

mobile data

• M A G A Z I N E •

Profitable telemetry applications [14]

NEWS

Introducing Sweden's new operator [4]

Report from Live wirelessly and prosper [10]

Blackberry delivers [7]

Strategy: Lengthening the lead [24]

Technology: More than a modem [12]

contents: no. 1 1999

Publisher's Note

- [3] Customers are responding to the Mobitex solution for wireless remote monitoring and control. Mobitex suppliers worldwide are showing that significant volumes are attainable.

Mobile Data News

- [4] • Introducing Mowic
• Blackberry delivers on the promise
• InstantBroker an overnight success
• Live wirelessly and prosper



Opening a new dimension

- [12] A building that puts out its own fires or locks up intruders and calls the police is not at all far-fetched, thanks to the Mobidem M3000 network access device, the latest development in Mobitex terminal products. To demonstrate its multiple capabilities, Ericsson designers devised the facetiously named Java Coffee Machine JCM3000.

Wireless telemetry's new legs

- [14] Currently the hottest application segment in Mobitex technology, wireless telemetry offers mind-boggling possibilities in remote monitoring and control, security, parking and asset tracking. With steadily falling prices, greater partner cooperation and increasing availability of standards-based hardware and software, the telemetry market is poised to take off.

Tyco fired up by wireless

- [17] Australian Mobitex operator United Wireless has joined hands with fire and security services supplier Tyco to provide fire-monitoring services in the Melbourne area.

Turkey pioneers innovative AMR application

- [20] Analysts all agree: automatic meter reading (AMR) will be the driving force behind the strong growth predicted for wireless telemetry. AMR can reduce the cost of utility readings drastically. Turkish Mobitex operators have seized the opportunity.

AlarmNet boosts confidence with Mobitex

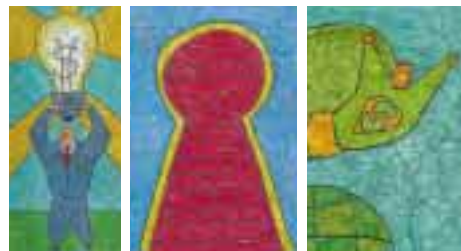
- [22] US: Security equipment – fire-alarm systems, burglar alarms, building access control systems, etc. – are a hot application segment within telemetry.

Mobitex lengthens its lead

- [24] Reflecting the recent trend of segmentation in the mobile data market, Ericsson is diversifying its wireless data strategy to match the bewildering variety of wireless data options. For Mobitex, the focus on enhancing the technology will continue, as it becomes absorbed by a market increasingly aware that in data communications one size does not fit all.

Wanda Wave

- [27]



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Compelling business case



ONCE AGAIN, MOBITEX is opening a new market. Telemetry, our theme for this issue, has long been a dormant application segment. Of course, as regular readers or Mobile Data Magazine are aware, Mobitex has

already achieved considerable success in wireless telemetry applications for vending machines and parking meters, two niche markets that enterprising Mobitex operators and suppliers have expanded into very profitable businesses.

Until now, however, customers in potentially much larger application areas, such as automatic meter reading (AMR), electronic security systems and asset tracking have not found solutions for wireless remote monitoring and control cost-justified. Like so much else in the Mobitex world, this is now changing rapidly.

Today, the business case for wireless telemetry applications is compelling and continues to improve rapidly. Mobitex is finally achieving a breakthrough in the AMR and security markets. In the process, many previous assumptions are being turned on their heads. In Turkey, U.K.-based ATL Metering, together with its domestic partner Sayot, expect to equip as many as 250,000 electricity meters for remote monitoring and control by year-end, proving beyond a doubt that significant volumes are attainable by suppliers. In Australia, Mobitex operator United Wireless is focusing on telemetry as a strategic market and

extending its network as the customer base expands.

The Mobile Data News section of this issue contains extensive coverage of the 1999 BellSouth Wireless Data Solutions Conference and Wireless Solutions Showcase, an annual event that never fails to draw key industry players and to generate considerable excitement.

The two products that almost stole the show this year were the RIM's Inter@ctive™ Pager 950 and the Palm VII™ from 3Com's Palm Computing® division. These are consumer products that are ready to use right out of the box and priced to sell. They are also designed to use interactive messaging services based on Mobitex, which is fast becoming a runaway success in the North American market.

Of course, the Wireless Data Solutions Conference is targeted to developers who see beyond today's products and whose vision will shape the future. A glimpse of this future was provided by Fidelity Investments, which presented its InstantBrokerSM application hosted on an Inter@ctive Pager.

With this revolutionary product, investors can buy and sell stocks, value their portfolios and receive notification when stock prices change or when trades are executed using a wireless device that fits in the palm of the hand.

At the conference, BellSouth Wireless Data's CEO Bill Lenahan confidently predicted that we are only witnessing the beginning of the development of interactive messaging. Seeing

many innovative solutions and witnessing the eagerness among conference participants to start developing for the new generation of wireless devices, we can only agree.

The flood of news from the Mobitex world continues to increase. Unfortunately, our coverage of BellSouth's conference left little room for a number of other important developments. To at least partially rectify the situation, we have increased the number of pages in the magazine. More importantly, we are also publishing the magazine on our web site and will be able to include more news as it occurs in the future.

Information resources are being increased in other areas, too. A Mobitex application database, as well as data sheets for Ericsson's Mobitex products, are being made available on our web site. In addition, the Mobitex Operators Association (MOA) has also opened a web site with news from and links to the worldwide Mobitex community.

In this steadily increasing flood of information, it sometimes seems as if we are running faster and faster just trying to keep up. Our goal, however, is to keep you informed, so please let us know how we are doing. We want to continue to increase both the quantity and the quality of the information that we provide, and your comments and suggestions are always welcome.

Gunilla Rydberg
PUBLISHER

mobile data news

Introducing Mowic



Sweden has a new operator. Mowic AB, whose name stands for Mobile Wireless Communications, began operating an 8 kbps network on the 450 MHz Euroband on January 24, 1999. Commercial services are now available in Stockholm and Gothenburg, Sweden's two largest cities, and will soon be expanded to include Malmö and other urban areas in southern and central Sweden.

"Mowic is targeting professional mobile data users," says Mowic president Björn



Sabel, whose company was founded in October 1998. "We see a tremendous opportunity for wireless packet data. At this point, there are many applications and products available and much interest in the Swedish market from Mobitex suppliers that would benefit professional users in many sectors. There is a vacuum in the market and a window of opportunity over the next years that Mowic intends to fill."

Unique offering

The new Swedish operator enters the market at an interesting time. Telia, the established Mobitex operator, already runs a first-generation 1200 bps Mobitex network that is loaded with subscribers. Cellular data services are gaining in popularity, and GPRS (General Packet Radio Service) for GSM is on the horizon. Björn Sabel and the investors backing his company, however, are not afraid to meet these challenges.

"Mobitex is a global success and it is addressing market needs that no other technology can meet," notes Björn, who feels that the advanced Swedish mobile data market has room for many players.

"Although Telia would seem to be our major competitor, this is by no means the case. Instead, the real competition will come from other service providers. We intend to show that Mobitex and a narrowband packet-switched service running on a

dedicated data-only network is the best and most cost-effective alternative for professional mobile data users."

Focus on partnerships

Mowic is aware of the need to offer its customers complete solutions. The company has already formed partnerships with a number of systems integrators and Mobitex hardware and software vendors. Björn Sabel also wants to forge such relationships with other operators and service providers, noting that "customers are always going to need more than one single party that can supply a total solution."

Several trucking companies in Stockholm and Gothenburg have shown considerable interest. An early customer is the Gothenburg Road Department, which is now deploying Mowic's network in its daily operations and conducting development work in collaboration with Mowic. Negotiations are in progress with other potential customers, including several large organizations in Stockholm and Gothenburg, but Björn Sabel is unable to reveal details at this time.

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Stockholm selects cutting-edge wireless solution

Mowic, the new Swedish operators, wasted no time in forging successful partnerships. As Mobile Data Magazine went to press, the company announced the signing on of its first major customer, Birka Energy, which has selected a cutting edge heat management solution from Schlumberger Resource Management Services (RMS) that includes data communications services using Sweden's new Mobitex network.

The order placed by Birka Energy, which is Sweden's largest district heating company, is valued at USD 8 million and calls for the installation of an integrated data collection and management system for the Stockholm's district heating system. The order includes numerous heat meters which are equipped for two-way communication using Schlumberger's Power Line Carrier (PLC) and Mowic's network.

Advanced energy management

The new system, which will be fully implemented by January 2000, will provide Birka Energy with the advanced energy data management technology that it requires to offer enhanced customer services in the newly deregulated Swedish energy market.

The initial deployment, which was started in April, will replace the existing heating sen-

sors in all of Birka Energy's district heating substations, located at strategic points around the city and responsible for the delivery of hot water to some 350,000 residential apartments and 20,000 commercial and industrial operations.

The substations will then be equipped with Schlumberger advanced CF50 electronic heat energy calculator units, which will use high-frequency PLC (Power Line Carrier) technology for on-line meter reading and other services, including two-way communications for real-time control and tariff adjustment.

"We are convinced that Schlumberger value-added services will provide Birka Energy with the competitive edge that it seeks in the challenging environment of today's utility market," says Henning Eneström, Scandinavian manager for Schlumberger RMS.

Meter-to-billing system

Schlumberger RMS (Resource Management Services) delivers innovative solutions through building on strategic revenue, data and metering management. In addition to energy-resource consulting services, the division offers project design, implementation and management that includes both outsourcing of operations and manu-

facturing. Schlumberger is the only company to span all resource industries – water, gas and heat.

