

mobile data

3/98

• M A G A Z I N E •

**EFT/POS and Mobitex -
a winning combination**

[10]

**Mobitex offers true
two-way messaging** [20]

Canadians on the move [4] • **Top-notch banking in Turkey** [15]
• **Those innovative Koreans** [18]

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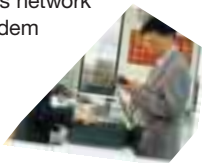
contents: no.3 1998

Publisher's Note

- [3] The theme for this issue is wireless point-of-sale applications. Find out why this is becoming a cornerstone application for many operators with significant near-term growth potential.

Mobile Data News

- [5] Cantel expands its network
New Mobitex modem
WyndTell
POS in Indonesia



Point-of-sales and Mobitex – a winning combination

- [10] Our theme article for this issue explains why Mobitex is the ideal technology for wireless POS applications, which are expected to show strong growth in coming years.

The Netherlands: No cash on delivery needed with Dutch service

- [14] The PTT Post Parcel Service chose Mobitex to increase efficiency and improve customer service.

Turkey: Wireless point-of-sale spreading in Turkey

- [15] Yapi Kredi Bank is installing 4,000 wireless POS terminals which will increase the bank's market share in merchant banking and improve service to card holders.

Canada: The pizzaman cometh

- [16] Cantel AT&T's new AirPOS service is on its way to becoming the national standard and is being used by a variety of merchants, including a pizza delivery service.

Wireless innovations abound in Korea

- [18] The Mobitex operator in Korea is developing innovative applications.

Mobitex goes for the moon

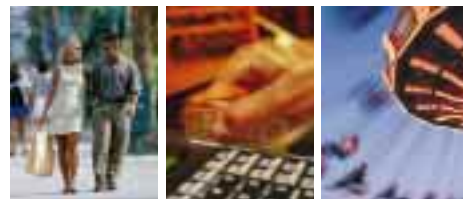
- [20] Interactive messaging is a new market in which operators are competing with vastly different technologies. Our technology review shows why Mobitex is the superior alternative for interactive messaging.

Charting the wide world of terminals

- [24] More than a dozen manufacturers supply terminals for the fast-growing wireless POS segment. We contacted the suppliers to get the facts on these important products.

Wanda Wave

- [27] A visit to Turkey reveals that our roaming reporter is a shopaholic. Can wireless messaging provide a cure when Wanda's fingers are itching to take out her credit card?



mobile data

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PUBLISHER'S NOTE

New wave of growth



THE MOBITEX WORLD AND THE MARKET for wireless data continues to change. New market conditions and user demands shape our world. Yesterday's killer app is finally making prime time. An appli-

cation once considered a sleeper is now a market opener.

Of course, Mobitex, the *de facto* international standard for wireless data, just gets better. Ericsson, operators in 22 countries around the world and a growing number of suppliers continue to advance the technology. Some things never change.

Our theme for this issue is wireless POS (point-of-sale) applications. For some time, this application segment has been regarded as the next big thing in wireless data, yet various obstacles have prevented wireless POS applications from being deployed on a wide scale.

Today the pieces are finally in place. Mobitex operators and terminal vendors are able to offer financial institutions and merchants turnkey solutions based on a highly reliable and cost-efficient network service. Wireless POS is becoming the cornerstone application in many markets, offering a business case that illustrates the key benefits of Mobitex technology.

In Turkey, Yapi Kredi Bank is working with Mobitex operator Mobicom to deploy a versatile wireless POS service for merchants and consumers. In Canada, Cantel AT&T has developed the AirPOS service, which will be used by several of the country's commercial banks. In the Netherlands, RAM Mobile Data operates the only network approved for connection to BeaNet, the national network for EFT/POS transactions.

These three case studies represent only a small sample of the POS applications currently in operation or now being deployed. In Europe, the Americas and Asia, Mobitex operators and their business partners are finding that wireless POS is a key market segment with significant growth potential.

As our article on wireless POS terminals shows, equipment manufacturers are also eager to take advantage of this opportunity. We have identified nearly a dozen manufacturers of wireless POS terminals for Mobitex and made every effort to obtain information about their products for this issue of Mobile Data Magazine.

Despite our best efforts, we have undoubtedly missed some products. We offer our apologies to these vendors. Please send us your product information, and we will do our best to rectify the omission.

On another front, interactive messaging is gaining ground. Of course, e-mail and Internet usage

has been increasingly steadily for many years, but users have lacked a truly convenient, plug-and-play solution for wireless messaging. With the Interactive Paging service offered by BellSouth Wireless Data and similar services being launched by other Mobitex operators, such a solution is finally available at a very affordable price.

Mobitex technology continues to evolve. This is as it should be and the primary reason why Mobitex is the leader in wireless data communications.

In light of this, we are very pleased to be able to announce that Rogers Cantel, the first Mobitex operator outside the Nordic region, is expanding its network in Canada. Due to Rogers Cantel's dedication and expertise, combined with a high level of IT maturity in Canada, we are certain that their expansion project will be successful. Their investment also proves that Mobitex is truly a competitive system when it comes to interactive messaging and POS.

Gunilla Rydberg
PUBLISHER

mobile data news

Mobitex expands from coast to coast in Canada

Rogers Cantel has announced the largest expansion of the Mobitex network to date. Canadians in major urban centers from coast to coast will now have access to the dedicated packet-data transmission capability of Mobitex. This major expansion of the network will complete phase two of the two-part Mobitex build-out and will provide Mobitex coverage to over two-thirds of the Canadian population.

Frank Maduri, director of wireless data at Rogers Cantel, enthusiastically explains how market and technology forces have converged and motivated this nationwide investment. There has been a significant increase in the demand for wireless data services, particularly point-of-sale (POS) applications and two-way messaging. The technology has advanced and reached the point where these services can finally be delivered in a user-friendly and cost-effective manner.

Canadians are the world's largest users of debit cards on a per capita basis. The availability of wireless hand-held POS devices will allow Canadians to continue using their debit cards, even when paying for taxis, home deliveries and so forth. The Canadian addiction to plastic will definitely result in a skyrocketing demand for wireless POS. Two out of five of Canada's major commercial banks have signed up to use Rogers Cantel's network for electronic funds transfer applications, making coast-to-coast coverage a must. (See separate article on page 10)

Rogers Cantel is already working with IVI Checkmate (formerly International Verifast Inc.) to provide merchants and consumers with access to the convenience of a POS system, which the expansion will make

available nationwide. "IVI Checkmate has made a significant investment in Mobitex-based POS products. Rogers Cantel's clear commitment to Mobitex on a national scale will ensure that we can provide our portable POS terminals to more Canadians than ever before," says Barry Thomson, IVI Checkmate's president and CEO.

The growth of the Internet and the explosion in the use of e-mail is indirectly driving the demand for two-way paging. The demand for wireless e-mail access is very strong, but until recently, the technology available has been expensive for end-users and limited in terms of functionality. Now, with RIM's new Inter@ctive 950 two-way pager, users can send and receive e-mail wirelessly and continue to have access to basic paging functionality. Rogers Cantel readily anticipates the likely upswing in demand for Mobitex services among mobile business professionals.

"We are committed to providing more mobile professionals in Canada with easy and secure access to the full range of wireless services, including corporate e-mail and LAN access," comments Charles Hoffman, CEO of Rogers Cantel. "Canadians need to be productive and have access to their computer networks, even when they are away from the workplace. The robust and reliable coverage of the Cantel AT&T Mobitex network is the answer to that need."

Another market segment that stands to gain from the network expansion is telemetry. Rogers Cantel sees potential within the next two years, as utility companies begin to deregulate. By that time, the company will be well equipped to meet the utilities' demands.

Frank Maduri strongly believes that a bright future awaits Mobitex.

"The timing is perfect. Calls are constantly coming in asking for our services, and we have the solutions to the applications companies are looking for, with the coverage to match. Cantel and its strategic business

partners have the most effective sales channels, the right technology and best-of-class products. The demand is there and Rogers Cantel is well-positioned for it."

With this most recent expansion, Rogers Cantel will add enhanced Mobitex coverage to Victoria, Vancouver lower mainland and the Fraser Valley, Edmonton, Winnipeg, greater Montreal, Quebec City and Halifax, thereby completing its coast-to-coast provision of service. This phase is scheduled for completion by April 1999.

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New CD-ROM forthcoming

Ericsson Mobile Data Design announces the development of a CD-ROM version of the Mobitex Interface Specifications (MIS). Until now, the company has distributed the MIS in the form of a thick binder to operators and application developers.

The new CD-ROM, which is in HTML format, is redesigned, updated and much easier to use compared with the hard-copy version. Users can quickly browse through the contents to find the information they need. The binder will also be kept up-to-date for those who prefer paper.

The release date is scheduled for this autumn. Distribution channels for the CD-ROM will be determined at the next MOA meeting.

For more information

Contact your
Mobitex operator.



New POS application makes for easy shopping

PT Massinfo Nusantara of Indonesia has taken EFT/POS applications one step further. The Mobitex operator has developed a system for multiple point-of-sale terminals connected to one radio modem. This application is ideal for larger users, such as department stores and supermarkets, which may have many POS terminals on-site for credit card sales, but need only one connection.

