# SMART CARD NEWS

*Subscribers will receive Bull's "**Chinese Neng**" debit - credit card free with this issue of Smart Card News.*

# Easi Solutions for Business Travellers

Easi Solutions Plc., formerly PCC (UK) Ltd, based in Oxfordshire, is equipping Hilton hotel rooms with unique desks that incorporate the latest computer technology to assist business travellers send and receive e-mails, shop, listen to music and surf the net.

No longer will you need to carry your laptop and CD player with you when travelling. If you book into an easi-room your personal business centre is waiting for you. When registering at reception you will be given a Smart Card which will allow you access to a secure office desk which contains a PC, Smart Card reader, CD and floppy drive, printer and scanner all in the comfort of your hotel room.

# June 2000

## News

### Cards on the Cover

### Main Photograph
**The London Hilton Hotel**

## Smart Card Tutorial

*NB: This set of tutorials will be available to purchase online in spring 2000*

**Don't Forget!**
Our Website, containing On-Line News, a Library of Smart Cards and information about the full range
of SCN services, can be found at the following address: **www.smartcard.co.uk**

# Easi Solutions for Travellers

*Continued from page 101*

Easi Solutions have set themselves up to deliver special services to hotel guests. Today's business hotels are all pretty much the same so the hotel that can offer the business traveller something special will take the lead, or so easi Solution's think. Their solution is to supply and fit secure office desks, which match the decor of the room, at no cost to the hotel. Easi Solutions gain their revenue by taking a proportion of the room rate and by advertising revenue generated from their Internet shopping mall e@si Solutions.

The key to the system is a Smart Card which the guest can use throughout the hotel chain. The Smart Card will also act as a loyalty card and collect guest preferences, so information and goods can be directed to that guest. In the near future the card could have an electronic purse for secure shopping over the Internet and allow access to other features in the hotel such as the mini bar, leisure facilities, etc.

To celebrate the new corporate identity and name change, easi Solutions are running a competition to win the use of a Lear jet for a whole weekend, to fly anywhere in the world. Details can be found at: www.easimail.com

Easi Solutions partners are Acer, the PC manufacturer and Alcatel the telecommunications and Internet operator.

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# Cards for Football Supporters

Fans of Coventry City football club will be the first in the UK to be able to pay for their half-time beer, pies, hot dogs and hamburgers with prepaid Smart Cards instead of cash. The system is being trialed by GiroVend in partnership with Lindley Catering using more than 27,000 contact Smart Cards pre-loaded with values of up to £10.

The cards also have the potential to be used by the club for such applications as photo ID, access control, use in other club sales outlets, membership, ticketing, and transport to and from the ground.

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# Proton Launched in Nigeria

A transaction using a Proton-based Smart Card at the Ikoyi Club in Lagos, last month, launched the first pilot by Securecard Trust Company (STC), the Proton licensee for Nigeria. Cards containing an electronic purse, membership details and a security access pass are being issued to all 15,000 members of the sports and social club by the United Bank for Africa, a member of the STC consortium.

STC is working on three more projects: two salary payment card schemes with Standard Trust Bank, and the conversion of Nigeria's existing e-purse, the Diamond Bank Paycard, to Proton technology.

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# First Cashless Campus in Poland

Poland's first cashless campus has gone live at 6,000-student College of Information Technology and Management in the city of Rzeszow.

BPH, Poland's fourth largest bank, and Nomad Software, have teamed to provide the service. Students with bank accounts at BPH go to a campus Smart Card "shop" and enter their PIN to buy credits which are loaded onto the card to buy goods and services on the campus.

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# Flint Now Gemplus Distributor

Flint Smart, a division of Flint Distribution, has been appointed as a distributor in the UK for Gemplus and will stock the entire range of Gemplus Smart Card readers and popular memory and microprocessor cards. Flint will also offer cards printed to individual specifications if required.

Flint is also stocking the GemPC410 universal Smart Card reader to plug into PC environments, enabling secure computer access and security for e-commerce, home banking and e-purse applications.

