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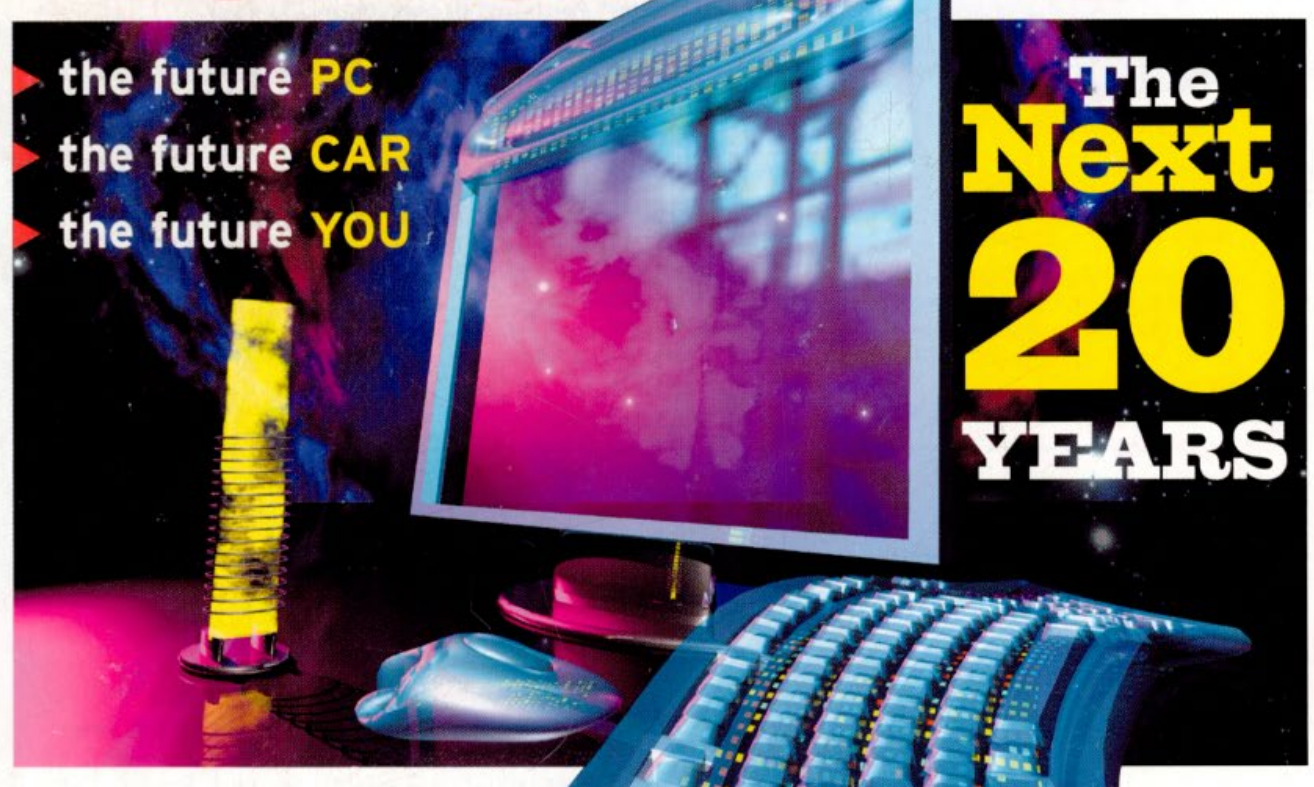
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THE INDEPENDENT GUIDE TO TECHNOLOGY

SEPTEMBER 4, 2001

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MAINTAINING THE MOBILE EDGE

TO STAY AHEAD IN BUSINESS TODAY, YOU MUST HAVE ACCESS TO YOUR INFORMATION—AND BE ABLE TO STAY IN TOUCH—NO MATTER YOUR LOCATION. FOR THE ROAD WARRIOR ON THE GO, THERE'S A DIGITAL DEVICE TO TACKLE JUST ABOUT ANY NEED.

In today's business world, business travel and telecommuting have become the norm rather than the exception. Despite advances in electronic mail and video conferencing technologies, many corporations still prefer to do business face to face, or need to be onsite to support their customers. According to the National Business Travel Association, over 43 million business professionals took to the road last year, and those numbers are expected to increase by 5 percent annually.

Today's mobile professional must stay connected to the home office and client base while on the road to maintain a competitive edge. As a result, a new breed of mobile professionals has emerged. You'll rarely see business travelers doing crossword puzzles while waiting to board a flight; instead, an assortment of cellular phones, notebook computers, PDAs, and two-way pagers is being deployed to connect them to the office, the Web, CRM databases, and other critical pieces of information, all without the need for a landline or wired connection.

