



SMART CARD NEWS

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Microsoft Announces Smart Card Operating System

Microsoft's long rumoured entry into the Smart Card arena was confirmed at the Cartes show in Paris last month with the announcement of a new Smart Card operating system. The involvement of the world's largest computer software company is likely to give a major boost to the expansion of the industry worldwide.



In terms of major applications in the field, the US has so far lagged behind Europe - Smart Cards being viewed rather as something invented and happening "over there" in Europe. The involvement of Microsoft may now help America to "discover" Smart Cards.

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Microsoft Operating System

Continued from page 201

Craig Mundie, Senior Vice President of the consumer platforms division at Microsoft, said the platform offered the greatest choice of tools, a common run-time environment and the strongest possible security. "With the low cost Smart Cards for Windows, we hope to support a broad array of solutions to provide secure access to on-line resources as part of an end-to-end solution.

"We have a business model that provides value-added opportunities for our vendors, and we feel we have an opportunity to help expand the Smart Card market on an international basis."

Typical solutions are seen as secure network authentication, secure corporate transactions (such as on-line banking), electronic cash and customer loyalty programs.

Features include a multi-partition file system for multiple applications, access control rules, pluggable cryptographic algorithms allowing developers and customers to specify and design their own levels of cryptographic support, and support for existing standards, including ISO 7816-4 commands.

Supporters of the development, which is expected to increase the uptake of Smart Cards among the PC user base, include card manufacturers like Bull, De La Rue Card Systems, Gemplus and Schlumberger; chip manufacturers Hitachi, Siemens and STMicroelectronics; and systems supplier ICL.

So what happens now?

- A beta version is expected to be available in January 1999.
- Software is scheduled to be available on various leading processors in the first quarter of 1999.
- Merrill Lynch & Co. Inc will employ Smart Card for Windows equipped with Schlumberger Cyptoflex technology for secure Web access.
- Schlumberger and Microsoft will test IT security with Cable & Wireless.

- Microsoft and Proton World International are to do a joint feasibility study concerning the support of the Proton electronic purse and multiple application platform by the Smart Card for Windows operating system
- ICL plans to pilot the platform at a university in the US, at a corporation in Europe, and also develop a corporate / campus scheme with system access and based on its SmartCity system
- In the UK, BT says it is looking forward to testing and evaluating Smart Card for Windows and its development kits at its Martlesham Heath laboratories.
- ORGA plans to pilot products on the platform.

Duncan Brown, a senior consultant with analysts Ovum, said Microsoft's announcement "advances the debate on platform standards for Smart Cards. Both Java Card and MULTOS are severely threatened by this move."

Not so, says Visa International, a major supporter of Java Card technology. Philip Yen, Visa's Senior Vice President, Emerging Technology, welcomed the addition of Smart Card for Windows "as yet another operating system that will work with the Visa Open Platform." Member banks, he said, would now have a greater choice of operating systems as well as commonly used programming languages.

And at MasterCard-owned Mondex International, which promotes the MULTOS multi-application Smart Card operating system, the view is that it is good for the industry as it will encourage Smart Card usage in relation to e-commerce because of the addition of Smart Card readers to computers or keyboards. "We see MULTOS in a very strong position in the marketplace with support from banks and major players in the industry," said a spokesman.

However, SCN expects to see increasing vigour from the two Card issuers in getting more Visa Cash and Mondex applications into the field globally.

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Rival E-purse Schemes in France

One of the largest banking groups in France, Crédit Mutuel, announced plans to pilot the first Mondex electronic cash cards to hold the Euro. But only days later, a consortium of French banks led by Crédit Agricole and BNP, announced a rival bank card with an electronic purse based on the German GeldKarte. Meanwhile, some of the largest commercial organisations in France are planning to roll-out an electronic purse and transport pass called Modeus.

Mondex France

Crédit Mutuel revealed it has purchased 51% of the franchise rights to Mondex and will set up a new company, Mondex France, to introduce the electronic Euro. Mondex allows for the Euro to sit alongside national currencies on the same card - a feature which will be increasingly important in the transitional phase of the new currency. In fact, Mondex allows the cardholder to carry up to five different currencies at once.

In addition, Crédit Mutuel has said that it will introduce Mondex on MULTOS, the multi-application Smart Card operating system, allowing it to combine other financial services applications on a single chip.

Existing Smart Card payment schemes in France will be able to run on MULTOS-based cards allowing Crédit Mutuel and other French banks to seamlessly migrate the system to EMV. (De La Rue and Ingenico recently demonstrated a French BO' payment application running on a MULTOS card and a French POS terminal).

Michel Lucas, Chief Executive of Crédit Mutuel, said: "We have been looking very closely at the competing electronic cash systems in the market and believe that Mondex is without a doubt the clear winner. In addition to meeting our needs in France, it is a global system and provides interoperability for Europe and the world today.

"We are very open to other French institutions joining us in Mondex France as we want to see the widest possible representation and partnership."

Claude Brun, a Director of Crédit Mutuel, said: "With the single currency rapidly approaching and the development of open networks, the ability of Mondex Smart Cards to support several currencies at one time, including the Euro, was central to our decision

to buy the franchise."

Adding France to the Mondex scene is a major step forward for Mondex International and provides a strong base from which to establish Mondex across Europe. The announcement follows the recent decision by Norway to buy a Mondex franchise (SCN September 1998, page 167).

Pilots in two countries

Since then it has been announced that Crédit Agricole and BNP will test electronic purse Smart Cards with debit/credit functions in the Spring of 1999 in Tours in France and Mulheim in Germany. The pilots will run simultaneously to test interoperability and involve 30,000 cards.

Oberthur Smart Cards will manufacture and personalise the cards while the multi-application operating system will be developed by IBM which will provide the chips and offer consultancy on the GeldKarte standard and the new functionalities required. Steria will be responsible for system integration, Atos for the back-office, and Ascom Monétel for the terminals.