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## BONUS Card Launched in Turkey

Turkey's Garanti Bank, a commercial bank based in Istanbul, has launched BONUS, the first multi-branded partnership program with 21 different merchants.

The project is unique because the MasterCard branded chip cards come with BONUS as the umbrella name, and the individual partners' name - based on the store that the cardholder applied from - on the right hand upper corner.

Each time a BONUS MasterCard is used in any of the 600 participating outlets, a rebate (bonus) varying from 15% to 1% is stored in the chip. Garanti Bank also offer 0.7% each time the card is used.

At the point of payment, the card is inserted into a Hypercom EMV type approved ICE 5000 terminal and the cardholder can see on the display how much BONUS has accumulated and may choose to deduct this from the purchase transaction.

The bank started the project with YKM, one of the country's largest department stores, and is capitalising on its cardholder base.

"Within the first few weeks of the program we will have 350,000 cardholders as we convert them from the YKM's Private Label card program," explained Mehmet Sezgin, General Manager of Garanti's Payment Systems Division. "We are trying to combine the best of technology and branding. With the BONUS program we are moving into the chip platform, upgrading our POS environment, scanning our application forms and offering customer selected PINs via our call center."

The program is being backed with a multi-million dollar communication campaign.

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## Mondex Ghana $2m Contract

Hitachi Europe has been selected by Mondex Ghana to provide the new Smart Card based cash solution under the recently launched Smart Commerce initiative.

Mondex Ghana is a new venture company set up by Ghana Commercial Bank (GCB) and the Agricultural Development Bank (ADB) to exploit the Mondex electronic cash franchise. The company plans to introduce Mondex in phases, bringing banking to over 18 million Ghanaians, over 90% of whom do not currently have accounts.

The project, worth over $2 million will begin with a two stage launch where 5,000 cards will be issued to GCB and ADB employees, and a closed campus launch in the city of Accra, which has a population of 3 million, to target 50,000 consumers with the new technology.

W P Gray, a Director of Mondex Ghana, said: "With only about 10% of the population having bank accounts, there was limited merit to implementing a traditional, transaction based, electronic banking system."

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## Ingenico/BMC Security Initiative

Ingenico Fortronic has pioneered a new chip card reading security initiative with Barclays Merchant Services (BMS) to address the growing threat of counterfeit card fraud.

Based on an Australian terminal, Chip-Checker is a bespoke solution for BMS designed to combat fraud (particularly counterfeit) by utilising the information on chip cards already in circulation. The device, which simultaneously reads and compares the data on a card's magnetic stripe and it's imbedded microchip - alerting retailers to any discrepancy - was demonstrated for the first time at the Retail Solutions 2000 exhibition, 6-8 June, NEC Birmingham, UK.

Chip-Checker will be used by BMS to offer an immediate added security measure for its merchants until chip card acceptance in Electronic Point of Sale (EPOS) terminals is fully implemented.

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# Top Award for FT Mobile

The Smart Card Industry Association (SCIA) has granted its 2000 Outstanding Smart Card Application (OSCA) Award to France Telecom Mobile for its "Iti Achat" Mobile Commerce System. The award, presented annually during the CardTech/SecurTech conference, recognises innovative Smart Card systems worldwide, and is intended to encourage and applaud broad application of Smart Card technology.

The mobile 'Iti Achat' system allows French bank cardholders to confirm their payment transactions by simply inserting their bank card into a dual slot GSM phone and entering their PIN code. With more than 40 million French bank Smart Cards and the 22 million GSM phones in France, it is anticipated that more than one million dual slot phones will be deployed by the end of this year.

"The judges were impressed with the way France Telecom had created a new business model by leveraging the early and significant investments in Smart Card technology by both the French banks and wireless service providers," said SCIA Executive Director Charles Cagliostro in announcing the OSCA Award in Miami Beach.