WEB-ENABLED PHONES

For the executive on the go, Motorola offers a line of "multi-communications devices," one of which is the \$200 i2000plus. Capable of accessing two different wireless network services, the all-digital i2000plus can be used in over 65 countries throughout the world, including Africa, Australia, Asia, Europe, Mexico, and North America, and displays menu choices in eight different languages. Thanks to Nextel's Plus Dialing, you can call overseas without needing to know the international dialing code, which is a very convenient feature.

Additionally, the Internet-capable i2000plus uses Nextel's Wireless Web service to connect to the Internet,

where you can access news, stock quotes, travel information, and more. Not only does the i2000plus also function as a text/numeric pager and a two-way radio, it supports 3-way calling, has a built-in speakerphone for hands-free conference calls, and has voicemail, making it one of the most complete communication devices on the market.

Samsung Electronics has taken cellular, Internet, and multimedia capabilities and bundled them together in its Uproar! phone (\$400). This dual-band/dual-mode PCS phone contains a Web browser and personal organizer, enabling you to stay connected and organized wherever you go. But what makes the Uproar! unique is that it's also an MP3 player, so you can take your music on the road with you.

The Uproar! uses Sprint's Wireless Web browser to connect to the Internet, and includes the most-often-used features found in PDAs—a calendar and phone book, which will handle over 200 entries, as well as a to-do list and programmable alarms.

The phone itself supports voice-activated dialing, 3-way calling,



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voicemail, caller ID, and call forwarding, and is a voice recorder, too. A built-in USB port allows you to download 64MB worth of MP3 files from your PC to the Uproar!, which is a good 2 hours of tunes you can listen to with the included headset. If a call comes in while you're listening to music, the ringer will notify you so you can pause the music and take the call. The Samsung Uproar! is not only a useful phone, it's a pretty cool hybrid of business and entertainment devices. Even if you're not a big music fan, other media (such as books on tape) can be converted to MP3 files, loaded on the Uproar! and taken on the road.

Kyocera's Smartphone QCP 6035 is a three-in-one device, combining a multiband cell phone with a Web browser and a Palm organizer. The Smartphone is a CDMA (Code Division Multiple Access) phone that uses three types of cellular technologies (CDMA digital PCS, CDMA digital cellular, and analog), which cuts down on those "dead zones" and provides a wider range of coverage. In addition to having some of the more common high-end cell phone features—such as voice-activated dialing, voicemail, speed dialing, and speakerphone—the Smartphone is also a full-blown Palm device, complete with 8MB of memory. Because of this, the Smartphone is able to run any Palm applications available, and supports technologies such as SSL (secure socket layer), WAP, SMS and HTML.

With the right software, the Smartphone can access information on your corporate network, giving you mobile access to CRM data, for example. Another useful feature is the auto-dialer: just tap a number in your address book, and the phone dials the number for you. Plus, the Smartphone will synchronize with your PC, enabling you to back up and update your phone's data, download new software from the Web, or move important files from the corporate network to your phone. Considering what it would cost to purchase a quality Web-enabled cell phone and a wireless-capable PDA separately, at under \$500, the Kyocera Smartphone QCP 6035 is a bargain that will lighten your load while traveling.

Ericsson also has a Web phone that does double duty as a PDA. The R380s is a smart phone, as it integrates an operating system (Symbian EPOC) for PDA

functions and will synchronize with a desktop PC. A serial cable and software is included, enabling you to sync up with any number of PIM applications, including Microsoft Outlook and Lotus Notes, although you can't add additional applications to the phone. Still, the R380s is a full-function PDA with a built-in calendar, contact database, calculator, world clock, notepad, and handwriting-recognition software which lets you write on the screen.

The R380s is a GSM (Global System for Mobile Communications) device that supports unified messaging, including e-mail and faxing via SMS (Short Message Service), and has WAP (Wireless Application Protocol) capabilities for Internet browsing using a SIM (Subscriber Identity Module) card. A full range of cell phone features includes voice-activated dialing, voicemail, call logging, caller ID, and call waiting, as well as coverage on both the GSM 900 and GSM 1800 networks. Ericsson also offers the R380 World phone, which includes many of the same features as the R380s, and provides access to GSM services in Europe, Asia, Africa, and the Americas.

THE FUTURE: GPRS/3G

Much has been written about the future of wireless communications, so much in fact that we seem to be running out of acronyms to describe the many different technologies being developed. The bottom line is this: more and more people have come to rely on wireless services as part of their everyday lives, and the existing infrastructure for wirelessly sending and receiving voice and data (via IP packets) just does not have the bandwidth or speed to provide information as efficiently as a wired environment does. In other words, we need a bigger pipeline to move data through the wireless world.