"Schlumberger is a world leader in resource management and metering that is pioneering innovative technology for remote monitoring and control," says Mowic president Björn Sabel. "We are extremely proud to be able to supply a highly reliable and cost-effective wireless data channel for the vital link between Schlumberger's equipment in the substations and Birka Energy's Customer Information System."

It is hoped that this project will be the first step in implementing what Birka Energy terms "a meter-to-billing" system covering all aspects of resource management and metering. Discussions are currently in progress between Schlumberger and Birka Energy regarding a potential second phase of the project in which web-based client services will be added for all operations, query and administrative functions.

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RAM UK wins major field service contract

RAM UK has been awarded a major field service contract by Thames Water, the UK's largest water and wastewater services company. Thames Water personnel will now dispatch service calls, update field staff status, access service histories, and replenish spares via Mobitex, using cradle-mounted handhelds and Maxon radiomodems. The entire system, built using Nettek's RFexpress, will also include wireless e-mail. 1100 field staff will get the new system this year. The contract is worth GB£2M.

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GWD to distribute M3000

Global Wireless Data (GWD) has been selected by Ericsson as one of the North American distributors for the new Mobidem M3090 OEM radio modem. This agreement extends the relationship with the Norcross, Georgia-based supplier, which has been selling the Mobidem M1090, M2090 and M2190 in the North American for some years.

GWD provides wireless data communication products and integration services to end users, software developers, systems integrators and value-added resellers. The company offers the most extensive selection of wireless LAN and WAN products, including wireless LAN hardware, wireless data services, wireless modems and variety of software applications and development tools. GWD strives to be a

single source for wireless networking products and services. Since 1994, GWD has helped over 250 companies implement wireless solutions in such industries as transportation, healthcare, field service, warehousing, distribution and education.

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Database for application developers

Ericsson Mobile Data Design recently completed a survey of Mobitex applications. The results of this extensive survey have now been put in a database and made available on the Mobitex web site. This knowledge base on mobile data applications is unique and gives Mobitex operators and suppliers a significant advantage over competing systems.

The Mobitex application database start

page provides a number of functions allowing companies to register new applications and visitors to search for applications by market segment, geographical market or functionality. The information available for each application includes a short description, as well as how long it has been available commercially or is still in development, number of users, contact information, size of company, etc. A special news group will soon be linked to the database to which registered companies will have access. The database itself is intended for registered companies, operators and partner companies and is therefore protected by a login process.

Check out this invaluable source of information on Mobitex applications at: www.ericsson.se/mobitex and join us if your company develops Mobitex applications.

For more information
mobitex.info@erv.ericsson.se

MOA on the web

The Mobitex Operators Association now has a web site at www.mobitex.org. On this site, visitors will be able to keep up with the latest developments in the Mobitex community, including current and upcoming events, such as the MOA meeting held in Vancouver, Canada on April 24. Minutes of previous meetings, as well as other reference information is also available.

The MOA web site also contains information about and links to member and associate member organizations. Everyone involved with Mobitex technology should bookmark this site and check it frequently.

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BlackBerry delivers on the promise

Wireless e-mail in your pocket is an extremely powerful concept. Unfortunately, as the developers at Research In Motion (RIM) realized, the mailbox in your pocket may not be the one you need to access. Instead, the mail that you need right now has been delivered to the office and is flashing an alert box on your desktop PC while you're on the road.

Realizing that having to use a separate mailbox while out of the office was more than a little inconvenient for many business users, RIM designed BlackBerry™ as the first complete, secure and integrated wireless e-mail solution for the mobile professional.

Link to desktop e-mail

With the introduction of the Inter@ctive Pager, RIM had already achieved a breakthrough in handheld technology. No larger than most alphanumeric pagers, it delivered groundbreaking advances in portable technology. The RIM Inter@ctive Pager contains a wireless Mobitex modem, an Intel 386 processor, up to 2MB of Intel Flash memory, a useable QWERTY keypad and operates for two weeks or more on a single AA battery making it an extremely powerful device. The BlackBerry handheld is based on the same hardware as the RIM Inter@ctive Pager 950, but incorporates different software including a personal organizer. Black-

Berry also features desktop and server software that integrates the solution with Microsoft Exchange.

For many corporate users, BlackBerry extends the value proposition in two very important respects. Firstly, it provides handheld access to the corporate mailbox, not just a second mailbox used only on the road. Secondly, and even more important for business users, BlackBerry is a secure solution, which uses end-to-end encryption of all messages sent from and received in the field.

BlackBerry provides a wireless link to Microsoft Exchange Server and the user's mailbox on the desktop PC. The principle behind its operation is very simple. BlackBerry relies on a Redirector, which receives notification from Exchange Server whenever e-mail is received. The BlackBerry Redirector is able to instruct Exchange Server to forward a copy of the new mail to the BlackBerry handheld over the Mobitex network. Sending e-mail from the BlackBerry handheld works in a similar manner. The message is first sent over the Mobitex network to the Exchange Server in the office. The message is then placed in the user's outbox and is sent from the office server, just as if the user was sitting at his or her desktop PC.

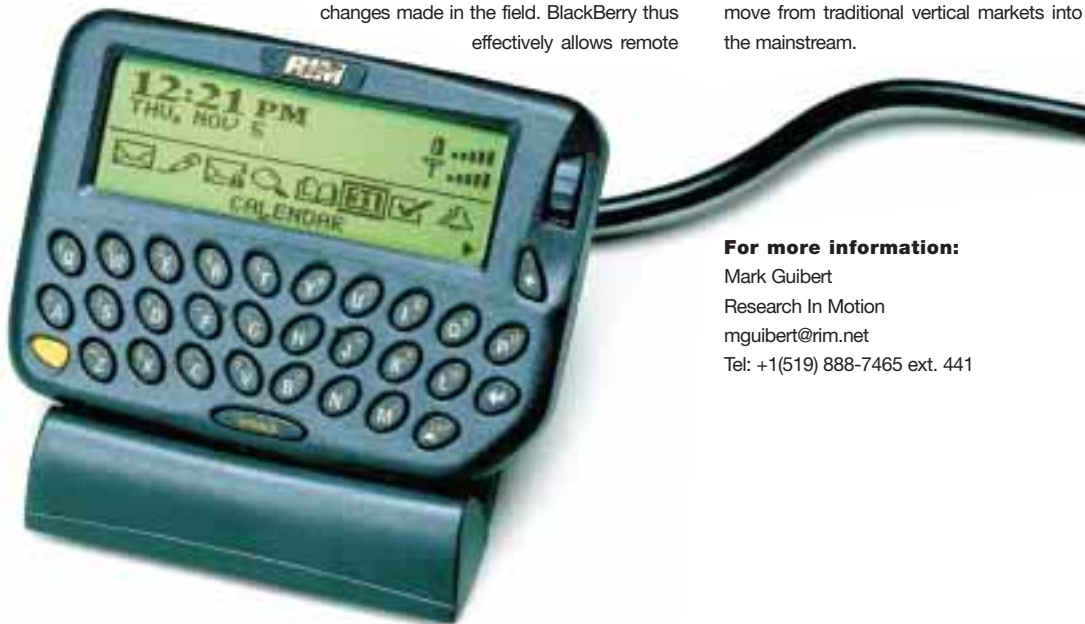
Although mobile users access and send e-mail using BlackBerry handheld, their mailbox back in the office accurately reflects changes made in the field. BlackBerry thus effectively allows remote

control of the corporate Inbox. Mobile users can filter messages to reduce the volume of data transferred over the Mobitex network and efficiently manage their e-mail while on the road. Senders and recipients see only the corporate e-mail address and do not realize that the user is out of the office.

The Windows NT and Exchange Server architecture, triple-DES encryption and password protection on the handheld device combine to make BlackBerry an extremely secure solution that satisfies all the requirements of the IT department. Encryption is end-to-end using highly secure 128-bit triple DES encryption. Redirection of e-mail can be configured to either the server, or the desktop PC. BlackBerry also uses an existing connection to the server, thus eliminating the need to install special software on portable PCs. The BlackBerry solution thus provides a secure link between the desktop and the handheld that does not require a special configuration for mobile users or compromise existing firewalls.

Indispensable service

With BlackBerry, RIM is entering a new realm in which the company both resells airtime on the BellSouth Wireless Data's and Cantel AT&T's networks and provides support for the BlackBerry service. This type of pre-packaged solution is becoming increasingly important as Mobitex applications move from traditional vertical markets into the mainstream.



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New MOA associates

Joining the growing list of MOA associate members is The GSM Consultancy. Contrary to its name, the company works not only with GSM but all types of wireless technologies. Consulting serv-



ices offered include systems solutions, human resources, capacity and coverage solutions, documentation services and quality and configuration management.

The GSM Consultancy, which maintains offices in the U.K., Sweden and Australia, offers services to both manufacturers and network operators. For more information, visit the company's web site at: www.gsm-consultancy.com.

During the past month MOA has elected three more companies to associate membership – Nettek, Communication Interface and RATP.

Nettech is one of the pioneers in the wireless data business, and offers a wide range of products and services to developers, network operators and end-user customers. Communication Network Interface, based in Seoul is a developer and manufacturer of wireless client devices, specially POS and paging terminals, currently on DataTac networks. RATP is a private network operator in Paris, using Mobitex to communicate with and manage its fleet of public transportation vehicles.

For more information:

Contact information for all MOA members and associates to be found at www.mobitex.org

M3090 data sheet available

A data sheet for Ericsson's new M3090 OEM Radio Modem for 900 MHz networks is now available and can be ordered on the Mobitex web site at www.ericsson.se/mobitex under download and order.

