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www.ericsson.se/mobitex

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A DEVELOPER'S PERSPECTIVE

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MAKING IT IN CHINA

Recently we were honored by a visit from a delegation of officials from the Radio Regulatory Department of the Ministry of Information Industry of the People's Republic of China. There are currently three test networks in operation in mainland China with a commercial Mobitex network now being built in Hong Kong, and these officials from the Chinese equivalent of the Federal Communications Commission in the US wanted to meet the engineers who design the 800 MHz equipment that will be used in China.

Ericsson is making a very major commitment to deploying Mobitex on 800 MHz and to ensuring that equipment meets all the Chinese authorities' requirements. As we go to press, the first of the trial networks has been passed the technical test evaluation, and Ericsson engineers are hard at work building TDL's Mobitex network in Hong Kong.

Needless to say, this represents a very major opportunity for the Mobitex community. As Mr. Liu Lihua, director of the Radio Regulatory Department, so correctly points out, China is a very densely populated country with several cities of more than 15 million inhabitants for which Mobitex is an ideal technology. We therefore encourage our friends and colleagues working with Mobitex to make every effort to make Mobitex a success in China by sharing their knowledge and expertise and partnering with Chinese companies to jump start the market.

In this issue we are taking a developer's perspective. One of our feature stories describes the excellent engineering work performed by the Korean company CNI in developing the new TWM III wireless Internet device. This is a classical developer's story, and the result is an impressive product that is already a tremendous success in Korea. Even more exciting is that CNI will soon launch an 800 MHz version of the TWM III for China and is working on a 400 MHz version that will be available in the UK later this year. We all know what happened in North America when handheld Mobitex devices were introduced by RIM and Palm. It will therefore be extremely interesting to see what happens in other markets as CNI's device and new wireless cradles for Palm devices are launched.

Our second article on product development features the unique Veev wireless service developed by the Bank of Montreal and 724 Solutions in Canada. This is an excellent and very complete example of a personal electronic marketplace on a wireless device for mobile users. It also shows how the development process is becoming more complex and being expanded to include a broader range of expertise and business interests. This kind of development, in which content and services are being aggregated and delivered using web technology, will become increasingly common as the mobile Internet becomes an everyday thing.

The Mobitex success story continues in the US, where Cingular Interactive is adding thousands of new subscribers each week. The US operator is now building out its network to accommodate millions of users. Naturally, this means that Ericsson will be delivering many new base stations, but also that we will be significantly enhancing the network architecture. Ericsson continues to advance Mobitex technology to meet the growing requirements of millions of users all over the world.

We hope that you will enjoy this issue of Mobile Data Magazine and find it informative in your work. We also hope to see many of you at WAVE 2001 in Las Vegas, where Ericsson once again will be one of the main sponsors.

Pontus Lindqvist

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Mr. Liu Lihua, director general of the Radio Regulatory Department

CHINESE AUTHORITIES LICENSE MOBITEX

During the last week of March, Ericsson Mobile Data Design in Gothenburg was honored by a visit by a delegation from the Ministry of Information Industry of the People's Republic of China.

The visitors included Mr. Liu Lihua, director general of the Radio Regulatory Department, Mr. Liu Yan, deputy director general of the Policy and Regulatory Department and Mr. Zhou Xing Guo and Ms. Zhou Chunying, who are both senior engineers at the Radio Regulatory Department.

Late last year, the Chinese authorities issued licenses for three test networks in Guangzhou, Shijiazhuang and Chengdu to evaluate Mobitex technology. These tests are now nearing completion, and the Radio Regulation Department recently took a decision to open the 800 MHz band for Mobitex networks, which will use the frequencies 821 to 825 MHz for the uplink and 866 to 870 MHz for the downlink.

Mobile Data Magazine took the opportunity to talk to Mr. Liu Lihua and his colleagues about the licensing process for Mobitex and the prospects for mobile data in China.

How are the Mobitex trials progressing in China?

The trials are progressing very well. Our tests to date show that the networks meet the Radio Regulation Department's requirements. No radio interference or other disturbances have been noted. We are confident that Mobitex will pass the final tests and be certified for commercial operation.

How will Mobitex licenses for 800 MHz be awarded?

Licenses may be awarded to both national and regional operators who have the necessary resources to provide service in the areas in which they wish to operate. Regional licenses may be issued for major cities or regions that correspond to provinces. It will be possible to award more than one license in each area, so competition will be allowed.

Why did the Chinese authorities decide to license Mobitex?

There is tremendous market demand for wireless data. Mobitex is a proven technology that is strongly supported by Ericsson and which Ericsson continues to develop.

What types of applications will drive the Chinese wireless data market?

There is a tremendous demand for all types of communications services in China, and there are already several different wireless data services in operation. We believe that traditional applications for the transport sector and other vertical applications for POS (point-of-sale) and AMR (automatic meter reading) will be very successful, but there is also a great need for personal information exchange and access. Wireless e-mail, stock trading and mobile Internet will be very important in China.

What are the obstacles to the take up of Mobitex services in China?

We believe that terminals will drive the market. Licensing Mobitex for 800 MHz will allow the development of small, handheld terminals, and the widespread availability of low-cost terminals will open a vast market. We have seen what has happened in other parts of the world when such terminals have become available and expect a similar development in China.

Will terminals be manufactured locally?

We hope that local Chinese manufacturers will show strong interest in Mobitex, but joint ventures will be necessary to jump-start the market. Foreign companies must be encouraged to share their knowledge and expertise and invited to participate in the strong growth that we foresee for Mobitex.

How big a market will China be for Mobitex?

All forms of wireless communications are growing rapidly in China. Mobile telephone subscribers are increasing by eight million a month, and we expect that there will be 240 million mobile phones by 2005. During 2000, paging subscribers grew by eight million to more than 80 million, and we believe that there is a market for as many as 20 million two-way pagers and wireless PDAs. There is a tremendous need for short data transfers, and we believe that wireless data will become an even bigger market over the next two years.

Are there other factors that favor Mobitex?

China is very densely populated, with several cities with a population of more than 15 million. Mobitex is a very cost-efficient technology that is superior to cellular under such conditions. We believe that Mobitex will be a success, not least because Ericsson stands behind the technology and continues to develop it to meet the requirements of the Chinese market. ■

MOBILE BUSINESS NEWS

HONG KONG OPERATOR FIRST OUT WITH 800 MHz

Hong Kong and Macau-based wireless operator Telecom Digital Limited (TDL) will be the first in the world to put an Ericsson 800 MHz Mobitex system into commercial operation. TDL is a paging operator and mobile telephone retailer and reseller with more than 20 years' experience in the industry and more than 200,000 subscribers to its services.

The Hong Kong Mobitex network, which will use 823 MHz for the uplink and 868 MHz for the downlink, is now being installed and will be taken into operation in September. A Network Control Center (NCC) and a number of base stations have already been delivered, thus allowing the new operator to test devices and applications and conduct demonstrations for prospective customers.

"At the moment, we are actively searching for devices and applications," says Raymond Wong, senior MIS manager at TDL. "We are naturally very interested in the 800 MHz version of CNI's TWM III and the applications that Intec Telecom has developed. We are also looking at Ericsson's M3080 modem for 800 MHz and talking to several local companies."

For its one-way paging service, TDL markets an advanced product of its own design that in addition to basic paging services delivers a rich variety of content, including news, weather, traffic information and stock quotes. Although TDL will undoubtedly choose to partner with another supplier in order to get its new Mobitex service up quickly, the company has the expertise and resources to develop a number of exciting terminal products over time, according to Tomas Lundkvist, marketing and sales director at Ericsson Mobile Data Design.

Wireless e-mail and mobile Internet will naturally be important applications for TDL.

Another application that Raymond Wong expects to be very big in Hong Kong is wireless stock trading. In the vertical market, TDL will focus initially on mobile sales force applications.

THOROUGHLY PROFESSIONAL ORGANIZATION

Before selecting Ericsson's 800 MHz Mobitex network, TDL also evaluated a two-way paging system. Factors favoring Mobitex were capacity, latency, simplicity and security. Raymond Wong was particularly concerned about capacity and latency. "Capacity in the two-way paging system was simply too limited," notes Raymond Wong. "In a densely

populated region like Hong Kong, the superior capacity per channel that Mobitex provides was a compelling advantage."

"We also found that latency in the two-way paging system was 30 to 60 seconds, compared to just a few seconds for Mobitex," continues Raymond Wong. "For a wireless stock trading application in which every second counts in making a trade, such latencies are simply unacceptable."

