tools of the trade

HP Compaq tc1100

Reading, Writing, and Computing

The **HP Compaq tc1100** combines a full-function PC with the pen-and-paper convenience of a tablet PC. Running on Windows XP Tablet PC Edition, the tc1100 is compatible with industry-standard software and hardware as well as legacy applications. Handwriting and voice-recognition functions give you two other ways to enter, access, and manage information. You can also draw pictures, sketch, or annotate documents that can be shared with others using the digital ink capacity. The digital pen doesn't need batteries, is wireless, and supports pressure-sensitive applications. There are several options for connecting to networks or other computers including Intel Pro Wireless 2100 network connection (802.11b wireless LAN), integrated Bluetooth (PAN), and in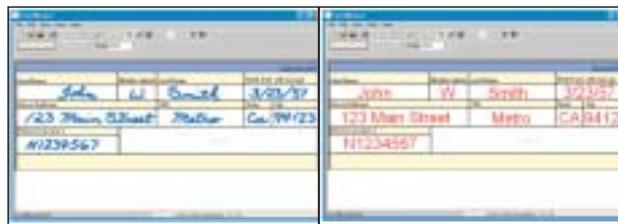frared (VFIR). As a tablet, the tc1100 weighs just 3.1 lbs. and is about ¾ of an inch thick. The display is 10.4-inch XGA TFT with improved sparkle-free glass that offers a 160-degree viewing angle. It has 256MB or 512MB SDRAM upgradable to 2 GB. The case is durable magnesium—light enough to hold like a book, sitting or standing. http://h18000.www1.hp.com/products/tabletpc/

The **riteForm™** program is handwriting recognition software from **Pen & Internet, LLC**, designed specifically for filling out forms longhand on a computer. The recognition engine is lightweight enough to fit on a Pocket PC, Windows CE 4.X tablets, tablet PCs, or electronic pen and paper, so forms can be filled in away from the desk or in the field. The form is already in electronic format, eliminating the need for document scanning, storage, and transmission. The recognition is third-generation and is available in English and German with other languages in development. Because forms often require anticipated entries, there's a riteForm Lexical Utility in the riteForm Local SDK so you can build custom lexicons from lists of words. Unlike most graffiti-type recognition engines, riteForm recognizes cursive, print, and mixed cursive-and-print handwriting. It will recognize nonvocabulary words and arbitrary combinations of letters such as abbreviations often used on forms. Recognition is improved with instantly available drop-down lists of alternative words. Information and demos are available at www.penandinternet.com.

The **SMART Board™** interactive whiteboard from **SMART Technologies, Inc.**, is available in a number of configurations providing large computerized displays. The Front Projection model can be hung on the wall or rest on a floor stand. Its screen is 47 × 60 inches with a 72-inch diagonal. There are also rear projection and plasma display models. The boards are fully computer-interactive because of DViT™ (Digital Vision Touch) Technology, which makes the displays touch-sensitive, reacting to a finger, stylus, or pointer. You can press on the board's surface to control any computer application or multime-

riteForm™ for Handwritten Forms

Writing on the Screen ◆ Michael Castelluccio, Editor

■ A FEW YEARS AGO, the "Computers Everywhere for Everything" march ran into a wall, and it's been pretty much stalled since then. The obstruction is constructed of two kinds of stone—complexity and the interface—and very little progress has been made trying to pull the wall down.

Actually, in the beginning, computers required that you converse with them in their language, so you memorized a long list of machine-friendly instructions. Remember DOS and the line-by-line dialogue you typed? The instructions weren't even English; you were typing lines like *copy c: my file.txt a:*.

And then along came the Xerox PARC invention that should have changed it all—something the researchers called windows. Along with Doug Engelbart's ingenious pointing device, the mouse, we now had a visual metaphor that should have made life and computers simple enough for anyone who wanted to use one.

That was then. Take a close look at any windows-type program today. In the middle of the screen is the main work area, but what's that above and below and maybe even squeezing in from the sides? Stacks of toolbars and boxes, each divided by numerous buttons, many with their own drop-down lists subdividing sideways into other lists. And that button on the far right—the one that says *Help*—the one that really should have an exclamation point—that button will open an encyclopedia-size book to help you navigate this window that looks out over a digital Sargasso Sea.

There seems to be a rule: To upgrade a program, you should add to it. The consequence is a creeping complexity that has reached a tipping point in some software. There probably should be another rule: If you need a three-credit course to be able to use a *continued on next page*

dia, such as CD-ROM or the Internet. Notes written on the surface can be saved to a computer file, and handwriting recognition will save notes into PowerPoint software. SMART Board software is available in a variety of languages, and Version 8.0 features a new XML-based, cross-platform file format for Windows, Macintosh, UNIX, and Linux operating systems. SMART has a group of allied technologies including multimedia cabinets (Expression™), whiteboard cameras (Camfire™), interactive lecturns and integration modules (Sympodium™), and projector mounts for meetings or classrooms (LightRaise™). More information is at www.smarttech.com.

