would support a pen. But they recently and quietly announced that OEMs can now sell the Tablet PC OS on a desktop computer, as long as the desktop includes a monitor with an integrated active digitizer (a so-called "tablet monitor"). If you look at the big picture, this makes sense. It's just another step on Microsoft's path towards integrating the pen into all PCs.

In summary, the Tablet PC seems to be an experiment with the PC form-factor, but it's really not. It's a vehicle for introducing the pen to the personal computing ecosystem. It's one step on a 7-to-10-year journey towards adding the pen as a third input device in all PCs. ✐

–Geoff Walker