IBM says it will be integrating, on a single chip, the French chip card functionality and the German GeldKarte functions which were partly developed by IBM.

Steven Houghtalen, Director of IBM's Global Smart Cards Solutions, said: "This is a real international project and a big step towards the Euro and interoperability of Smart Card-based payment systems."

Modeus E-purse and Transport Pass

Meanwhile some of the most powerful entities in France are forging ahead with an electronic purse and transport pass called Modeus with plans for what is described as "a massive launch" for the end of 1999.

Founding partners in the scheme are Caisse d'Épargne, La Poste, Société Générale and transport operators RATP and SNCF. They have recently been joined by Banque Populaire with France Telecom and a number of banks said to be joining in soon. This development company is open to new partners. Modeus, formed by the partners, is a limited company with a capital of 105 million FF.

The microprocessor Modeus card is used as a transport pass storing tickets (single journey or season) working in contactless mode. It is also an electronic purse for everyday small purchases, including parking, tolls and local community services etc. Two versions are proposed - a reloadable electronic purse linked to the holder's bank account, and an anonymous purse that can be used by anyone even if they do not have a bank account.

Another strength for the system is that the card is euro-ready. The card can be used to pay either in French Francs or in euro during the transaction period. Readers will be able to display any transaction and balances in Francs or in euro, along with the conversion rate.

From test to launch

RATP and SNCF, with private transport companies, have been testing the contactless chip card technology on every public transport network in the Ile de France since 1996. To date, more than 20 million transactions have been recorded.

One experiment is in operation in the 120 underground stations and on one private bus line. Another concerns multi-modality (bus + train + car park) and will be carried out in the Versailles and Saint-Quentin en Yvelines areas starting this month. A third experiment will be launched north-east of Ile de France in February 1999 by RATP, SNCF and private transport companies (ADATRIF and APTR).

In Noisy le Grand, RATP are testing a card supporting both the transport and the electronic purse applications and the number of participants will be further expanded and include the banking partners.

Modeus says the trials will be extended to the Montparnasse area in Spring 1999 and the number of cardholders enlarged to 50,000. Thereafter all the above testing sites should progressively merge. A massive launch throughout France is planned for the end of 1999.

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Loyalty Schemes

Interactive Loyalty from Mondex

Mondex International launched Interactive Loyalty which it claims will save retailers and card issuers millions of pounds by eliminating the need to mail statements to their customers. In addition, loyalty programmes can be available in six weeks.

Programmes using Interactive Loyalty software enable considerable customer-specific information to be stored on the card so companies can easily target each customer in store with meaningful incentives. And by enabling customers to redeem rewards immediately, there are huge potential savings by reducing the need for call centres and catalogues.

The scheme uses the multi-application operating system MULTOS enabling loyalty programmes to be added to Smart Cards already in issue, while product upgrades and extra functions can be added from the tool kit without having to re-issue the cards.

In addition to providing the software, Mondex has created a Business Partner Network to provide a complete solution, advise on the design of the programme, provide the terminals (Dione), host database system (Amdahl), customisation of cards (DataCard) and the analytical skills to enable exploitation of the data collected (DunnHumby).

Ian Cox, Senior Manager, New Projects and Ventures at Mondex, told SCN that the level of interest in the system was encouraging and the first customer (unnamed) implementation would be in Q1 of 1999.

Details and demonstrations can be found on Web site: www.interactiveloyalty.com

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Siemens Sheds Semiconductors

Siemens has made public its expected intention to shed its components division, including their semiconductor activity.

Hit by sharp price falls, the poorly performing unit made a loss of DM1.2bn in fiscal year ending September 30th. A stock market floatation is now planned.

GemClub-Memo from Gemplus

While Mondex has gone for high end microprocessor technology for its loyalty scheme, Gemplus has focused on a new high performance memory card pointing out that they are less expensive than microprocessor cards and claiming that 80% of loyalty market programmes are still based on memory cards. This, they say, answers both market and business case requirements.

The new card is the first to support the industry standard T=0 communication protocol, common to most terminals, eliminating the need for developing specific drivers for each terminal that accepts cards.

Gemplus says it is also the first memory card compatible with the PC/SC standard, which facilitates any software development using Windows environments.

The 2K bit (256 bytes) card features two distinct counters on the chip, allowing two applications to run on the card, either independently and secure of each other, or interactively, for example, a retailer can issue a single card with both a reward program and a closed electronic purse.

GemClub-Memo is currently available for application development with the first cards in volume from the beginning of February 1999. The card will cost from 5-7FF in volume quantities and Gemplus says it has already been accepted for a number of projects which cannot be disclosed at this stage because of client confidentiality.

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Gemplus Market Forecast

Gemplus produced its Smart Card forecast at the presentation of its new loyalty card GemClub-Memo to show the predicted increase in loyalty cards by the year 2003.

Also of particular interest in relation to our front page story on the Microsoft Smart Card for Windows operating system is the forecast that Smart Cards in IT will increase from one million in 1997 to 120 million in 2003, an increase of 142%, to become the fastest growing market sector.

Market (Mu)	1997	2003	CAGR
Pub Telephone	684	3270	30%
Wireless	69	760	49%
Banking	49	690	55%
Loyalty	22	320	56%
Health	16	210	54%
Pay TV	12	150	52%
Transport	8	240	77%
Gaming	2	70	78%
Access Control	10	260	72%
Identity	2	50	71%
Information Tech	1	120	142%
Other	24	170	38%
Total	900	6310	38%

Proton Cards from Schlumberger

Schlumberger has signed a license agreement with Bull to offer Smart Cards for the Proton electronic purse. As an official supplier, Schlumberger will manufacture cards for the full range of Proton implementations from high-level multi-application cards, through easy-entry electronic purse cards to low-end disposable cards.

