RUGGEDIZED DEVICE ROUNDUP

"Humvees" of the Windows Mobile World!

by Duncan H. Brown

Ruggedized Pocket PCs are the Humvees of the Windows Mobile world. They are ready out-of-the-box to stand up against water, dust, ugly weather and rough handling. They can be many times more expensive than consumer-grade Pocket PCs, but when the going gets tough, these tough units keep going. For enterprise users who need rugged dependability for their mobile workforce, on the factory floor or outside in the wind and rain, these units are just the ticket.

Not all ruggedized devices run the latest versions of the Windows Mobile OS; a few run the Pocket PC 2002 or the earlier Windows CE software, and some run Windows CE.Net (a related OS used primarily in devices that don't include the Pocket PC software applications). For more detailed specification of these devices, see At-A-Glance in this issue on page 86.

Rugged Windows Mobile 5.0 devices

The following ruggedized devices run Windows Mobile 5.0, the latest version of Microsoft's mobile OS and application suite.

Juniper
www.junipersys.com

The Juniper **Archer Field PC** is a rugged Pocket PC designed for outdoor excursions in any conditions. It has an Intel XScale 520 MHz PXA270 processor, 64 MB of RAM and 128 MB of flash ROM. The Archer has both a CF and an SD card slot and a 3.5" diagonal-measure display. It comes with a Lithium-Ion battery pack estimated to yield 20 hours of continuous use (2+ days on the job) between charging. It is housed in a tough magnesium case.

Symbol Technologies
www.symbol.com/products

The Symbol **MC70** is an interesting combination. It runs Windows Mobile 5.0 Phone Edition software and is aimed at what Symbol considers to be a sweet spot between consumer Pocket PCs and outsized ruggedized devices. It sports an Intel XScale 624 MHz PXA270 processor, and 64 MB of RAM and 128 MB of flash ROM. It has a 3.5" diagonal-measure screen, an SD card slot, plus an RS 232 port. It comes standard with Bluetooth, Wi-Fi, and GSM/GPRS/EDGE capability. Its Lithium-Ion battery is estimated to give as much as 9 hours of use between charges.

Tripod Data Systems
www.tdsway.com

The TDS **Ranger** has been Tripod Data System's workhorse Pocket PC. They've updated their signature devices, the **Ranger 300x** and the **Ranger 500x** to Windows Mobile 5.0. The 300x sports a 3.5" diagonal-measure screen, a 312 MHz Intel XScale PXA processor with 64 MB of RAM and 256 MB of flash ROM. The 500x sports a larger 3.8" diagonal-measure screen, with a faster 520 MHz Intel XScale PXA 270 processor and a whopping 128 MB of RAM and 512 MB of flash ROM. A substantial Lithium-Ion battery gives both units an estimated 30 hours between charges.

Innovative designs make ruggedized devices the cutting edge for Pocket PCs

by Conrad Blickenstorfer

Vertical and industrial markets are where it's at these days for the Pocket PC platform. While it's becoming increasingly rare to find a new consumer-grade Pocket PC without a tiny screen, phone, camera, and GPS receiver shoehorned into it; and while the introduction of new consumer Pocket PCs seems at an all-time low, the industrial marketplace is finding Windows Mobile just right.

Symbol Technologies of Holtsville, NY has sold 500,000 MC9000 rugged handhelds in just three years: that's half a million units of just one of their many lines of Windows Mobile devices. This is impressive, especially considering that Symbol's rugged industrial handhelds cost quite a bit more than your garden-variety consumer Pocket PC down at Circuit City or Best Buy.

The secret of their success

What makes commercial and industrial grade Pocket PCs so successful while their consumer market brethren are struggling and trying to morph into little phones? The answer is actually quite simple: in the consumer space, Microsoft has successfully convinced everyone that nothing but Windows proper will do. No matter what the size of a computer, it better run Windows XP, all of it, or it's not a real computer. If you want a pen slate, Microsoft will just serve up a version of Windows XP that can be operated with a pen, sort of. Still too big? Get a UMPC, an Ultra Mobile PC that's even smaller than a Tablet PC and that you operate it with a stylus or with your fingers. But it, too, runs Windows XP.

Pocket PCs don't have Windows XP in them, and that is, in the eyes of many, the problem. Certainly at some point Microsoft may have believed in a small, simple Palm alternative. But every new rev since Windows CE 1.0 has looked more and more like desktop Windows. The same goes for the mobile versions of the MS Office applications. The thrust is not to optimize them for the small screen, but to make them as compatible with their bigger brothers as possible. You see the dilemma: Unless they run Windows XP on the Pocket PC, it will never measure up, especially since the original idea of a PDA has long since been abandoned. Hence the Pocket PC as we knew it is morphing into something else—and no one is quite sure what that should be.