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New Mobitex radio link test rig

Ericsson Mobile Data Design has released SA-MTE (Stand Alone Mobile Test Equipment) a versatile testing environment that manufacturers of Mobitex equipment can use to test mobile terminal units and applications. SA-MTE provides a complete set of test tools that can emulate radio link traffic, as well as single radio link frames. SA-MTE can also be used by network operators to perform basic verification of a mobile unit's behavior.

Comprehensive test functions

The SA-MTE software runs on a BRU3 single-channel base station and is controlled by a front-end application running on a PC or Sun Solaris platform. The radio link protocol is compatible with MIS (Mobitex Interface Specification) R4A, as used in system releases NTE, R14N and R14E. The software can generate correct, as well as emulated error frames, for both positive and negative testing. Frames and traffic can be logged for off-line analysis and processing.

SA-MTE operates in two different modes: transparent mode, which allows any frame to be sent to a designated mobile unit, and autonomous mode, in which the software emulates a base station connected to the



Mobitex network. In autonomous mode, which is used to verify that the mobile unit responds correctly with respect to the Mobitex protocol, several mobile units can communicate with each other to test real traffic situations.

Further information on SA-MTE, as well as a data sheet, is available at www.ericsson.se/mobitex under download and order.

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InstantBroker an overnight success

At the BellSouth Wireless Solutions Conference, Joe Ferra, senior vice president at Fidelity Investments, presented InstantBrokerSM, an innovative application hosted on the RIM Inter@ctiveTM Pager and other wireless devices that his company has developed to meet the needs of what Ferra terms "the new investor."

Serving the new investor

"In 1998, 27 percent of all individual investments handled by Fidelity were conducted on line," reveals Ferra, whose company is the largest in the investment industry and the technological leader. In Ferra's view, this shift to online investing marks the emergence of a new type of investor whose hallmarks are both "high tech and high touch, control and convenience."

To meet these new demands, Fidelity has been developing a number of online products to supplement its traditional investment services. In addition to such expected and well documented changes in the industry as lower brokerage fees and lower costs for an online service compared with the same service when provided by a customer service representative, Fidelity's experience indicates that online services are attracting a new type of investor and thus have the potential to increase business overall.

InstantBroker was conceived as a means to integrate a fully automated paging and response system for the individual investor with Fidelity's real-time core systems. The service is available in various forms, depending in large part on the capabilities of the user device. The greatest functionality is available on the Inter@ctive Pager.

A glimpse of the future

When hosted on the Inter@ctive Pager, InstantBroker offers functions for portfolio valuation, order entry, execution notification, position valuation, price triggers and margin status. All of these functions are directly accessible from the pager, which uses the Mobitex network to communicate with Fidelity's real-time core systems.

As an example, an investor holding stock in a company that is expected to release an interim report at 2 p.m. could use the Inter@ctive Pager to put a price trigger on the share price. When a share-price move-

ment triggers a response at 2:07 p.m., the investor can enter a buy or sell order on the pager just seconds later. Since trading is brisk, the order completes rapidly, and an execution notification is received little more than a minute later. At exactly 2:10 p.m., the investor requests a new position valuation.

InstantBroker generated considerable

excitement among conference participants, by showing that the new generation of extremely small, wearable devices can be transformed by creative developers into wireless information appliances. Fidelity's InstantBroker is thus no less than a glimpse of the future of wireless interactive messaging.



Live wirelessly and prosper



This was the theme for the 1999 BellSouth Wireless Data Solutions Conference, an annual event that never fails to draw the crowds. Conference attendees not only include developers and suppliers of Mobitex hardware, applications and solutions. The event is also closely monitored by the media, industry analysts and competitors to BellSouth, Ericsson and their partner companies.

This year's event, held from February 28 to March 2 in Dallas, Texas, created plenty of excitement and featured new Mobitex product announcements by RIM, 3Com, Itronix, Sybase, Ericsson and numerous other conference sponsors and participating companies. Many of these important new products are featured in separate articles in the Mobile Data News section of the magazine.

Two who almost stole the show

Of course, the innovative Palm VII Con-

necting Organizer from 3com and RIM's Inter@ctive Pager 950 and the company's new Blackberry wireless e-mail solution almost stole the show. Inter@ctive Pagers were made available to all participants for the duration of the conference, and more than

20 units were given away as prizes in drawing held at the end of every session. With an electronic mailbox in their pockets, conference participants were not only talking to each other. They were sending messages to each other like crazy and letting the whole world know what was going on in Dallas.

The Palm VII, which was formally announced at the Palm Developer's Conference two months earlier and featured in the previous issue of Mobile Data Magazine, proved a worthy competitor to RIM's device. Although not currently available as more than a prototype, the Palm VII which was on display in the Solutions Showcase exhibition area adjacent to the main conference hall, was clearly the envy of more than a few conference participants. It didn't hurt that the prototype unit that the 3Com folks were demonstrating was encased in clear plastic, letting both gearheads and the technologically challenged alike marvel at the wonders inside.

Two things made absolutely crystal clear by both the Palm VII and the Inter@ctive Pager 950 are that devices are shrinking dramatically in size and that Mobitex technology is finally reaching a mass market. Conference participants were quick to realize that the "Live wirelessly and prosper" theme was not just an empty promise but a tremendous opportunity. Joe Sipher, Group Product Manager for communications at 3Com's Palm Computing unit made this very clear when he encouraged developers to "jump on the band wagon" and take advantage of the tremendous head start they were getting on developing wireless applications for the Palm VII, the Mobitex-enabled successor to the Palm III Organizer, the world's most popular palm computing platform.

Thinking outside a shrinking box

There were plenty of other presentations and demonstrations to get conference participants thinking. Fidelity Investments presented its vision for prosperity, centered around the InstantBroker application, which is hosted on the Inter@ctive Pager 950. Ericsson formally launched the Mobidem M3090 OEM Radio Modem and was showing the Java Coffee Machine demo application based on its next-generation modem.



Itronix unveiled a new Windows CE device that opens a new window in rugged wireless mobile computing. All of these products are featured in separate articles.

The BellSouth Wireless Data Solutions Conference, however, is primarily aimed at developers, and both break-out sessions during the conference and separate workshops held on March 3 gave developers plenty of food for thought, as well as hands-on experience with new devices and applications. Above all, they got a first taste of developing applications for the Inter@ctive Pager and the Palm VII.

Although interactive messaging and the connected organizer paradigms offered by these devices are extremely useful and intuitive to a broad spectrum of users, this is just the tip of the iceberg. The development tools being introduced for these devices, as well as the UltraLite deployment option for the Inter@ctive Pager and the Palm VII developed by Sybase and the web clipping

metaphor developed by Palm Computing for the Palm VII, open the door to a new generation of applications, of which Fidelity Investment's InstantBroker is only the first example.

To leverage the power of these new devices, developers will need to think outside a shrinking box. A wirelessly enabled device that fits in a pocket and runs for weeks on a single battery is truly liberating. These devices put information in the palm of your hand anywhere and anytime. For developers who understand how people on the move want to use information in their business and personal lives, the opportunities are limitless.

Creating a new market space

BellSouth Wireless Data's president and CEO Bill Lenahan perhaps captured the mood of the conference best in his opening presentation when he asserted that "interactive devices are creating a new market

space not yet adequately analyzed." He saw a wide range of applications, including both enterprise and industrial solutions.

In Bill Lenahan's analysis of the interactive applications and services being pioneered by his company, there is a space between wireless desktop extensions and simple alerts provided by one-way and acknowledgement pagers. Speaking directly to the assembled media representatives and industry analysts, he proceeded to outline his vision for the development of the interactive market. We can only hope the experts were listening and will be able to catch up some time soon. In the meantime, the Mobitex community intends to live wirelessly and prosper.

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Product announcements

Rugged CE device from Itronix

The T5200 handheld wireless workstation launched recently by Itronix at the BellSouth Wireless Data Solutions Conference and aimed at field service applications marks a breakthrough in mobile computing. The T5200 is the first field service solution powered by the Microsoft Windows CE operating system to offer fully integrated power management and wireless communications capabilities in a highly durable package that is half the size, weight and cost of today's rugged mobile workstations.

Itronix is totally focused on rugged, wireless field computers and has two decades of experience in providing mobile workforces throughout the world with innovative computing solutions. Clients include a long list of companies in the field service, telecommunications and utility sectors, and BellSouth recently selected Itronix equipment for its field service application.

The new Itronix T5200 with its oversized carrying handle and rugged plastic case is a far cry from the sleek handheld Windows CE devices likely to draw envious looks in a computer store. On the other hand, heating consumer devices in an oven to 60° C, dropping them repeatedly from 1 meter, expos-

ing them to pouring rain or subjecting them to any of the other tests Itronix' computers must pass would quickly render them useless.

The T5200 features an integrated wireless modem (either for Mobitex, DataTAC, or CDPD), a lithium-ion all-day life battery pack, integrated wireline modem with microphone and speakerphone, and 2 Type II PC Card slots.

Mobix wireless kit

At the conference in Dallas, Mobix announced its Mobix Wireless Kit (MWKit) for the Palm III and IBM WorkPad. The new product consists of a Type II PC Card adaptor, a Type II Radio Modem and the MobilCell/Pilot drivers. Mobix expects the MWKit to be available in Q2, and will handle any Type II card for Mobitex.

Mobile Server

Dynamic Mobile Data Systems unveiled Mobile Server, a software suite which gives access to ODBC, MAPI, and Winsock-based applications using RIM's 950 Inter@ctive Pager and Palm devices.



Mobile Server also includes terminal emulation and support for Outlook.

Rugged Panasonic

Panasonic Personal Computer Co. now offers integrated wireless data communication over Mobitex with its ruggedized notebook computer.