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PC Card Reader with Modem

A Smart Card reader combined with a high performance modem in a PC Card (PCMCIA Type II), with no protruding parts, was unveiled by Swedish company Intertex Data AB. The new product thus saves one valuable PCMCIA slot compared to having a separate modem and card reader.

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Sesame awards

Best Application

ERG won the Best Application SesameS award at the Cartes show in Paris for the development of its contactless Smart Card system for fare collection in Hong Kong. The first large-scale, multi-operator and multi-application system of its kind, it is used in all modes of transport.

(Recently, ERG won the Information Industries Export Award at the 1998 Western Australian Industry and Export Awards for the same system).

Other finalists in this section were Gemplus for Gambling in the Street, a new concept for gaming based on a handheld, personal, electronic game terminal and a Smart Card for inputting, storing and securing both bets and winnings; and Moneyline for its P2000 - GSM - GPS system which combines a Global Positioning System (GPS) and a portable terminal P2000 GSM, to merge fleet management, payment by card and passengers' control.

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Best Innovation

ELVA was awarded the Best Innovation SesameS award for its on-line VocaliD Smart Card. A vocal identification card, it allows secure access to on-line services using an embedded acoustic interface and the telephone as a reader.

Other finalists in this section were Raychem for its Piezo powered card with a flexible colour LCD for displaying information directly onto the card; and Schlumberger's SiShell providing additional physical security for the chip (see page 210).

Philips New Cryptocontroller

Philips Semiconductors has announced that the first 0.35 µm Smart Card cryptocontroller with an embedded 32-bit FameX crypto coprocessor for public key encryption will be available in Q1 1999.

Called the P8WE5032, it is targeted at multi-service cards, Java Cards including public key encryption, pay-TV, secure authentication modules (SAMs) for point of sale terminals and electronic commerce applications.

Philips says FameX provides the fastest available solution to calculate RSA, with a 512 bit key length processed within 35 ms, or a 1024 bit key length processed in 160 ms.

The P8WE5032 features 32Kb ROM, 2.3Kb RAM and 32Kb EEPROM and will enter volume production in Q2 1999.

The first derivative, the P8WE5016, a secured Smart Card controller with 16K of EEPROM will be available at the same time.

The P8WE50xx family features a triple-DES coprocessor which Philips says reduces execution times considerably, enabling a triple-DES operation to be completed in less than 110s. As a result, the overall time required for a triple-DES operation within a transaction can be reduced by a factor of up to 400.

Cryptographic key generation is provided by Philips' Fips 140-1 evaluated True Random Number Generator (TRNG).

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Atmel Microcontroller

Atmel Corporation announced the AT90SC3232C Smart Card integrated circuit microcontroller (MCU). Built around Atmel's proprietary 8-bit RISC AVR, it features 32K bytes of Flash program memory, 32K bytes of EEPROM and 1K bytes of RAM and also includes a crypto-coprocessor with preprogrammed functions for cryptography and authentication.

It is targeted at Smart Card applications requiring a high level of security from banking, pay-TV, medical and social security records, to compute-intensive applications such as GSM SimtoolKit, Java and multi-application cards. The microcontroller is available now in sample quantities. Prices start at US \$4.2 each for 100k units.

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Bull Electronic Purse Offer

Bull, announcing its SmartPurse scheme, took the unusual step of publicly costing a typical electronic purse configuration for potential clients. This is a positive change from working out the details of a scheme before you obtain any idea of the cost price.

The first solution presented by Bull uses the Proton technology and includes:

- microprocessor cards with the Proton electronic purse application developed by Bull
- personal readers marketed by Bull subsidiary Xiring
- Solfeo, Amadeo and Alto payment terminals
- reloading terminals developed by Banksys
- NT servers with the electronic purse application developed by Proton World International
- customer services including installation, deployment and support.

David Lévy, CEO of Bull Smart Cards & Terminals, said: "Bull is in a position to set up a SmartPurse site within six months of taking an order."

As for price, Bull gives an example of a SmartPurse configuration for 20,000 people as costing US \$473,000 or approximately US \$24 per person.

This includes:

- The Proton NT license
- License for the Tuxedo transactional monitor
- The Windows NT server
- Security access modules
- One electronic purse card per person
- 200 electronic payment terminals
- Integration, support and deployment services.

Maybe Bull should follow up this idea and publish the potential benefits and savings in introducing an electronic purse scheme to assist customers in establishing their business case.

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Proton Reloading on the Internet

Proton World International (PWI) announced the availability of Proton electronic purse reloading via the Internet. A Smart Card reader integrating the Proton technology is connected to the Internet PC and is used for PIN introduction and amount verification. A Java-based web interface guides the cardholder through the process of loading the card on-line. This new application is euro-ready.

At Cartes, PWI also launched Proton for Windows NT, described as a variable-scale solution for multi-application Proton cards that brings it within the range of companies, schools, universities, clubs etc to implement systems with any number of cards, from a few dozen to hundreds of thousands.

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Visa OP for Java Card-based SIMs

Visa International has announced that the Visa Open Platform is to be used as a basis for specification which will enable Smart Cards to be loaded with applications via GSM mobile phones.

Visa will submit proposals to the Special Mobile Group (SMG) of the European Telecommunications Standards Institute (ETSI) to recognise the Visa Open Platform as a standard to be adopted for Java Card-based SIMs (Subscriber Identity Modules).

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Java Card 2.1 API

Sun Microsystems announced that it has posted a draft of the Java Card 2.1 Application Programming Interface (API) specification for public review and comment at <http://java.sun.com/products/javacard>. The new version adds features for application developers, card manufacturers and card issuers. The Java Card API is a blueprint for building applications to run on Java technology compliant Smart Cards.

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The Future Today

Sun Microsystems announced the SunConnect Architecture for Card and Payment Systems based on Java technology and allowing customers to develop and deploy transactional financial services applications over a variety of delivery channels.