With 20 years in the business, TDL has in depth knowledge of all aspects of paging, wireless data and cellular telephone systems. Because its engineers are very experienced in all matters relating to base station sites, equipment installation and network configuration, deployment of the network is going extremely quickly. With a large sales force, many retail locations and long experience as a wireless service provider, TDL is also in an excellent position to leverage its large customer base and add new Mobitex subscribers quickly.

"We are extremely pleased to be doing business with such a professional customer," says Tomas Lundkvist. "The negotiations were very demanding, but we met competence at every level of TDL's organization, so we were able to move forward very quickly. There was a mutual understanding between TDL and Ericsson of the technical issues to be resolved that made this project a pleasure to work with." Mobile Data Magazine will naturally return to Hong Kong when the Mobitex network is officially opened. In the meantime, we welcome TDL to the Mobitex community. ■

www.tsl.net.hk

CASH NOT NEEDED FOR GROCERIES

Order groceries on the Internet and have them delivered to your door. While not a new service by any means, the Dutch are using Mobitex to enhance the service and increase convenience for customers. As of December, the Dutch grocery chain Max Foodmarket is on the Internet and ready to take orders at any time. There are no charges for deliveries. Customers have access to all items in stock, and orders are delivered within two hours. In addition, customers can pay at the door with their bank card and a PIN code. All of Max Foodmarket's drivers are equipped with a wireless PIN code terminal that operates over the RAM Mobile Data Mobitex network.

"We don't want to have to carry cash," says Marcel van de Molen, marketing manager for Max Foodmarket. "PIN codes are completely safe and completely integrated in our system. People can simply place their orders on the Internet. After ordering, they don't have to think about whether or not they have money at home to pay for the delivery. Wireless PIN terminals are a perfect solution."

Max Foodmarket is an Internet-based supermarket designed to make shopping easier. The cyber-store offers more than 4,000 articles at competitive prices. All deliveries are free, and the store makes deliveries daily between 9 a.m. and 10 p.m.

All the driver needs is the wireless payment terminal. The payment amount is credited to the store's account under the customer's name. Just as in a store, the customer is presented with a printed receipt. Payments are thus simplified for both the customer and Max Foodmarket.

Preferred payment option

The wireless PIN terminals are supplied by the RAM partner company CCV (Computer Centrum van der Velde). The UPT 9770 terminal used by Max Foodmarket is a second-generation product that is smaller and lighter than previous models. CCV, which also takes responsibility for the entire transaction, handles collection and processing of more than 100 million credit card and loyalty transactions each year. With the new terminal, a growing share of these transactions will take place over Mobitex, since Mobitex is the only wireless network in the Netherlands certified by Interpay, the organization that regulates electronic payment traffic.

Max Foodmarket could not be more pleased with the results of the wireless payment solution. After completing the first tests in Utrecht in December, the grocer decided to deploy the system in several other regions during 2001. Service is now available in Leiden and the Hague and will soon be expanded to Amsterdam and Harlem. Marcel van de Molen foresees no problems.

"We can naturally guarantee that the wireless PIN system works perfectly. I also expect that at least 95 percent of all customers will prefer this payment option. After all, people who order groceries electronically on the Internet will also want to pay for them electronically," concludes Marcel van de Molen ■

www.ram.nl
www.maxfoodmarket.nl

TRANSCOMM TO INTRODUCE MOBITEX PDAs IN UK

The devices to be developed for Transcomm will be similar to the devices currently running on 900 MHz networks in Korea and North America but will support European Mobitex frequencies in the 400 to 450 MHz range. In the US today, handheld devices, such as the RIM Blackberry 957 and the Palm VII running on the Cingular Interactive Mobitex network are proving particularly popular among professional users. Transcomm antitipates that a minimum of 25,000 of the new devices will be connected to its network in the first year after their introduction

Transcomm offers what it believes to be the only end-to-end solutions business in the British wireless data market. The use of wireless data is forecast to grow substantially over the next five years, with some research organizations forecasting tenfold growth between 2000 and 2004. The growth of wireless data will be increasingly driven by the need for people to access the mobile Internet.

Transcomm views Mobitex as a core technology in provisioning the mobile Internet. In the UK, Mobitex provides coverage of 93 percent of the population. Transcomm plans to introduce its Mobile Internet Service on October 1, 2001 in association with a number of partners. Further details will be available in the next issue of Mobile Data Magazine. ■

www.tardis.co.uk
www.ram.co.uk

ERICSSON ENHANCES CINGULAR´S NETWORK

Ericsson will supply Cingular Interactive with up to USD 25 million in equipment and software to significantly expand capacity in the US operator's existing Mobitex network. Through this contract, which is one of several initiatives in a USD 50 million program called Operation Platinum Standard, Ericsson will supply base stations and new system software to triple Cingular Interactive's core Mobitex network capacity.

The Cingular Interactive Intelligent Wireless Network is already one of the greatest successes in the Mobile Internet market," says Ericsson senior vice president Torbjörn Nilsson. "Mobile Internet is the future of telecommunications, and Mobitex technology is driving growth of this revolutionary medium in the world's largest telecom market."

Cingular Interactive is experiencing more than 100-percent subscriber growth annually. The company closed 2000 with more than 570,000 subscribers, up from just more than 200,000 in 1999 – an average net addition of about 90,000 subscribers per quarter during the year.

"We are pleased to be working with Ericsson to continue growing and augmenting our award-winning network to accommodate the phenomenal subscriber growth that is forecast to take place over the next few years. Ericsson will help us deliver an excellent network experience for our customers and partners during this period of explosive growth," says Donald Kovalevich, president of Cingular Interactive. ■

www.cingular.com

UNITED WIRELESS ACQUIRED BY DotWAP

In a complex series of transactions, dotWAP Holdings with headquarters in Melbourne, has acquired Australian Mobitex operator United Wireless and entered into an agreement by which dotWAP itself will be acquired by Australian Technology Securities (ATY) Ltd.

"Austar decided to sell United Wireless because it does not fit within our core business and was an unnecessary drain on management time and resources," says Dana Strong, managing director of Austar United Broadband. "We wish dotWAP well with its business. We are sure that they will be able to make use of this valuable asset."

Wes Rosenbaum, who is CEO of dotWAP will be responsible for the overall management and operations of the dotWAP group, which will be renamed United Wireless Limited. dot WAP has established business centers to cater for all elements of the wireless data service supply chain and is positioned to provide customers a fully integrated wireless data solution across a range of devices and networks.

Currently, the new Mobitex operator offers a Wireless Application Gateway and a backbone infrastructure that support international wireless data services. The current version of the dotWAP client-server architecture is designed to operate on Mobitex networks with Palm V series organizers using a wireless cradle specially designed for dotWAP.

The new dotWAP services are being added to the United Wireless network, which already provides services to fire brigades, emergency services and courier services. The Australian Mobitex network currently covers more than 70 percent of the country's population. ■

www.uw.com.au

MOBITEX HAS A NEW LOOK

The Mobitex website has a new look. Please visit our site and tell us what you think. We hope you will find the totally redesigned site more visually pleasing, more informative and easier to navigate. As always, you can find the latest issue of Mobile Data Magazine, the latest product information, extensive case studies and a wealth of other information on our site. ■

www.ericsson.com/mobitex

NEW AWARD TO BE INSTITUTED AT WAVE 2001

Cingular partners with cutting edge solutions for the Cingular Interactive Intelligent Wireless Network will be vying for the first annual "Best Use of the Network" Awards, which will be presented during the WAVE 2001 (Wireless Alliances and Vision Exchange) conference. The conference, presented by Cingular Wireless, will be held May 14-16, 2001, with optional developer workshops on May 17, at The Aladdin Resort in Las Vegas.

The "Best Use of the Network" Awards will recognize the most innovative use by a commercially available solution on the Cingular Interactive Intelligent Wireless Network. Three industry categories will be honored: Field Force Automation, Telemetry and Transaction and Mobile Professional. All partners with commercially available solutions on the Cingular Interactive Intelligent Wireless Network that submitted an entry will be eligible for the award.

"The 'Best Use of the Network' Awards provide a platform to recognize innovative solutions during what promises to be the best forum for building alliances and sharing ideas with industry-leaders to date for a Cingular Wireless event," says Lew Blumstein, vice president, Solutions & Distributions Programs, for Cingular Interactive, a business unit of Cingular Wireless. "We're excited to have the opportunity to honor our partners for industry excellence during the conference. ■

www.cingular.com

MOCOM 8000 COLLECTS DATA

The MOCOM 8000 is a new server for measurement data collection over Mobitex. Developed by Swedish Mobitex operator Mowic together with TLab West, MOCOM 8000 is a general system for the collection of measurement data and alarms over Mobitex designed for property management, energy and security companies.

