First Look: Acer TravelMate TM100 with Windows XP Tablet PC Edition

by Conrad H. Blickenstorfer

The term "Tablet PC" needs explanation. It refers to a pen/ink-enabled version of Windows XP running on slate or notebook hardware that loosely follows Microsoft's recommendations as to what such a device should and should not be. Is it more than just Pen Extensions III? That depends on your expectations.

On June 4th and 5th, a small group of journalists participated at a Microsoft Tablet PC Reviewer's Conference in Seattle. Although Microsoft has been promoting the Tablet PC concept for almost two years, this was the first time that the press was given working Tablet PC prototypes with beta versions of the Tablet PC software. The actual hardware/software combination consisted of an Acer TravelMate TM100 "convertible" notebook loaded with Windows XP Tablet PC Edition.

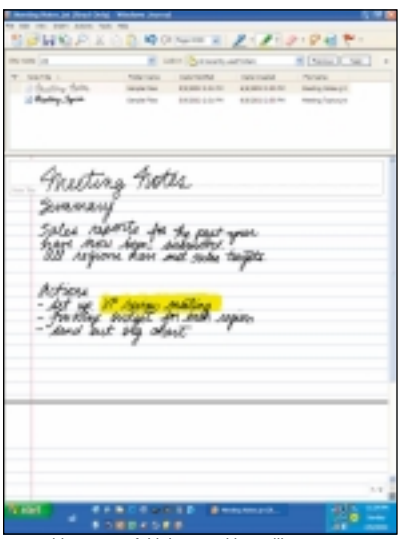
Pen Computing has reported in detail on the Tablet PC concept in the July 2001 issue and then again in a special Tablet PC insert in our May 2002 issue. During that time the Tablet PC has undergone many changes and revisions. What initially began, at least in my opinion, as another attempt to create a true slate with an optional external keyboard morphed into something different, a mobile computing device that may come in different forms and shapes, and whose primary focus is the use of "ink" as a new data type. There has been significant discussion among the staff of *Pen Computing* about the meaning of this shift. I personally believe that Bill Gates really did want a "pure" slate and that it was the practical-minded factions within Microsoft, and perhaps resistance among hardware partners, that eventually morphed the concept towards a more conventional form factor. One interpretation of this morphing is that, given the past failures of pen slates, the teams got cold feet and chose to play it safe, resisting efforts to create a true pen slate. Another interpretation is that Microsoft's Tablet PC group concluded that the project was really about adding ink and the pen to the mainstream computing arsenal while leaving the decision about form factors up to OEMs and the buying public.

Be that as it may, we now have had a chance to take the "Tablet PC" for a first test drive. Thanks to the move to a form factor-agnostic approach, the term "tablet" is definitely relative as the little Acer TravelMate notebook is not a tablet but a "convertible" that can function both as a standard notebook and also as a pen tablet. It accomplishes this transformation with a display that swivels 180 degrees, then folds down flat on top of the keyboard, LCD side up. While the Acer is a competent piece of hardware, this article is not a review of the little transformation artist. For that, see the sidebar piece on page 46. Rather, it describes my first impressions of the look and feel of Microsoft's "Tablet PC," or to state it one more time, the Microsoft Windows XP Tablet PC Edition running on a piece of hardware that represents one of several form factors designed for this extra-feature version of Windows XP. The inclusion of notebook form factors has definitely made it more difficult to figure out what to call the combo. After all, I am not calling my IBM ThinkPad a "Pro PC" just because it is running Windows XP Professional.

To put it bluntly, those of us who have been around the pen technology scene for a while may have a hard time not comparing the XP Tablet Edition to Pen Services I (1991) and Pen Services II (1995). Microsoft claims much better integration this time around. That may well be so, and the Tablet PC edition deserves an unbiased evaluation. So here is what you can expect from a computer running the new version of XP.

All of Windows XP, and more

To start with, you can use the Acer TravelMate like any other Windows notebook. In fact, if you didn't know this was a "Tablet PC," you would simply boot up Windows XP and use it like a standard computer with Windows XP. That's because the Tablet PC Edition has all the features of Windows XP. You do not have to make any compromises and you can use it like any other version of XP. If you did so, of course, you'd miss out on some pretty terrific new functionality, functionality that indeed may eventually change the way computers are being used. That's because the Tablet XP Edition adds ink as an integral data type. You don't have to use it, but if you do it brings a whole new dimension to what you can do with Windows, and with a computer. Ink is available in a special utility called Windows Journal. It is also available to various extents in Office and most Windows applications. Also present is that powder keg of pen computing, handwriting recognition. Microsoft is to be congratulated for being brave enough to include it as it represents an almost surefire invitation for a trashing by the mainstream press. This is why Microsoft played it low-key when it added the Transcriber recognizer to the Pocket PC. Transcriber wasn't actually installed in the first generation of the Pocket PC and it wasn't called



Journal is a powerful ink notetaking utility

a handwriting recognition engine. It was quietly included on the Pocket PC CD-ROM and many people never knew it was there. I couldn't have blamed Microsoft for taking the same approach with the recognizer in the Tablet PC Edition.