PAGESCAN III from **Peripheral Dynamics Inc.** (PDI) is a full-page image scanner that combines high speed and sharp images in 8-bit grayscale. The PAGESCAN III uses a high-speed USB 1.1 or 2.0 connection, and it scans documents at 17 ips (inches per second). It automatically transports and scans documents forward and reverse (bi-directionally) from a full-page size (A4) down to forms only 3.25 inches wide × 3.0 inches long. A high-density thermal brander is available as an option. The 8-bit grayscale uses 256 tones of gray. It can also capture and

PAGESCAN III

decode optical mark-sense (OMR) data as well as bar-code data. Enhanced images result as the scanner minimizes sensitivity to document creases and folds. The device is modular and designed to fit as an OEM assembly into a terminal enclosure. It has increased document clearance to avoid jams and a hinged, spring-loaded top plate to make the paper path easily accessible. You can visit www.pdiscan.com for additional information, or call (610) 825-7090.

SMART Board Display

program, get a different program.

The second kind of stone in the wall is the result of the input device used by computers. Typing is what you do at work. At home and elsewhere, you talk, write, and push buttons on the machines you use.

So how do we remove these two impediments so we can finally get to ubiquitous computing? Well, if you really want to, the solution would require that you simplify programs and find a better input device.

Decide what the core function of the program is, and then take away everything that isn't essential. Sort of what a sculptor does, removing the extraneous from the block, or what Palm Computing did when it started. And then we need a better input.

The most natural information sharing/storage medium we have is language, so the choice we have for best input would be speech, writing, or the printed word. We already rely on the last of these with keyboarding. It's okay for work, but it stands in the way of the average user in other circumstances.

Talking to computers is gaining acceptance in automated help over the phone, but even though your desktop can be taught to listen to you, relatively few people use speech-recognition software. There are a number of reasons for this. First, the better programs require fairly powerful computers to work well. Second, some people feel the situation is a little awkward or strange—talking out loud to a machine. Perhaps as our telephones morph into real computers powerful enough for speech recognition, this might change.

So that leaves us with handwriting.

Nokia Digital Pen

Not a bad technology, really. Beginning in the West with the Phoenician alphabet some 3,500 years ago, it has caught on nicely, and there are few places where you'll find people with absolutely no access to paper and pencil or pen or marker.

Written History

The first broad experiment that had humans writing on computers was the Apple Newton. The original handwriting recognition engine for the Newton was called Calligrapher, which was licensed from the Russian company Paragraph International.

The Newton was a brilliant idea that proved to be ahead of its time, probably for two reasons. First, the device cost $1,000, and, second, Calligrapher had to learn how you wrote. If someone else wanted to try it, and everyone did, their scribbling undermined what the device had learned from you.

Ultimately, the Apple Newton fell from the tree and just rolled away out of sight. The handwriting system for the Newton 2x00s ended up on the Mac OSX v.10.2 and is now called Inkwell. The CalliGrapher program also survived the experiment and is currently offered in v.7.2 for use on Pocket PCs (www.paragraph.com/ calligrapher/).

The version of the Newton idea that finally caught on, the Palm handheld, used a simpler writing recognition called Graffiti. It limits you to printing on the bottom of the PDA screen, and, although it's very efficient and won't get confused if you lend the device to someone else, it can't recognize cursive handwriting.

In school we learned to print first because it's easier. But the cursive we learned in later grades is faster, more

ornate, and more personalized. As with children, it's also harder to teach a computer to read cursive. The computer needs fuzzy logic to make accurate guesses and a compact engine that will fit on the small computers.

Today there are a number of industry-specific tablet PCs as well as the generic Tablet that is intended to run Windows XP and replace laptops for many users. You can write on these computers with the note programs already there, or you can download one of Pen & Internet's impressive recognition programs. The riteForm product is described in the Tools of the Trade section, but there's also an e-mail utility called riteMail. The basic utility, ritePen, is an advanced handwriting recognition program that's in its third generation. With it, you can write anywhere on the Tablet screen in any program that allows text input, or you can use an input device like a Wacom pad. The input is smooth, and the program will recognize and turn cursive handwriting, print, and combination cursive and print into text. (www.penandinternet.com)

And then there are the computerized pens that can be used for input devices. The Nokia SI-1B Digital Pen writes with ordinary ink while scanning its own movement and storing the text or drawing. Back at your desk, you put the pen in its stand and send the information to your computer. The pen also has Bluetooth so you can wirelessly transfer content to your cell phone to send to others. Away from phone and computer, it's a pen that writes like any other. (www.nokia.com/ nokia,0,4879,5797,00.html)

The questions remain whether we will ever escape the keyboard and whether we will demand software that does one thing very well. Until we do, it's likely that the wall will remain in place. ■