The multiple point-of-sale terminals are connected to the Mobitex network using the Wireless Router ISO 8583 from PT Dataline Prima Komunikasi, which also contains a radio modem (see configuration).

This application was developed specifically to help users reduce the costs of the communication link between the POS terminals and the bank host computer. In Indonesia, most of these links are currently over the public telephone network, which is relatively expensive compared with the

wireless network and poses a number of difficulties in consistently obtaining a good-quality line.

Larger stores normally use a leased wireline connection with a fixed communication cost. Cost efficiency is obtained only with higher credit card transaction volumes; if cash sales are numerous, then the system becomes expensive for the merchant. Since Mobitex is based on packet switching, the costs are based on the actual number of data packets transferred through the network. In the end, it is much cheaper than the public telephone network, both in terms of dial-up and leased lines. The ability to use several POS terminals on one Mobitex connection serves to further enhance cost efficiency.

The multiple POS terminal application has already been implemented in department stores, including Sogo, Metro and Makro, and installations are underway in several

other major department stores, supermarkets and hotels. Between ten and 40 terminals are used, depending on transaction volumes.

The financial institutions using the Wireless Router ISO 8583 include American Express Bank, Citibank and Duta Bank.

PT Massinfo Nusantara plans to continue introducing the application to potential merchant and banking customers who would benefit from switching to a wireless system. The company currently has an exclusive distribution agreement for the Wireless Router ISO 8583 and is interested in introducing the multiple POS application in other countries as well.

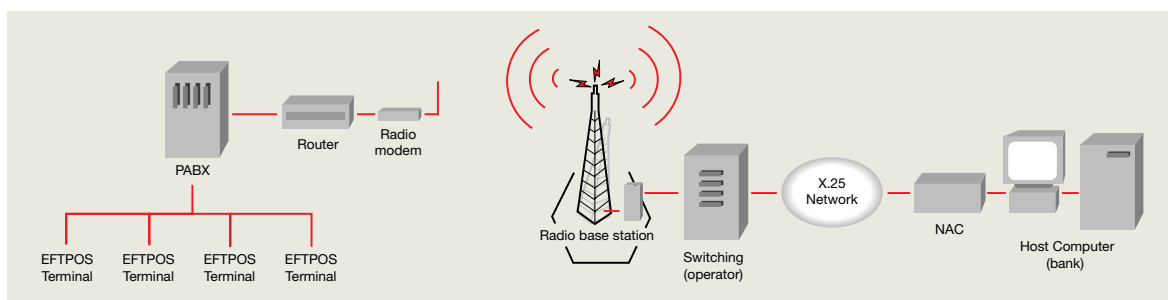
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New Ericsson modem announced

Ericsson Mobile Data Design recently announced the Mobidem M3090 OEM Wireless Modem. The M3090 is a compact wireless radio modem designed for easy integration into third-party OEM equipment for telemetry, security and SCADA applications.

Designed for the 900 MHz Mobitex networks operating in North and South America and Korea, the M3090 is a fourth-generation product that employs an entirely new platform. The new unit is extremely small, using the same circuit board and ASICs (application-specific integrated circuits) as



Ericsson's latest-generation mobile telephones. Since the unit is designed solely for integration into third-party OEM equipment, it has no casing and employs a 14-pin serial interface.

"With the new M3090 modem, we will be able to fully leverage continued advances in Ericsson's world-leading mobile telephone technology," notes Tuomo Keinänen, general manager for Mobitex modem sales at Ericsson Mobile Data Design.

The new modem, which is expected to be available during the first half of 1999, was developed in record time by a team of Ericsson engineers who faced the challenge of moving to a completely new platform with a new processor and a new development environment. A full report on this groundbreaking product will be published in the next issue of Mobile Data Magazine.

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mobile data news



Improving quality of life for the deaf

If you stop to consider the essential role communications play in your daily life, both at home and in the workplace, it may be difficult to imagine what it would be like to be deaf in this age of travel, mobility and cellular phones.

The solution for this group of citizens can now be found, thanks to the expanded partnership between BellSouth Wireless Data and Wynd Communications, aimed at providing broadscale wireless service to the hearing impaired. This partnership brings the nationwide, interactive BellSouth Intelligent Wireless Network to Wynd Communications' WyndTell service, the first service to deliver comprehensive, convenient mobile communications to people who are deaf or hard of hearing.

The WyndTell service, which has been commercially available since February of this year, operates on a palm-sized, clam-shaped terminal with a built-in screen and full QWERTY keyboard. The device alerts users of new messages by vibration, an LED or an audible alert. The WyndTell solution gives people who are deaf or hard of hearing the convenience of a mobile phone plus the flexibility to communicate interactively using a variety of methods, including text telephone (TTY), Internet e-mail, fax, alpha paging and text-to-speech.

With BellSouth Wireless Data's Mobitex coverage available to over 93 percent of the urban business population of the United

States, WyndTell customers can use WyndTell virtually anywhere they travel, including at more than 130 of the busiest airports in the country.

"BellSouth Wireless Data is pleased to support Wynd Communications' efforts in delivering a service that can change the lives of Americans who are deaf or hard of hearing," said William

F. Lenahan, President and CEO of BellSouth Wireless Data. "Wynd has dedicated itself to serving the deaf community by making a significant investment in the research, development and testing of WyndTell."

He continues, "The combination of the WyndTell service and the BellSouth Intelligent Wireless Network will ensure that deaf customers are always on, always connected and always interactive."

Joe Karp, marketing manager at Wynd Communications, has high expectations for the future. "We see tremendous growth potential in the deaf and hard-of-hearing community because WyndTell addresses key communication needs. Because of this potential, we have realigned our business to primarily serve this segment.

"We are seeing great response with customers in 42 of the 45 covered states, as well as among national opinion leaders and the leading universities and organizations focused on deafness which are using our service," he asserts.



Wynd recently announced that their customers can now choose between the two RIM pager models, 900 and 950.

The deaf community has indeed responded positively to the partnership. Besides enabling deaf professionals to work more closely and effectively with their colleagues and clients, the nationwide coverage facilitates travel. Nancy J. Bloch, executive director of the National Association for the Deaf, says, "WyndTell eliminates the search for a public TTY when you're on the road and provides so many more choices in ways to communicate."

The WyndTell service was developed after more than 18 months of research, development and testing by dozens of people with hearing impairments. The features were developed directly in response to the feedback from the pre-release product testers.

Wynd's director of sales, Judy Viera, who is deaf, also provided a great deal of input on the product development. She says, "Working with the product development team and dozens of testers, we have created a solution that, for the first time ever, gives deaf or hearing-impaired individuals the ability to be mobile, yet connected."

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Correction

The editors would like to note two incorrect statements in the article "Street parking worries solved in Australia" published in Mobile Data Magazine 2/98. The article mistakenly refers to Schlumberger of France as a German company. The article also states, "...information can also be transferred from the central computer to the base stations, where it is forwarded by radio to the modem inside the parking meter." The latter part of this sentence is incorrect.

New marketing communications material from Ericsson

The marketing communications department at Ericsson Mobile Data Design has had its hands full over the summer producing material for operators and others using the Mobitex network. Three new posters, measuring 70 x 100 cm, are available for use at trade shows, seminars or as part of a display stand. They are entitled:

- ▶ Always connected – Always on-line
- ▶ Worldwide de facto standard for wireless data
- ▶ Wireless solutions for credit-card validation



The new Mobitex Web site will be launched in September. It contains helpful information on:

- ▶ Products and services
- ▶ Mobitex market development and presentation of MOA
- ▶ Applications
- ▶ Issues and trends
- ▶ Contacts, news and case studies

Be sure to check it out!



Phase Two of our Internet development will include an on-line version of Mobile Data Magazine and connectivity information.

A new brochure for interactive messaging is also available. It describes the numerous possibilities for operators interested in developing these services and why they should choose Mobitex technology. The brochure will present various issues from both an operator and an end-user perspective and will be illustrated with real-life examples.

To order posters and brochures, contact:

Ericsson Mobile Data Design
mobitex.info@erv.ericsson.se
Tel: +46 31 703 6048

Survey of Mobitex applications

Two independent consultants are currently working on behalf of Ericsson Mobile Data Design to analyze the Mobitex applications sector by performing a survey of the existing applications and the companies developing them.

The study is intended to provide a complete global overview of the application industry and user groups. Therefore, all input from application developers, operators and users is highly appreciated.

To submit information on your company, please e-mail:

mobitex.info@erv.ericsson.se



Ericsson has released a new Mobitex Customer Services Product Catalogue, describing professional Mobitex services in the areas of consultancy, implementation, training and support.

New courses in Mobitex

The Mobitex Training Center is offering two new courses in its autumn 1998 program: Mobitex Cell Planning Principles and Mobitex R14N Upgrade Workshop. For those who would like to obtain a course description and schedule, inquiries may be sent to:

mobitex.training@erv.ericsson.se

mobile data news



Catching crooks in motion

Criminal offenders are no longer safe on the streets of Manchester. The Greater Manchester Police (GMP) force has signed an agreement with Serco, a support services and systems engineering company, to deploy LapCop, its mobile number-plate recognition system that uses Mobitex over the RAM Network.