Traditionally remote monitoring applications use data collection units (DCUs) that monitor hundreds of meters and send data via dial-up modem connections. Handling the input data at the receiving end requires large modem pools that are cumbersome to administer. Because input data is often buffered in the DCU so that as much data as possible can be sent at once, the advantages of real-time data collection are lost.

Mowic and TLab West have developed software that allows most types of DCUs to be connected directly to the Mobitex wireless modem. The DCU functions as if it was connected to a fixed line and sends data directly to the central system. At the receiving end, MOCOM 8000 provides equally transparent gateway software for forwarding of data to existing servers. MOCOM 8000 sends the received data to the right recipient, regardless of the type of system.

MOCOM 8000 thus reduces costs and eliminates modem pool administration. In addition, the system collects data in real time, thus improving service levels and reducing response times. The MOCOM 8000 system offers Mobitex operators an opportunity to market a powerful solution for telemetry applications in the utility, property management and security sectors. ■

www.mowic.se

EXPANDING THE HORIZON FOR DEVELOPERS

Do you think of a developer as a gear head who lives on pizza and Jolt cola and works in front of a computer long into the night tracing elusive bugs with a hardware debugger? If so, it's time to think again. In the mobile Internet era, application development and systems integration have become more complex tasks that demand a wider range of professional skills and project groups in which many business interests are represented.

Delivering a consumer product that consists of a wireless handheld that can be activated over the air by the user within minutes of purchase and is pre-loaded with a dozen or more immediately useful applications and services is a complex task. Product development includes many traditional tasks, such as hardware design, software development and systems integration. However, new skills are also required for integrating content and services. Developing for the mobile Internet adds yet another dimension.

The developer's world is thus expanding and becoming more complex. Naturally, as the article on the development of the TWM3 by CNI illustrates, hardware designers and programmers who get down to the metal still have an important role to play. Increasingly important, however, are new groups of professionals who play a key role in aggregating content and services, packaging them for the mobile Internet and delivering them on a range of wireless devices. The development of the Bank of Montreal's Veev wireless service illustrates the complexities of this process.

INSPIRING AND CHALLENGING

Analysts and industry experts agree that devices drive the wireless data market. The phenomenal success achieved by Cingular Interactive in the US, which is adding thousands of subscribers each week and expects to have more than one million subscribers by year-end is largely attributable to the popularity of the Palm VII and RIM handheld devices.

This success has both inspired and challenged wireless data providers and developers in other parts of the world. While the Palm VII and the RIM handhelds have many compelling features, it is obvious that it is not the devices themselves, but rather the new interactive lifestyle they enable that makes them so popular. Consumers are flocking to wireless devices because interactive messaging, location-based information services, m-commerce applications and mobile Internet access are truly liberating.

The challenge lies in supplying devices that deliver an out-of-the-box experience and a pre-packaged set of applications and services that will make them irresistible to consumers, thus increasing sales from sales of devices and revenues from services. Mobitex enjoys a head start in opening the mobile Internet market, but as competition heats up and new technologies come into play, Mobitex developers will need to be innovators, if they want to stay ahead.

MORE RESOURCES FOR DEVELOPERS

One aspect of the challenge for developers is designing a device that will offer an attractive set of features at the lowest possible price. Naturally, the price of any given device depends on several factors, including product development and manufacturing costs, the anticipated volume of sales and whether or not the operator or service provider subsidizes the device. Not surprisingly, the cost of the components required to make the device, and even the actual manufacturing cost, may be marginal factors in this complex equation.

A dedicated wireless data device lacks a familiar and immediately useful application like voice calls and does not address a market consisting of hundreds of millions of mobile phone subscribers. This naturally places limits on the resources that can be invested in product development. Fortunately, however, the growing popularity of interactive wireless data services is changing the economics of product development for wireless devices.

Although manufactures are seldom willing to disclose unit sales figures for competitive reasons, there is enough publicly available information to obtain estimates of the volume levels that Mobitex devices can attain. Cingular Interactive, for example, recently signed an agreement with RIM for delivery of more than 200,000 wireless handhelds over a 12-month period. Palm Computing, while even more reluctant to disclose sales figures, claims in its 2000 annual report that sales of the Mobitex-enabled Palm VII had exceeded those of all Windows CE handhelds combined by June 30, 2000. In another example, British Mobitex operator Tardis Transcommunications, which recently contracted CNI to produce a 400 MHz version of the TWM III, announced that it expects to sell 25,000 devices during the first year.

While these are small numbers in comparison with mobile telephone sales, they do indicate that there is a growing market for wireless handhelds and that volume sales of Mobitex devices can offset relatively substantial product development costs. Moreover, future prospects are even brighter, according to "The Battle at Hand," a market forecast and analysis of smart handheld devices published recently by IDC that predicts a tripling of the global handheld market from USD 8.2 billion in 2000 to USD 26.6 billion in 2004. Thus, while the PC market is stalling, handheld sales will continue to accelerate and exceed PCs in terms of the number of units sold.

PLATFORM DEVICES FOR CONSUMER MARKET

Although the focus here is on devices for a consumer market, there is also a very large market for wireless devices for vertical applications. There are any number of examples of such devices, but perhaps the best example is wireless POS (point of sale) terminals, which are available from literally dozens of suppliers. ▶

"The developer's world is expanding and becoming more complex."

"Innovative new services are creating a larger market for wireless data."

These wireless payment terminals provide everything needed for wireless point-of-sale transactions, including a radio modem, a card reader, a display and a keypad for data entry.

Devices such as the TWM III, the Palm VII and the Blackberry handhelds, however, were designed for the horizontal or mass market, or what has sometimes been called a business-diagonal market consisting of mobile professionals. At one time, it was believed that wireless e-mail would be the killer application in this market. As is so often the case, consumers voted with their feet, and market realities once again proved the pundits wrong.

For these reasons, developers of wireless devices for the consumer market have focused on platform devices that can host a variety of applications and services. CNI, Palm and RIM have naturally developed many of these applications and services in house, but the popularity of these products is largely attributable to their capacity to host third-party products and the availability of software development kits.

EXTENDING THE HORIZON

Not surprisingly, financial services are leading the way in unleashing the power of a new generation of smaller, more powerful wireless devices. Financial products and services are ideally suited to the new digital economy, and banks are leading the way in moving their business online. Mobile professionals in the business-diagonal segment are also ideal early adopters who appreciate the value of wireless access to banking and brokerage services.

In developing the Veev wireless service, the Bank of Montreal and 724 Solutions have gone even further to create what can be regarded as a personal electronic marketplace that aggregates not only banking and brokerage services, but also shopping and lifestyle services. This is a model that the Bank of Montreal is marketing actively and intends to extend throughout North America.

If the developer's world is becoming more complex through these developments, it is at least heartening to know that wireless services such as Veev are expanding the horizon and helping to create a larger market for wireless data and making the mobile Internet an everyday thing for consumers. ■

DESIGNING A CONSUMER PLATFORM

In Korea, Mobitex operator Intec Telecom is launching its own brand of mobile Internet access called Micess. It is doing so using a device called the TWM III developed by its parent company Communication Network Interface (CNI).

Sleeker and smaller than a Palm V, this WAP-enabled wireless PDA features a full range of functions for Internet access, interactive messaging and e-mail and stock trading plus standard PIM (Personal Information Manager) functions and a variety of games, several of which can be played interactively with another player over Mobitex.

The TWM III is the latest in a line of successful products from CNI that includes devices for the Mobitex and DataTac wireless data networks and Flex paging systems. Products for these systems include PDAs, OEM modems and wireless POS terminals. The radio modems in most of these products are based on circuits from the UK supplier Consumer Microcircuits Limited (CML). CNI's wireless devices have won type approval in the US, Canada and several Asia Pacific countries. Originally developed for the 900 MHz Mobitex network in operation in Korea, the US and Canada, the TWM III is also available for the new 800 MHz frequency used in China and will soon be available in a 400 MHz version for use in the UK.

"Handhelds for consumers are opening the market."

IMPRESSSIVE SPECS AND FEATURES

"CNI is an excellent engineering and manufacturing company," says Kevin Swann, sales and marketing director at CML. "They recognized that the lack of handheld products was holding back the wireless data industry, and through close teamwork with CML, they have developed consumer devices that are opening the market."

The TWM III measures just 66 x 106 x 19 mm and weighs only 154 gram with batteries. It is based on an ARM7 32-bit RISC processor with 4 MB of flash memory plus 2 MB of system RAM. The touch-screen display is a 160 x 240 pixel LCD with four levels of gray. Input is supported via pen touch using intuitive icons, handwriting recognition and an on-screen keyboard. In addition, there are three functions keys, a track wheel and an escape button. The device is delivered with a cradle for recharging and RS-232 serial communication, a power adapter and a serial cable. It uses two AAA batteries and contains a rechargeable Lithium Ion battery.