"The system is especially exciting as it provides a glimpse of how payments will be done in the next decade and it sends a signal to the PC industry that now is the time to begin incorporating Smart Card readers as standard equipment in personal computers."

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# Patent for ATM Money Transfer

Robin Gustin, CEO of Capital Security Systems (CSS) has announced that her company's patent enables universal, point-to-point, money transfer services to ATM users and Smart Card holders. CSS's patent allows bank network customers to transfer funds from one ATM to another; in effect, emulating a wire order in an ATM environment.

"Our ATM-based money transfer services differ from others because ours enables customers to directly 'wire' money from their ATM account to any other ATM in the country," she explained. "It is far more convenient to simply walk up to an ATM and transfer money from there, instead of hunting down a wire service-type facility to send cash."

"Several other things make our platform unique," Gustin said, "including check-cashing technology that is 100% automated and the way we download change to a Smart Card, which is covered by a third patent." According to Gustin, on the Super ATM platform, Smart Cards enable a variety of customers, both banked and unbanked, to do seventeen fee-based transactions.

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# $3.3 million Order for ActivCard

ActivCard SA has received a $3.3 million order from its leading distribution partner, Protect Data of Sweden, for ActivCard' token-based digital identity solution. The order is for FöreningsSparbanken's secure Internet-based banking services.

FöreningsSparbanken began deploying secure Internet banking services in 1997, ending 1999 with over 400,000 users utilising ActivCard technology to access a suite of electronic banking services over the Internet including, electronic funds transfer, electronic billing and e-commerce Net Merchants.

The bank is to increase its user base to one million by the end of 2000 and is deploying at a rate of 6,000 - 10,000 new users per week since the beginning of the year.

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# Collectors Corner Card

Bull have supplied the Chinese Neng debit - credit card for this months Collectors Corner. The card was announced by Bull in August 1998 as an answer to the People's Bank of Chinas (PBOC) quest for a nationwide chip-card interoperability standard for the entire banking system.

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## Biometric Smart Card Solution

iD2 Technologies, a developer of PKI (Public Key Infrastructure) solutions to identity users across the Internet, has partnered with Precise Biometrics and Miotec to offer biometric Smart Cards.

Precise Biometrics is contributing its fingerprint matching systems and integrated Smart Card and fingerprint reader, Miotec is using its advanced Smart Card operating system and card while iD2 is providing end users with software to support Smart Cards and encryption and create digital signatures.

The card uses the authorised holder's fingerprint to unlock its functions. Once the user's fingerprint has been scanned, the new solution matches the fingerprint within the Smart Card itself.

"With this new solution, the only way to gain full access to the card's functions is to present the correct fingerprint. This method of authentication is extremely user friendly, fingerprints cannot be changed or copied and we always carry them around with us: they cannot be forgotten," explained Rain Eriksoo, iD2's Director of Marketing.

"The basic principle is that if only the registered user has access to the Smart Card and private key then only they can create a digital signature. This offers an exceptionally high degree of security and trust for on-line merchants who need to be sure who they are communicating with and for network administrators who need to know the identity of users accessing their network."

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## SCIA Appointments

The Smart Card Industry Association (SCIA) has announced that three industry leaders have been elected to serve three-year terms on SCIA's ten member Board of Directors. They are: Paul Beverly, Vice President North America, Schlumberger Smart Cards & Terminals; Jim Lout, President and Chief Operating Officer, Yes IC Smart Cards Inc., and Mike Weekes, Solution Manager, IBM Global Services' e-Business and Smart Cards.

SCIA also announced the appointment of new board officers. Paul Beverly replaces Charles Cagliostro as Board Chairman; Gilles Lisimaque replaces Peter Quadagno as Vice Chairman; Mike Weekes of IBM was appointed Board Secretary. Ben Miller of CardTech/SecurTech, Inc. was re-appointed Board Treasurer.