The system captures the number-plate registrations of passing traffic and transmits them over the RAM Network to the Police National Computer (PNC). Automatic checks are carried out against listed vehicles and matches are transmitted to the most appropriate police response unit within seconds.

The RAM Network provides links to both GMP vehicle listings and the central PNC database. Checks are made on each vehicle registration mark as it arrives. If a match is made, a report is automatically sent back over the RAM Network to a data terminal in a police vehicle. The whole process takes between four and 15 seconds.

A camera, which is part of the LapCop system, is mounted in the back of a police car and obtains a series of images from passing vehicles. The system runs Automatic Number Plate Recognition Software, which captures and converts number plate image data to text format. This is automatically transmitted as a PNC request over RAM's network, detailing time, date and location.

The equipped police vehicles are fully mobile and can be positioned on motorways, major roads or at the scene of accidents, which eliminates the problem of

drivers bypassing fixed vehicle recognition systems.

Greater Manchester Police is one of the busiest forces in the country and recorded over 303,000 crimes last year, of which more than 30 percent were vehicle-related. The area covers 500 square miles, including 160 kilometers of motorway and almost 10,000 kilometers of other roads. The PNC and GMP databases hold all police information on "vehicles of interest," including details of stolen cars, disqualified drivers or drivers who need to be urgently contacted.

"Our police force covers one of the largest geographical remits in the UK, so we wanted to implement a totally mobile solution, with automatic access to PNC data when it's needed, where it's needed," says detective superintendent Bill Noble. "We look forward to seeing some radical results."

At the moment, the system links up to the main vehicle databases, but if we roll it out further, the solution could be developed to support continental plate listings, as well as make huge time savings in the identification of stolen car parts," adds detective Noble. Normally, PNC checks are carried out by patrol vehicles over voice radio to the control room operator.

Besides many types of surveillance applications, the system is ideal for use at major events with many people in cars. Three Racal Talon transporter versions of the MANPR system were recently tested at the British Grand Prix by the Northamptonshire police, who were able to make no less than 42 arrests.

The Greater Manchester Police's implementation of LapCop has been developed

by Serco in partnership with Visual Image Dynamics, Sanderson Insight and RAM Mobile Data. Sanderson Insight provides mobile access to the PNC via the RAM Network.

Jim Lawless, managing director at Serco Field Services, explains, "We recognized the huge demand for an inexpensive, yet swift and accurate system for automatic detection of stolen vehicles and developed LapCop in response."

"Because of the scale of operation, the system had to be capable of conveying a regular flow of data at a very low cost," says Vic Way, managing director of Sanderson Insight. "The RAM Network only incurs charges for data transmitted, rather than time spent on-line, which meant there was no comparison with other networks."

RAM Mobile Data anticipates wider expansion of the system in the coming months, as other police forces take an interest in LapCop. "This is another example of how mobility increases the value of information technology in the police environment," says David Wellbelove, director of RAM's public sector business unit.

And it is yet another reason why crime doesn't pay.

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MOA to meet in Amsterdam

The next meeting of the Mobitex Operators' Association (MOA) will be held on October 19 in Amsterdam. Joining the operators this time will be new associate members Mobix, Nomadic Communications and Infowave.

"The previous two MOA meetings held last January in Gothenburg, Sweden and in April in Istanbul, Turkey were very successful," relates MOA chairman David Neale from Canadian Mobitex operator Rogers Cantel. "At these meetings, new associate members participated much more actively in the Technical Guidance Council, and we are expecting more active participation from vendors in Amsterdam."

David Neale considers that the participation of vendors as MOA associate members has been very positive and contributed to creating a common development path for Mobitex products and services. In Gothenburg, there was a focus on telemetry and point-of-sale applications, while the Istanbul meeting devoted

considerable time to network extension and relations with satellite operators.

MOA membership continues to grow with both new operators and new associate members. The addition of a permanent executive officer has also strengthened the organization substantially. David Neale perceives a new optimism among MOA members.

"We are finding that the arguments for Mobitex as the wireless carrier of choice are very compelling," he notes. "Recognition in the industry is growing. People are aware of Mobitex' strength as a network that is built solely for data and which is ultimately reliable. MOA's members are widely regarded in the

industry as the experts in wireless data communications."

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Mobitex present at the flying finish

At the Belgium Ypres Westhoek Rally, which took place on June 26-28, RAM Mobile Data Belgium was the solution provider for three Mobitex applications. The applications were developed for the event with safety and security in mind, while significantly modernizing the routines associated with the rally.

A new mobile payment system based on the Mobitex network was used for the first time, which enabled more secure ticket distribution and payment, even in areas without electricity or communication lines.



Since spectator traffic at the event can be very heavy, three mobile sales terminals were conveniently located just outside the main event area, enabling spectators to purchase tickets without having to wait in long lines and with the option of using a credit card if they wished. Since the weekend tickets were relatively expensive, using wireless payment transfer meant less cash in circulation, thereby heightening security.

To enhance driver safety, the pace car and the cars ranked in the top-three were equipped with a GPS (Global Positioning System) hooked up to the Mobitex network, which enabled the functionaries in the race control center to follow each car during the races. The spectators in the press box and the VIP section were also able to follow the races more closely on special screens.

At the end of each race, the start and finish times of all of the drivers

were gathered using a wireless connection from a portable PC to the race control center. There, points were calculated and any penalties were drawn. At previous rally events, times had been transmitted using a courier or closed-circuit radio, methods which organizers realized were either ineffective or provided inadequate coverage. However, the Mobitex network and the coverage offered by RAM Mobile Data Belgium enabled both fast and reliable time reporting.

The use of RAM Mobile Data's technology is also a part of the organizing committee's strategy to classify the Belgium Ypres Westhoek Rally as one of the qualifying races for the World Championships.

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EFT/POS and Mobitex – a winning combination

This theme article provides an overview of wireless EFT/POS applications and presents three case studies from the Netherlands (PTT Post Parcel Service), Turkey (Yapi Kredi Bank) and Canada (Cantel AT&T AirPOS). This special theme issue also includes a separate article (page 24) on wireless POS terminals.



THIS COULD HARDLY be a more opportune time for devoting an issue of Mobile Data Magazine to wireless point-of-sale (POS) applications. For quite a while, industry insiders have been predicting that this would be an area of explosive growth, yet time after time, these hopes have been dashed by a variety of obstacles.

Today, however, the picture is finally bright. As the case studies in this feature article show, POS applications are finally taking off. In

as disparate countries as Turkey, the Netherlands and Canada, Mobitex operators are finding a booming market for POS applications.

As our presentation shows, growth in this application segment is likely to be global. Now that the obstacles for wireless POS have been overcome, banks, credit card issuers and other financial institutions are demanding scalable solutions that work not only in a single market, but in many markets and on a global scale.

Ideally suited

Electronic Funds Transfer/Point-of-Sale (EFT/POS) refers to the electronic, on-line authorization of a transaction from a remote terminal by a financial institution or host processor that is typically part of the computer system of a bank or credit-card issuer. Although credit cards are often involved, the transaction may be credit, debit or funds transfer.

The idea behind wireless EFT/POS applications is simple.

Instead of using a wireline connection for communication between the point-of-sale terminal and the host system which approves the transaction, why not take advantage of the Mobitex network, which can provide a connection in places where ordinary telephone service is not available or waiting times for services are prohibitively long?

As an added benefit, a wireless POS application supports mobility. Although many applications, such as the Yapi Kredi Bank's ATM installations in Turkey, are based on fixed terminals, wireless POS terminals allow a mobile sales force to collect payments directly at the customer site. Mobile terminals also allow retail sales to be conducted in temporary locations, such as exhibition halls and football arenas.

In addition, the packet-switched Mobitex network was designed for short, "bursty" data. This makes it ideal for POS applications, which typically involve data packets of less than 150 bytes for a request and less than 110 bytes for an authorization. Because call set-up time is negligible and customers pay only for the amount of data transferred, not connection time, a packet-switched wireless data network is also extremely efficient for POS applications. According to estimates by Mobitex operators, a single radio cell can support up to 1,200 POS terminals.

Achieving credibility

Proponents of wireless POS solutions, however, underestimated the challenges facing them in opening this market. Although the new wireless technology showed much promise, it was viewed with suspicion in many quarters.

"Banks and other financial institutions are by nature extremely cautious," notes MOA chairman David Neale, who as vice president for data and emerging technologies at Rogers Cantel Inc. managed the development of the Cantel AT&T AirPOS service now being used by the Royal Bank of Canada. "They demand an extremely high level of security for financial transactions and are heavily dependent on legacy systems with proven reliability. They do not buy new technology for the technology's sake, and we had to work very hard to establish our credibility."

In virtually all markets, experience shows that banks want a completely transparent solution. In effect, although a wireless link is being used,

it should look just like a dial-up wireline connection to the payment terminal. Terminal equipment and protocols designed for EFT/POS applications operating in this environment are thus not immediately useful in a wireless environment.