Microsoft microbrowser

Microsoft said at the BellSouth Wireless Data conference in Dallas that it will make its entire microbrowser available for free, source code and all, this spring.

Opening a new dimension

The Mobidem M3000 OEM radio modem and the new platform for onboard Java applications may not brew a better cup of coffee, but Ericsson engineers recently showed the power and versatility of the new products in an innovative demo application. As the new device begins volume production and is integrated into OEM products, a new dimension of wireless data communications will be opened.

MOBITEX NERDS KNOW THAT the term radio modem is a misnomer and that devices such as the new Mobidem M3000 are more properly called network access devices. Gearheads are also the ones most likely to go “gaga” over the new architecture for onboard applications now being implemented in the new device.

Billed as “more than a modem,” the M3000 represents Ericsson’s most significant advance to date in technology for Mobitex terminal products. Until the new generation of OEM products using this revolutionary device appears, however, the benefits for end users of the M3000 will not be immediately apparent. This article will attempt to explain in

non-technical terms the breakthroughs embodied in the M3000 and to provide a tantalizing glimpse of the kinds of Mobitex devices that we can expect to see in the near future.

What customers want

In designing the M3000, Ericsson listened carefully to the wishes of its OEM customers. Not surprisingly, customers wanted better performance, lower power con-

sumption, lower prices and easier integration. Always ready to at least attempt the impossible, Ericsson designers decided that the only way to comply with this wish list was to start with a clean slate.

“Of course, everyone is looking for a silver bullet, but nobody expects to find one,” notes Mats Adler, Product Manager at Ericsson Mobile Data Design. “Still, by basing our design on a completely new platform, we were able to satisfy nearly all customer requests. The new platform, which is the same as is used in Ericsson’s state-of-the-art mobile phones, allowed us to design a product that is more than a modem.”

Ease of integration

“Although there are many items on their wish lists, our experience indicates that ease of integration is a primary concern for OEM customers,” notes Mats Adler. “After all, developing a new product and integrating our modem into the design represents a significant investment for the customer. By lowering the up-front cost for developing a new OEM product, we hope to change the economics of designing Mobitex terminals and improve the overall business case for launching a new Mobitex OEM product. It is only



▲ The OAI firmware in the M3000 stand alone modem, I/O, encapsulates the MASC protocol for maximum efficiency. A Java application can use the I/O, D/A, A/D and I²C channels for monitoring and control of for example alarms, vending machines and other equipment.

The OBA platform

The software developed for the M3000, which will soon be released by Ericsson, provides a runtime environment for an onboard application (OBA). At the heart of this environment is a Java Virtual Machine (JVM) and an onboard application interface (OAI), which provides a high-level interface for the firmware for lower-level radio and Mobitex transport functions. This not only relieves developer's of the burden of learning the details of radio communications. The OAI firmware in the M3000 stand alone modem, I/O, encapsulates the MASC protocol for maximum efficiency. A Java application can use the I/O, D/A, A/D and I²C channels for monitoring and control of for example alarms, vending machines and other equipment.

For developers, the exciting news is that the M3000 will store up to 400 k bytes of Java code, which can control other equipment via the I²C bus. Although 400 k bytes may not seem like

much, the Java language is normally compiled into very efficient bytecode that is designed to run on a JVM. Most embedded applications will therefore probably not need more than a fraction of this capacity.

The Inter-IC Control or I²C bus, on the other hand, allows the power of an embedded Java application to be extended to other onboard equipment. Although perhaps not familiar to some readers, the I²C bus is very common in embedded applications that use micro-controllers and other sophisticated integrated circuits. Basically, it allows devices to talk to each other by providing a scheme to address all devices on the bus and to exchange data between devices. Data is exchanged one byte at a time, and what the data represents, whether it is a reading from a sensor or a control word used to re-program the device, is completely up to the devices involved.

then, when product development is cost-justified, that other factors, such as price, performance and battery life, really make a difference.”

With the new M3000 product family, Ericsson designers not only simplified the serial interface, they added an I²C bus and new I/O, D/A and A/D channels for device monitoring and control. Together with the software that has been developed to support the new platform, these enhancements will make it much easier for manufacturers to simply plug the M3000 into existing terminal designs.

Introducing the JCM3000

Ericsson design engineers who have had several fully functional prototypes have been eager to demonstrate the capabilities of their new product.

The Java Coffee Machine was unveiled to the world in Dallas on March 1, 1999 at the BellSouth Wireless Data Solution Conference. The JCM3000, as it was facetiously named, used the Mobidem M3090 OEM radio modem and an embedded Java application to wirelessly verify a credit card over the Mobitex network, activate the machinery to brew and dispense the coffee and read various sensors indicating water

temperature or such machine states “door open.”

“In building the demo application, we wanted to show the unique features of the new M3000 by creating an embedded Java applications that uses the I/O, D/A and A/D channels for device monitoring and control”, relates Mats Adler. The M3000 is more than a modem, and the Java Coffee Machine is not a trivial application, but rather an example of how our new product solves many design problems.

“Integrating the M3000 into the circuitry of the vending machine was very easy, and the platform that we have developed for embedded applications made it even easier to write the Java code we needed for the application’s functionality”, continues Mats.

Opening up a new world

“There are basically no limits to what an onboard application for the M3000 can do,” notes Mats Adler. “The Java Coffee Machine is really only a very simple example. In a security or climate control system for a building, on the other hand, the onboard application could react to a wide range of input conditions and respond accordingly. Because the application is hosted on a device for two-way wireless data communi-

cations, all of the data that it registers can be monitored at a remote location, and people at that location can tailor the application’s responses to the current situation. A building that puts out its own fires or locks up intruders and calls the police is not at all far-fetched.”

With its diminutive size and the ability to add optional GPS positioning or Bluetooth microwave communication modules, the M3000 will enable creative developers to design completely new personal wireless communications devices. A pocket-size device that knows at all times where the user is located and where she is going and can communicate with Bluetooth-equipped telephones, computers and other devices will open a new dimension. Users will always have up-to-date information in the palm of their hands and be able to interact with their environment in new ways.

“We are extremely excited about the possibilities being opened up by the M3000 and the new platform for onboard applications,” notes Mats Adler, Product Manager at Ericsson Mobile Data Design. “This is also only the beginning. The new platform and Ericsson’s continued advances in wireless communications technology really are opening up a new world.” ■

Wireless telemetry's new legs



Long considered a zero billion dollar market with vast potential, wireless telemetry applications are finally up and running on a wide scale in many new markets. As this article and the accompanying case studies show, today's profitable telemetry applications turn previous assumptions on their heads. This is a new application segment where automatic meter reading, electronic security systems and other telemetry applications are providing new growth for Mobitex.

IF ONLY THE IMAGINATION SETS THE limits for what is possible with Mobitex technology, then telemetry is an application segment where fantasies are running wild. Here are applications that allow vehicles to report themselves as stolen and tell the police where they

can be retrieved. There are also applications for vending machines that are able to adjust pricing and product selections according to changes in the weather, the time of day, special events at the retail location or other conditions.

Far from being fantasy, these and

many other more mundane applications, such as monitoring gas pipelines or electricity grids, are not only possible using Mobitex technology but very profitable. Remote monitoring and control using a wireless data network is a capability that adds significant value to applications

in many different industries and creates a new market for Mobitex.

Fixed wireless applications

As an application segment, telemetry spans many industries and includes many different types of applications. Although the differences between industries and the applications that they require are considerable, telemetry applications all involve remote monitoring and control over a wireless network. In addition, they share a number of common features that makes this a useful classification, at least for Mobitex operators and suppliers.

A particularly significant characteristic of telemetry applications is that they often involve a fixed installation where the wireless data link replaces a dedicated wireline connection. Here the relatively low cost of a wireless link, compared with a fixed line, is a compelling benefit for customers. For Mobitex operators, however, the fact that many telemetry applications generate little traffic makes them less attractive. A security system, for example, may generate traffic only when there is a break-in attempt at a remote site being monitored by a telemetry application.

Extending telemetry applications to include not only remote monitoring but also remote control makes them more useful, as well as more attractive from the operator's perspective, since the amount of traffic generated by the application increases. On the other hand, this requires interfacing the radio modem to other equipment that controls the heating and ventilation systems in a building, for example. For this reason, many telemetry applications require special terminals with integrated OEM modems and a high degree of customization by a systems integrator.

Predominantly fixed installations, low traffic volumes and the need for a high degree of customization make telemetry a challenging application

segment. Recently, however, a number of important breakthroughs have opened new markets for Mobitex in this segment. In the remainder of this theme article, we will describe the markets that are considered to be the most promising, as well as present three case studies of successful applications.

Wide range of uses

Most Mobitex operators currently focus on security, parking, asset tracking and remote monitoring as the primary markets for telemetry applications. Several of these submarkets, particularly remote monitoring, can be further broken down by industry or type of application. Remote monitoring and control can thus include automatic meter reading (AMR), as well as monitoring and control of power grids and pipelines in the utilities sector, vending machine servicing in the retail sector, building control and a variety of other applications.

Several studies of the telemetry market, including a Forrester report published in September 1998, include vehicle tracking among telemetry applications. Among Mobitex operators and suppliers, however, vehicle tracking is often part of a more comprehensive application for dispatching and fleet management. This is also an established application segment for Mobitex with a large installed base in the trucking, transport and field service industries. Vehicle tracking is therefore not included among telemetry applications in this survey.

Parking meter monitoring and vending machine servicing are Mobitex applications that have virtually created their own markets. Parking meter applications, which have been featured in several previous issues of Mobile Data

Magazine, have been pioneered by such suppliers as Schlumberger and are being used on a wide scale in Europe and Australia. Vending machine applications, on the other hand, are increasing in popularity in the U.S. but are also expected to be deployed widely in Europe and other markets.