So let me tell you what's actually different in the Tablet PC edition. You start with standard Windows XP Professional. On top of that you get an *Input Panel* that toggles between an on-screen keyboard and a handwriting input area, *Windows Journal* to work with ink, and the ability to use *ink* in various Windows applications. In addition, you also get *speech input*, which we'll get into in a future article.

Windows Journal

Journal is an ingenious utility (really an application, though Microsoft doesn't call it that) which lets you write notes in beautiful ink. I say beautiful because this is not the jerky, ugly ink strokes recorded by older tablet digitizers and older software. Tablet PC ink looks more like calligraphy. You can select different "pens" with different widths. There is also a highlighter and an eraser, and your ink can be any color you want. A lasso tool lets you select ink. It is always completely obvious what was selected and what was not. For people who miss the old paper notepad, yet also want to take advantage of the power of a computer for storage, searching, and communication, Journal is a boon.

It is important to realize that Journal is meant to be a notepad for electronic ink and *not* an ink processor. Predecessor technology to Journal did use the ink processor approach where words would wrap and where you could place the cursor between words and insert more ink. Microsoft deliberately departed from that approach in favor of a more paper-like interpretation of ink—ink that stays put unless we erase it. That is not to say that you cannot manipulate the ink to some extent. You can insert space between lines of ink text. You can also scale ink and change its color. Finally, you can have ink recognized and converted to text that then either replaces the ink or is sent to the clipboard.

Do use the recognition feature, you write something, then select it and use the "Convert Handwriting to Text…" You then see what the recognition result is. If something is wrong, you click on the word. A very small green angle shows up. Tap on it and a list of alternates shows up. If none applies, you can either delete the word or rewrite/respeak it. At first sight, the Text Correction panel seems to lack some simple edit functionality, like erasing or adding words and such. However, you quickly find that you can actually edit in several ways: via the Acer's physical keyboard, via the Input Panel both in recognition and keyboard

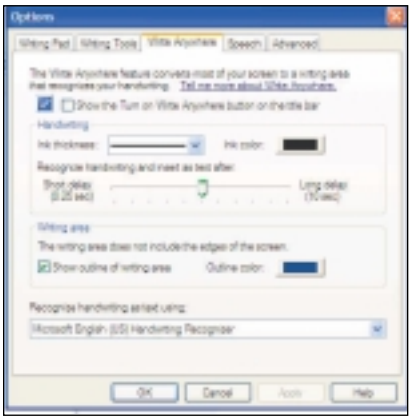
modes, and via write-anywhere recognition. Correcting in ink is a different issue. You cannot add horizontal space between two words in ink (as you did in the predecessor technologies), so you cannot simply place the cursor between two ink words and add a word. You can, however, select ink and move it, then insert new ink. There is no doubt in my mind that Journal may be a revelation to some people, especially when used in conjunction with the utility's ink search and sorting features.

The Input Panel

Entering data into the Tablet PC Edition can happen in several ways: keyboard, onscreen keyboard, or handwriting recognition. The latter two are done via a special Input Panel that in many respects is the center piece of the Tablet PC Edition's user interface. You can open the Input Panel conventionally by launching it, or you can "shake" the pen left to right a couple of times. This is convenient, but not entirely obvious.

The Input Panel works either in pen or keyboard mode and is heavily customizable (see screenshot). You can play with basics such as pen width and color, size of the input window, number of lines for data input, time between lifting of the pen and the start of recognition, and so on.

The much maligned handwriting recognition works amazingly well. I was not initially a fan of the Input Panel method, especially when it looked like this was going



A control panel lets you finetune recognition and ink

to be the only way to use the recognition engine. The final version does allow writing into the Input Panel, write anywhere, or both at once. "Write anywhere" actually means writing inside a box that shows up, but you can alternate between anywhere and writing in the input panel. That box can be a bit annoying as it sits on top of whatever else is on the screen. Go outside that box and there is no recognition. Another thing that is a bit distracting is a horizontal line that acts as a guide to help you write horizontally, thus making the recognizer's job easier. I wish you could turn those lines off. My handwriting is not particularly nice and I do mix printed and cursive. I do, however, follow a few basic common sense rules for handwriting recognition. I was easily able to write 20 words or so all over the screen and it recognized every single one of them.