Development is under way to bring a third generation (3G) of wireless standards and products to the market



Kyocera Smartphone

CONNECTED

that will provide broadband services capable of handling the huge data sets common in applications such as streaming media, videoconferencing, and full-blown Web browsing. Right now, the transmission rate for wireless data is 9-16Kbps, which is way too slow to support rich media uploads and downloads. Plus, there are at least four standards with which wireless devices communicate, including CDMA, TDMA (Time Division Multiple Access), GSM, and PDC (Personal Digital Cellular). The presence of so many standards with varying geographic coverage is one of the main reasons why you might lose service from place to place, or are forced to roam the network looking for a connection.

3G technology, based on the widely used GSM core, promises to bring speeds of up to 2MBbps to the wireless user and a wider area of coverage, since there will probably be only two standards—W-CDMA, or wide CDMA; and CDMA2000, which will handle multiple carriers and support existing core network standards, making the migration to 3G somewhat easier. The deployment of 3G is no small undertaking, and may not be fully realized until the year 2004. In Europe, licensing and infrastructure preparations are already under way for 3G; the price tag is expected to be over \$100 billion by the time all is said and done. Since licensing auctions have not begun in the U.S., there's no way to tell what the final cost will be, but it most certainly will be substantial. The main goal will be to provide a unified blanket of coverage that allows the user to connect from an industry-standard device, at speeds that will make wireless communications as important and useful as wired communications.

General Packet Radio Service, or GPRS, is a protocol that works with the existing GSM standard to move data packets through the wireless network at speeds of up to 115Kbps (although speeds

up to 56Kbps are more likely), providing users with an "always-on" connection, similar to wired broadband services such as cable or DSL. There are differing opinions as to whether GPRS is actually a stepping-stone to the implementation of 3G or just a temporary solution to speed up the slow transmission rates offered by 2G networks. Actually, GPRS is referred to as 2.5G technology, an indication that 3G is indeed already on its way. Either way, GPRS is here and manufacturers are marketing GPRS phones, with an emphasis on faster data rates, better Web capabilities, and continuous connectivity to mobile Internet services.



Motorola Timeport 280

Motorola was the first out of the gate in the GPRS race with its Timeport P7389i phone. This tri-band phone (it operates within three GSM networks) allows you to switch between voice and data modes, and uses TrueSync software or an infrared port to synchronize with PCs, handhelds, and PDA devices. Early reports claim much faster connection speeds with the integrated WAP browser, and animated icons alert you to incoming SMS mail. The Timeport P7389i also supports both voice dialing and voicemail, and includes a phone book that will hold up to 100 names and numbers.

Other GPRS offerings from Motorola will include the V.Series v66, which should be one of the smallest GPRS phones available. While the v66 won't be available until later this year, and will probably only be seen in international markets at first, it is already being touted as one of the coolest looking phones around. Sporting the popular clamshell design that made StarTAC phones all the rage—plus a built-in FM radio—the tri-band v66 will no doubt appeal to the latest-gadget lovers.

Ericsson's R520m phone supports GPRS and Bluetooth technologies, and is a full-function PDA as well. Because it is capable of transfer rates up

ANYWHERE • ANYTIME



to 56Kbps, the R520m will offer a more robust Web experience than ever before for the wireless user, moving data up to 5 times faster than normal. An integrated WAP browser, complete with bookmark memory, rounds out the Web functionality of the phone. PDA features include a calendar, address book, phone book, e-mail address storage, alarm clock, and a stopwatch. The Bluetooth capabilities allow you to connect the R520m wirelessly to other Bluetooth devices (such as a notebook or handheld computer), or you can sync to these and other devices using the built-in infrared port.

The phone supports voice dialing, call screening, call holding, and call diverting, and includes a speakerphone for call conferencing. Battery life on the R520m can last anywhere from 11-25 hours of talk time and 300-700 hours of standby time, depending on which battery you choose (slim or high capacity). The R520m is a tri-band phone that can be used on the GSM 900, 1800, and 1900 networks. Another GPRS phone from Ericsson, the T39, provides the same features as the R520m but can be accessorized with an MP3 player and a mobile camera, which lets you take digital photos and send them over the wireless network as e-mail attachments.

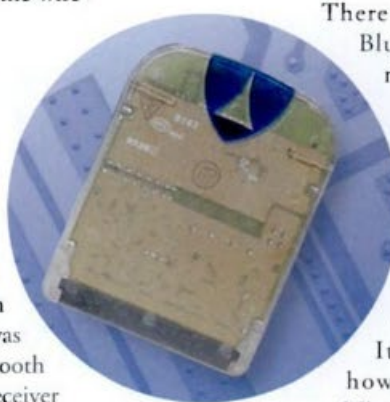
BLUETOOTH: MORE THAN JUST A FUNNY NAME

By now, almost everybody has heard of Bluetooth, but it's only recently that this technology has found its way into certain devices. Bluetooth takes its name from a tenth-century Viking king, Harald Bluetooth (Blatand, originally), whose claim to fame was uniting Denmark and Norway. Today, Bluetooth is actually a chip with an embedded radio receiver that aims to become a standard that will wirelessly unite computers, phones, printers, peripherals, and scores of other devices that incorporate the technology.