CNI worked together with Intec Telecom and third-party suppliers in developing this consumer device. In addition to the hardware, CNI produced the SDK (software development kit), the PIM functions (address book, to-do list, scheduler and scheduler summary) and the offline games (Block, Othello, and Puzzle). Intec and its third-party supplier developed POP3 e-mail, the WAP interface and browser, instant messaging, chat and SMS applications, the stock trading application and the interactive online games, which include Chess and the popular game of Go.

At the heart of the TWM III is CNI's RPM3 Mobitex radio packet modem for OEM devices. Based on CML components, this is the world's smallest Mobitex OEM modem.

"We currently use the CMX 909A chipset for the TWM III and the RPM3," says Cali Kim, sales & marketing manager at CNI. "During the development stage, CML supported CNI very quickly and faithfully." ▶

CREATING AN OPEN PLATFORM

One of the most important decisions in developing the TWM III was to provide support for WAP (Wireless Application Protocol) and POP3 (Post Office Protocol, version 3) e-mail. While the extra development effort required to support these protocols is substantial, the benefits are considerable. With WAP and POP3, the TWM III is transformed from a proprietary device to an open platform that will support third-party applications from a vast community of developers.

"WAP is a mobile Internet standard and the standard for other cellular networks in Korea today," explains Won Baek, president and CEO of Mobitex operator Intec Telecom. "With WAP, we gain important benefits. Content is easy to develop and maintain, and applications and content developed for other cellular networks can be reused without modification."

Similar benefits derive from the POP3 and SMTP (Simple Mail Transport Protocol) support included in the TWM III. This allows seamless integration with existing e-mail servers and enables users to send e-mail to any Internet e-mail account. The TWM III can retrieve e-mail from any POP3 server, while leaving messages undeleted for later retrieval on a desktop computer in the office. The e-mail functions on the TWM III are also integrated with the PIM address book.

To support the TWM III's rich feature set, Intec Telecom has developed a number of gateways. In addition to an e-mail gateway for wireless messaging services and a WAP gateway for mobile Internet access, these include a stock trading gateway, a network gaming gateway and gateways for SMS (short message service) and instant messaging services. Intec also developed the WAP browser for the TWM III.

AIMING TO OPEN NEW MARKETS

The TWM III is a success in Korea, but CNI has set its sights higher. An 800 MHz version is already in production and will be available as Mobitex networks are taken into operation in Hong Kong and mainland China. Recently, British Mobitex operator Tardis Transcommunications announced that it had signed an agreement with CNI for a 400 MHz version of the TWM III to be launched in the UK later this year. Negotiations are also pending with other 400 MHz operators around the world. This is an exciting development for the Mobitex community, since it is widely regarded that the lack of small, portable devices for 400 MHz has inhibited market growth.

"We see no difficulty in developing a 400 MHz version of the TWM III," reports Cali Kim. "CNI plans to keep the same form factor as the 800 MHz and 900 MHz versions. These versions use retractable external antennas, but the 400 MHz version will use a fixed external antenna. This is an area in which CNI puts special effort into performance."

Then there is the North American market. The 900 MHz version of the TWM III has been certified by the FCC, and CNI has a US subsidiary in Greenwich, Connecticut. With the feature-packed TWM III, the Koreans are certainly set to give the Americans at Palm and the Canadians at RIM a run for their money. ■

"An open platform that supports third-party applications."

RPM3 MOBITEX MODEM

At the heart of the TWM III is CNI's RPM3 Mobitex radio packet modem for OEM devices. Currently the smallest OEM modem available on the market, the RPM3 is available in versions for 900 and 800 MHz, with a 400 MHz version due to be released later this year. The 900 MHz RPM3 has the following specifications:

Size	47 x 70 x 9 mm
Weight	37 g
Interface	Serial Asynchronous
Operating range	-30 – 60 °C
RF protocol	Mobitex R14N
Host protocol	MASC
Frequency	Tx: 896 – 902 MHz Rx: 935 – 941 MHz
Tx output	2.0 to 0.03 W in 7 increments
Rx sensitivity	-115dBm (BLER <10%)
Power supply	5 V
Power consumption	Standby: 3.5 mA Tx: 1700 mA, Rx: 70 mA

CREATING A PERSONAL ELECTRONIC MARKETPLACE

With the Veev wireless service, the Bank of Montreal and 724 Solutions have created a personal electronic marketplace that is redefining how customers and vendors view mobile commerce services. Designed to aggregate banking, brokerage, shopping and lifestyle services, Veev is also a platform that is open to other merchants and service providers.

About four years ago, we began looking at how our customers would want to access our services in the future," says Mark Dickelman, vice president for wireless services at the Bank of Montreal. "We realized that while wireless access would be an important method, we needed a generalized infrastructure for aggregating our services and making them more accessible. The mobile channel is thus the first of many."

It was at this time the bank began talking to 724 Solutions, a company that was formed in 1997 to design, distribute and deploy wireless Internet infrastructure software solutions for financial institutions. The Bank of Montreal became 724 Solutions' anchor customer, and together the two companies began developing a shared vision and what was to become the Veev service.

"The Bank of Montreal saw the power of being able to aggregate its services from the very start," recalls Susan Witteveen, vice president for mobile commerce services at 724 Solutions. "At that point the bank consisted of many separate businesses. Management saw the opportunity to bring these businesses together using a single service platform that would create a pull product and give customers access to a wider range of financial services."

PARTNERHIP AND A SHARED VISION

The Bank of Montreal realized that it would be creating a mobile commerce platform that would not only add value for its customers, but also offer value to merchants and service providers. Branding was therefore an issue that was confronted at an early stage. In a radical move, the Bank of Montreal decided to create a bank-neutral service. In fact, subscribers to the current service do not even have to be Bank of Montreal customers, although these subscribers are obviously not able to access the bank's financial services.

> "We wanted to create a marketplace that would be open to all."

"We wanted to focus on a win-win strategy," says Mark Dickelman. "Whether it's the bank, the wireless carrier, a merchant or a service provider, each party has a value proposition for the customer. We wanted to create a marketplace that would be open to all. The Veev name is a deliberate expression of this bank-neutral branding concept. We wanted an exciting name for an exciting product."

During these early phases of development, the Bank of Montreal and 724 Solutions developed a very close relationship, leading the bank to become one of the first investors in the company and the first licensee for its Financial Services Platform. The Bank of Montreal brought its knowledge and close relationships with wireless carriers content providers into the partnership, while 724 Solutions was able to leverage its close relationships with such companies as Certicom and Neomar, which developed critical components for wireless security. Bank of Montreal contributed the financial services expertise, customer marketing strategy, and technical guidance and operational capability.

The two companies also developed a shared vision centered around a personal electronic marketplace. This is an environment where consumers have personalized and integrated access to their trusted financial and retail relationships complemented by high value informational content. It is characterized by mobility, convenience, freedom of choice and robust technology that allows each customer to easily create his or her own personalized world of mobile financial services and commerce.

"This is not about squeezing the web on to a PDA or a mobile phone," says Susan Witteveen. "We are not just trying to provide access to financial services. Veev supports a range of relationships between the bank and its commercial and merchant customers and between customers and merchants that allow a broad range of services to be extended to people on the move."

FIND AND BUY WITH POET

In designing and developing the Veev service, the two partners conducted extensive market research. This included not only studying market research, but also conducting their own consumer research that included extensive interviews with focus groups to determine the appropriate form and content for the new service.

"Back then, it was like asking people what kind of buttons they wanted on their spaceship," says Susan Witteveen with a laugh. "All of this was so new that many people found it somewhat overwhelming. One of the most important lessons that we learned, however, was that it has to be kept simple. Veev should be easy to use. There should be no incremental work for merchants, and it should provide real benefits for customers."

Bank of Montreal's Veev service is designed to support a "find and buy" style of shopping. To this end, 724 Solutions developed Point-of-Exposure Technology (POET) that allows customers browsing a magazine, for example, enter a product code from an advertisement on their ▶

VEEV WIRELESS SERVICES

Veev is the Bank of Montreal's wireless service for anytime, anywhere access to banking, brokerage, lifestyle and a growing number of shopping services. Subscribers do not have to be Bank of Montreal customers. They simply need to become a subscriber to one of the supported wireless carriers, purchase a WAP-enabled device supported by their carrier and sign up, either on the Web at www.veev.bmo.com or using their wireless device. This provides access to shopping and lifestyle services that include horoscopes, weather and news provided by Reuters and Canadian Press.