The Windows Mobile platform is successful in vertical markets because vertical market devices are tools for specific jobs, and they are used as such. A mobile worker in an industrial field will view his or her Windows Mobile powered handheld as a terrific productivity tool, and not as a crippled little wannabe computer that doesn't run XP.

Innovative designs make a difference

It's been a while since I've been truly excited by a commercial or business Pocket PC model—most of the recent ones are exceedingly ho-hum and boring—but the industrial devices are innovative, forward-looking, and often feature terrific industrial design. If you take a look at some of the industrial Pocket PCs offered by companies like Symbol Technologies or Intermec, you'll be surprised. Symbol's MC50 and MC70 rugged Pocket PCs are not only exceptionally well built, they even look better than the latest iPAQs. The same goes for Intermec's CN and CK models. Casio also has an interesting offering. The same company that withdrew its once terrific lineup of Pocket PCs from the U.S. market makes an industrial Pocket PC with a full VGA display, a battery that lasts 27 hours, and that sports an IP54 ingress protection rating (meaning it's nearly indestructible), all for under a grand.

It's telling that Symbol's marketing guru Mark Chellis, who once worked for Compaq, is now promoting mobile technology in industrial markets. Most of the best marketing and design talent in the mobile space is now working for industrial device companies. This is where the money and the action are.

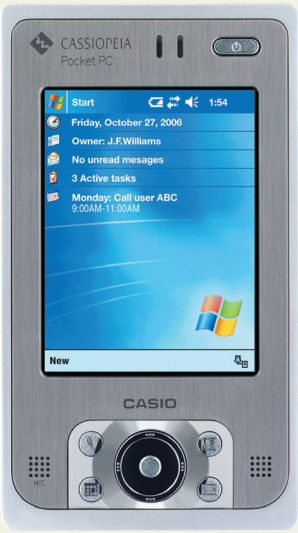
Rugged Pocket PCs aren't suffering from an identity crisis

While the commercial market can't figure out if Pocket PCs should be mobile companions, mobile media companions, media mobile assistants, multi-media connected assistants, dad's lil' tech helper or whatever, the industrial types have it all figured out. Windows Mobile is an awesome platform for small, dedicated software needed for real jobs. The devices they create are true productivity tools, yet come with all the hooks and APIs needed to let them communicate and do the variety of things that consumer Pocket PCs do. But they can also scan, read mag stripes, image, do RFID, double up as phones, and even as walkie-talkies. And if you drop it into a puddle, or a truck runs over it, you don't have to worry about it.

None of this means that I am counting out the market for consumer Pocket PC. While I fear for the original concept of the PDA, Pocket PCs will likely re-emerge stronger and better than ever. Consumer Pocket PC makers should look at the vertical and industrial market for inspiration and ideas, because right now the vertical market manufacturers are doing a much better job of designing compelling devices.

Rugged Windows Mobile 2003 devices

The following devices run Windows Mobile 2003 or earlier versions of the Microsoft OS and application suite.



Casio

www.casio.com

The Casio **IT-10M20** is a ruggedized unit with an Intel PXA270 416-MHz processor and with 64 MB of RAM and 64 MB of flash ROM. It runs Windows Mobile 2003 Second Edition and has a 3.7" diagonal-measure screen. It includes 1 CF Type II slot and 1 SD/IO slot. Wi-Fi and Bluetooth are available as options. It includes a Lithium-Ion battery that is estimated to last for 27 hours.

Ecom

www.ecomus-ex.com

Ecom produces three devices in the **X10 Ex i.roc Series**. The 410 & 510 weigh 15.8 oz.; the 610 weighs 21.1 oz. All run Windows Mobile 2003 and have 64 MB of RAM and 32 MB of flash ROM. They are equipped with the Intel XScale PXA255 400 MHz processor. They vary according to various protective ratings for different environmental conditions.

These rugged devices are designed for use in hazardous areas where there is a danger of explosions. All units have Wi-Fi and Bluetooth built in plus an SDIO card slot. They're equipped with a large battery yielding an estimated 15 hours of normal use.

More ruggedized wonders! ➢

Hand Held Products

www.handheld.com

The **Dolphin 9500/9550** features the Windows Mobile 2003 software running on a platform with an Intel XScale 400MHz processor. It is equipped with 64 MB of RAM and 32 MB of flash ROM. It has an integrated triple-radio design with wireless WAN, LAN, and PAN, and comes with a 2000 mAH hot-swappable battery. The Dolphin 9500/9550 is a ruggedized, weather-resistant device intended for use by mobile field workers. Two new versions of these devices, the **Dolphin 9501** and the **Dolphin 9551**, include an integrated laser scanner for greater range and accuracy when scanning.