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## Beating Password Theft by Virus

Litronic, provider of public key infrastructure (PKI)-based Internet security solutions, recommends businesses take an aggressive approach toward password protection following the recent virus attacks by combining virus protection software with Smart Card and PKI technology to thwart viruses similar to the Love Bug virus that tempted users to open it with the innocuous message "I Love You."

Although the public was warned that the virus, which carried a worm, destroyed media files, the ultimate goal was more devious than simply wreaking havoc in businesses across the globe. The worm searched victims' computers for user names and passwords to send back to a Philippine e-mail account. With this information, predators could pose as unsuspecting users, essentially stealing their on-line identity.

"Using Smart Cards with PKI, passwords are not an issue, causing a worm's efforts to locate user information to simply come up empty," said Bob Gray, Vice President of Product Development at Litronic. "PKI securely enables people to log on, access files and transact on-line without worrying about identities being stolen."

He added that while virus protection software aids in identifying threats and protecting and repairing damage, it is ineffective in stopping worms from stealing passwords or personal data once they are inadvertently unleashed on the hard disk or network.

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# £6m London Contract for TranSys

London Transport has awarded a £6 million contract to the TranSys consortium in a further stage of implementing its Prestige project Smart Card ticketing and revenue collection system to be introduced in 2002.

The consortium has installed 530 gates at Underground stations covering 97 per cent of all stations. London Transport estimates that these improvements will reduce fare evasion across the network by £2 million a year.

As a result of progress to date, TranSys is now to introduce Q-Busters technology at 50 Underground stations. Developed by Cubic Transportation Systems, one of the consortium members, these standalone machines have been designed to make it easier and quicker for passengers to purchase weekly travelcards and other ticket types without the need to use the ticket office.

Using touch screen technology, it will be possible to purchase one of 10 tickets with the press of a button, using a credit or debit card.

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# Visa Approves GemXpresso

Gemplus has obtained Visa International certification for GemXpresso 211 - V1', the first Smart Card to support Java Card API 2.1 and Open Platform 2.0.

A Gemplus Smart Card platform based on the Java Card specification from Sun Microsystems (Virtual Machine 2.1, Java Card API 2.1) and Open Platform 2.0, GemXpresso 211 - V1' can add applications even if the card has already been issued to a cardholder.

It provides full interoperability of both source code and byte code of any applet, thanks to the Java Card 2.1 specification and is based on Philips Semiconductors' P8WE5032 cryptocontroller.

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# Oberthur Acquires SCI

Oberthur Card Systems (OCS) has acquired London-based SmartCards International (SCI), specialists in card management and e-value software solutions.

Oberthur sees the acquisition as a significant step forward in the development of its Card Management Solution (CMS) first launched at Cartes 99, back in November.

It says that combining its CMS with SCI's Nautilus system will provide a complete end-to-end solution giving instant access to detailed information about the issuer's cards.

Thomas Savare, Oberthur's Chief Operating Officer, said: "At a very early stage, we realised the powerful opportunities Open Platform from Visa and MULTOS brought to multi-application Smart Cards. Card management is crucial in bringing these opportunities to the consumers, so this acquisition marks the beginning of a very exciting future not only for us but also for the card market as a whole."

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# Order for 10,000 Terminals

Blackstone Online has selected Hypercom's ePic ICE card payment terminals as the platform for Blackstone POS its new point-of-sale activation program for convenience stores, gas stations and other venues that sell prepaid calling cards. The company plans to deploy more than 10,000 terminals during the next 12 months.

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# SCN Awards for Top Students

MEng Systems Engineering students at UMIST (University of Manchester Institution of Science & Technology) are regarded as among the very best in the UK while the University itself is in the top six for supplying technology and engineering graduates.

SCN will be awarding three cash prizes to students from the 4th year Computer Security & Cryptography department who, in the opinion of Smart Card News, have grasped the commercial business case for using a Smart Card within the campus environment.

At the UMIST university graduation on 4 July, Patsy Everett, Managing Director of Smart Card News, will award prizes to three students from the computer security department.