Transparent solution

The Canadian experience shows that operators and terminal manufacturers must work together to create a service that meets the banks' requirements. Put simply, the operator must implement a gateway to the banks' main-frame systems, while the terminal manufacturer must adapt an existing payment terminal or develop a new terminal that operates over a wireless network.

Providing a transparent solution means changing as little as possible, says Stephen Jack, senior marketing manager at Rogers Cantel and the chief architect behind the AirPOS Financial Gateway. To the bank's system, a wireless POS terminal should be just like any other terminal. It should support the same protocol and appear in every respect to work like a wireline terminal.

The AirPOS Financial Gateway on which the Cantel AT&T service is based, is a unique solution that simplifies the terminal designer's task. In effect, all of the software in a conventional terminal for handling communications can be eliminated. "The terminal can simply send data out the port and assume that there is always a connection. All we require is that you put the bank-specific data in an MPAK (Mobitex packet)," explains Stephen Jack.

Other gateway implementations require more work. In the Turkish case, for example, YKB decided to take a more traditional approach, which uses the Mobitex network's built-in X.25 gateway. In the Netherlands, RAM Mobile Data was able to take the middle road by implementing a gateway in its network to the national BeaNet network used by virtually all of the country's EFT/POS applications.

Wide selection of terminals

The variety of gateways with which terminal manufacturers must work means that expertise in banking systems and EFT/POS protocols is not sufficient. These suppliers must also



With Mobitex a bank will find POS solutions that will support multiple applications, such as integrated solutions for taxis and customizable solutions for retail operations. ▼





▲ In the Netherlands, as in many other countries, use of credit and debit cards and PIN codes is very high. With Mobitex, response time is typically 4-12 seconds.

be experts in communications, and wireless networks add a new challenge. Although Ericsson's Mobitex OEM radio modems and software from third-party sources can help to reduce the complexity of the task, developing a wireless POS terminal is still a non-trivial undertaking.

Despite these challenges, more than a dozen suppliers (see separate article) are currently offering wireless EFT/POS terminals. These suppliers include both established players, as well as new entrants to the field. This wide range of products reflects the tremendous potential these companies and the Mobitex operators see in today's market.

Growth rates for EFT/POS terminals are international. Growth in terminal deployment is highest in the Latin American, Asia Pacific and Middle East regions, where it is expected to amount to around 40 percent annually. Although lower, growth rates in Europe and North America are still expected to top 20 percent and reach as high as 35 percent in some countries, according to the Nilson Report, a POS industry newsletter.

Nationwide standard

The three case studies accompanying this article represent only a small number of the many POS applications currently operating or soon scheduled to be taken into

operation on Mobitex networks around the world. Each application, however, shows how the Mobitex operator worked closely with its business partners to implement a service and an application that meets the unique requirements of its market.

In North America, wireless POS applications have been in operation for some time. VeriFone as a terminal manufacturer and Master Card and American Express as credit card issuers are very active in this market, and the systems developed by these companies are being field tested and deployed in South America, Europe and elsewhere with excellent results.

The success achieved by the Cantel AT&T AirPOS service, however, marks a breakthrough in this field. Currently, both the Royal Bank of Canada and the Bank of Nova Scotia have signed on. Negotiations are also nearing completion with two other Canadian commercial banks. AirPOS and Mobitex are thus positioned to become the *de facto* national standard for wireless POS applications in Canada.

Cornerstone application

The Dutch PTT Post Parcel Service application is representative of current trends in Europe and other parts of the world. In the Netherlands, as

in many European countries, use of credit and debit cards and PIN codes is very high. The BeaNet network used for EFT/POS in the Netherlands makes this country somewhat unique. The Mobitex network operated by RAM Mobile Data Netherlands is also the only wireless service certified for connection to BeaNet, making Mobitex the logical choice for wireless POS applications.

There are numerous other examples from Singapore, the U.K. and other countries, where operators and service providers have found the arguments compelling for a wireless POS application based on Mobitex technology. In these countries, infrastructure is not an issue. There are many alternatives for both fixed and wireless communications, yet Mobitex has been identified as the most reliable, cost-efficient and flexible solution.

Turkey is perhaps the most spectacular success story in this issue. In this case study, a new operator has moved very quickly to deploy a network offering excellent coverage in the most populated areas of the country and to assist its largest customer in implementing a service that gives Yapi Kredi Bank (YKB) a major competitive advantage in the market. Here, wireless POS is the cornerstone application for a new operator.



▲ Mobile terminals allow retail sales and cash withdrawal to be conducted in temporary locations such as exhibition halls, football arenas and amusement parks.

Working the value chain

It is no coincidence that wireless POS has assumed this role for Mobicom, the new Turkish operator. In both Asia and South America, new operators are finding that wireless POS applications provide the soundest business case for their markets and are acting accordingly. This is the first-ever issue devoted to point-of-sale applications, but wireless POS success stories will undoubtedly be a regular feature in future issues of *Mobile Data Magazine*.

This does not mean that there are not challenges in successfully deploying wireless POS applications.

As Stephen Jacks at Canadian operator Cantel notes, "We knew that we had to work the entire value chain, from the terminal manufacturers and the banks to the banks' customers. Building a world-class service and striving to become a value-added operator would be meaningless without recruiting retailers and merchants who wanted to use the service."

This point was also not lost on YKB's managers, who identified as one of their primary strategic goals to increase their share of the merchant banking business. However, in both Turkey, the Netherlands and Canada, success

was by no means given. As our three case studies show, a well-conceived business strategy and a team effort involving the operator, the terminal supplier and the customer were needed.

When these prerequisites are present, wireless POS applications have tremendous potential. Today, after many false starts, the pieces are finally in place for truly transparent applications that offer superior benefits in terms of cost efficiency, extremely reliable and rapid processing, and mobility. Wireless EFT/POS and Mobitex technology are a winning combination. ■

The gateway to the financial giants

The AirPOS Financial Gateway is the central component in Cantel AT&T's new AirPOS service and the key factor in providing a transparent solution for Canada's commercial banks. Cantel AT&T evaluated several alternatives for providing gateway functionality, including the conventional Mobitex X.25 gateway and a gateway developed by BellSouth Wireless Data in the U.S., but found that none of these solutions met all of the banks' requirements. The company thus decided to build its own gateway.

"Our solution was to use a special switch that feeds into the Mobitex exchange (MOX)," explains Stephen Jacks. "With this switch, which does not have to be co-located with the MOX, we can handle up to 12,000 simultaneous users per frame relay line. This makes it a very flexible and scalable solution."

Connectionless environment

The switch itself is a standard product, which is unremarkable in most respects. The secret behind the AirPOS gateway, however, lies in what Cantel has termed MTP/POS. This is an

extension of the standard Mobitex Transport Protocol for point-of-sale applications.

Using MTP/POS, Stephen Jacks and his team designed a gateway that in every respect emulates wireline terminals as seen by the central system at the bank. On the wireless side, however, communication is completely connectionless. This means that the gateway sets up and tears down all calls on behalf of the terminals with which it communicates.

Compelling features

Apart from greatly simplifying terminal design, this architecture has several compelling features. Perhaps the most important of these is that communication between the AirPOS Financial Gateway and the terminals uses MASC, the native data format for Mobitex, meaning that communication is maximally efficient.

Another advantage is that this architecture avoids the overhead of an end-to-end session between the terminal and the host system at the bank. The wireless POS terminals operate in a connectionless environment and send and receive only the

data needed for the financial transaction. Instead, the gateway handles handshaking, acknowledgments and other aspects of the end-to-end communications protocol on the terminal's behalf.

Right the first time

"The proof for us that we had gotten it right came with certification testing by the Royal Bank of Canada," relates Stephen Jacks. "The AirPOS Financial Gateway was certified with no faults on the very first test. This was a truly exceptional result that showed that we satisfied the bank's very stringent requirements in every respect."

The Canadian Mobitex operator now hopes to share this outstanding achievement with other operators. Although it was developed in-house at considerable effort and expense, Rogers Cantel does not regard the AirPOS Financial Gateway as proprietary technology, but rather encourages other operators to study its solution and to develop similar products. The company is also considering submitting the MTP/POS protocol extensions to MOA's Technical Guidance Council.

The Netherlands: No COD needed with Dutch service



COD (cash on delivery) is becoming a thing of the past in the Netherlands. Thanks to Mobitex and the wireless data network operated by RAM Mobile Data Netherlands, payments for parcels delivered by the PTT Post Parcel Service can be made on delivery using a debit or credit card. The payment is forwarded wirelessly over the Mobitex network to BeaNet, a national network that supervises all PIN code transactions in the Netherlands.

WITH 1,500 DRIVERS, the PTT Post Parcel Service is one of the Netherlands' largest parcel services. The company has specialized in freight forwarding and the delivery of parcels weighing up to 30 kg.

The PTT Post Parcel Service handles over 75 million parcels per year, making it the largest company of its kind in the country. If requested by the customer, deliveries may be insured, registered and paid upon receipt. Delivery is guaranteed overnight.