The **Dolphin 7900** is a more compact version of the **9500 series,** while still retaining a ruggedized exterior. It sports the same 400 MHz XScale processor, but with 64 MB of RAM and 64 MB of flash ROM.

Intermec

www.intermec.com

The Intermec **730 Series** is a Windows Mobile 2003 device with an Intel XScale PXA255 400 MHz processor. It has 64 MB of RAM and 64 MB of flash ROM as well as an internal SD card slot. It features integrated Bluetooth and Wi-Fi and a 2,400 mAH battery. An optional integrated Linear Image scanner for reading barcodes is also available. It is ruggedized to withstand falls and to keep out dust and water. Intemec has introduced a new version of the 730, the **730 I-Safe**. It has all the features of the 730 plus is designed for use in industrial situations where flammable gases, combustible dusts or ignitable fibers may be present.

The Intermec **700 Color** uses the Intel XScale PXA250 400 MHz processor, has 64 MB of RAM (expandable to 128 MB) and 64 MB of flash ROM, and both an internal SD card slot and a Type 1 CF card slot. It comes with either Windows Mobile 2003 or the earlier Pocket PC 2002 software. The device has optional integrated scanners for barcodes and other image capture programs. The 700 can be configured with up to three radio options in the same device, including 802.11b, Bluetooth, and GPRS or CDMA. The 700 Color comes with two 2,000 mAH batteries. It is ruggedized to withstand falls and keep out dust and water.

The **700 Mono** runs the Pocket PC 2002 software and has a monochrome screen but is otherwise identical to the 700 Color.

Panasonic

www.panasonic.com/Toughbook

The **Toughbook P1** is an industrial Pocket PC based on the Intel XScale PXA263 400MHz processor and has 64 MB of RAM and 64 MB of flash ROM. It also includes a color touch-screen and a built-in 39-key backlit keypad. The Toughbook P1 runs Windows Mobile 2003 and comes with a single Secure Digital card/ Multimedia card slot and a 2,100 mAH rechargeable battery. It features integrated WLAN 802.11b and Bluetooth Personal Area Network and is available with USB host capability as well as integrated WAN and GPS.

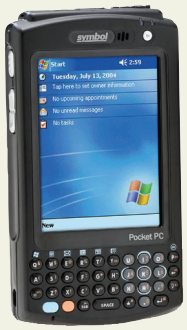
Psion Teklogix

www.psionteklogix.com

The Psion **Workabout Pro** is available with either the Windows Mobile 2003 SE software or Windows CE.Net, and uses the Intel XScale PXA255 400 MHz processor. It features 64 MB of RAM and 64 MB of flash ROM and includes CompactFlash and SD card slots and integrated Bluetooth. It is a ruggedized unit designed to withstand being dropped and is sealed against water and dust.

Symbol Technologies

www.symbol.com/products



Symbol Technologies offers the Symbol **MC50,** which comes with the Windows Mobile 2003 SE software. It features an Intel XScale 500 MHz processor and 64 MB of RAM and 64 MB of flash ROM. It is available with or without a built-in thumb keyboard. It is a rugged unit designed for enterprise deployment with VOIP and Wi-Fi standard.

Symbol also offers the **MC9000 series**, which feature an Intel XScale PXA255 400 MHz processor. The **MC9000-G** comes with Windows Mobile 2003 (or Windows CE.NET), 64 MB of RAM and 64 MB of flash ROM. This handheld computer is designed to withstand being dropped and exposure to dust and water. The **MC9000-K** and the **MC9000-S** feature Windows Mobile 2003 for Pocket PC Phone Edition (or Windows CE.NET) and run on the Intel XScale PXA255 400 MHz processor. They are offered with color or monochrome display screens and with three different field-replaceable keyboards: 28 keys, 43 keys, and 53 keys.

Symbol also offers the **PDT 8100,** which uses the Pocket PC 2002 software.

Talla-Tech www.talla-tech.com

The Talla-Tech **R-PDA-51** and **R-PDA-55** feature Windows Mobile 2003 running on an Intel XScale 400 MHz processor. They both feature 128 MB of RAM and 48 MB of flash ROM, an SD card slot, Bluetooth, and an internal 1400 mAH Lithium Polymer battery. The R-PDA-55 has integrated Wi-Fi. Both units accept an accessory Expansion Back (which has two PC card slots) and an additional 1,800 mAH battery. Also available are a GPS back or a Scanner back, both of which include a PCMCIA or CF card slot and an additional 3,600 mAH battery.