Immediately, the word infrared comes to mind—a protocol that requires devices to be aligned closely together (within 3 feet), which must have an unobstructed line of sight between ports to communicate.

Since Bluetooth is a radio frequency specification (operating in the 2.4GHz frequency band), it can identify other Bluetooth devices from as far away as 30 feet and can work through walls and other barriers, such as briefcases. Additionally, Bluetooth supports voice and data transmissions and can connect with up to eight devices at a time.

There are a few Bluetooth-enabled devices on the market today, including the phones mentioned above, and many more are on the way. Motorola has embraced Bluetooth and is providing clip-on accessories, such as the Smart Module, for select phones. One such model, the Timeport 270, is a tri-band Web phone with a built-in PIM, speakerphone, voice-activated dialing capability, and four-way navigation key which functions as a joystick, making navigation through the Internet and phone menus quick and easy. Motorola also offers a Bluetooth PC Card, which can be used in any Type II PC Card slot, as well as a USB adapter for the PC Card which, when combined with your Timeport 270 or other Bluetooth-ready phone, becomes your own personal area network (PAN), without connecting a single cable. Other devices are being developed that are Bluetooth ready, including Fujitsu's Lifebook B-2547 notebook, WIDCOMM's BlueConnect plug-in for handheld computers, Ericsson's Bluetooth headset and phone adapter, and notebooks from Sony.



BlueConnect

There just aren't that many Bluetooth devices shipping right now, but they are on the way, according to the Bluetooth Web site (www.bluetooth.com). This site provides a list of qualified Bluetooth products, most of which are in late development or final testing stages. It remains to be seen, however, how the news of Microsoft's exclusion of Bluetooth support in its Windows XP operating system will affect future development efforts.

ACCESSORIZE

Some of the more popular mobile computing products to hit the market in recent years are the

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Palm, Handspring, and Pocket PC devices. Palm and Handspring handhelds are typically labeled as PDAs (personal digital assistants) and use the Palm OS, while the Pocket PCs use a version of Windows, developed for consumer electronic devices. For these devices, Microsoft simply calls the OS Pocket PC. Both platforms bring powerful but limited computing power to these handheld devices, which have become a valuable part of the mobile professional's arsenal of connectivity tools. Just as phone manufacturers have integrated computing technology into their products, handheld manufacturers have formed alliances with companies who produce communications accessories for the handheld community.



RIM 957

Unless you own one of the Palm VII series handhelds, which already has wireless Internet access capabilities, you'll need to purchase a separate add-on to connect to the outside world. The Minstrel V Wireless Modem, which works with Palm V devices, provides full wireless connectivity to e-mail, the Internet, and your corporate network at speeds of up to 19Kbps, without adding more than a few ounces to the weight of your Palm V. For Palm III series owners, the Minstrel III Wireless Modem will do the trick. Minstrel Wireless Modems are also available for the Handspring Visor product line, as are wireless solutions from Yada Yada and @ctivelink. One of the more innovative products for the Visor, the VisorPhone, transforms your handheld into a multifunction PDA/cellular phone, complete with three-way calling, Web browsing, e-mail, and direct dialing capabilities.

For the Pocket PC crowd, the AirCard 400 Ricochet Modem provides wireless speeds of up to 128Kbps in a Type II PC Card form factor, although Ricochet service is not widely available yet. The Minstrel 540 Wireless Modem for the HP Jornada 540 series moves data at speeds of up to 19Kbps, as does the PocketSpider, which slides into your Pocket PC's CompactFlash slot.

A discussion of wireless devices and services for corporate road warriors wouldn't be complete without mentioning the BlackBerry, developed by Research In Motion. RIM's line of BlackBerry handhelds—primarily designed as a wireless e-mail and messaging solutions—have become popular because they maintain an always-on connection, allowing information to be “pushed” to the device. BlackBerry devices from RIM include the RIM 850 and 950 pagers and the RIM 857 and 957 handheld units. RIM recently announced its BlackBerry Enterprise Server solution, which is designed to synchronize BlackBerry handhelds with online calendars and schedulers without the need for a desktop cradle.

Wireless connectivity plays a crucial part in today's business world, enabling real-time communications between the mobile professional, the home office, and the unlimited resources available on the Web. The industry has recognized the fact that more and more corporations are doing business from the road, and continues to develop products and services that will enhance the mobile-office environment, enabling you to maintain the mobile edge. ■



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