For remote monitoring applications, the greatest potential is seen in the utilities sector, which the Forrester report expects to be the driving force for wireless telemetry applications. Although the productivity gains deriving from AMR (automatic meter reading), for example, are very substantial, utility companies have thus far not found the incentives for implementing such an application. Decreasing hardware costs, as well as deregulation of utility markets, however, are changing this picture.

Asset tracking, finally, is a niche market in which the business benefit of a wireless data application often stands in direct proportion to the value of the asset. Mobitex is thus used to track rail cars and shipping containers, for example. An important feature of these applications is that Mobitex is usually used in combination with other technologies, primarily GPS and satellite systems.



▲ Predominantly fixed installations, low traffic volumes and the need for a high degree of customization make telemetry a challenging application segment.



Technology made to order

For Mobitex operators interested in pursuing the opportunities provided by telemetry applications, there are a number of issues to be addressed. The most basic of these relates to the low volume of traffic generated by simple telemetry applications. For an operator developing a business case for a telemetry application, the key to addressing this issue lies in realizing that while end-unit revenues may be low, telemetry applications typically require a large number of installations. Because a single 12.5 kHz Mobitex radio channel is able to support as many as 1,500 interactive users and many more fixed, low-traffic installations, a price point can usually be found that provides low-cost service to the customer, yet is a

◀ *Vending machine applications are increasing in popularity in the U.S. but are also expected to be deployed widely in Europe and other markets.*

profitable business for the operator.

Another issue concerns coverage. A telemetry application designed to monitor an electricity grid or a pipeline network, for example, will typically need to collect data from remote locations where radio coverage is not available or providing it would be expensive. In this respect, Mobitex technology again provides several advantages. The coverage for a single base station is normally about 30 km and can be extended even further in certain cases. Because telemetry applications are usually based on fixed installations, the application can be based on higher-power modems, which are located for optimal radio reception.

Yet another factor affecting the economic viability of telemetry applications relates to network capacity and functionality. The Mobitex network was designed from the start to provide two-way wireless data communications and to efficiently handle a large number of simultaneous users. Also, Mobitex is dedicated data-only network meaning that it is suitable for application where network availability always must be guaranteed as opposed to networks where data is used to fill out spare capacity. A simple telemetry application with relatively few installations over a large area may not require such advanced functionality, but if it is desirable to add remote control functions in the future, or if a relatively large amount of data needs to be sent from the remote site, Mobitex will be a better choice than a solution based on a simpler and less costly wireless paging or short message service.

Compelling business case

Successful telemetry applications

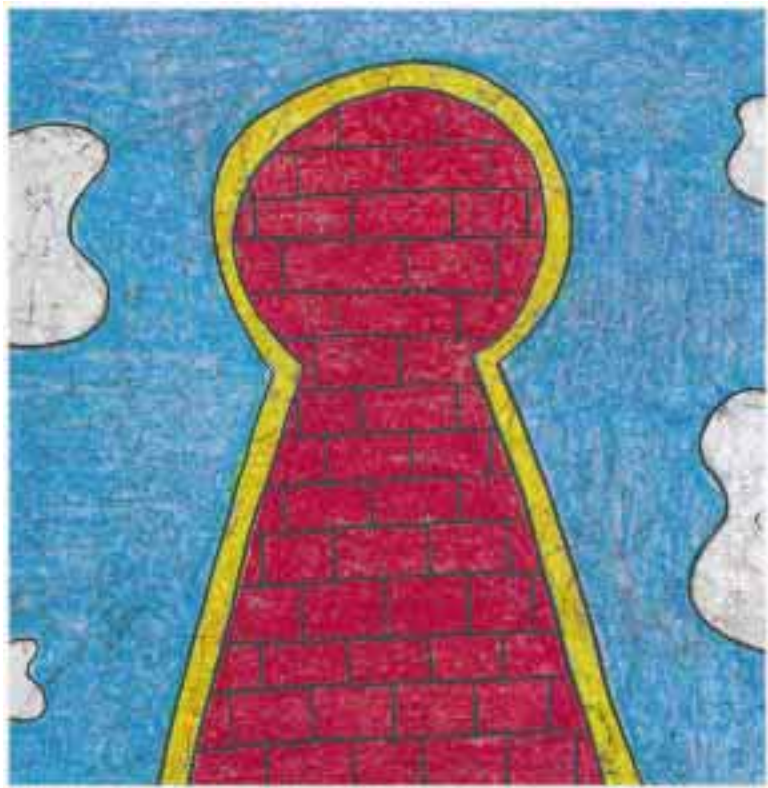
show how these obstacles can be overcome. The cases presented here illustrate how telemetry applications can be profitable for both operators and suppliers, while delivering real value to the customer. Although the case studies involve very different applications, there are several lessons to be learned.

Perhaps the most important lesson is that telemetry applications by virtue of the sheer number of terminals installed can sell networks and finance network expansions. This is exactly what the Australian Mobitex operator United Wireless is doing. Although traffic may be light, Mobitex is extremely cost-efficient, since it can support up to 1,500 users on a single radio channel.

Another important lesson is that a little information goes a long way. Whether it is a utility company that with traditional methods is only able to read meters twice a year or a retailer who is forced to send out personnel to check if vending machines need to be re-stocked, wireless telemetry applications provide essential data at low cost, allowing companies to rationalize their operations and dramatically improve customer service. These are very tangible benefits that are extremely important in cost-justifying a wireless telemetry solution.

With steadily falling prices, greater cooperation between the various partners required for a successful telemetry application and greater availability of standards-based hardware and software, telemetry is a market poised to take off. As the case studies accompanying this article illustrate, the business case for wireless telemetry applications is very compelling and continues to improve rapidly. Many Mobitex operators and suppliers not currently active in this segment will be surprised to find that wireless telemetry can provide new potential and new customers. ■

Tyco fired up by wireless



When Melbourne decided to outsource its fire monitoring functions, the Metropolitan Fire and Emergency Services Board turned to Tyco, the world's leading supplier to the fire and security services segment. Now, 5,000 fire panels are being added to United Wireless' Mobitex network, with 4,000 more to be installed over the next 12 months.

AUSTRALIAN MOBITEX operator United Wireless recently won a very major order from Tyco, which will use wireless data technology to provide fire monitoring services for commercial, residential and industrial premises in the Melbourne area. In the first stage of the deployment to start in June, 5,000 fire panels will be connected to the Mobitex network. It is expected that an additional 4,000 will then be added over the next 12 months.

This contract is the result of a decision by Melbourne's Metropolitan Fire and Emergency Services Board (MFESB) to outsource its fire monitoring functions. The reasons for this decision were that the existing monitoring equipment was not year-2000 compliant and can no longer be supported. Instead, it is being decommissioned in favor of the new system.

Furthermore, the existing equipment requires copper land lines for the transmission of alarm signals.

Telstra, the partially government-owned telecommunications operator, is currently upgrading its network to fiber optic cable, which is not compatible with the old monitoring equipment.

Network quality decisive

Tyco uses an application called Centaur ASE, which connects a building's fire system to the Tyco Monitoring Network. In Melbourne, this connection is provided by United Wireless' Mobitex network. Alarm and fault signals generated by fire panels in the alarm system are thus transferred wirelessly to Tyco, with alarm signals automatically forwarded to dispatch fire service vehicles. Fault signals, on the other hand, immediately alert Tyco staff in the customer care center of potential problems at the site.

United Wireless was chosen for the quality and reliability of its network. With Mobitex, the radio modem always chooses the most appropriate radio channel and base station in the area in which it is operating, thus ensuring that signal strength is always optimized. In addition, the error checking and recovery algorithms used in the Mobitex network ensure that there is no data corruption.

United Wireless' advantages over GSM for this type of application are obvious. Because every second is critical in a fire monitoring

application, GSM call set-up times, which are typically around 20 seconds, were a major disadvantage. Alarm and fault signals over the Mobitex network, on the other hand, normally take about five seconds. Because packet switching is used and there is no need for an end-to-end connection, the network guarantees that alarms will not be lost due to call drop outs.

Cost was another factor in Tyco's decision to use Mobitex. With a GSM service, both connection time and distance have a major impact on traffic charges. In the Mobitex system, however, which is ideal for the short, bursty traffic between a fixed telemetry terminal and a host, charges are based on the number of packets sent and do not increase with distance.

Major customer benefits

The Tyco Centaur ASE solution provides several major benefits for the Metropolitan Fire and Emergency Services Board and building owners and managers:

- Reduced monitoring costs – The Centaur ASE reduces fire alarm monitoring costs by eliminating the expensive fixed line currently leased by building owners from Telstra. The amount saved depends on the length of the line, but for most customers the savings range from AUD 200 to AUD 2,500 per year.
- Reduction in false alarm charges – False alarms to the Fire Service are reduced, because faults are not automatically forwarded. Instead, these signals are trapped by Tyco and managed according to the building owner's instructions.
- Multiple system monitoring – One Centaur ASE unit can monitor up to six separate fire alarm systems at one site.
- Back-up link to Tyco – The system includes a dial-up modem as a back-up to the Mobitex network.

Alarm monitoring streamlined

"With Mobitex, we can cost-effectively transmit two-way monitoring data through an error-free system to our Fire Monitoring Customer Care Centre. This will guarantee that we always get the instant and accurate information we need to keep people safe," says Tyco's managing director Peter Parsons.

A surprising lesson is that telemetry applications by virtue of the sheer number of terminals installed can sell networks and finance network expansions.