Bank of Montreal customers can also gain access to banking and investment services. The banking services allow customers to view account balances and transaction history, make bill payments, transfer funds between accounts and request cash advances from MasterCard accounts. Brokerage services for BMO Nesbitt Burns or BMO InvestorLine customers allow users to buy and sell stocks on major North American exchanges, request stock, index and Canadian mutual fund quotes, view personal investment portfolios and transaction histories, create and receive stock alerts and create watch lists to monitor stocks, stock indices and Canadian mutual funds.

wireless device. Detailed product information is then displayed, allowing the customer to confirm the selection and instantly purchase the product.

"Naturally, security is a prime concern for customers doing their banking or making purchases using a wireless device," notes Mark Dickelman. "We know that customers implicitly trust their bank. They expect and rely on the bank to provide complete security, which of course we do."

Security for the Veev service relies on 724 Solutions' PKI Gateway and one or more Certificate Authorities (CAs). The PKI Gateway included in 724 Solutions' Financial Services Platform (FSP) employs Trustpoint PKI technology licensed from Certicom. For Mobitex devices such as the RIM handhelds and for wireless devices based on the Palm OS, a PKI-enabled WAP browser from Neomar is used.

OPPORTUNITY OF A LIFETIME

To test the Mobile Commerce Services Platform and the Veev service, the Bank of Montreal and 724 Solutions contacted Indigo, Canada's premier online retailer of books, gifts and flowers. "Adding Indigo to Veev was originally conceived as an experiment," admits Susan Witteveen. "It took us less than a month to bring Indigo to mobile users, and now, one year later, it's still running and gaining in popularity."

"Whatever else it may be, wireless banking is another death knell for the old self-contained model, where banks developed, produced, sold and serviced only their own proprietary products," says Lloyd Darlington, president and CEO of Emfisys, the technology arm of the Bank of Montreal Group. "Partnerships with carriers, content suppliers, device manufacturers and solution providers are essential.

"Bank of Montreal has created a model we believe can be extended far and wide. We look forward to competing with the best in an industry that has decided to seize the opportunity of a lifetime," concludes Lloyd Darlington.

PIONEER AND PATHFINDER

"The banking and brokerage services obviously allow us to aggregate our services, whereas the lifestyle services are the fun stuff," says Mark Dickelman, vice president for wireless services at the Bank of Montreal. "We included them not only because they are easy to add, but also because customers who use the other services tend to want them. They broaden the range of services and offer more value for the customer."

"The Bank of Montreal has been a pioneer and a pathfinder in developing Veev," says Susan Witteveen, vice president for mobile commerce services at 724 Solutions. The service is the first of its kind and became the first browser-enabled service in May 1999. The Bank of Montreal started the Veev service in Chicago one year ago through its subsidiary Harris Bank and is now evaluating opportunities for offering the service to other North American banks.

"We have packaged the service and developed a risk-management model," says Mark Dickelman. "Now we will be working with 724 Solutions to market Veev to North American financial institutions with less than US $20 billion in asset value." ■

> "The Bank of Montreal has been a pioneer and pathfinder in developing Veev."

MOBILE COMMERCE SERVICES PLATFORM

724 Solutions' Mobile Commerce Services Platform (MCSP) provides a highly scalable solution for the delivery of secure m-commerce transactions. The MCSP is a complete technology solution for businesses and commerce intermediaries that facilitates secure, personalized, context-sensitive consumer and merchant interaction and payment completion. As an end-to-end solution, the MSCP brings value to all points of a "find and buy" transaction, while leveraging existing payment mechanisms, networks and systems.

The MSCP comprises a modular, secure and scalable platform solution enabling purchasing transactions from a range of mobile Internet-enabled devices, including mobile phones and wireless devices, such as the RIM Blackberry and Palm VII handhelds. The platform includes applications for mobile shipping, personalization, secure payment services and commerce gateways.

SECURE PLATFORM

The MCSP naturally builds on other 724 Solutions products, of which the most important are the PKI (Public Key Infrastructure) Gateway, the Wireless Internet Platform and the Financial Services Platform (FSP). Security is naturally a key factor in m-commerce services, and with the MCSP, 724 Solutions is committed to providing best-in-class confidentiality and integrity across all channels and all solutions. In deploying a wireless PKI infrastructure, 724 Solutions has licensed technology from Certicom and Neomar, two companies that were featured in Mobile Data Magazine No. 3, 2000. 724 Solutions' PKI Gateway takes Certicom's Trustpoint PKI Portal one-step further by enabling multiple device access – making the consumer's/businesses' device-of-choice a truly secure tool for conducting m-commerce.

INTEGRATED SOLUTIONS FOR GREATER EFFICIENCY

While the growing mass market for Mobitex continues to receive the most attention, vertical solutions for public safety, transport, logistics, sales force automation, telemetry and point-of-sale remain the bread-and-butter applications for most wireless service providers and network operators. In these applications, terminals are often purpose-built for maximum functionality, efficiency and ease of use.

To date, specialized wireless terminals for vertical applications have for the most part employed a traditional design that combines a radio modem and a data terminal or PC with specialized software developed by the equipment vendor or a systems integrator. Although many of these devices are now based on new radio modem technology that supports the design of portable, battery-powered units that can be used indoors, devices that fully exploit the latest advances in radio modem technology and wireless terminal products are almost totally lacking in vertical applications.

There are a number of products and product combinations that provide a very rich development environment for vertical applications. These include both the Palm VII, RIM and CNI wireless handheld devices, which are available with a WAP browser and supported by an SDK (Software Development Kit) from the appropriate manufacturer, and OEM Mobitex wireless modems from Ericsson, CNI, Maxon and RIM, which are also supported by SDKs and in several cases (e.g. Ericsson and Maxon) include firmware in the modem that is designed to simplify the developer's task. This article will focus on development for the Ericsson M3090 and M3080 OEM modems, which are supported by the M3000 OEM Modem Developer's Kit (OEM MDK)."

EVERYTHING IN A SINGLE BOX

The M3000 series OEM wireless modems represent a new platform for Mobitex terminal devices, which is identical in most respects to that used in Ericsson's most advanced mobile phones. It is available in 900 MHz and 800 MHz versions as the M3090 and the M3080 OEM wireless modem.

In addition to a powerful processor and memory for onboard applications (OBA), these modems provide an I^2C (Inter-IC Control) bus, an RS-232 serial connector, and standard contacts for I/O, A/D and D/A channels for device monitoring and control. Optional integrated modules for GPS or Bluetooth can be delivered in the same package as the modem. Software included in the modem consists of firmware for MASC and OBA support and an optional JVM (Java Virtual Machine).

The M3000 OEM Modem Developer's Kit provides everything that developers need in a single box. Included are three M3000 series radio modems for 900 or 800 MHz, two development boards for testing of both MASC and OBA-based applications, two power adapters, two antennas and all the necessary cables. The OEM MDK ISK also includes full documentation and a CD that is packed with development tools and software that includes many sample applications with full source code that demonstrate the power of embedded Java applications for this unique product.

A PROTOCOL VIRTUOSO

"Protocol management is one area where the benefits of a Java OBA on the M3000 are very significant," says Mats Adler, product management and application support for modem technology at Ericsson Mobile Data Design. The example he cites uses an M3000 series modem with an integrated GPS (Global Positioning System) receiver. The OBA handles the GPS protocol and calculates geographical positions completely transparently to the client device, which can simply send coordinates to the host system over the modem.

"Not only does the onboard application handle all the details of GPS. It can also do so intelligently," continues Mats. "Using Java and the OBA framework, it is very easy to determine how often to send location information based on how quickly the user's position is changing. If the user is standing still, the application simply stops transmitting, thus reducing traffic and costs."

The benefit of implementing other protocols as an OBA on the M3000 is that the wireless client can be given almost any characteristics to make it appear as a native device to the host. A POS (point-of-sale) terminal that uses a proprietary protocol, for example, is a perfect candidate. When the protocol is implemented as an OBA, the host system never knows that the data is being sent over Mobitex.

POWERFUL DEVELOPMENT PLATFORM

For developers who are familiar with the protocol to be implemented and perhaps even have a Java implementation available, designing such an intelligent wireless positioning device can proceed very quickly. The M3000 OEM Modem Developer's Kit contains everything needed to create a working prototype. The developer board and the modem can be set up in just minutes. Once the software from the M3000 OEM MDK CD is installed on the PC used for developing the prototype, an existing Java protocol handler can be downloaded to the modem in a few simple steps. Testing of the onboard application can begin.

> "Integrated solutions unleash the power of the M3000."