Other Talla-Tech Pocket PCs: Talla-Tech offers a line of PDAs for military field use. The **Tacter R-PDA** (models A, B, C, or GPS) feature Pocket PC 2002 running on an Intel XScale 400 MHz processor. They have 64 MB of RAM and 32 MB of flash ROM (48 MB in the GPS model). Each has an SD card slot, a color touch screen, a serial port, and a 1,400 mAH lithium ion Polymer battery. The B model includes an additional 900 mAH lithium ion battery and a Type II PCMCIA card slot. The C model includes two Type II or one Type III PCMCIA card slot(s) and an 1,800 mAH lithium ion battery. The GPS model includes a single Type II PCMCIA card slot, a 3,600 mAH lithium ion battery, embedded military GPS and related GPS features.

Tripod Data Systems
www.tdsway.com

The TDS **Recon series** is a rugged, weatherproof Pocket PC running Windows Mobile 2003. It's available in two models: the **Recon 400** (Intel PXA255 400 MHz processor, 128 MB of flash ROM) and the **Recon 200** (Intel PXA255 200 MHz processor, and 64 MB of flash ROM). Both devices have 64 MB of RAM, a front-lit color touch-screen, a 3,800 mAH rechargeable battery, two CompactFlash slots, and 9-pin serial and USB ports. The Recon meets MIL-STD-810F military standards and earned an IP67 rating.

Unitech America
www.ute.com

The Unitech **PA950** features Windows Mobile 2003 running on an Intel XScale 400MHz processor. It has 64 MB of RAM and 32 MB of flash ROM. The PA950 incorporates a built-in scanner for industry standard bar codes, a 19-key backlit keypad, a rechargeable 720 mAH lithium ion battery pack, and a touch screen. It includes expansion slots for WLAN or WWAN. The PA950 is designed for use in the field: it's sealed against dust and rain and withstands drops of up to 4 feet onto a concrete floor.

Rugged Windows CE devices

The following devices run on Windows CE or Windows CE.NET. Some have limited subsets of the built-in applications.

Itronix
www.itronix.com

The Itronix **Q200** runs the Windows CE operating system. It uses an Intel XScale PXA255 400 MHz processor. It comes with 64 MB of flash ROM and 128 MB of RAM. It includes a color touch-screen, a 2,288 mAH battery, a 52-key backlit numeric keypad, and a built-in barcode scanner. The device has one Type III PC Card slot and one Type II CF slot. The Q200 is a rugged, weather-resistant device designed for mobile field workers.

Junipers Systems
www.junipersys.com

The **Allegro CX,** a ruggedized mobile data collection tool based on the Intel XScale 400 MHz processor and Windows CE v4.2. It comes with 128 MB of RAM and 128 MB of flash ROM plus a color or black-and-white screen. It also comes with integrated Bluetooth and a user-accessible PC Card slot for added data storage and hardware expansion. In addition, it includes a 62-key alphanumeric keypad for data entry. The device has a 3,800 mAH rechargeable battery and a battery holder that lets you use 3 AA alkaline batteries to power the device in an emergency. Expansion pods let you add additional hardware features, including a GPS receiver, barcode scanners, and more.

The **Allegro CE** has an Intel StrongARM 206 MHz processor with many of the same features and accessories as the CX. It has 128 MB of RAM and 128 MB of flash ROM. The Allegro CE comes with the Windows CE v3.0 operating system. Both the CX and the CE include a limited set of the Pocket PC applications along with a third-party spreadsheet program.

Psion Teklogix www.psionteklogix.com

The Psion Teklogix **Netpad**, a specialized handheld device with a large 640x240 pixel landscape-orientation color touch-screen. It is powered by an Intel StrongARM 206 MHz processor and comes with 64 MB of RAM and 32 MB of flash ROM. Rechargeable batteries in 875, 1,400, and 4,400 mAH capacities are available. The device has a single Secure Digital card slot and is available with optional Wi-Fi, Bluetooth, or GSM/GPRS wireless capability. The Netpad comes with the Windows CE .Net operating system built in, but does not include the Microsoft productivity applications found on Windows Mobile Pocket PCs.

Symbol Technologies www.symbol.com/products

The **PPT 8800** is a rugged handheld computer that comes with Windows CE running on the Intel XScale 400 MHz processor.

Focus on specific enterprise use

Some of these devices have the full Pocket PC application suite built into them, some have a limited subset of these applications, and some come with the OS only. The specific version of the OS and the application suite included with the devices is not as important to enterprises running custom software developed for a specific business application (inventory, sales management, data collection, etc.). Most of these device vendors will help their customers develop the custom software they need or recommend a custom software developer that can help them.

Finally, although most of these devices are developed for enterprise/vertical niche use, many come with the full suite of Pocket PC applications. They may also be suitable for individuals willing to spend a little more for a device that can better withstand bad environments and tough use. ■