According to Sun, this new extension of the SunConnect architecture provides three additional key benefits to card issuers, merchant acquirers, third-party processors, ATM switch operators and other customers.

1. It increases flexibility in payment instrument upgrades with no need to replace existing systems.
2. By embracing Java technology's "Write Once, Run Anywhere" capabilities, it provides a single development environment resulting in faster application development and lower costs.
3. As it is based on an open computing framework, companies can select the solutions that best meet their economic, technological or strategic needs.

A prototype of the SunConnect Architecture for Card and Payment Systems was demonstrated on Sun's stand at Cartes in Paris by London, UK-based JCP Computer Services. One of the most interesting exhibits at the show, the prototype took us to the future today.

With a single Smart Card a customer can:

- access their accounts either through a home banking system over the Internet or from an ATM
- go to a travel agency electronically to book a flight, redeem loyalty points, pay for the flight and download the ticket into the card.
- Use the card at the airport to check-in and then as the boarding pass for the plane.

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Motorola Planet Platforms

Back in March 1997, chip manufacturer Motorola announced plans to take a leadership role in card manufacture targeting transportation and banking with contactless and combination cards.

While most of us nodded wisely at the time, Motorola found out that when it comes to gazing into the crystal ball of the Smart Card world, forecasts usually take much longer to come to fruition than predicted. Motorola still does not have a major application in the field and we have not heard of any substantial card orders despite Motorola exhibiting some impressive products.

But the US-based giant is still proactive and at Cartes unveiled a new suite of product platforms called M-Smart, taking us to the planets of Mercury, Venus and Jupiter.

Mercury provides a basic platform for building applications in areas such as access control/campus, transit and basic retail. Venus is a microprocessor platform for multi-applications such as mobile communications and banking, while Jupiter is a 32-bit RISC processor based platform for building value-added solutions. Motorola says that, for example, cards originally issued for banking can be upgraded to include transit and loyalty applications.

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New RSA Crypto Card

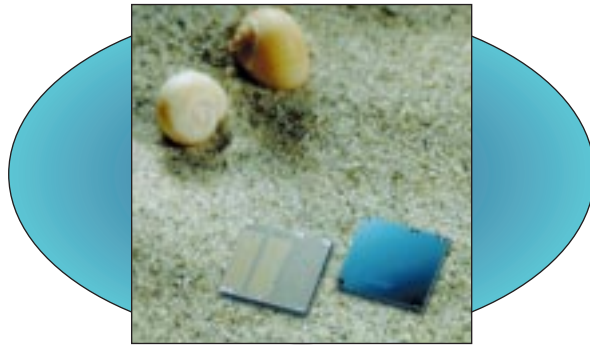
A new high security Smart Card with ultra-fast public key cryptography and an expanded memory was unveiled at Cartes by Schlumberger. Called Cryptoflex 8k, the card is capable of executing a 1024-bit key length RSA signature in under half a second. The new card builds on the Cryptoflex card by extending memory from 4 to 8K bytes, speeding algorithm computation, incorporating hashing to simplify application development, and offering a user-definable key length. The chip also performs DES signatures.

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SiShell for Chip Security

Right:
Chip without protection
and chip protected by
SiShell
[Schlumberger]



Below Right:
MagIC 6000 in use
[Schlumberger]

SiShell (see page 207), on display by Schlumberger, is an innovation in Smart Card security which physically protects the chip from unauthorised access attempts and complements current software and electrical protection measures.

The process applies a silicon shield - sealed at the wafer production stage - over the active surface of the chip preventing attempts to gain access using chemical agents or "hacking" by mechanical or electronic probing. Schlumberger says that the effectiveness of the system has been proved by extensive tests by themselves and a major semiconductor company.

Olivier Piou, Schlumberger Vice President and General Manager Smart Cards, said: "SiShell adds a new level of protection to Smart Card hardware in order to further reduce the risk that silicon devices in Smart Cards become one day an interesting potential point of attack."

SiShell is purely a manufacturing process and can be applied by semiconductor manufacturers to any existing chips.

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Gemplus Plant in South America?

Argentina sources say that Gemplus will build a Smart Card manufacturing facility in South America, probably in Brazil or Argentina, within the next three years. In Argentina, where its main competitor is Schlumberger, Gemplus predicts it will sell two million cards over the next two years. It forecasts a US \$10 million turnover in Argentina for 1998 and 30% growth for 1999.

Contactless Ticketing in Rennes

The SNCF (French National Railways Company) is to trial contactless Smart Card ticketing on public transport (trains and buses) in the city of Rennes and the surrounding area.

French company Dassault AT has been selected to provide the main components of the ticketing system. It will supply point of sale terminals to be installed at the selling agents or in the sales offices of the urban transportation provider. This equipment consists of Talento electronic payment terminals which are able to recharge contactless Smart Cards, or Personal Computers with POS programming. Specialised machines will print and encode customised contactless cards. Dassault will also provide inspection ticket readers for buses, and information terminals which show the amount remaining on the card. Customers will also be able to display the card balance on card case pocket readers.

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MagIC 6000 Terminal



A multi-function point of sale terminal, the MagIC 6000, has been launched by Schlumberger Smart Cards & Systems. The new terminal allows retailers to integrate additional features and simplify their transition to Smart Card-based payment schemes. The counter-top terminal can handle magnetic stripe and Smart Cards, including electronic purses, and is EMV compatible.

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Bikeabout Scheme in Portsmouth



Smart Cards and readers from Gemplus are helping students and staff at Portsmouth University in the UK to move about the campus and the city on bicycles provided on free loan.

The scheme, called Bikeabout, and believed to be the first of its kind in the world, has been developed by Portsmouth University and the City Council with Gemplus and Dixon Bate. European Union funding was provided to help set up the scheme as part of an alternative transport policy. As well as helping students and staff to move about without any parking problems, it is designed to benefit the environment by cutting down on car journeys.