This description assumes that the OBA (onboard application) framework is being used. The M3000 supports both the native Mobitex protocol MASC and the more powerful OBA framework, which requires the JVM (Java Virtual Machine) that is included in the firmware on the modems when the M3000 OEM MDK is delivered. The JVM, together with Ericsson's M3000 OBA Java classes, provide high-level interfaces to the digital inputs and outputs, 8-bit analog inputs and outputs, the serial port, the I^2C bus and the radio interface.

Sample code on the M3000 OEM MDK CD shows how to use the OBA interfaces and Java classes for all forms of input and output. There are also extensively documented sample applications that provide an excellent starting point for developing AVL (automatic vehicle location) systems, advanced fleet management applications, point-of-sale (POS) terminals, service devices for vending machines and telemetry solutions for various wireless monitoring and control applications.

LOWER COST, GREATER EFFICIENCY

Fleet management systems provide an excellent example of the power of the M3000 OBA framework. In this application, it is not only desirable to support simple dispatching of vehicles. Instead, the system should track vehicle locations at all times and monitor several vehicle parameters, such as fuel consumption and temperature inside refrigerated trucks used to transport perishable foods.

In this scenario, the M3000 can support all the requirements with power to spare. The GPS module and the intelligent positioning application described above can track the vehicle's location at all times. With the appropriate sensors, the M3000 can also monitor fuel consumption and temperature, while processing logic in the onboard application determines if and when an alert should be generated and sends data back to the host system as appropriate.

If these are the only requirements, the user interface in the vehicle may only require a simple display and keypad. Apart from the M3000 modem, few additional components would be required. Above all, there is no need for an onboard computer or an external processor, since the M3000 and the OBA perform all the necessary processing.

As this simple example shows, an M3000 OBA requires fewer components, thus reducing equipment costs. In addition, an integrated solution is more efficient, since it uses less power, yet it can provide significantly greater functionality than a conventional solution. More importantly, development time is reduced, because developers have a rich development environment at their disposal that provides a high-level Java interface and supports very rapid prototyping.

APPLICATIONS THAT STRETCH THE IMAGINATION

One of the first demonstrations that Mats and his team created was an application that was called the Java Coffee Machine. Although meant as somewhat of a joke at the time, the application, which was developed in just a matter of weeks, could actually validate a credit card over the Mobitex network, activate the machinery to brew and dispense coffee and read various sensors indicating water temperature or such machine states as "door open." The Java Coffee Machine thus implemented significantly greater functionality using less development time and fewer components than existing vending machine applications.

"The possible applications stretch the imagination," emphasizes Mats Adler, whose team has been working hard to develop tools and support services for the M3000. "We would like to see the full power of the M3000 unleashed in integrated solutions for a wide range of vertical applications, and we are more than willing to help anyone who has a good idea."

Watch for the Mobitex Developer's Zone

To help developer's Mats and his team have loaded the M3000 OEM MDK CD with tools, software, sample applications and documentation. There is now a simulation tool and a project management tool, for example. Naturally, the the CD also includes all Ericsson tools for downloading firmware and testing and verifying onboard applications for the M3000 OEM wireless modem.

"We are also working hard to launch our Mobitex Developer's Zone in the near future," reveals Mats. "At the WAVE 2001 conference in Las Vegas, we will conduct a survey to update our database of Mobitex applications, which will naturally be accessible through the Developer's Zone. We are also preparing tools and support services for the Web."

There are also several signs that developers are beginning to realize the power of the M3000 series OEM wireless modems for Mobitex. In Brazil, for example, Tech Link is using the M3090 in new products scheduled to be released shortly. There have also been several inquiries from China regarding the new M3080 for products for use on the new 800 MHz networks.

"We are excited about the prospects for the future and hope that the forthcoming Mobitex Developer's Zone will become a forum for creative developers exploiting the full power of the M3000 modem and the M3000 Modem Developer's Kit," concludes Mats Adler ■

M3000 OEM MODEM DEVELOPER'S KIT

The M3000 OEM Modem Developer's Kit contains everything developers need for quickly creating onboard Java applications that unleash the full power of the M3000 OEM wireless modem. The kit contains all the necessary hardware, software, cables and documentation in one convenient box.

HARDWARE

Three modems and two development boards allow you to create a fully configured prototype that leverages the full power and flexibility of the M3000 Mobitex OEM Radio Modem.

3 M3000 series Mobitex OEM Radio Modems	M3090 for 900 MHz or M3080 for 800 MHz
2 development boards testing of both MASC- and OBA-based	Prototype boards for development and applications.
2 power adapters	Input: 110-240 VAC, 50-60 Hz Output: 12 VDC, 2.9 A max
2 antennas	Type depends on modem frequency.

CABLES

All the cables needed to make the M3000 OEM Modem Developer's Kit a plug-and-play solution for application developers and system integrators.

2 power cables	Type depends on applicable country standards.
2 RS232 serial communication cables	DB9 female – DB9 male
2 antenna cables	OSMT – SMA female converter cable

SOFTWARE AND DOCUMENTATION

A full complement of software and development tools plus sample applications with source and comprehensive documentation to support every phase in the development and integration process for creating your customized wireless solution.

M3000 OEM MDK CD	The OEM MDK CD contains software for MASC- and OBA-based application development, the OBA frame-work software and firmware, tools for OBA development and downloading of applications to the M3000, tools for verification and testing, many sample applications with full source code and all relevant documentation in PDF format.
Onboard Application Developer's Guide	Comprehensive documentation with extensive examples for developing Onboard Applications in Java.
Integrator's Manual	An authoritative reference for system integrators who need to include the M3000 in an OEM product.

MOBILE MARKET NEWS

NEXT GENERATION MOBITEX IC FROM CML

With the release of the CMX 909B Mobitex modem IC, the world's most widely used Mobitex chip has been significantly improved. This chip, which is made by Consumer Microelectronics Limited (CML), is the successor to the popular FX 909A chip used in Mobitex modems and terminal products from such manufacturers as UK-based vendor Maxon and CNI (Communication Network Interface) in Korea.

CML designs, manufactures and markets integrated circuits used in communications equipment worldwide. CML is a member of CML Microsystems Plc, a group of five companies with operations in the UK, the US and Singapore and a worldwide network of distributors. The company's offices are at group headquarters in Maldon in Essex, England.

For over 30 years, CML has been a leading player in providing equipment manufacturers with very low-power solutions to many communications needs. CML operates as a fabless semiconductor company and specializes in mixed-signal semiconductor products for the wireless data, wireline telecom and two-way radio markets. Among these are a variety of products for RF data and voice that include both FSK (Frequency Shift Keying)

and GMSK (Gaussian Mean Shift Keying) modem chips for packet data.

PROVEN MARKET LEADER

CML realized the importance of wireless data at an early stage and has been a major player in the industry for some time. For CDPD (Cellular Digital Packet Data), CML believes that it holds a market share of between 35 and 40 percent. Its FX 909A Mobitex modem chip is currently used by a number of Mobitex designers globally.

Achieving ultra-low power operation and powersave functions in its products is one of CML's main focuses. The company is a proven market leader in this area, providing multiple functions on-chip, the lowest possible pin count and compact surface mount packaging. These features are evident in the new CMX 909B and in existing products based on CML chips, such as the TWM III from CNI described elsewhere in this issue.

After reviewing the requirements of Mobitex over the next few years with its existing customers, CML developed the CMX 909B as a next-generation Mobitex modem IC. Among the most significant improvements is a doubling of the date rate, compared with the FX 909A, from 19.2 to 38.4 kbit/s.

INTELLIGENT POWER MANAGEMENT

The CMX 909B is a CMOS integrated circuit that contains all of the baseband signal processing and Media Access Control (MAC) functions required for a high-performance GMSK wireless packet data modem. It interfaces with the host processor and the radio modulation/demodulation circuits to deliver reliable two-way transfer of application data over the wireless link.

This solution offers design engineers significant benefits over the software solutions that are otherwise required for wireless applications. In addition to the increased data rate, the CMX 909B incorporates the R14N Short Block acknowledgement frame from the latest Mobitex standard. R14N allows mobiles to respond using a shorter transmit period, thus increasing battery life.

The CMX 909B also features an envelope detection method to assist software in determining the start and end of frames. Once again, this reduces the need for external hardware and reduces the probability of missing a packet.

Multiple powersave modes permit the implementation of intelligent power management, leading to a lower battery capacity requirement, thereby reducing overall size and weight. The CMX 909B is designed for operation at 3V and 5V and is available in 24-pin SOIC, SSOP and PDIP packages. ■

www.cml.micro.co.uk

RIM INTRODUCES WIRELESS CALENDAR

BlackBerry Enterprise Server customers will enjoy a seamless, two-way wireless connection between their online calendar and their BlackBerry Wireless Handheld™. With wireless email and calendar, customers will stay connected to the information that drives their day.