Tyco will be removing all fire alarm connections to fire stations. This streamlines the monitoring path to the MFESB's dispatch center, allowing the fire service to focus more on fire prevention and timely emergency response.

Preparations for installing the new system have been in progress for more than a year. United Wireless has worked closely with Tyco on testing hardware and software as it was developed. In addition, the Mobitex operator has planned coverage to meet Tyco's requirements and will be installing an additional four base stations in the Melbourne area to extend coverage.

"Our network has been in place in the Melbourne area for five years," reports United Wireless CEO Joe Gatto. "We are ready for the extra demands of this new contract. We look forward to working with Tyco on this project, as well as cooperating with them on future projects."

The Australian Mobitex operator has specifically targeted telemetry applications and has a number of other customers in this segment, but the Tyco contract represents a major breakthrough both in terms of the number of installations and its importance as a reference for similar projects in the future. With public authorities constantly looking to reduce costs and continued deregulation in the power, water and gas industries, United Wireless' focus on telemetry is paying off handsomely, while improving service and contributing to public safety.

A base for expansion

The advantage of fixed telemetry is that most of the terminals targeted by United Wireless are in metropolitan areas where the majority of the population lives. This allows the operator to concentrate coverage to these more densely populated areas. Establishing a network to serve fixed subscribers also allows the operator to expand the network over time to meet the needs of mobile applications.

In addition, one customer with a fixed telemetry application brings many more subscribers to the network than one customer with a mobile application. The Tyco application, for example, initially brings 5,000 fire panels to the network, with a further 4,000 expected over the next 12 months. One customer with a mobile application for a vehicle fleet might bring only a few hundred subscribers to the network.

Why target the telemetry market?

United Wireless has specifically targeted fixed telemetry applications as a means of achieving network development in a cost-effective manner. Fixed telemetry applications allow the operator to easily define coverage requirements. This is more difficult with mobile applications, which generally have wider and more varied coverage requirements.

In a country as large as Australia with a sparse population of 18 million, this is particularly important. Mobile applications require providing coverage over a large area where the population is scattered, pushing up network development expenses to the point where they are prohibitive. There are simply too many geographically remote regions of Australia that cannot be covered cost-effectively.

Although the monthly revenue produced by the fire panels is lower than a mobile application, the large number of subscribers more than compensates for this.

In Australia, the power, water and gas industries are being deregulated. This means that utility companies for the first time are competing for customers and being forced to look for products and systems that will allow them to remain competitive in a deregulated market. Automated remote telemetry applications provide these competitive advantages, allowing meters to be read remotely by the utility and eliminating the need for on-site reading by metering personnel.

Ideal for telemetry

Mobitex is an ideal technology for telemetry applications, since the traffic generated by these applications consists of short exchanges typically containing only a small amount of data. The network is optimized for this type of bursty traffic and allows many terminals to share the same radio channel. Packet switching also ensures a reliable and secure communications channel and lowers costs for telemetry applications compared with other network technologies, since traffic costs are not affected by time or distance. In addition, the group broadcast function in Mobitex allows a host to poll fixed telemetry terminals cost-effectively and instantaneously.

As the Tyco contract shows, focusing on telemetry is a very successful strategy for United Wireless. Although sales cycles typically extend to one year or more, the Mobitex operator is able to work closely with the customer in developing and deploying the ultimate solution. United Wireless currently has many fixed telemetry customers and expects to expand this market substantially over the coming years. ■

Turkey pioneers innovative AMR application



Turkish Mobitex operator Mobicom and its sister company Sayot are opening up a new market for automatic meter reading with almost unlimited potential. Using an unique solution developed by ATL, the Turkish company is making rapid progress in developing a major application area.

WHY SPEND HUNDREDS of millions per year on a task that should only cost pennies per day? This is the central proposition underlying automatic meter reading (AMR), the application that all analysts agree will be the driving force behind the strong growth predicted for wireless telemetry applications.

To get a perspective on these wildly optimistic predictions for growth, let's take a closer look at the numbers. AccuRead, a company 50-percent owned by British Gas that performs some 80 million readings per

year for more than a half dozen British utilities, has published figures showing that the average two readings per year performed by a utility company cost GBP 5. Multiplied by the hundreds of thousands or millions of customers that an electricity, gas or water distribution company serves, these costs easily run into the hundreds of millions.

On the other hand, ATL Metering, a subsidiary of Advanced Technology (UK) PLC that has specifically targeted this market, claims to be able to provide these services for just pennies a day. Instead of being

limited by semi-annual readings, utility companies are being offered daily or on-demand readings and such features as accurate billing, energy consumption profiling and variable tariffs at a price that is just a fraction of current costs. With a customer value proposition this good, there must be plenty of takers.

Rapid progress in Turkey

Sayot of Turkey is one of the takers. This company, which was formed to exploit opportunities in the telemetry market, is a subsidiary of Cukurova, which is also the parent

company of Mobicom, the Turkish Mobitex operator. Like many countries around the world, Turkey is deregulating the energy sector and opening the market to new entrants who will compete with publicly owned utilities. When ATL showed a prototype system to Sayot in December 1997, the company realized that there was a vast potential market to be exploited and that the Mobitex network operated by its sister company Mobicom already provided the necessary infrastructure.

The Sayot project progressed relatively rapidly. By March 1998, the Turkish company began a pilot project with meters located both above and below ground. Three months later, a decision was taken to begin manufacturing the ATL equipment locally on license. Sayot also began the task of recruiting distributors for the new system and obtaining type approval for the equipment. Privatization of utility companies, however, was delayed.

“With national elections coming up in April, the government lost some initiative in pushing forward with privatization,” explains Kevin Holland, marketing director at ATL Metering and responsible for the Sayot account. “This of course was a set-back and forced us to re-adjust our forecasts. We are very optimistic, however, and expect to equip upwards of approximately quarter of million meters by year-end.”

The radio advantage

The ATL solution is unique in that it is able to accommodate virtually all types of electricity, gas and water meters from the leading manufacturers. Both existing and new meters can be fitted with ATL’s equipment, which uses a low-powered radio to create a local area network connecting the meters to the ATL RAMCo concentrator.

The radio itself is extremely sensitive, providing a range of up to 400

metres through buildings with a power output of only 10 milliwatts. Each RAMCo concentrator can handle up to 14 separate 25 kHz radio channels simultaneously and collect data from thousands of meters. A typical installation, however, uses an average of four radio channels and collects data from about 1,500 meters over an area with a radius of up to 400 m. Radio transmitters in the meters will wait for the radio channel to become available, but if it is blocked for a longer period of time, they are able to hop automatically to another channel. The system uses error detection and recovery to ensure that no readings are missed and that all readings are accurate.

The link from the ATL RAMCo to the utility’s meter reading center can be implemented in a number of ways. Sayot chose Mobitex, but ATL also supports other wireless carrier services as well as PSTN connections.

“Many utilities don’t understand radio,” observes Kevin Holland. “They think that you have to have wires to ensure that the data is transferred reliably from point A to point B. So part of our selling job is convincing the customer that radio is reliable and economical, both for the local network and wide-area communications.”

Sayot was no exception, Kevin Holland reveals. “At first the customer wanted to use the PSTN, but of course telephone lines in Turkey are neither plentiful nor completely reliable. Gradually Sayot realized that its parent company Cukurova also had a stake in Mobicom, the Mobitex infrastructure was much more reliable and less costly than the PSTN. It also helped that we were working with Ericsson, whose expertise in wireless communications is very much respected by the market.”

Not just cost savings

Naturally, the cost savings produced by an automatic meter reading system provide strong motivation for the utility specifying the system.

Cost savings, however, are by no means the only benefit of ATL’s solution. In an increasingly deregulated market, other benefits are becoming at least as important.

These include:

- Improved customer service
- Accurate billing
- On-demand meter reading
- Energy profiling
- Consumption-based tariffs

Theft detection and remote switch/stroke off are often the primary motivators for many countries. ATL is also quick to point out that energy and water are valuable and scarce resources that must be managed efficiently. With an automatic meter reading system and the ability to monitor and control consumption precisely, these objectives can be met, while lowering costs and improving service for customers. This was one of the main attractions to the Turkish electricity regulator.

Perseverance pays off

The ATL RAMCo solution has generated considerable interest in many countries, and several new contracts are currently being negotiated. Agreement to distribute the ATL



product have been concluded with two Mobitex operators, United Wireless in Australia and ST Mobile data in Singapore. ATL has also been commissioned by RAM Mobile Data UK and by Mobicom to incorporate ATL technology into supplementary units to extend their system functionality.

The selling cycle for this type of application can be lengthy. Many utilities need time to change the way they think as well as operate. Yet, for Mobitex operators, companies like ATL, and their business partners, there are substantial rewards at the end of the day. For companies that are persistent and develop the business strategies required by this market, automatic meter reading offers perhaps greater potential than any other Mobitex market. ■

ATL's remote access monitoring solution

The ATL solution is based on a local area radio network and the ATL RAMCo, a concentrator for remote access metering. Each electricity, gas or water meter is fitted with a radio transceiver that is powered by batteries or directly from the electricity grid. In typical implementations, the radio generates 10 mW output and operates over a range of up to 400 meters with through-building penetration, corresponding to a sensitivity of between -116 and -121 dBm. The ATL RAMCo supports up to fourteen 25 KHz channels with error detection and recovery. A typical installation uses four channels and concentrates readings from an average of 1,000 meters.

The ATL RAMCo is the brains in this solution. This unit can be viewed as the server for the local-area radio network. It concentrates the data from the meters and provides the interface to the wide-area network, as well as a rich array of functions and data manipulation options for the management system. On the metering side, the ATL RAMCo supports equipment from all major manufacturers, including ABB, Horstmann, PRI and Schlumberger. Options for wide-area communications include Mobitex, cellular systems, the PSTN and most other technologies. ATL's solution also supports drive-by metering and a number of other data collection options.