"Smart Card News has been publishing technical news on the industry for over nine years and I am most impressed by the commercial understanding these students have for the concept of implementing a Smart Card scheme," said Patsy Everett. "I shall follow these students careers with interest as they obviously have much to offer the industry in the future."

Computer Security is a fourth year option for the MEng Systems Engineering students at UMIST. The course is taught by Dr Colin Walter who is recognised worldwide in the area of computer arithmetic that is required for chips embedded in Smart Cards. The course mixes the essential technical details of cryptography, firewalls, secure communications, e-commerce and electronic money.

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# Bull and iD2 Partner on Security

Groupe Bull and PKI (Public Key Infrastructure) solutions provider iD2 Technologies are partnering to provide customers with strong user authentication and electronic signatures.

Bull is to take a European distribution licence for iD2's complete PKI solution portfolio and more than 30 Bull consultants and engineers will receive comprehensive training from iD2.

iD2 will integrate Bull's RSA Smart Card solutions. The iD2 Certificate Manager, which combines the tools for the creation and maintenance of digital identities, will be coupled with Bull's experience in operating systems for microprocessor cards, enabling customers to establish their own Certification Authorities (CAs) for the management of digital identities.

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# B2B Secure Internet Trading

Coface and Gemplus have launched the first global solution to certify, secure, rate and guarantee B2B trade over the Internet. It will use Gemplus' Gemsafe Smart Card technology to guarantee that the cardholder exists, is authorised to carry out the commercial transaction and cannot repudiate a commercial undertaking. Coface's @rating service rates the quality of the contractual parties and guarantees the satisfactory conclusion of the transaction.

According to Marc Lassus, President of Gemplus, "From now onwards, each time a business 'signs' with a Smart Card, it will instantly be able to show its @rating and thereby demonstrate its ability to honour Internet contracts."

The offer contains a business kit with a Smart Card, card reader, software for signature and encryption, an @rating for companies that do not already have the label, plus a management platform for the Smart Card and @rating capable of interfacing with websites operated by virtual marketplaces, debt managers and financial institutions.

Available now in France and in 10 other countries on three continents, the offer will be progressively rolled out with the @rating launches in 80 countries by the end of the year.

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## SecureIT Chip Protection

Chip protection technology, originally developed by Raytheon Company to protect sensitive military products, is now available to the commercial world.

The company has announced that a new SecureIT Technology Centre has been set up at Raytheon's facility in Fall Church, Virginia, in collaboration with HRL Laboratories, of which Raytheon is a co-owner.

The SecureIT technology has been developed by HRL over the last 12 years to provide virtually "unbreakable" protection for chips against reverse engineering and tampering. It uses specialised circuit layout methodologies within the standard chip manufacturing process to "camouflage" logic functions and data on chips by using buried transistor connections - microscopically enabled or disabled - making every CMOS transistor pair look identical, and "connecting" each transistor to all possible connections resulting in hundreds of thousands of false connections.

The new technology centre will maintain an evolving threat database, with a corresponding set of evolving SecureIT "countermeasures" as required.

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## Visa Reaches One Billion Cards

Visa International has announced it has reached one billion cards worldwide, a first for the payments industry. It also reported that its payment volume in 1999 reached $1.6 trillion, representing a 19 per cent increase over the previous year.

Malcolm Williamson, Visa's President and CEO, Visa International, said Visa's second billion cards will look quite different from its first billion, due largely to changes in technology. "Although we are delighted to be celebrating one billion cards, we are not necessarily aiming to reach two billion cards," Williamson stated. "Instead our goal is to leverage technologies like the Internet, chip, wireless and biometrics to provide new choices to our member institutions and their customers, including the option of moving to cardless payments."

On Smart Cards, Visa says they will provide consumers and businesses with enhanced functionality. This could include storing loyalty points, providing personal authentication or carrying secure personal information on a single card in addition to the convenience of combining credit, debit and cash accounts on one piece of plastic. Today Visa estimates that the global marketplace is already about one-third of the way to adoption of Smart Cards and, by 2010, most Visa cards worldwide will contain a chip.