Handwriting Recognition

As you can tell, handwriting recognition plays a rather prominent role in the Tablet PC edition. Which means it'll be a highly visible target for criticism. That became evident right from the start during a tutorial session on how to use the Tablet PC software at the conference. Only minutes into a demo of Journal, a reporter for a leading business weekly loudly complained about handwriting recognition errors and demanded to know the engine's recognition accuracy—a question which, of course, does not have a definite answer. Another popular columnist chimed in with cynical questions and commentary. Even I wondered why the demo of this ink-based application was so heavy on recognition, with the predictable results: trashing by the mainstream press. Microsoft staff, unfortunately, had unwisely raised expectations by repeatedly stating that they had *the best* recognition available today. The conclusions drawn by those mainstream journalists, I suppose, was that if the best could not handle their scribbling, then the technology is not ready for prime time. I must say that the recognition *is* the best I have ever seen, and that the recognizer worked extremely well for me. What it boils down to is that in order to make a recognizer work for you you must learn how to use it. A bit of practice and observing a few simple rules is all it takes to greatly increase accuracy. Of course, if you simply want to prove that it does not work, then it won't.

ACER TRAVELMATE TM-100

Acer's ultraportable TM-100 notebook has the distinction of being the first hardware available to get a feel for Windows XP Tablet PC Edition. Is the little Acer a compromise or a viable notebook with extra functionality?

The Acer TravelMate TM-100 is a convertible Tablet PC. As such, it's really just an ultraportable notebook with additional capabilities that allow the use of Windows XP Tablet PC Edition. (Generally, products in the "ultraportable" notebook class have a single disk drive, weigh around three pounds, are around an inch thick, and have a 10" or 12" screen.) The three key additions to the hardware in the TM-100 beyond a standard ultraportable notebook are a rotatable screen, an electromagnetic digitizer and programmable buttons on the screen bezel.

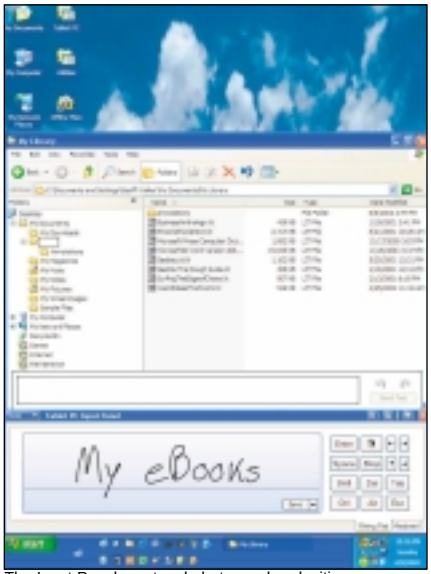
Before we get into the additions, let's take a look at how the base TM-100 stacks up against comparable ultraportable notebooks. The table on the next page lists the specifications for the Acer TM-100, the Fujitsu B-Series, the HP (formerly Compaq) Evo N200 and the Sony VAIO SRX77. As you can see from the table, the four products are very similar. The TM-100 has the following relatively minor differences from the Fujitsu B-Series (the closest match):

- Simultaneous LAN, 1394 and WiFi instead of just one of the three
- Longer battery life instead of an optional extended battery
- Lower performance graphics controller
- Dedicated smart card (one less available PC Card slot)
- No stereo line-in jacks
- No port replicator
- No legacy ports (serial, parallel or PS/2)
- A touchpad & scroll button instead of an eraser-head & touch screen
- 0.3 pounds heavier (due mostly to a larger battery)
- XP Tablet only instead of a choice of XP (Pro or Home), 2000 or 98
- One-year warranty instead of a three-year warranty