Of the parcels delivered by the PTT Post Parcel Service, some three million are paid by the receiver. Previously, these parcels often had to be returned because the receiver did not have cash or a check on hand for payment. This was a source of irritation both for customers and the drivers.

A solution was found in the wireless payment methods offered by RAM Mobile Data. With a wireless POS terminal, drivers are able to accept payment at the door on delivery of a parcel.

Fast and reliable

To date, some 600 PTT Post Parcel Service drivers have been equipped with wireless POS terminals supplied by NCR, which is also the main contractor for the project. The battery-operated terminal has a keypad, a radio modem and an antenna. It communicates with RAM Mobile Data's Mobitex network and forwards transactions to BeaNet, which handles all PIN code transactions in the Netherlands.

The PTT Post Parcel Service is the first logistics service supplier to offer customers the ability to pay via wireless POS terminals. RAM Mobile Data is also the only network approved

for BeaNet transactions. With the wireless connection to BeaNet, customers can pay using a credit or debit card and a PIN code from virtually any location throughout the Netherlands. Data delivery over RAM's Mobitex network is reliable and fast, with response times typically less than 10 seconds.

"We are very satisfied with the function and performance of the RAM Mobile Data network," reports Gerald van Weel, product manager at PTT Post Parcel Service.

Satisfied customers

The advantages of effecting electronic payments at the door are obvious. Customers do not need to keep cash at home when expecting a parcel from the PTT Post Parcel Service. Drivers carry less cash and checks, which increases security. Using wireless payment terminals also helps to reduce the number of parcels that must be returned because the customer did not have cash at home. In addition, administrative work is eliminated, since less cash and fewer checks are handled.

The response from the PTT Post Parcel Service's customers has been positive. Customers regard the new wireless terminals as a convenient means of payment and consider this an improvement in service.

In the Netherlands, where payment using credit and debit cards with PIN codes is widely accepted, wireless payment terminals are not limited to post parcels. RAM Mobile Data is actively marketing the wireless payment service to taxi companies, amusement parks, mobile shops and exhibitions. ■

Wireless POS spreading in Turkey

Yapi Kredi Bank (YKB) is one of Turkey's largest commercial banks. When Turkish Mobitex operator Mobicom brought wireless data technology to Turkey, YKB saw an opportunity to significantly improve customer service and increase its market share in merchant banking with wireless terminals.



MOBICOM, THE NEW Mobitex operator in Turkey, has been working with wireless EFT/POS solutions since 1997, when the decision to invest in a wireless data network was taken. Since that time, Mobicom has worked hard to build out its network and to offer wireless POS services to customers. These efforts were recently rewarded when Yapi Kredi Bank (YKB), one of Turkey's largest commercial banks, decided to deploy 4,000 wireless POS terminals.

Deployment of the initial 400 units began in June. Completion of the first phase of the project consisting of 4,000 terminals will be completed by September. According to YKB's business plan, a second phase will then commence with an increasing number of terminals.

Multiple POS solutions

Installing ATMs in locations where wireline service is not available or not completely reliable was a major factor in YKB's decision. More important business objectives, however, were to increase market

share in merchant banking and to penetrate new markets for mobile applications, including cash handling for distribution operations, home delivery and retail operations in tourist areas.

YKB has a market share of 34 percent among persons holding banking cards, making it one of Turkey's leading banks in this market. The bank's share of merchant banking, however, was less than 20 percent, and with the new wireless POS terminals, YKB was intent on increasing this share. The bank therefore sought alternative POS solutions that would support multiple applications, integrated solutions for cashiers and checkout counters and customizable solutions that would be suitable for a wide variety of retail operations.

Since 1997, more than ten EFT/POS vendors have been working with Mobicom on the integration of existing and new products with Mobitex for the Turkish market. Following Mobicom's initial marketing and development efforts, YKB elected to

place orders for its first 4,000 units with Ingenico and Intellect.

Solid image-maker

The wireless POS terminals deliver major technical benefits to YKB and its customers. Among these are fast response times (typically 4 to 12 seconds, vs. 15 to 30 seconds for wireline) and superior availability (99.96 percent vs. 70 percent for wireline). Additional benefits include extremely high security, high reliability with no congestion or overload and virtually unlimited expansion capability. From the bank's perspective, Mobitex has an advantage in that Mobicom takes responsibility for network management.

"We regard Mobitex as a solid image-maker," says Ayhan Feridun, vice president for business and scope development at YKB. "Our new wireless solutions for on-line banking are a catalyst for increasing market share and improving customer service. Furthermore, we can offer easier and more efficient operations with significant cost

reductions for key customer groups in the merchant and retail sectors.”

Opening new markets

Offering a range of solutions is a key element in YKB's business strategy, which is intended not only to increase market share but to open new markets. One such market is mobile sales forces, where YKB will use its wireless POS solution to enable payments to be collected directly from distribution channels. With other solutions for merchants, the bank intends not only to increase its share in merchant banking, but also to increase its customer base in the card payment market.

Tourism is another sector in which the bank sees great potential. Currently, Mobicom's network offers best coverage in the high-population areas around Istanbul, Ankara and Izmir. Coverage is being expanded, however, along the Southern Mediterranean coast where the most popular tourist resorts are located. Visitors to Turkey will thus be able to make cash withdrawals on their Visa and American Express cards at YKB's wireless ATMs, as well as pay for meals and souvenirs at restaurants and stores equipped with wireless POS terminals.

Premier application

Although Mobicom concentrates on all wireless data segments, including field sales and service, transportation, public safety and telemetry, wireless POS is in many respects the premier application for Turkey's new Mobitex operator. Together, Yapi Kredi Bank, Mobicom and its business partners are creating new services and defining a new market in one of Europe's most dynamic economies. If the initial results are any indication, the 4,000 wireless POS terminals now being deployed by YKB are only the beginning. ■

Canada: The pizzaman cometh

In the classic Eugene O'Neil drama, it was the iceman who filled the ice box that kept food and drinks cool and refreshing. Today, for many people of a younger generation, the welcome sound of the doorbell signals pizza delivery. Now, thanks to the Cantel® AT&T™ AirPOS™ service, Canadians no longer need cash, but just a debit card to pay for pizzas delivered to their homes.

MARKETED UNDER the co-brand Cantel AT&T, AirPOS is a new wireless POS service for retailers and other business operations where fast, efficient and convenient payment is key to maximizing profitability. The new service, which was developed by Cantel AT&T in Canada, is adaptable to virtually any retail operation and has been approved by Canada's leading financial institutions.

The Royal Bank of Canada, which has the country's largest merchant



base, was the first to certify the AirPOS service for debit and credit card transactions. More recently, the Bank of Nova Scotia also approved the service for its merchant customers. Negotiations are also nearing completion with an additional two commercial banks in Canada.

“The Royal Bank is committed to the timely delivery and support of efficient and convenient electronic debit and credit payment solutions to all business segments,” says Frank Moore, vice president for merchant

services and point-of-sale at the Royal Bank. "This wireless service provides the opportunity for us to enhance our service both to the commercial and personal banking customer."

Enormous growth expected

The first device to be approved for use on the AirPOS services is the Air Quatro wireless POS terminal manufactured by IVI Checkmate, Canada's leading producer of point-of-sale terminals. Approval of IVI's Air Quatro for use on the Canadian

Mobitex network paves the way for a series of portable, long-range wireless terminals from IVI. The new terminals will be deployed in a number of currently untapped electronic payment markets, including taxis, limousines, home and office delivery and stadium concessions.

"Rogers Cantel is a leader in the wireless industry and continues to advance the technology of wireless communication," states L. Barry Thomson, president and CEO of IVI Checkmate. "We are pleased to

take advantage of Rogers Cantel's expertise to explore new business opportunities that will allow IVI to develop the high-quality products that customers demand from us and for which IVI is renowned."

"The market for wireless POS is poised for enormous growth," says Charles Hoffman, president and CEO of Rogers Cantel Inc. "Rogers Cantel is pleased to work with Canada's largest POS company to provide the first national wireless POS service in Canada. Together, IVI and Rogers Cantel will carry some of the two billion electronic transactions that occur in Canada each year."

Profitable for customers

Rogers Cantel has had a clear vision to create a service that adds value to the network and which will increase profitability not only for IVI and other business partners, but for the banks and their customers, as well. Recently, the Canadian Mobitex operator also announced a substantial network build-out that will help the banks and their merchant banking customers to launch the AirPOS service nationwide.

The coming months will be exciting times for Rogers Cantel as more and more merchants come on line. In the meantime, one of the most gratifying initial successes was the decision by a Toronto-based chain of pizza restaurants to use the AirPOS service in its home delivery operations. Now, as Cantel AT&T engineers and marketing representatives work overtime serving their many new customers, they can at least send out for pizza with a clear conscience. ■



▲ Downtown Toronto: Banks demand an extremely high level of security for financial transactions, notes David Neale, who as president for data and emerging technologies at Rogers Cantel, managed the development of the Cantel AT&T AirPOS service now being used by the Royal Bank of Canada.