The bicycles are stored in electronically controlled racks in three depots on the campus. To borrow a bike, the user inserts a Smart Card containing his or her details into a reader. The depot, the bike and rack number, the time the bike was taken and who took it is automatically recorded. When the user wants to return the bike it can be left at any depot where inserting the Smart Card again will identify the bike and user then release a rack so that the bike can be stored. The scheme is designed to handle up to 2,000 users. Many cycle schemes in other university cities have collapsed because there was no way of recording who took the bikes making it easy for them to be abandoned in the streets or stolen.

Shane Atkinson, Procurement Officer at the Council, said: "We wanted a system where once people hired a bike they had ownership of it. People know their details are recorded and that they cannot obtain a bike without a valid Smart Card."

"We have also put in several additional security measures such as electronic tags, sensors and CCTV so that we have a complete record of who took which bike from which depot and when it was borrowed and returned."

Dixon Bate is now marketing the idea across Europe and has already secured a large contract in Rotterdam.

Left:
Gemplus' alternative
transport system in
Portsmouth, UK
[Gemplus]

Below Left:
Ascom Montel's EFT 10
[Ascom Montel]

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Moscow Card Project

Citizens of Moscow are to be offered a multi-functional Smart Card following the signing of a letter of intent by Juri M Luschkow, the city's mayor; Dr Otto Wiesheu, Bavaria's Minister for Economic Affairs, and Jürgen Nehls, Managing Director of Giesecke & Devrient GmbH (G&D), of Munich, Germany.

Part of the deal is a plan by the Moscow city authorities and G&D to manufacture the chip cards, readers and terminals in Russia with G&D contributing its technical expertise.

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Europay Approved Terminal

Ascom Monétel's EFT10 multi-application terminal has received terminal type approval Level 1 from Europay International as complying with the EMV specifications. It integrates a modem, a silent printer, magnetic and Smart Card readers and can accept all standard Smart Cards.



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French Banks Offered BO' on Java

French banks are planning to migrate their Smart Card payment cards to EMV standards by the end of 2001, but in the meantime Schlumberger has jumped in with a new Java-based Smart Card application designed to run on the current Cartes Bancaires BO' standard. This will enable the banks to offer value-added services such as loyalty and electronic purses alongside their credit/debit functions.

Schlumberger is offering its Java-based Cyberflex card which allows new cardlets such as loyalty schemes, electronic purses and ID applications, to be added and removed from the cards while the BO' features currently in use can run on the card until the banks have the terminals and systems in place to support EMV standards. They will then share the card with a new EMV credit/debit cardlet. Philippe Tissot, Schlumberger Product Line Manager Financial & IT, explained: "The end of 2001 is still three years away and by making BO' available on Java now, we are giving them the opportunity to exploit new business opportunities with value-added services today. At the same time, we are offering a smooth path for migration to EMV standards."

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Connectors for TV Decoders

Amphenol-Tuchel Electronics GmbH has introduced two new Smart Card connectors. The Dual Plane is designed for satellite TV decoders, as well as other applications, enabling the insertion of chip cards with the chip in either the upward or downward positions.

The vandal-resistant PushMatic for electronic purse applications was specially designed for the (save) use of the GeldKarte and Paycard in Germany. After insertion of the card, PushMatic locks the card electromagnetically in the final position. After the transaction is completed, the card is released into the removal position.

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Artema Terminal from Dassault

Eye-catching and smart, the Artema portable terminal from Dassault AT was one of a range of electronic payment terminals displayed by the French company at Cartes.

Artema is a new generation terminal using DECT (Digital Enhanced Cordless Telecommunications), a standard for cordless communication for proven cordless telephones.

Thanks to the radio link with its base (connected to the telephone network), it is possible to carry out the entire transaction next to the customer, for example at the table in a restaurant, even when a call must be made to obtain authorisation. The Artema has a powerful 32-bit RISC processor, large capacity memory and accepts all magnetic stripe and chip cards that meet the EMV specifications.

Dassault was also showing its new SPP 300 reader of bank and private credit cards and designed for large retail stores. The reader is claimed to be the first to come with a SAM (Secure Application Module) connector for processing electronic purse and loyalty cards.

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Welcome Integrates MULTOS

French company Welcome Real-time (previously known as High Co Technologies) has joined the MULTOS Global Supplier Network and will develop its loyalty software system, XLS (eXtended Loyalty System), to run as an application on the MULTOS Smart Card operating system.

In addition, Welcome Real-time and De La Rue Card Systems have formed an alliance to jointly market a Smart Card solution with De La Rue providing its multi-application chip card range and Welcome Real-time its loyalty software system. Bull is also to integrate XLS software into the entire range of Bull CC Cash cards.

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Edinburgh University Card

All 22,000 students at the University of Edinburgh, Scotland's largest university, are to be issued with multi-function Smart Cards in a venture with the Bank of Scotland.

The new one-card system will be used for matriculation, ID, library and door access purposes and will have an optional Mondex electronic cash facility. The Mondex option is free of charge to all students regardless of which bank or building society they use.

With Mondex, students can pay for a range of goods and services such as meals in the cafeteria or photocopying in the library.

Students can transfer up to £100 from their bank account to the card via one of the Mondex dispensers located around the university. Mondex can also be used for person-to-person payments by transferring money from one card to another. No more than £50 can be transferred on any one day.

Once the system is established within the university, a number of retailers in and around the university will be invited to accept Mondex.

In the longer term, the university plans to use the card to further improve security and extend its usage for vending, printing payment, car park control and launderette facilities in the halls of residence.

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TSA Acquires SCIL

Transaction Systems Architects Inc (TSA) has announced the acquisition of SmartCard Integrations Limited (SCIL), a privately owned corporation headquartered in London, UK.