The strength of ATL's solution lies not only in the products that the company itself manufactures, but also in its business partnerships. Public utilities are often conservative, and the list of well-respected suppliers with which ATL works closely instills confidence. Working with Ericsson and local telecommunications operators further strengthens this perception. The customer is thus assured of a solution backed by a strong alliance of world-class suppliers.

AlarmNet boosts confidence with Mobitex



Ademco, the world leader in electronic security, recently selected Research in Motion as a supplier of Mobitex modems for its AlarmNet service. This agreement represents a major breakthrough for Mobitex and confirms that security is a hot growth segment in the telemetry market.

SECURITY IS ONE of those unavoidable facts of life. Commercial property owners are normally required by law to install fire alarm systems, which must be inspected regularly. Typically,

they also combine these systems with other systems that protect their property against break-in and/or control access to the premises.

Home owners, while usually not required by law to install such equip-

ment, are doing so in increasing numbers. People want to protect their property against real or perceived threats. Electronic security is a booming business.

Wireless & Wireline

In the electronic security sector, U.S.-based Ademco is the world leader. With an impressive history beginning nearly 70 years ago, the Ademco Group has emerged as the leader in electronic security technology.

Ademco pioneered many important developments that have fueled the growth of this industry and made security systems easier to install, use and service. Many of these advances have been in wireless and wireline communications, which are literally the lifeline of a security system.

Group companies and business areas include Ademco OEM Radio Products, AlarmNet, Apex and ASC (Ademco Sensor Company). Together, these companies provide a wide range of products for wired and wireless security systems, intrusion sensors and central station equipment.

Monitoring & Control

Fire alarm equipment are naturally an important part of Ademco's product offering. Products include both fire panels and integrated units that combine the fire panel with various types of communications equipment for wireline or wireless communication. Ademco's products in this area are without exception certified as meeting the specifications of relevant regulatory bodies. In the U.S., the most important of these is Underwriters Laboratories (UL), which was originally founded by the nation's insurance companies and plays a large role in setting codes for fire safety.

Ademco also produces a wide variety of sensors and control equipment. Sensors range from simple optical devices for motion detectors to video cameras. Control equipment is based on relays and actuators that allow almost any type of equipment to be controlled remotely. While most customers want a rela-

tively simple security system that generates alarms when an intruder tries to break into the premises, or when a monitored parameter, such as temperature in process equipment, exceeds some limit, the possibilities are virtually endless, particularly when a two-way communications channel is used for both monitoring and control.

Consider an HVAC (heating, ventilation and air conditioning) system for indoor climate control, for example. While a simple application involving the Ademco equipment could relay alerts over the Mobitex network relating to such conditions as overheating or equipment breakdown, a two-way wireless data communications channel allows almost any degree of control. Perhaps a conference area is not frequently used and therefore maintained at a lower temperature. The heat could be turned up by remote control in preparation for an unexpected early morning conference. This and many other options would be available with a wireless remote control and monitoring system.

Stringent requirements

Ademco's AlarmNet-M service uses the BellSouth Wireless Data Network in the U.S. and the Cantel AT&T network in Canada. The robust, secure and reliable nature of these Mobitex networks meets the stringent requirements of a continu-

ously monitored security system. Constant connectivity to the network allows continuous transmission of small packets of security-related information. In addition, because Mobitex is designed for two-way data communications, monitoring, alarm and access control systems can be selectively activated and re-programmed remotely.

Hot growth area

For the US and Canadian Mobitex operators, the Ademco service provides further confirmation that the security and telemetry markets are hot growth areas. Mobitex is particularly well positioned in this market. The technology is widely recognized throughout the industry as the most reliable for this type of application. End users in their evaluation of available technology also consistently find that Mobitex offers substantial cost savings over other alternatives.

"Security is an application segment in which we see significant potential," says Gunilla Rydberg, marketing and sales manager at Ericsson Mobile Data Design. "We receive inquiries almost daily from Mobitex operators and business partners about security solutions. The business case for Mobitex-based security applications is very solid. With Ademco's endorsement of Mobitex technology, we expect even greater growth in security applications in all markets." ■

AlarmNet and the Ademco Group

AlarmNet is a division of the Ademco Group. For nearly 70 years, technical excellence and unsurpassed quality have been the hallmark of the Ademco Group's commitment to the security industry and those that it serves. Today, as the world's largest and most experienced manufacturer of electronic security products, the Ademco Group is firmly established on the forefront of the security industry. Recognized industry-wide as the leader of technological innovation, the Ademco Group dedicates more than USD 20 million annually to research and development. The Ademco Group operates R&D facilities throughout the world. These include the United Kingdom and Mexico, in addition to its principal headquarters in Syosset, New York. The Ademco Group is a division of the Pittway Corporation, a company listed on the New York Stock Exchange with annual sales exceeding USD one billion.

Mobitex lengthens its lead



ERICSSON'S WIRELESS DATA strategy is becoming more diversified. In addition to Mobitex, Ericsson's wireless data offering includes system products for CDPD (Cellular Digital Packet Data), GSM on the Net as well as other GSM-based data services. Ericsson also markets wireless LAN products and a number of mobile data solutions for business networks that provide wireless LAN and WAN access in various combinations. On the horizon are third-generation mobile systems based on W-CDMA (Wideband Code Division Multiple Access), packet-based GPRS (General Packet Radio Service) services for GSM networks, WAP (Wireless Application Protocol) applications, and even Bluetooth, which will provide wireless "micro-LANs" for mobile devices in a small area, such as a car or a single office.

Faced with this bewildering variety of wireless data options, Ericsson's customers and business partners have every reason to won-

der where Mobitex fits into the scheme of things and what the future holds for Mobitex technology. This article will describe how Ericsson is currently positioning Mobitex in the market, while an upcoming strategy article will address current and planned enhancements of Mobitex technology.

Wireless data is different

In recent years, the mobile data market has become increasingly segmented. In part, this is because data communications requirements vary, regardless of whether the user is connected to a fixed or a wireless network. E-mail and messaging, for example, simply do not have the same hefty bandwidth requirements as multimedia applications or web surfing. Some users also need to be constantly connected to receive instant updates and notification when data changes, while others may be content to connect occasionally to download a file from the office server or search a database.

For most of its short history, how-

ever, the mobile data market has been small, especially when compared with mobile telephony which has achieved a mass market and continues to show double-digit growth rates. Comparisons with mobile telephony have not only been disappointing for mobile data proponents. They have also been misleading.

While voice calls are a familiar, almost universal application that makes mobile telephones immediately useful and intuitive for most users, there is no such application for mobile data. Wireless data applications are different, and there is no such thing as a "wireless" wire that can replace a fixed or dial-up connection. Thankfully, the growth of the Internet has made it apparent to ordinary users that bandwidth requirements for data applications may also vary and that the phone line used for conventional dial-up modem communications may not have sufficient capacity for all applications.

With the benefit of hindsight, it is easy to see that the nascent mobile

data industry suffered from a "one size fits all" mind set. It would be unwise to suggest that Mobitex or any other technology is suitable for all applications, yet early proponents often gave this impression. Today, however, although the number of alternative technologies may seem confusing, users can choose the technology that most closely matches their requirements. Market segmentation and the emergence of clear alternatives for given applications have also made this choice easier.

Cellular operators prefer voice

Although cellular systems, such as GSM and D-AMPS, are being upgraded to provide greater data communications capability, many observers consider that the potential for data-over-cellular services is limited. The reasoning behind this assessment is that these systems are dimensioned for voice calls, which are also the most profitable type of traffic for the operator. In effect, data will always be a supplementary service. If there is spare capacity in the network and sufficient demand among subscribers, data services could mean extra revenues.

For many operators, however, capacity is insufficient for the existing traffic load of voice calls. The situation is not improving. On the contrary, in many cellular markets, regulatory bodies are opening up new radio spectrum in the 1800 and 1900 MHz bands to provide more capacity for voice calls. Eventually, as third-generation mobile telephone systems come on line, capacity will increase and data may become an integral part of cellular services. However, this will probably not occur for several years.

Another problem facing cellular operators is that data applications are different. Mobitex operators, who run dedicated, data-only networks, have learned from experience that most mobile data customers are found in vertical markets with many

special requirements and that the selling cycle in these markets can be quite lengthy. Not all cellular operators have the marketing resources to reach these customers, and with mobile phones selling like hotcakes, few feel strong incentive to do so.

Matching applications to technology

Compared with Mobitex, data-over-cellular services have some key differences. As already mentioned, cellular networks are not dedicated data networks. For applications where network availability must be guaranteed, there is a risk that voice calls, which are normally given priority, may temporarily block the network for data traffic. Cellular networks also offer circuit-switched services for which there is a significant call set-up time. For some applications, this is a significant limitation, while for others it makes no difference at all.

Readers familiar with the packet-switching technology used in Mobitex networks realize that this makes Mobitex ideal for applications involving short exchanges with small amounts of data where instant network access and highly reliable communications are required. There are literally hundreds of successful Mobitex applications meeting these criteria in the transport, field service, security, point-of-sale and telemetry sectors.

Other applications involving file transfer or larger volumes of data, on the other hand, are not well suited for Mobitex. For these applications, data-over-cellular solutions make more sense. Call set-up time becomes negligible, and because data speeds are faster, traffic costs may be lower than in a Mobitex network, which is optimized

for a different traffic pattern. Although it is not currently a large market, most mobile phone manufacturers and cellular operators support mobile office applications that allow users to send faxes or retrieve documents from an office server using their cellular phones.