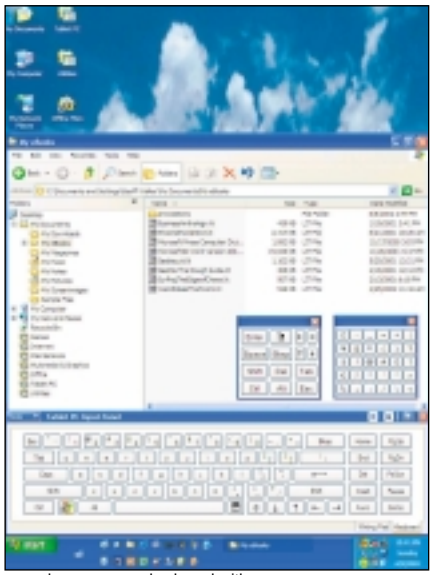
Many of these differences are due to small design tradeoffs between size, weight, battery life, performance and cost. Looking at the other two notebooks in the table, you can see that each of them employs a slightly different set of design tradeoffs – yet the four products are still very competitive within the ultraportable class. Choosing between them (without considering the additional functionality of the Tablet PC) is a matter of deciding which details matter the most to you.

Now let's look in more detail at the hardware additions that turn the TM-100 into a Tablet PC. The rotatable screen is the heart of the convertible. To convert to tablet mode, you (1) push in on the screen latch and open the screen to between 85 and 95 degrees, (2) push to open the spring-loaded latches on each side of the screen, (3) rotate the screen 180 degrees clockwise (only), (4) push to close the latches on each side of the screen, (5) close the screen face-up over the keyboard, and (6) slide the screen latch to the "tablet position" to secure the screen to the body. This sounds like a long process, but after you practice it a few times, it only takes about seven seconds.

On the pre-production TM-100 that I was given to review, the rotatable hinge has some free play that makes it feel less than totally durable. In the open-and-close direction, the hinge feels just as solid as any other notebook hinge. But because the screen is supported on a single hinge in the center of the product rather than the usual pair of hinges, there's about 0.1" to 0.2" of free play (depending on the screen position) in the side-to-side rotation direction. Acer says they've done extensive robot testing of the hinge mechanism for up to 30,000 cycles, well beyond their standard hinge spec of 18,000 cycles. Rotating the screen 24 times per



The Input Panel can toggle between handwriting.....


... and an onscreen keyboard with pop-ups

Other uses of ink

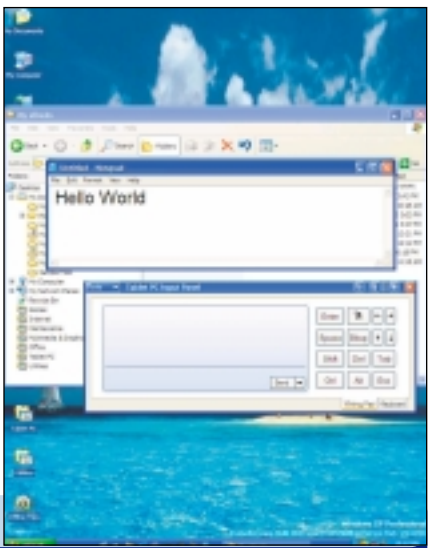
Ink is available in other parts of Windows as well, and especially within the Office suite. In PowerPoint, for example, you have a small seven icon toolbar: pointer, pen, highlighter, eraser, selector, forward and backward. This allows you to annotate slides during a presentation. You can write while you explain something, highlight areas, select that text, and also use the pen to advance the slide show. At the end, you are given the option of saving the ink annotations or deleting them. Other applications also allow annotations and inclusion of ink to varying degrees. We'll report on that in more detail in a future article.

Where is the Tablet PC going?

So that's the first hands-on with the "Tablet PC," whatever that may mean. The results are inconclusive and pretty much everything is still in flux. The whole project may eventually yield a new generation of actual tablets, or it may simply add ink to notebooks. Which may not be bad. All we can say right now is that the Acer worked well with the new software. We did run into the usual bugs and glitches you'd expect from beta hardware and software. No need to go into that because most will be fixed by the time final versions become available.

By far the most important question is what the "Tablet PC" will eventually become. At this point it is almost certain that the majority of Tablet PCs won't be slates, but notebooks with a degree of pen functionality. None of the ink-enabled software I've seen so far is compelling enough to qualify as a "killer app." It is entirely possible that there is no Tablet PC killer app, and that the success (or failure) of the concept will depend on a combination of factors and abilities that,when combined, can make for a more compelling user experience. Some of those factors and abilities are ink, low weight, long battery life, no heat build-up, quick and reliable standby, public acceptance and software support, ease of integration, low cost premium, the evolution of wireless LANs, discovery of untapped markets. You get the idea.