Wireless innovations abound in Korea

The Mobitex network operated by Intec Telecom, which was largely in place and operational before the recent economic downturn in Korea, is adding new subscribers at a rapid rate. Many of these new subscribers are using innovative applications developed in Korea by Intec Telecom. The Intec Group, of which Intec Telecom is a subsidiary, also includes ITS, a company that manufactures wireless terminals for the Mobitex operator.

ONE OF THE FIRST applications out of the gate was a unique system for collecting bus fares. In Seoul, with a population of some 12 million people, buses are the primary means of public transport. With bus fares often costing several thousand Korean Won (KRW), keeping enough coins on hand is a problem for the city's commuters.

A smart-card system enabling commuters to pre-pay bus fares had been in use for some time. The idea behind this system was that commuters would be able to load their cards with cash at any one of 3,000 kiosks around the city. However, this required the kiosk

owner to install a wireline debit terminal and incurred a cost of KRW 50 per transaction to Korea Telecom.

Mobitex operator Intec Telecom saw the opportunity. Charging only KRW 30 per transaction and offering a wireless terminal for immediate installation costing much less than a wireline terminal, Intec made rapid inroads. "Today we have 1,000 kiosks connected to our system, and the number is growing daily," reports Sang-Un Yoo, executive managing director at Intec Telecom.

Intec also plans to extend the smart card system to Seoul's subway

system. Recently, the operator won a concession covering about half the subway system, which currently uses paper tickets. When the smart-card system is taken into operation, commuters will be able to use the same card for buses and subways.

Taxi drivers kept busy

The next area for expansion was a taxi dispatching system. For taxi drivers, the extra fares and increased revenues that a wireless dispatching system promised was an attractive prospect, but the cost of the wireless terminal was a crucial factor.

To demonstrate the promise of this application, some 300 Seoul taxis were equipped. Following this initial successful deployment, a second roll-out is now in progress that will bring the total number of taxis equipped with Mobitex to 1,500 by the end of the summer. With the introduction by ITS later this year of a less expensive terminal, Intec Telecom expects this number to rise to between 5,000 and 6,000 taxis.

The dispatching system used in Seoul includes a GPS (Global Positioning System) receiver mounted in the mobile terminal in the vehicle. At the dispatching center, operators can view an electronic map that shows vehicle locations, direction of travel, speed and distance from the destination. Dispatch operators and drivers can also exchange text-based messages with full support for Korean characters.

The response from drivers has been enthusiastic. Drivers using the system report that they get many more fares. By working to bring down the cost of terminals, Intec has demonstrated its commitment to taxi operators. This, in turn, has increased revenues both for drivers and for Intec Telecom.

New growth areas identified

Other areas on which Intec Telecom is focusing are two-way paging, the security and insurance sector and the power industry. As yet, there are few applications or users in these markets, but Intec Telecom sees significant potential for the future.

"Two-way paging is an attractive application," relates Sang-Un Yoo. "There is considerable interest in two-way paging in a number of vertical markets, so this is where we will start. Naturally, we are also interested in opening a horizontal market for two-way

paging, but we expect that this will be a later development in Korea."

Current plans call for a two-way paging service to be launched this autumn. While initial customers for this service will undoubtedly be found in vertical markets where two-way paging is adequate for simple dispatching applications, there is significant potential in the horizontal market. Today, there are more than 16 million one-way paging subscribers in Korea.

More promising right now are telemetry applications for the security sector and the power industry. Intec Telecom is now completing work on a gateway for a security application in which existing wireline connections via the PSTN will be replaced by wireless links over the Mobitex network.

"For security systems, a wireless data network offers a superior solution," Sang-Un Yoo points out. "Not only is Mobitex cheaper than wireline with respect to both installation and monthly service costs. A wireless link is by nature more secure, since there is no line that criminals can cut when attempting a break-in."

Ambitious plans for growth

Intec Telecom predicts that the number of installations in the security and insurance sector will grow to more than 5,000 by the beginning of next year. The company also has ambitious plans for a telemetry application for the power industry, which operates some 400,000 switching stations throughout the country.

Today, power outages are a relatively common occurrence. With a wireless data application, however, electricity distribution companies could more quickly locate and repair faults. With telemetry and a wireless data network, power companies will also be able to monitor their networks more efficiently and take preventative action when demand surges occur.

"There is no doubt that Intec Telecom is a very ambitious and innovative operator," says Lars Birkstedt, area manager for Korea at Ericsson Mobile Data Design. "The Korean Mobitex operator has moved very quickly to build a network with excellent coverage that will soon be the world's second largest. Intec Telecom offers an excellent service that is rapidly attracting new customers." ■



▲ Intec, the Korean Mobitex operator, has developed a unique smart-card system for collecting bus fares.



▲ Intec expects the number of taxis equipped with Mobitex terminals to rise to between 5,000 and 6,000 vehicles.

Mobitex goes for the moon



In the rapidly developing interactive paging market, Mobitex is going for the moon. Designed from the outset as a fully two-way wireless data network, Mobitex offers the best technology for interactive paging. Feature for feature, it beats rival technologies hands down. With so much going for it, there are no limits for Mobitex in this new market.

INTERACTIVE PAGING is a new type of service and a new market based on Mobitex technology. Although significant enhancements have been made in the Mobitex system software to accommodate interactive paging, it is important to note that the basic technology remains the same. What is new are the devices used for interactive paging and the user requirements for

which they are designed.

In this article, we will examine the technologies used for interactive paging and other forms of two-way messaging from the standpoint of end-user requirements. First, however, let us place two-way messaging in the context of established technologies and define the space for which the market players are battling.

Closing in on a new market

Two-way messaging systems fall somewhere between one-way paging and mobile data systems in terms of subscriber cost and functionality. A further differentiation of services can be obtained by dividing the two-way messaging market into three segments: delivery acknowledgment, preprogrammed and full two-way messaging. This differentiation also



▲ Without interaction, a longer message simply increases the user's frustration over not being able to respond.

reflects a trend in the market which is going from one-way to two-way paging and from alphanumeric pagers to more capable devices for interactive messaging.

Delivery acknowledgment is the simplest form of two-way messaging, offering what is advertised to U.S. consumers as guaranteed delivery. A further step up in functionality is a system offering preprogrammed responses, typically one of 16 numerical codes representing a pre-defined message. This type of system has sometimes been referred to as 1.5-way messaging. Full two-way messaging, finally, presents few limits on the response transmitted by the mobile device. This is the type of service being offered by BellSouth Wireless Data in the U.S. as interactive paging and for which the Mobitex system software has been enhanced.

Few entirely new technologies are being developed specifically for two-way messaging. Instead, existing technologies for one-way paging and mobile data are being adapted to the new market requirements. Other contenders include the Short Message Service (SMS) offered in digital cellular systems, primarily GSM and D-AMPS, as well as variants of these technologies for PCS (Personal Communications Systems).

Clearly, adapting an existing technology and/or re-using an existing network for two-way messaging is most cost effective for operators. Migrating an existing technology to two-way messaging, however, is more or less difficult. A one-way paging system requires significant added functionality. With a mobile data system

such as Mobitex, on the other hand, the full functionality of the system will not be needed for two-way messaging. Mobitex operators thus essentially get a two-way messaging network for the cost of a system software upgrade, while one-way paging operators face substantial investments in infrastructure.

Staking out the battleground

Interest in two-way messaging in the paging industry has grown steadily in recent years.

One development fueling this interest has been the increasingly widespread use of alphanumeric devices, which have transformed the pager from a simple beeper into a more useful information appliance. The combination of an alphanumeric pager and the broadcast capabilities of paging networks has enabled the development of attractive wireless information services that customers perceive as having real value. For many users, however, an alphanumeric pager begins to look like one-way e-mail. Without interaction, a longer message simply increases the user's frustration over not being able to respond.

Of course, many paging subscribers do not want or need more than simple beeper functionality. Although the two-way messaging market is expected to show exponential growth over the next five years, it is starting from a near-zero level today and, according to estimates by the Yankee Group, is expected to amount to no more than 25 percent of the total paging market by the year 2002. Interactive paging subscribers, in particular, will be predominantly new users, not existing users who have moved from simple beepers to a more capable service.

For Mobitex operators, interactive messaging represents an entirely new market which can be well served using the network's existing functionality. BellSouth Wireless Data is leading the



way with its Interactive Paging service, which targets new customer groups that are different in many respects from traditional wireless data users. Many Mobitex operators around the world are watching the U.S. with interest and preparing to launch similar services.

Mike Lazaridis, president of RIM (Research in Motion), the Canadian company that manufactures the Inter@active Pager being used by BellSouth Wireless Data, characteristically takes an aggressive view of the opportunities for operators. "The market will be two things: super cheap one-way for something like five dollars a month with the device included, and full two-way, all-you-can-eat for 25 dollars a month. That's the battleground. Everything else is no man's land."

Fulfilling user requirements

Apart from interactivity and full two-way messaging, which are the defining characteristics of the new interactive paging service, what are the primary user requirements

that must be fulfilled by Mobitex or any other competing technology? Industry experts agree on the following six requirements, although not necessarily on their order:

- ▶ Coverage
- ▶ Device size
- ▶ Service cost
- ▶ Battery life
- ▶ Network latency
- ▶ Capacity

Beating the competition

In the U.S., BellSouth Wireless Data is entering the battle for interactive paging customers armed with Mobitex technology that beats rival technologies hands down on virtually all counts. Compared with, for example, ReFLEX, a system developed by Motorola on the basis of its industry-standard FLEX technology for one-way paging, Mobitex offers significantly better functionality.