The choice between a packet-switched or circuit-switched service is thus largely determined by the application. In applications for which packet switching is the most suitable alternative, however, Mobitex offers strong features and benefits. Mobitex is extremely robust, providing pervasive coverage in the area served by a base station, very efficient use of radio spectrum and highly reliable communications. Moreover, recent enhancements of Mobitex technology have reduced power consumption, improved power management and extended battery life to levels that few wireless technologies can achieve.

New applications for changing requirements

User requirements are changing, and new applications are emerging. Interactive messaging is perhaps the best example of how Mobitex is evolving in response to these trends. Although details must be saved for a future article, the Mobitex system has recently been enhanced in a



▲ Thankfully, the growth of the Internet has made it apparent to ordinary users that bandwidth requirements for data applications may also vary.

number of significant ways to provide the foundation for what is a fundamentally new service and a completely new market.

Many people are finding that the always on, always available and always interactive nature of this new service perfectly matches their life styles. Having the equivalent of an Internet mailbox in your pocket can be liberating. New applications for RIM's Inter@ctive Pager and 3Com's new Palm VII wireless organizer are showing that information in the palm of your hand is a powerful concept and that the vast information resources of the Internet can be tapped without a fixed connection or a powerful PC.

What neither Mobitex nor any other currently available wireless technology can do is provide a rich browsing experience or support multimedia applications without a wire. Technologies promised for the future, such as GPRS or third-generation W-CDMA systems, may make this possible by raising data speeds to 115 kbps and 2 Mbps, respectively. GPRS will become available in some markets in the near future, but W-CDMA is not expected to see wide-scale deployment for several more years. In the meantime, however, many industry observers expect that people will soon be surfing the web at speeds approaching 10 Mbps using DSL (Digital Subscriber Line) or cable modem technology. Once again, we will be forced to concede that wireless wide-area networking will be slower and provide less capacity than fixed connections.

Pioneering new technology

Wireless technology for local area networks has thus far been a separate market. This may be changing, however. GSM and D-AMPS mobile telephone systems are being expanded to provide a seamless network that allows the same phone to be used on both the cellular network and the office cordless system.

Bluetooth, a new technology for wireless communications that creates micro-networks connecting devices within a radius of a few meters, will be added to Ericsson's Mobitex terminals, cellular phones, portable and handheld computers and a wide range of other devices.

There is no reason why a Mobitex Inter@ctive Pager, a GSM mobile phone, a DECT cordless phone, a Windows CE handheld PC, a desktop PC, a fax machine and a color laser printer should not talk to each other. Today, Mobitex operators provide gateways to the PSTN, satellite systems and one and two-way paging networks in order to extend the reach of the user's device. Tomorrow, Mobitex will work with these and other technologies in new ways, and Ericsson will continue to pioneer innovative wireless data solutions on all fronts.

Lengthening the lead

What is important to remember is that each wireless communications technology has its strengths and limitations. Mobitex remains the best choice for a dedicated narrow-band wireless packet data network. More than ten years of experience has taught Mobitex operators that this technology is not for everyone. Each application and each user has unique requirements, but Mobitex has proven to be an ideal technology for many more applications and users than its inventors ever imagined. Interactive messaging and telemetry are the two latest examples of how Mobitex is attracting new users and opening new markets.

Equally important is that the realization that one size does not fit all applications or users has made the Mobitex community more aware of the technology's strengths and limitations. Today, Mobitex co-exists with many other wireless technologies. In the U.S., for example, Mobitex users can send messages to any one or two-way pager, as well as

cellular phones, and satellite systems provide coverage for wireless data applications in areas where Mobitex coverage is lacking. In tomorrow's devices, Mobitex technology for wide-area data communications will merge with Bluetooth wireless technology for pico-networks and allow dispatch messages or control signals to be forwarded not only from a central office to a mobile terminal but onward to other onboard equipment or from the user's pocket to his briefcase. Hybrid devices that combine Mobitex technology with other wireless systems are also on the horizon.

These prospects are on the horizon because Mobitex technology is extremely proven and has established a leading position in the wireless world. The Mobitex standard, which is administered by the Mobitex Operators Association, has always been an open and international standard. As we will show in the second article in this series, it has also been able to rise to the challenges posed by the Internet revolution, integrating with the Internet and providing better and more useful access to the wealth of information available on the web than any other currently available wireless technology. Mobitex is thus lengthening its lead.

Among readers of Mobile Data Magazine, there are few who doubt the future of Mobitex technology. While there may be other technologies on the horizon, Mobitex is the de facto international standard for mobile data. Today, there are Mobitex networks in 23 countries on five continents, and BellSouth has put its considerable resources and powerful brand solidly behind Mobitex. With a large and steadily growing customer base and major new markets opening up, there should be absolutely no doubt whatsoever that Ericsson remains firmly committed to Mobitex and will continue to enhance the technology as we go forward into the new century. ■

A shrinking world

As I swung my bag over my shoulder and nearly fell over from the weight, I paused for thought. With each departure for a conference trip, my carry on baggage seemed to be getting heavier. No amount of aerobics or weight lifting was going to enable me to shoulder this load comfortably. There had to be a better way.

I had plenty of time to make it out to the airport, so I decided to unpack my shoulder bag to see what could be eliminated. Surely there must be something I didn't absolutely need to bring with me to Dallas.

Of course, my notebook PC was by far the largest item. On its own, it was relatively light, but when the extra battery, the U.S. and European power adapters, external mouse and two boxes of diskettes that I normally carried were added, both the weight and volume of my mobile computing platform were nearly doubled.

I knew that there was other, more lightweight alternative for accessing my e-mail and writing my articles while on the road. What I had to do was ask myself a hand-on-the-heart question: was I really going to continue working on my PowerPoint presentation at 33,000 feet while en route to Dallas or should I consider the presentation on which I had already spent countless hours finally finished? I had a new Windows CE handheld PC with pocket versions of Word and PowerPoint that I had

not yet had a chance to give a thorough workout. Perhaps now was the time.

Once the decision to jettison the notebook PC had been made, I felt giddy. My eyes fell on the camera and flash that I normally carried to take photos for my stories. Perhaps these items, as well as the spare batteries for both the camera and the flash and the three extra rolls of film that I was carrying could be left behind in favor of a digital pocket camera.

Perhaps I was getting carried away, but the cellphone caught my eye. Of course, the phone was neither heavy nor bulky, but once again, I was carrying spare batteries, two in fact, in case I needed to talk for extended periods without being able to recharge. My heart skipped a beat as I realized that even this communications lifeline could be replaced by the new Inter@ctive Pager 950.

Stripped down to the Inter@ctive Pager, a Windows CE handheld PC and a pocket digital camera, I fairly skipped out to the cab that would take me to the airport. Realizing that I would not have to live under the torture of trying to work on a plane was exhilarating. I found myself looking forward to this trip more than any other I had taken recently.

My expectations were also exceeded during the very first hours of

the BellSouth Wireless Data Solutions Conference. Not only was I able to work effectively, while still remaining in touch. I was also able to concentrate more fully on the proceedings.

After the first day of the conference, I felt a need to get away for a while. Although it was nearly midnight, the warm Texas night was alluring. As I walked towards a historic park that I had seen from the cab on my way in to the hotel, I felt the now familiar vibration signaling that the Inter@ctive Pager in my pocket that new mail had arrived.

I knew that I could ignore the message and respond later at my convenience, but curiosity overcame me. As I sat down on the park bench and opened the new message, I saw that it was from my mother, who despite her advancing age continued amaze me.

Venturing out on her own, she was vacationing in France, where she was sitting in a cybercafé at 7:00 a.m. enjoying a croissant and a café au lait while using her HotMail account to send me a message. I responded immediately, and was amazed when her second message reached me only minutes later. Soon we were chatting across an ocean and six time zones.



Links.

Mobitex information:

<http://www.ericsson.se/mobitex>

<http://www.mobitex.org>

Mobitex e-mail addresses at Ericsson:

Marketing and sales: mobitex.info@erv.ericsson.se

Customer support: mobitex.tac@erv.ericsson.se

Logistics: mobitex.logistics@erv.ericsson.se

Mobitex training center: mobitex.training@erv.ericsson.se

Ericsson links:

Ericsson's website for Network Operators: <http://www.ericsson.se/wireless>

Ericsson Mobile Data Design: <http://www.ericsson.se/mobitex>

Mobitex operators & associations featured in this issue:

BellSouth Wireless Data, US: <http://www.bellsouthwd.com>

Cantel AT&T, Canada: <http://www.cantelatt.com>

United Wireless, Australia: <http://www.uw.com.au>

RAM Mobile Data, UK: <http://www.ram.co.uk>

Companies and organizations featured in this issue:

Stockholms energi, Sweden: <http://www.seab.se>

Schlumberger, France: <http://www.slb.com/>

Global Wireless Data, US: <http://www.wireless-data.com>

Mobitex Operators Association: <http://www.mobitex.org>

Research In Motion RIM, Canada: <http://www.rim.net>

Blackberry: <http://www.blackberry.net>

GSM Consultancy: www.gsm-consultancy.com

Nettech, US: <http://www.nettechrf.com/>

Communication Network Interface, Korea: <http://www.cni.co.kr/eng/index.html>

RATP, France: <http://www.ratp.fr/>

Sybase, US: <http://www.sybase.com>

3Com, US: <http://palmpilot.3com.com>

Fidelity, US: <http://www.fidelity.com>

Itronix, US: <http://www.itronix.com>

Mobix communications, Israel: <http://www.mobix.com>

Panasonic: <http://www.panasonic.com>

Tyco: <http://tycoint.com>

Ademco, US: <http://ademco.com>

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