William E Fisher, Chairman, CEO and President of TSA, explained that the acquisition would expand their Smart Card expertise.

"Smart Cards will be an important opportunity over the next few years and with this acquisition we are well positioned for those opportunities that lie ahead."

Mansour Karimzadeh, a Director of SCIL said that TSA would provide them with the resources to position and market their Smart Card knowledge. SCIL is active in several Smart Card arenas - Mondex, EMV (Europay/MasterCard/Visa) and Visa Cash.

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Belgian Payphones Use Proton

Belgacom, the national Belgian telecommunications company, has completed its roll-out of Proton multi-applications Smart Card technology with new chip card payphones providing electronic purse payment of phone calls, checking of the purse balance, reloading the purse and a one key calling card service. A loyalty application file is also reserved in the chip for future use by Belgacom.

Cardholders can activate the calling card function on any payphone. Once activated, all cardholder related information is securely stored in the card and is automatically transferred to the calling centre whenever the one key calling card service is used.

The project involved payphone supplier Ascom Monétel and network provider Alcatel working closely with Belgacom

Benoit Simonart, Belgacom's General Manager Special Businesses Division, said the modernisation of their payphones network enabled their customers to access multiple applications, adding: "Proton chip technology also offers many promising possibilities for the future."

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PWI Moves to New Offices

Proton World International has moved to new offices in Brussels at:

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Chinese Driving Licence

BIT Integration Technology Inc., headquartered in Canada, is issuing Smart Card drivers licences in China's Shaanxi Province.

The company has already issued 232,000 drivers licences (at 31 July 1988) bringing in a revenue of C\$1.8 million, but now the Shaanxi Provincial Government has enacted a law requiring all drivers to carry the Smart Card licence.

Eugene Lo, President of BIT, said: "By changing their legislation, the Shaanxi government has demonstrated both their support for BIT's efforts, and their satisfaction with BIT's results. This will provide BIT with the facility to issue up to 600,000 drivers licences within the next 10 months and complete the first cycle of licence issuance in Phase I of this project." Phase II of the Shaanxi Drivers Licence and Infraction Management System (DLIMS) is expected to start in Q2 of 1999. Aims of the DLIMS include reducing licence evasion and fraud.

BIT is providing a turnkey solution comprising systems integration, Smart Cards, readers (including portable readers) and digital imaging systems. Smart Cards have been sourced from two suppliers. The current supplier is Giesecke & Devrient who are providing secure memory cards using the Siemens SLE 4428 chip with 1K bytes EEPROM. A supplier and developer of Smart Card and digital imaging systems and technologies, BIT is based in Markham, Ontario, and has offices in Xi'an, Shaanxi; Nanning, Guangxi; and Hong Kong.

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Bull Extends SmartEMV Range

Bull is extending its Smart EMV range with three new cards: CC EMV which combines the functionalities of Proton with those of the EMV payment applications; SmartEMV UKIS which meets the standards of the UK market, and Smart EMV off-the-shelf which addresses the Europay standard of the same name.

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Gemplus Developers' Program

French Smart Card-based solutions supplier, Gemplus, has announced the Gemplus Developers' Program, aimed at developer communities, including R&D laboratories, universities and other research organisations to accelerate the availability of new, leading-edge Smart Card solutions.

Project Manager David Jencel, explained: "We want to couple the creativity of our own development specialists with like-minded, creative people in the hardware and software developers' community."

Gemplus expects the new program to reinforce the loyalty of developers who are already contributing to the success of the Smart Card, and to win over new developers to its platforms.

Developers taking part will benefit from a dedicated web site - www.gemplus.com/developers. This will offer the ability to download software as well as to access FAQ sites, and application program interfaces (APIs). Gemplus will also provide training, focused support and product seminars. The program will start in Europe and will initially focus on Java Card (GemXpresso) and web network security (GemSAFE) and will be extended internationally by the beginning of 1999 to other products.

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Flamingo Park Card

Flamingo Park, a Taiwanese recreational center is using contactless Mifare Smart Cards as a club card.

Eight thousand cards have been supplied by German contactless card manufacturer PAV Card, Hamburg.

In a unique move, 5,000 club cards have Visa Card functions. Chung Shing Bank, shareholders of the park, and Visa expect a particularly attractive image campaign and an extension of their customer range in the high-income bracket.

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Electronic Supermarkets

A glimpse of the future of vending has been unveiled by Smart Vending Solutions with its Free Access Merchandising technology at the recent NAMA (National Automatic Merchandising Association) 1998 National Expo.

The system is a revolutionary concept in vending. The customer inserts an advanced payment card which unlocks a glass door to give access to a wide variety of products in the display case. Each item removed from the machine's Smart shelves is identified by electronic sensors and billed to the payment card. When the door is closed again, the customer can retrieve the card.

Depending on the model, a wide variety of merchandise can be made available such as cold beverages in cans, snack foods, toiletries and gifts, up to the same merchandise you would expect in your corner shop, for example, TV-dinners, sandwiches and pastries, fresh bread, paper goods, detergents and stationery.

There is also an automatic cafeteria offering full course meals including salads and deserts in the cooled section and freshly-cooked main courses in the warmed section.

"To the vending industry, this means shifting from the 'mechanical grocery store' to the 'electronic supermarket,'" says Mordechai E Teicher, President and CEO of Smart Vending Solutions and the inventor of the company's patents.

Marketing Manager Noga Segev, said they were aiming at two markets: the automatic vending industry and the retail industry. "Many retail operations need automation to help serve the customer around the clock, closer to home, workplace or school," she said.

Various models are still in the development stage with the year 2000 targeted for commercial supplies.

The Tel Aviv, Israel-based company is concentrating on research and development rather than manufacturing and is seeking strategic alliances with the major vending machine manufacturers.