With the wireless calendar, BlackBerry Enterprise Server takes calendars to the next level. With wireless calendar synchronization, BlackBerry Enterprise Server and BlackBerry Wireless Handhelds exchange calendar events wirelessly and automatically so that the online calendar and handheld calendar are synchronized without need of a cradle. The BlackBerry user enjoys the benefit of an updated handheld calendar and the online calendar is also updated for the benefit of colleagues and assistants trying to schedule new appointments. With BlackBerry, customers get maximum control of their calendar and email.

Wireless calendar features include:

- Accept or decline meetings (with or without comments) from the BlackBerry Wireless Handheld.
- Initiate meeting requests from the handheld.
- Changes to online calendar are automatically updated on the handheld.
- Changes to the handheld calendar are automatically updated on the online calendar.
- Invite meeting attendees using the handheld address book.
- View up-to-date calendar online and on the handheld.
- End-to-end data encryption for greater security.

"Wireless connectivity with proper back-end integration will change the way you think about your mobile organizer. In fact, it gives a whole new meaning to the term – 'connected' organizer," said Mike Lazaridis, president and co-CEO of Research In Motion. "Meeting scheduling is a dynamic process that depends on multiple parties. The value of your calendar is highly reliant on your ability to both input and receive timely updates. Wireless calendar synchronization with BlackBerry dramatically improves the scheduling process by providing an automated, two-way, wireless connection to your calendar so that you're always up-to-date." ■

www.rim.net

TECHLINK MAKES IT SIMPLE

Brazilian equipment supplier TechLink announced recently that it has developed EasyCradle, a family of wireless cradles for the Palm III, Palm V and Palm m100 handhelds that operate on 900 MHz Mobitex networks. The EasyCradle, which will be available during the second half of this year, follows on the successful launch of TechLink's EasyLink wireless POS terminals for Mobitex.

TechLink is a young company founded in 1999 that specializes in the design, manufacture and marketing of wireless data devices. Both the EasyCradle and the EasyLink products are based on Ericsson's M3090 OEM radio modem for Mobitex. TechLink is actively promoting its products in international markets and has the capacity to produce and deliver its products in volume. ■

www.techlink.com.br

NEW PALM COMING

In a keynote speech at Andrew Seybold's Summit4Mobility conference on February 27, Palm CEO Carl Yankowski revelaed that an updated Palm VIIx handheld will be released later this year. The new unit will be about the same size as today's Palm V family of handhelds and will have features aimed at improving usability, including access to corporate e-mail, instant messaging and notification of incoming messages. More details on this important new product will undoubtedly become available during the upcoming WAVE 2001 conference, where Mr. Yankowski will once again be a keynote speaker. ■

www.palm.com

POLE STAR STRENGTHENS POSITION WITH MOBITEX

Pole Star Space Applications Ltd recently announced a significant new business partnership with Transcomm UK Ltd (formerly RAM UK), further strengthening Pole Star's position as the supplier of choice for industry-standard global remote asset management solutions. Pole Star will offer customers Internet access to the UK Mobitex Network through PurpleFinder, their web-based remote asset management solution.

The Pole Star/Transcomm Network partnership will provide a number of key benefits for customers. When used with the Mobitex wireless data service, PurpleFinder will provide UK operators with a robust, fast, and cost-effective integrated web-based remote asset management solution. Because it is optimized for data use PurpleFinder customers

will benefit from continuous, real-time communications that are secure, error-free, and reliable with unlimited capacity.

"Our association with Transcomm UK Ltd is a key milestone in our business expansion plan. It will further enhance PurpleFinder's position as the leading Web-based product of choice, not only in the UK, but globally. We are also in the process of building similar relationships with other organizations around the world offering Mobitex services," says Darrel Sheinman, Pole Star CEO. These expansion plans are naturally enhanced by the fact that there are now 30 Mobitex networks around the world, making it the de facto international standard for "packet-switched wireless data communications."

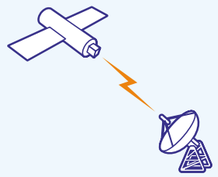
COMMITTING TO MOBILE INTERNET

"Pole Star has a bright future not only in the UK, but also internationally," continues Sheinman. "We already utilize the Inmarsat C, D+, and Orbcomm communication networks, and by strengthening our coverage with Transcomm we have the most comprehensive global solution on the market."

"Mobile Internet has a key role to play in the future growth of effective business communications. That's why bringing Transcomm and Pole Star together in this way is an important and timely step for both parties," concludes Adrian Noad, marketing and business development director at Transcomm. ■

www.ram.co.uk
www.tardis.co.uk
/www.freightfinder.co.uk

ABOUT PurpleFinder™



PurpleFinder is a Web-based solution for remote asset management offering asset location, communication and monitoring services, for fixed and mobile assets on land, sea and air.

Major applications include fleet and route management, supervisory control and data acquisition (SCADA), and bureau service, providing quantifiable business benefits in the transport, distribution, security, remote monitoring and field service areas. All that is required is a transceiver unit or existing SAT-C terminal for each asset, an Internet/Email-enabled computer, and the appropriate free web browser. No special hardware or software is required above a standard office personal computer.

PurpleFinder uses satellite GPS in conjunction with combination satellite and land-based communication services to provide global, two-way, real-time, web-access to standard and exception-based asset positions, messages and monitored data. ■

MICROPOINT NOW RAM-READY

Micropoint, an international supplier of notebook PCs and mobile solutions, has been certified as the first RAM-Ready supplier by RAM Mobile Data Netherlands. A RAM-certified partner of long standing, Micropoint developed the field-service solution for Dutch water companies described in Mobile Data Magazine No. 2, 2000. In addition to its Jazz and Cameo 2 notebook PCs, the company supplies the Micropoint OfficeCase, which provides a complete mobile office for workers in the field, and the Micropoint Navigator, which is a GPS-based vehicle tracking system.

RAM Mobile Data Netherlands recently evaluated several Mobitex-enabled Micropoint products. Various tests were performed to verify how the hardware and software functioned on the RAM Network. These tests showed that the Micropoint solutions functioned optimally under a variety of network conditions. As a result, Micropoint was awarded the first RAM-ready title.

The RAM-Ready award is not only a guarantee that Micropoint solutions are ready to run on the Dutch Mobitex network and will perform according to the operator's strict requirements. This certification also provides assurance for Micropoint customers that the supplier is able to supply both hardware and software for a turnkey wireless data solution, thus minimizing development time and cost. ■

www.micropoint.nl

OMNI 3600 CUTS WIRE, NOT PERFORMANCE

VeriFone, a division of Hewlett-Packard Company and worldwide leader in electronic payment solutions, recently introduced the Omni 3600 e-payment terminal, a complete multi-application payment solution in a powerful, compact portable that cuts the wire, not the performance. With broad wireless coverage and high-performance multi-application functionality, this fully-integrated, Internet-enabled portable can support a variety of payment, payment-related and value-added applications to meet the needs of traditional merchants as well as merchants on the move.

"This product raises the bar on performance because it extends the power of a multi-application payment terminal to the Omni 3600," says Eric Lecesne, general manager, VeriFone Technology and Product Operation. "We're freeing merchants from the time and expense of phone and power line installation. We're also leveraging the most popular elements of our Omni 3200 and Omni 3300 family of terminals to deliver exceptional speed, superior reliability and ease of use all at a lower total cost of ownership."

The Omni 3600 has a triple-track magnetic-stripe reader, primary smart card reader, and internal PINpad to support the full spectrum of applications including credit, debit, and smart card-based transactions. The smart card reader is compliant with Europay, MasterCard, Visa (EMV) standards, which ensure global interoperability between chip-based cards and terminals today and in the future. The Omni 3600 utilizes VeriFone's global e-payment platform, which includes VeriFone's Verix operating environment to support and run multiple applications on a single device.

The first version of the Omni 3600 will utilize the nationwide Cingular Interactive Intelligent Wireless Network in the US. This version will also use Mobitex networks in Canada and areas of Latin America. ■

www.hp.com/solutions1/verifone/promos/omni3600.html

JAVA-ENABLED SMART SERVICE

Cingular Interactive is moving to Java as the open software platform for new services on its Intelligent Wireless Network. With support from Sun Microsystems, Cingular Interactive will show Java 2 Micro Edition (J2ME™) tools and methods at the upcoming WAVE 2001 conference that will enable ASPs and developers to build next generation wireless applications and services that are dynamic, personalized and interactive.