It's simply too early to tell if this is a great new thing or just Pen Extensions 3.0.



day, five days per week, 50 weeks per year for three years adds up to 18,000–more than even the heaviest user will experience in the typical three-year life of a notebook.

The electromagnetic digitizer in the TM-100 is made by Wacom. The primary characteristic of all electromagnetic digitizers is the ability to "hover," or move the cursor without actually touching the screen. The TM-100 comes with two battery-less electronic pens. The first is a PDA-size (0.22-inch diameter) "emergency" pen that is housed in the edge of the screen bezel. The second is a "regular-size" (0.35-inch diameter) pen that does not have a permanent storage location. Both pens have barrel (side) buttons; the default function of the button is right-click (the pen tip is left-click). The regular pen also has an "eraser" (a second electronic sensor) in the top of the pen. The feeling of the pen on the screen is much too slippery – it's like writing on ice, not at all like writing with a ballpoint pen on paper. Acer says they're going to work on adjusting the feel to give more writing resistance.

There are five buttons on the lower right corner of the screen bezel. The first button is dedicated to CTRL-ALT-DEL. This is required for security because it might be possible to spoof (hack) the on-screen keyboard, but it's impossible to spoof a hardware button. The second button is a "Function" button that allows modifying the action of the three remaining buttons. The default functions of the three remaining buttons are Up, Down and Enter. The default modified functions are Rotate Screen, Esc and Tab. Each of the three programmable buttons can be set to any of 23 different functions, ranging from controlling speaker volume to launching an application to playing back a recorded sequence of keystrokes. The buttons can even be assigned different functions based on the screen orientation. This functionality is so handy that you quickly find yourself using the buttons even when you're in notebook mode.

From a purely hardware perspective, this is a fine little notebook. If your mobile computing needs fall into the ultraportable notebook class, this will definitely be a product worthy of serious consideration. When you add in the Tablet PC capabilities that give you a whole new way of working with your PC, it becomes even more attractive. *–Geoff Walker*

Acer TM-100 vs. Other Ultraportable Notebooks

Specification	Acer TM-100	Fujitsu B-Series	HP Evo N200	Sony VAIO SRX77
CPU	P-III 700 MHz	P-III 700 MHz	P-III 700 MHz	P-III 800 MHz
Max Memory (MB)	256	256	192	256
LCD	10.4" XGA	10.4" XGA	10.4" XGA	10.4" XGA
Graphics Controller	Silicon Motion Lynx3DM	ATI Rage Mobility	ATI Rage Mobility	Integrated Intel 815EM
Graphics RAM (MB)	8	8	4	11 (shared)
HDD (GB)	20	20 or 30	20 or 30	20
Slots	1-PC, 1-Smart Card	2-PC[1], 1-Smart Card[1]	1-PC	1-PC, 1-Memory Stick
Ports	2-USB, 1-1394 1-VGA, 2-Audio, IrDA	2-USB, 1-1394[2] 1-VGA, 4-Audio, IrDA	2-USB, 1-VGA 2-Audio, IrDA	1-USB, 1-1394 1-VGA, 2-Audio
Port Replicator	No	Yes	Yes	No
Legacy-Free	Yes	No	No	Yes
Modem & LAN	Yes	Yes[2]	Yes	Yes
WiFi (802.11b)	Embedded	Embedded[2]	PC Card	Embedded
Battery Life (hours)	3-4	2.5	2.5	4-6
Battery Technology & Size (watt-hours)	Li-ion, 26.6	Li-ion, 19.4	Li-polymer, 17.8	Li-ion, 35.5
Extended Battery	No	Yes	Yes	Yes
Pointing Device	Touchpad + Scroll Button	Pointing Stick (Eraser-Head)	Touchpad	Touchpad + Jog Dial
Digitizer	Electromagnetic	Touch	None	None
Screen Rotation	Yes	Optional Download	No	No
Keyboard Spacing	92%	89%	90%	90%
Launch Buttons	4	4	4	None
Housing	Plastic	Magnesium + Plastic	Magnesium	Plastic
Dimensions (in.)	9.9 x 8.2 x 1.2	9.9 x 8.5 x 1.3	9.9 x 7.8 x 0.8	10.2 x 7.7 x 1.1
Weight (lbs.)	3.2	2.9	2.5	2.8
Operating System	XP Tablet	XP Home or Pro, 2000, 98	XP Pro or 2000	XP Home or Pro
Warranty (years)	1	3	1	1

(1) The removable smart card reader occupies one PC card slot
(2) LAN, 1394 and Wireless LAN are all mutually exclusive (there can only be one)