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Mondex Purchases On-line

Canada's Royal Bank and NBTEL are launching a pilot project in the Autumn of this year which will allow subscribers of NBTEL's Vibe service, who are Royal Bank Mondex clients, to purchase goods and services on the Vibe Intranet with the Mondex Smart Cards. The bank will provide clients with a Mondex electronic cash card, a Smart Card reader and software which will make their PC's Mondex-ready. Customers simply have to insert their Mondex cards into the reader and proceed with a purchase or transaction. They will also be able to load electronic cash onto their cards and make deposits to their bank accounts via their PCs.

"This on-line project will provide a useful model for developing a system that will eventually allow Royal Bank Smart Card customers to purchase goods and services on the World Wide Web," said Vice President Al McGale.

Bill Steeves, Chief Financial Officer and Vice President of Corporate Services at NBTEL, commented: "We believe electronic cash payment is an appealing and practical alternative to using credit cards for on-line transactions."

TouchNet Canada, which specialises in real-time transaction systems and solutions, also worked with Royal Bank on the project.

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VeriFone OMNI 2650 terminal

VeriFone, Inc., has launched the OMNI 2650 portable payment processing terminal. The new hand-held terminal communicates with its base via infra-red technology to provide retailers and restaurants with a flexible and mobile payment processing solution. The terminal can read both Smart Cards and magnetic stripe credit and debit cards. Hardware and software features support existing payment systems and simplify the introduction of new schemes such as loyalty programmes.

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Smart Phones for New HK Airport

Hong Kong Telecom is installing Grafit payphones from Schlumberger Smart Cards & Terminals at Hong Kong's new Chek Lap Kok Airport.

Installation is currently underway in the airport's VIP lounges and the waiting areas of the Airport Express Railway.

Targeting the needs of business and international travellers, the Grafit payphones feature Smart and magnetic stripe card readers and a PC port to allow travellers to connect their notebook computers to access and send e-mail and faxes.

Some of the phones are equipped with a small worktop, allowing travellers to set up their PCs and log-on while waiting for transport connections. The payphones have been configured to accept Hongkong Telecom Smart Cards, Hello phonecards, or credit cards. A graphical display supports both Chinese and English characters.

Grafit also incorporates two slots for security access modules, providing an upgrade path to support new electronic purse cards which are rapidly evolving in both Hong Kong and mainland China.

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Pay Now Pay Later Card

Schlumberger has announced its new Pay Now Pay Later (PN/PL) Smart Card, offering Europay member banks the opportunity to implement credit/debit card schemes quickly while retaining full EMV compatibility.

Philippe Tissot, Schlumberger's Financial & IT Product Line Manager, explained: "With these new cards, we are helping banks to compress the timescales required to develop and implement new financial services, while exercising the precise levels of risk management they need within specific domestic and international markets."

Cards are personalised by simply selecting from a range of available security and operational parameters stored on the cards, with no requirement for mask development.

Operators can specify a limit to the number of consecutive transactions that can be carried out off-line at the terminal: when that limit is reached, the card will automatically initiate an on-line transaction. The cards can also automatically reject a transaction due to PIN error without going on-line.

Thus cards can be personalised to reflect the levels of control required for different user groups presenting different levels of debit/credit risk - such as students or business customers, different countries with varying perceived levels of risk, different clearing procedures, etc.

The multi-application card is available in a range of memory sizes from 1.3 to 8K bytes.

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Self-service Card Issuance Kiosks

DataCard Corporation has introduced a new line of self-service card issuance kiosks which will enable consumers to conveniently acquire financial cards, enroll in loyalty programs and access a variety of other card-based services offered by retailers, banks and other consumer-based enterprises.

"Consumers will be able to walk into a store or a bank, apply for a credit card, receive it and begin using it immediately," explained Keith Clayton, Vice President, of DataCard's Self-service Solutions Group. "The same holds true for loyalty programs. Instead of filling out forms and standing in line, consumers can apply for acceptance and receive cards instantly."

He said that a variety of large, consumer-based enterprises are working with DataCard to explore the benefits of self-service kiosks.

A typical kiosk is about the size of an ATM and features interactive touch-screen controls, video capabilities and a built-in card personalisation system. Consumers use the interactive controls to navigate a financial or loyalty program, complete an application and receive a ready-to-use card.

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Biodegradable Card Breakthrough

A biodegradable card using environmentally friendly materials, including corn by-products, is to be promoted in a deal involving Gemplus, the University of Nebraska, Corn Card International and Digicard.

The material, called Mazin resin, was developed by the Bio-Systems Center at the University of Nebraska in the United States. Corn Card International (CCI) holds the Mazin trademark and distribution rights for the commercial deployment. Austria-based Digicard is one of several companies to experiment with printing the cards. Now Gemplus has signed a letter of intent with CCI to promote and develop markets for the biodegradable card as an alternative to the billions of non-recyclable plastic cards in circulation.

In a joint announcement the companies said that Mazin is completely biodegradable when introduced into a composting environment. "The new cards, when left in a compost pile for three to five weeks, will disappear after a bacterial process reduces the material to hydrogen, carbon and water," said the statement.

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Singapore's NETS to Adopt CEPS

Singapore's NETS (Network for Electronic Transfers) and operator of the CashCard electronic purse has announced that it will adopt the Common Electronic Purse Specification (CEPS).

Currently, there are about 1.2 million NETS CashCards in circulation and usable at thousands of retail outlets and payphones, over the Internet for electronic commerce (C-ONE), and for Singapore's Electronic Road Pricing scheme (ERP). CEPS, which will be available later this year, is a set of open and non-proprietary standards for interoperability of electronic purse cards. It is being jointly developed by Visa, ZKA (Zentraler Kredit Ausschuss) of Germany, and Visa España / SERMEPA of Spain and Europay.