J2ME-enabled smart services are the next step beyond today's text-based static content. Java software enhances the user experience by supporting easy-to-use, graphical, interactive services for wireless devices for disconnected use, as well as access applications interactively from the networks.

During the developer workshops following the conference, Sun representatives will show experienced Java application developers how to write Java applications for wireless devices that are compliant with the Mobile Information Device Profile (MIDP). Technical details will also be provided on the K Virtual Machine (KVM), Java 2 Micro Edition (J2ME™), Connected Limited Device Configuration (CLDC), and Mobile Information Device Profile (MIDP).

CROSS-DEVICE, CROSS-NETWORK DEVELOPMENT

"The J2ME environment will allow for enterprise and partner developers to leverage their existing Java technology programming expertise and applications to simply, rapidly and securely extend their solutions to a host of wireless handhelds via the Cingular Wireless networks" says Roy Tarantino, director Technology Platforms, Business Development, for Cingular Interactive. "The Java platform provides a cross-device, cross-network development environment, enabling us to assist our partners in migrating to Java, giving them more flexibility and helping them cut down on their development time, and a speedier delivery to the marketplace for their solutions."

Following WAVE 2001, developers will also be able to download the tools to build wireless Java technology based applications for any wireless handheld that supports the J2ME Mobile Information Device profile (MIDP) environment, including the RIM wireless handhelds, and the Palm V TM, from Cingular's Developer Web site. ■

www.cingular.com

RE-INVENTING THE WHEEL

By using the mobile Internet, Ericsson Business Innovations is making driving safer and more convenient. M-services in your car will be a reality much sooner than you think. Business Innovations is building an open platform enabling you to access a variety of personalized services ranging from vehicle specific services such as navigation and remote diagnostics to banking, entertainment and web browsing. Gunilla Rydberg, formerly the publisher of Mobile Data Magazine, now working as a product manager for automotive e-services at Ericsson Business Innovations, believes that m-services in cars have tremendous growth potential and will create high value for the end user.

Do people really need to access the Internet from their cars?

It is not really about accessing the Internet it is about getting the services you want when and where you want them. Increasingly people are bringing more and more devices such as PDA's, mobile telephones, TV screens and their computers into the car. The main driver for this technology is to provide one safe interface for all these devices and the services they provide. Using Bluetooth, the devices are accessed via the car interface. With a simple click you can answer the phone, re-organize your day and navigate your way through town, without taking you eyes off the road or your hands from the wheel.

Can you describe how all this might work?

The car will have a display built-in to the dashboard. For example the car could identify me via Bluetooth and log me in. My personal settings would be loaded, meaning that the language and configuration of the display would be what I expect and my personal address book would be available. If I say "Call Jim," I would be connected and could have a conversation with my colleague. If I was driving to work through heavy traffic, the car could advise me of the best route.

"The car is in many ways a natural extension of the home"

What is needed to make this happen?

We feel that the best approach is the Open Services Gateway Initiative (OSGi), which was started in 1998 by Ericsson, IBM and Sun and now has more than 80 members. The OSGi mission is to create open specifications for the networked home for the delivery of multiple services over wide-area networks to local networks and devices and to accelerate demand for these services. Recognizing that the car in many ways is a natural extension of the home, a Vehicle Expert Group was formed last year to create a vehicle gateway based on the OSGi Specification Release 1.0.

At Ericsson Business Innovations, we see this leading to the creation of car portals, from which personalized services and user profiles can be delivered to the car. One opportunity would be for car manufacturers to provide portals for their customers.

When will this become available?

All of the technology is available now. Naturally, there are many interests involved, and many parties are pulling in different directions, so this is not the only factor. We feel that when the time comes we will be there to take advantage of the volume market. To make it happen faster, a standard and an open specification is essential.

Car manufacturers are a key group. Telematics is a true convergent industry where traditional telephony, IT and automotive industries are now coming together, incorporating the best of both worlds.

What are some of the concerns of car manufacturers?

The automotive industry is very well equipped to deal with the technical concerns. Cars today already contain so many electronic and computerized components. Service technicians are already using computers to diagnose engine performance when the car is in the shop. Bringing this one more step to remote diagnostics when your car breaks down on the road is not a big deal. It's a question of balancing cost for the manufacturer and value for the car owner.

Of greater importance to car manufacturers is their ability to differentiate themselves from their competitors and build a strong brand and customer relations.

What about using Mobitex in automotive e-services?

The vehicle service gateway will be completely carrier-agnostic and designed to support whatever wireless services the user has, so there is no reason why Mobitex can't be included. Currently, SMS is used for many services. Increasing the intelligence of a navigation service, for example, so that it updates driving directions on the basis of changing traffic conditions does not require a lot of data or high data speeds. Automotive e-services is an emerging market in which it will be up to Mobitex vendors and service providers to take advantage of the opportunities.

Where can developers find out more?

We offer a Software Developer's Kit that will be available June 1, 2001 on the Ericsson Developer's Zone. The SDK offers the possibility for developers to create services and applications not only for vehicle but also home environments. The vehicle is just the tip of the iceberg. More information can also be found at the OSGi web site www.osgi.org.

What do you like most about your work?

The most exciting thing about working at automotive e-services is that new things are happening constantly and development is going so fast. This is a natural step in mobile services and we see that Ericsson is well placed to take advantage of the environment we are creating. ■

"The SDK offers the possibility to create services and applications not only for the vehicle but also home environments"

The wireless whatever

I probably should never have accepted the consulting assignment from Gee Whiz Wireless, but my almost incurable fascination for gadgets made it just impossible for me not to be a part of launching the Wireless Widget.

"Wireless Wizard, not widget," said Mr. G. impatiently. Apparently I was off on the wrong foot on this assignment. After all, the least the marketing consultant could do was to get the product name right. Probably I shouldn't have been fiddling with my new key chain when I answered the call.

"Right. The Gee Whiz Wireless Wizard it is. Now what can it do for me, Mr. G?" I asked, refusing to let this minor set back get me down and trying to strike an upbeat note.

"The Wireless Wizard is a truly revolutionary device that will power the mobile Internet," said Mr. G., warming to his subject. "It is the ultimate delivery platform for next-generation lifestyle services and supports a wide range of powerful personal productivity applications. Quite simply, it will do anything anywhere at anytime."

"I see. Well, I can see from the spec sheet you sent me that it's small enough to fit on a keychain, runs for a month on a single battery, yet it supports Mobitex, Bluetooth and GPS and has both a WAP browser and a built-in JVM, so I know that it's really a cool device. I just was kind of wondering what kind of applications and services you're going to ship with it. I mean, who's developing for it? Which service providers have you lined up? And what about partnering with content providers?"

"Perhaps I don't understand your question. I mean, these devices are practically going to sell themselves," replied Mr. G. in an infuriatingly disingenuous tone of voice that told me that he would be fluttering his eyes in surprise and looking at me condescendingly if we were talking face-to-face.

"I think we need to consider what kind of out-of-the-box experience will it deliver," I asked, trying to control my temper. I paused for a moment to assume a more deferent tone. "Does it offer location-based services? Can it give me driving instructions to help me find your office? Will it open my garage door when I get home?"

"Like I said, the Wireless Wizard can do anything anywhere at anytime. I don't think that's at issue here. But you may be right about the out-of-the-box experience. Maybe I should get my engineers working on over-the-air activation," said Mr. G., finally handing me the opening I needed.

"Good idea! In the meantime, let me work on a marketing plan and talk to some people who can put some applications and services on your device," I said, doing my best to give my client the impression that this was something that marketing consultants did in an afternoon.

After hanging up, I realized that I had been fiddling with my key chain during the entire conversation. It had a sleek gray metallic case with a built-in infrared flash light that emitted enough light to find the keyhole on a car door in the dark and also generated enough heat to thaw a frozen look. Why I had bought it when spring was beginning and temperatures were rising, I did not know. I only knew that I had burned my hand testing it and that since I had discovered that I could use it to carve my initials in an ice cube, I was probably going to wear out the battery before the summer was over.

My contacts did finally come through for Mr. G., putting together a truly impressive set of applications and services for the mobile professional that will undoubtedly create headlines when the product is finally released. In the meantime, I couldn't resist asking Mr. G. about a reference to a triple band wireless device in an early product sheet. I figured that Mobitex and Bluetooth accounted for two frequency bands, but I couldn't figure out the third one.

"Originally we planned to include an ultrasonic transmitter so that you could use the Wireless Wizard to control your dog," said Mr. G., pausing awkwardly and obviously not wanting to continue. "We had to drop that feature, though, because my engineers never could manage to train the dog."