In the critical area of coverage, Mobitex has the edge as one-way paging operators scramble to upgrade their networks for two-way messaging. While one-way paging networks have long been able to offer coverage exceeding that of cellular networks, BellSouth Wireless Data has worked hard and invested substantial sums over the years to catch up. Now, with a wireless data network that was designed from the start to support two-way data communications, BellSouth Wireless Data is able to offer greater coverage nationwide and better coverage in major metropolitan areas than the leading two-way paging operator. For end-users, Mobitex thus means being in touch more often and in more places.

Another important parameter in which Mobitex offers vastly superior service is network latency. Response times for a round-trip message returned to the sender with a reply from the recipient are typically less than ten seconds with BellSouth Interactive Paging Service. Competing two-way paging operators do not even come close. Network latency of a system is seldom less than a minute and often as much as four or five minutes. Such long latencies, which are a consequence of a network architecture designed for one-way paging broadcasts, mean that two-way paging services are simply not interactive.

A related issue is capacity. Paging networks were designed as broadcast networks for one-way messaging. Adding a second network for



Research In Motion recently introduced its new Inter@active Pager 950, a revolutionary device in the field of interactive messaging. About the size of a deck of cards (3.5 x 2.5 x 0.93 inches), it has an improved LCD display and a keyboard that's easier to use with a thumb-operated roller wheel and a menu-driven interface. According to RIM, the pager delivers higher performance and increased memory, along with an extended battery life – it can operate up to three weeks on a single AA alkaline battery! The Inter@active Pager 950 will also be priced lower than preceding models.



▲ Field tests by independent researchers have shown that the Mobitex-based interactive paging service operated by BellSouth Wireless Data is 100% reliable.

receiving messages can be problematic, and the greater volume of data that two-way messaging entails quickly leads to capacity problems. The Mobitex system, on the other hand, which was designed from the start for two-way data communications and which features distributed intelligence in its base stations, does not suffer from these problems.

Perhaps most devastating for other two-way paging services is that they are simply not as reliable as Mobitex, despite promises of guaranteed delivery. Field tests by independent researchers have shown

that the Mobitex-based interactive paging service operated by BellSouth Wireless Data is 100-percent reliable. A competing two-way paging service, on the other hand, exhibited an error rate as high as 10 percent under the most demanding conditions. Missed or garbled messages are not the kind of service that users want.

Taking a giant leap

Mobitex technology can thus provide a truly interactive paging service with user benefits that cannot be matched by rival technologies. BellSouth Wireless Data is leading

the way by leveraging the power of Mobitex technology to open this new and exciting market. Outside the U.S., other Mobitex operators are studying the market carefully and preparing their own service offerings.

As stated at the outset, interactive paging is an entirely new market for Mobitex. Most users will not need the full functionality of the Mobitex network. On the other hand, new subscribers for interactive paging services will most likely not be found among traditional paging users. Instead, interactive paging will undoubtedly attract users who are best described as road warriors and pocket people with an intense desire for advanced communications devices that fit in a pocket and run for weeks on a single charge. For people for whom e-mail, interactive messaging and Internet connectivity are essential, interactive paging may very well become a lifestyle choice.

As countless reviewers in the trade press have noted since the introduction of RIM's Inter@ctive Pager and BellSouth Interactive Paging Service, having full two-way messaging capabilities and the equivalent of a universal mailbox in the palm of your hand quickly becomes addictive. Like landing on the moon, it's one small step for Mobitex, but a giant leap for mankind. ■

Best battery life in the business

In the Mobitex community, the virtues of packet switching have been extolled countless times. Now, there's a new twist. Thanks in large part to packet switching, the Mobitex-based interactive paging service offers the best battery life in the business.

For users of portable devices who want long battery life, circuit switching becomes a major liability. Unlike packet switching, which sends data in short bursts, circuit switching demands a dedicated connection for the duration of the exchange. That

means that the radio transmitter is switched on and consuming power the whole time.

Mobitex technology also offers numerous functions for conserving power that have been significantly enhanced in the latest system release. Now Mobitex PC Card modems can be powered up or down and the transmitter switched on or off more quickly than ever. This capability, combined with a number of protocol improvements, allows battery life for pocket devices to be extended to as much as three weeks.

Charting the wide world of terminals



What would a theme issue on EFT/POS be without mentioning the companies that develop and produce terminals? Terminal manufacturers and application developers are, after all, among the driving forces behind expansion of the Mobitex user base. They are the ones working closely with countless supermarkets, restaurants, department stores, gas stations, banks and financial institutions all over the world, providing solutions that meet the needs of their day-to-day operations. Their innovations introduce the possibilities of wireless data to new market segments and users every day.

MOBILE DATA MAGAZINE set out to provide the readers of this issue with a comprehensive overview of the EFT/POS terminal market. In the process, we have unfortunately missed some manufacturers, either due to lack of contact information, or because the surveys we sent were not returned to us. So if there's a company missing here – and especially if that company is yours – please contact the editor and we'll publish the information in a future issue of the magazine.

Company: Bentas

Based in: Turkey

EFT/POS product(s): The Dione Xchequer family of POS terminals with a Mobitex modem

Modem compatibility: Ericsson M2160

Protocols supported for EFT and credit-card verification: Visa Emea and ISO 8583

Countries in which products are being used for Mobitex: Pilot projects in Turkey

Countries in which products are sold: Turkey

Markets and/or segments currently in focus with regards to Mobitex: Banking, retail and Internet are presently in the spotlight.

Future outlook: Plans include integrating Bentas' Insurance Package.

Company: Dialogis Software GmbH

Based in: Germany

EFT/POS product(s): MobilX25-Box (Mobitex modem not included)

Modem compatibility: All radio modems that support MASC and MPAK

Protocols supported for EFT and credit-card verification: All types of ATMs and POS products using the X.25 protocol for communication between the terminal and host can run on the Mobitex network using the MobilX25-Box. The application can also be used for lottery terminals.

Countries in which products are being used for Mobitex: Turkey

Countries in which products are sold: Turkey, Switzerland, Austria, Germany and Kuwait, with other countries soon to be added. Sales channels include

subsidiaries, agents and direct sales.

Markets and/or segments currently in focus with regards to Mobitex:

Special attention being paid to the banking sector for ATMs, EFT providers, as well as lottery companies.

Future outlook: Dialogis is interested in establishing contact with distributors in other Mobitex countries that would like to sell the MobiX25-Box.



Company: Digital Equipment AB

Based in: Sweden

EFT/POS product(s): Automatic teller machines (Mobitex modem not included)

Modem compatibility: All radio modems that support the MASC protocol.

Protocols supported for EFT and credit-card verification: The ATM application protocols Diebold 912 and NDC are supported.

Countries in which products are being used for Mobitex: Indonesia (live) and Poland (pilot)

Countries in which products are sold: Russia, Poland, Germany, Spain, Mexico, Austria, Indonesia, China, Malaysia, Middle East and the Ukraine, through both subsidiaries and partners.

Markets and/or segments currently in focus with regards to Mobitex: Mexico and Eastern Europe

Future outlook: Goals include establishing a pilot in Mexico in cooperation with Ericsson.

Worth noting: Besides solving the problems that arise from the lack of fixed communication networks in certain countries, this technology enables continuous cost justification of ATM networks by easily moving a non-profitable ATM to another location. It can also be used in temporary installations at sporting events, fairs, etc.

to provide better service for visitors.

Company: Hypercom Corporation

Based in: United States

EFT/POS product(s): T/P Integrated Printer Terminal with a Mobitex modem included

Modem compatibility: Modems from Reasearch In Motion

Protocols supported for EFT and credit-card verification: Supported protocols include ISO 8583, Visa II, APACS and Visa I

Countries in which products are being used for Mobitex: United States and Venezuela

Countries in which products are sold: Hypercom serves companies in more than 50 countries through a worldwide network of offices and affiliates in Argentina, Australia, Brazil, Chile, China, Hong Kong, Hungary, Japan, Mexico, Russia, Singapore, the U.K. and Venezuela.

Markets and/or segments currently in focus with regards to Mobitex: Unites States, Latin America, Asia and Europe.

Future outlook: Plans include integrating Mobitex in Hypercom's new point-of-sale terminals called ICE.



Company: Ingenico

Based in: France

EFT/POS product(s): The portable Elite 780 terminal – a complete integrated EFT solution with smart card, magnetic strip reader and thermal printer. Mobitex modem is included.

Modem compatibility: Any MAFK radio modem

Protocols supported for EFT and credit-card verification: Supported protocols include ISO 8596, Visa, MasterCard.

Countries in which products are

being used for Mobitex: Turkey, Canada, the U.S., Latin America, Poland and Belgium.

Countries in which products are sold:

More than 60 countries through subsidiaries and distributors.