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Mondex Electronic Cash for Chile

Six major Chilean banks have purchased the franchise rights for Mondex electronic cash in Chile using the MULTOS Smart Card operating system enabling the development of multi-application cards.

The banks - Banco de A. Edwards, Banco de Chile, Banco de Crédito e Inversiones, Banco Santiago, Banco Sud Americano and Banco Santander - will use MULTOS to develop electronic cash, debit and credit functions on a single card, in addition to a range of public and private sector services such as loyalty programmes or electronic ticketing.

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Visa Cash to be Extended in UK

Visa International is expanding its Visa Cash programme in the city of Leeds in the UK to the rest of the country. The announcement came as Visa celebrated the first birthday of the Leeds programme last month and the claim that it is now the largest electronic purse scheme in the UK with some 60,000 cards issued and 1,400 accepting locations.

Ken Bignall, Managing Director of Visa UK, said: "The Leeds programme has shown where an electronic purse adds real convenience for cardholders. For example, Visa Cash transactions have already replaced cash by up to 10% in car parks and have also proved popular in fast food restaurants, sandwich shops and newsagents.

"We plan to extend our coverage in these areas as well as other everyday applications such as public transport." He said that Visa would be exploring opportunities with member banks for Visa Cash elsewhere in the UK and expected to bring more banks on board.

Financial institutions which have issued Visa Cash include Abbey National, Barclaycard, Barclays Bank, The Co-operative Bank, The Halifax, Lloyds Bank, The Royal Bank of Scotland and TSB.

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Half Price Terminals Offer

Banks in the Asia-Pacific could save more than 50% on the cost of electronic payment card terminals through the Visa Preferred Purchase Programme, or Visa PPP, according to the card issuer.

The deal involves leading terminal manufacturers Hypercom, Ingenico and Keycorp.

Visa says the aim is to considerably reduce terminal costs and increase the spread of chip-ready and chip-capable electronic data capture (EDC) terminals throughout the region.

Hilary Quah, Director, Existing Merchants / Terminalisation, Visa Asia-Pacific, said that Visa had partnered leading terminal providers to address the issue of cost.

“The Visa PPP offers the new terminals at prices that can not be equalled by banks alone - even banks which purchase a large number of terminals.”

Quah said Visa's target was over 200,000 terminals in 1998. If the target was reached, the cost saving in purchase price to banks would be up to US \$100 million.

Price incentives include terminals at up to 52% lower than average prevailing prices and a rebate of up to 10% of the price paid if Visa reaches its target figures.

The Visa PPP will run until January 2000. Over 20 different terminals will be available, all of which will either support PIN pad and Smart Card functionality or can be upgraded to do so.

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Schlumberger SIMflex Order

Schlumberger Smart Cards & Terminals is supplying Microcell Connexions Inc with several hundred thousand of SIMflex Dual Mode SIM (Subscriber Identity Module) Smart Cards.

The thumbnail-sized 16KEEPROM microprocessor SIM card's dual mode capability allows subscribers to use their digital PCS (Personal Communications Services) over the Analog Cellular Network,

enabling them to communicate anywhere in the world where there is a GSM, PCS 1900 or AMPS network. Currently, Microcell Connexions service providers offer roaming to their customers throughout North America and over 20 countries around the globe.

Schlumberger says the card enables use of both 800 MHz and 1900 MHz bands without interruption of service. GSM operators can use either frequency band to expand geographically, upgrade service offerings, boost capacity and optimise use of current cellular infrastructure.

Microcell Connexions Inc, headquartered in Toronto, was awarded a license in 1995 to build and operate a national PCS network at 1.9 GHz in Canada, and has set itself apart by promoting its network on a wholesale basis to new and existing service providers, offering them unbranded and unbundled network services. Customers include Microcell Solutions Inc of Montreal, Westcomm Telecommunications of Toronto, and CityFone Telecommunications of Vancouver.

Mobile solutions

Also in North America, Schlumberger has just introduced its newest offering, Schlumberger Mobile Solutions, a complete suite of Smart Card-based products and services for the GSM market using Java-based technology to enable operators to provide downloadable, value-added services.

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Bull Enters GSM Market

Bull has announced that it is entering the GSM market for the first time with a range of three SIM (Subscriber Identity Module) Smart Cards, Over The Air (OTA) servers and integrated services. Bull says it has already formed a number of strategic partnerships, including one with Swedish company AU System.

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Interpay Nederland Joins PWI

Dutch banking consortium Interpay Nederland has joined with ERG, Banksys, American Express and Visa International to become the fifth shareholder in Proton World International (PWI).

Interpay Nederland was established by the Dutch banks to manage the funds transfer network for debit cards, credit cards, electronic purse and other electronic payment methods. It consists of all the banks in The Netherlands (about 70) and the main shareholders are ING, Rabobank and ABN AMRO.

Welcoming Interpay to PWI, Peter Fogarty, ERG Chief Executive Officer, said: "Interpay Nederland is responsible for one of the most advanced funds transfer systems in the world. Their involvement in the Chipknip electronic purse program is impressive, with over 12 million Proton-based cards issued and accepted by more than 100,000 terminals."

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APT Joint Venture in China

American Pacific Technology, of San Francisco, California, has formed a US \$6 million joint venture with Nanjing Pu-tian for the production of Smart Cards in Nanjing, China, and the development of turnkey Smart Card solutions for the global market. APT will provide 39% of the funding with 61% coming from Nanjing Pu-tian whose main shareholder is PTIC (Post and Telecom Industrial Corporation).

"We are extremely excited about this opportunity to expand our capabilities - and our presence - in China," said Mario Neves-Price, APT's Vice President of sales and Marketing. "We see exciting potential in this market and will be working together to deliver high-tech solutions and opportunities for the Chinese people."

APT manufactures Smart Cards and dual-interface cards and has formed joint ventures for access control, time and attendance and loyalty schemes.

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