Markets and/or segments currently in focus with regards to Mobitex: All mobile applications are of interest (taxis, delivery vehicles, etc.)

Future outlook: Ingenico aims to provide a full range of products for EFT solutions using Mobitex networks.

Worth noting: Ingenico provides mobile solutions using short-range radios (433 MHz, 900 Mhz) and long-range radios (Mobitex, GSM, RD-LAP and CSTD).



Company: Intec Telecom

Based in: Korea

EFT/POS product(s): Handy terminal for credit-card verification (Mobitex modem included)

Modem compatibility: Ericsson M2190

Protocols supported for EFT and credit-card verification: MASC

Countries in which products are being used for Mobitex: Currently available in Korea with installations in Turkey and Brazil upcoming in the near future.

Countries in which products are sold: The company is emphasizing sales in Brazil and Turkey at present.

Markets and/or segments currently in focus with regards to Mobitex: Gas station chains in Korea

Future outlook: Plans include extending terminal sales to supermarket chains and restaurants.

Company: Intellect

Based in: Australia

EFT/POS product(s): The 9770 Universal Payment Terminal with an

integrated chipcard and magstripe reader and a built-in Mobitex modem

Modem compatibility: Modems that comply with the PC card type-3 form factor

Protocols supported for EFT and credit-card verification: The 9770 is easily programmed for any EFT or credit-card verification protocol.

Adaptations for different markets are made by Intellect or its dealer. The common PAX software development platform allows existing EFT or credit-card protocols to be ported from wired terminals to the 9770 radio-connected terminal.

Countries in which products are being used for Mobitex: Fully operational in Turkey. Plans include entering the Dutch market soon with the same Mobitex version.

Countries in which products are sold: Intellect has its own offices in Australia, New Zealand, Belgium, Japan and the U.S. Products are sold worldwide through OEM deals with companies such as NCR and IBM, or by distributors.

Markets and/or segments currently in focus with regards to Mobitex: Benelux is Intellect's new target after the success in Turkey. Market segments currently in focus include applications such as home deliveries, repair services and mobile trade (fairs, special events, etc.)

Future outlook: Since Intellect is an integrator, rather than a developer, of Mobitex technology, it will ensure that its terminals remain state-of-the-art and in tune with network developments.



Company: IM Checkmate

Based in: Canada

EFT/POS product(s): The Air Quatro

M900, a multiple POS terminal controller

with a wireless connection to host processors through Mobitex, and the Elite 700 RF, a mobile battery-operated, fully-integrated debit/credit POS terminal using Mobitex for connection to the host processor. A Mobitex radio modem is internally integrated in both products.

Modem compatibility: RIM 900

Protocols supported for EFT and credit-card verification: Base24, ACI, Visa I and Connex are supported in the majority of applications.

Countries in which products are being used for Mobitex: United States and Canada.

Countries in which products are sold: United States and Canada. Sales channels include banks, processors and VARs.

Markets and/or segments currently in focus with regards to Mobitex: IM Checkmate emphasizes POS retail, mobile segments (such as taxis), delivery services, home repair and mobile merchants.

Future outlook: The company intends to establish its wireless POS products in the targeted markets.

Company: Lipman Electronic Engineering

Based in: Israel

EFT/POS product(s): Three POS terminals for the Mobitex network: Nurit

2070, Nurit 2090 and Nurit 3010. A Mobitex modem may be included according to customer requirements.

Modem compatibility: The Nurit 2070 is compatible with Ericsson's M2000



series or a RIM radio modem. The Nurit 2090 and 3010 are compatible with Ericsson's M2100 series.

Protocols supported for EFT and credit-card verification: Lipman's terminals support practically any end-to-end protocol, including synchronous and asynchronous protocols.

Countries in which products are being used for Mobitex: The United States and Turkey

Countries in which products are sold: Main markets are the U.S., Turkey, Israel, Hungary, Russia, China and Thailand. Products are sold through subsidiaries or local distributors.

Markets and/or segments currently in focus with regards to Mobitex: Terminals are mainly sold through banks and ISOs, so end-user segments are difficult to categorize.

Future outlook: The company plans to penetrate additional markets, with an emphasis on countries that have Mobitex.

Company: VeriFone Inc.

Based in: United States

EFT/POS product(s): Custom-developed products for specific pilot opportunities

Modem compatibility: RIM

Countries in which products are being used: 110 countries worldwide

Markets and/or segments currently in focus with regards to Mobitex: High value-added markets.

Future outlook: As the cost of radio technology decreases, they will incorporate this technology into a broader range of products.

Fantastic plastic

I should have known better than to take all my credit cards on my trip to Turkey. The advance information that I had received from Mobicom, the Turkish Mobitex operator, told me that their customer YKB had very ambitious plans for wireless POS. I still wasn't prepared for how easy it was to purchase virtually anything with a credit card in Turkey.

Of course, my Turkish hosts were most considerate. Every amenity was afforded me, and they went to great lengths to ensure that my schedule during my visit to their country gave me an opportunity not only to talk to key people in the Turkish wireless data industry, but also to enjoy Istanbul. Unfortunately, that meant that there was plenty of time for shopping.

Everywhere I went in Istanbul there were temptations. From the mind-boggling variety of the huge Kapali Çarsi bazarre to the Vakko department stores to modern malls such as the Galleria, I was constantly confronted by an almost infinite variety of goods for sale.

Spanning two continents, Istanbul is a unique city. Although very European in many respects, the Oriental influence is evident everywhere. Unfortunately for me, that meant that there were exotic items for purchase everywhere I looked, and my Turkish hosts were doing their

utmost to ensure that my credit cards would be accepted wherever I went.

After having spent twice as much in one afternoon as I had budgeted in pocket money for my entire trip, I realized that I needed help. The earrings and bracelets that I had purchased were very beautiful, and they would at least fit in my purse. How I was going to get an oriental rug home on the plane, however, was another matter.

I decided to send a message for help to my Canadian friend Julia, who was a shopaholic and had set up an informal network for others suffering from this affliction. I was sure that I could count on her for some good advice.

Of course, I also had work to do, so I hurried off to meet my contact at the bank. As luck would have it, he took me to visit a merchant who had just installed one of YKB's wireless POS terminals. He wanted to demonstrate the new terminal, and like a fool, I offered my credit card.

I was very pleased with myself for being able to resist the temptation to buy everything in sight and to limit my purchases to figs in cognac until I realized that, due to language difficulties, I had purchased not a single jar of figs, but an entire crate!

The professional woman in me did not want to acknowledge what I was

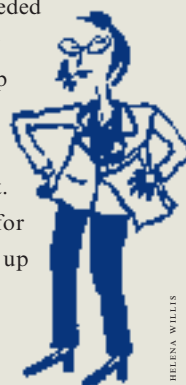
doing the following afternoon when I found myself purchasing an additional suitcase to carry home all of my purchases.

Depressed, I sat down at a café to have a cup of that delicious Turkish coffee and tried not to look at the fabulous rugs in the shop across the street. It was my fourth cup for the day, and this time I had succumbed to having a pastry with my coffee. But at least I had resisted the urge to buy something on six different occasions.

As I pulled out my PC to check my e-mail, I was pleased to see a reply from my friend Julia. I frowned, however, as I opened her message and read the following advice:

"I'm happy to say that I don't have a problem any more. Today, whenever I get the urge to go shopping, I phone out for a pizza. And as of last week, the delivery boy even takes credit cards. Life is good!"

I sighed wearily as I took another bite of my pastry. I needed my credit cards to cover my expenses on the trip home, but when I got home, I would simply have to bite the bullet. The only cure for shopaholics is to cut up their plastic. ■



HELENA WILLIS

Links.

Mobitex information:

<http://www.ericsson.se/mobitex>
<http://www.data-mobile.com/bmd02000.html>

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

Mobitex operators & associations featured in this issue:

Rogers Cantel, Canada: <http://www.cantelatt.com>
Massinfo Nusantara, Indonesia: <http://www.datasel.co.id>
RAM Mobile Data, UK: <http://www.ram.co.uk>
RAM Mobile Data, Belgium: <http://www.ram.be>
BellSouth Wireless Data, US: <http://www.bellsouthwd.com>
United Wireless, Australia: <http://www.uw.com.au>
RAM Mobile Data, Netherlands: <http://www.ram.nl>

Companies and organizations featured in this issue:

Wynd: <http://www.wynd.net>
Schlumberger, France: <http://www.slb.com>
Sanderson Insight: <http://www.sanderson-insight.co.uk/>
NCR, Netherlands: <http://www.ncr.nl>
Royal Bank of Canada: <http://www.royalbank.com>
Research In Motion RIM: <http://www.rim.net>
Bentas, Turkey: <http://www.bentas.com.tr>
Dialogis Software, Germany: <http://www.dialogis.de>
Digital Equipment, Sweden: <http://www.digital.se>
Hypercom, US: <http://www.hypercom.com>
Ingenico, France: <http://www.ingenico.fr>
Intellect, Australia: <http://www.intellect.com.au>
IVI Checkmate, Canada: <http://www.ckmate.com>
VeriFone, US: <http://www.verifone.com>

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