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## People on the Move

**Graham Carson** has been appointed Managing Director of ORGA Card Systems (UK). He joined ORGA from Barclaycard in 1991.

Datacard Group has appointed **Jeffrey J Hattara** as Chief Financial Officer to replace Paul Schroeder, who was recently appointed General Manager of the company's Secure Issuance Division. Hattara recently served as CFO for Minneapolis-based BMC Industries Inc.

NanoPierce Technologies has appointed **Richard L Cunningham** as Manager of Process Engineering. Previously he was Systems/Computer Engineer at Quantum.

**Michael J Kenney** has joined NanoPierce to spearhead a new program that will extend NCS to Wafer-level applications. Most recently he worked as a contract materials engineer expert for a wide variety of national and international companies.

WildCard Systems, an e-payments company that specialises in Web-based processing solutions, has appointed **Paul Smith** as Executive Vice President - General Manager, with responsibility for the Teen Card market. He has over 14 years experience in advertising and marketing.

mPower, a leading provider of on-line investment advice, has appointed **Judy Smythe** as Senior Vice President of Marketing and Product Development Planning. Previously she spent 12 years at Visa as head of Corporate Strategy where she developed Visa's Smart Card strategy.

## E-purses for Mobile Pre-pay

SmartPrepay, is planning to launch a new service enabling wireless operators and retailers to offer a pre-pay top-up facility on the Internet using Smart Card electronic purses. The company says its electronic top-up (etopup) service is compliant with all major card schemes, guarantees security of payment, diminishes the risk of fraud and significantly reduces transaction costs.

The UK-based company is independent of the mobile phone networks. Its solution acts as a universal gateway for merchants wishing to offer etopups to their customers. All UK mobile networks are supported and the company plans to extend its coverage rapidly to other markets.

Subscribers will use an electronic purse card which is debited or credited by accessing a portal, merchant or bank Web site. Smart Prepay says it will offer UK users free electronic purse cards and a secure on-line "virtual ATM" service that allows them to withdraw cash from their bank account and load it onto their card.

"Despite the proliferation of mobile phones and accessories sold on-line, there has been no risk free, cost-effective way to provide top-up facilities over the Web until now," said Dan Isaaman, SmartPrepay's Technical Director.

"Providing a secure, electronic cash equivalent, the e-purse reduces the threat of fraud for both the consumer and vendor as well as protecting vendors against the unscrupulous repudiation of transactions."

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## RSA Security Joins SC Forum

RSA Security Inc has become a Principal member of the Smart Card Forum (SCF), a non-profit, multi-industry organisation promoting the widespread acceptance of Smart Card technology.

RSA Security intends to help promote global acceptance of authentication standards and new technologies, including Smart Cards, tokens, biometrics and digital certificate technologies.

## Common Criteria Certification

STMicroelectronics has become the first company to be certified under the new ISO 15408 standard, also known as the Common Criteria. The certification to EAL4 Augmented was for the company's ST19 platform and included both a specific circuit and the complete development environment.

The ISO 15408 standard was developed to harmonise three similar, but separately developed Security Evaluation criteria known as the Orange Book (USA), CTCPEC (Canada) and ITSEC (Europe).

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## Smart Cards for Emirates Bank

Emirates Bank in the United Arab Emirates (UAE) is to launch an EMV Visa Smart Credit and Debit Card. It will integrate ACI FastStart for Visa solutions with its existing BASE24 processing platform - also from ACI - to issue, personalise and process Smart Card transactions for itself and other banks in the UAE.

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## Alteer Office Supports Windows

Alteer Corporation, an e-health company that deploys workflow management solutions via an application service provider (ASP) model, has announced that Alteer Office, its latest software for physician offices, now supports Microsoft Windows 2000 and Microsoft Windows for Smart Card technologies.

The ability to support Windows for Smart Cards enables a number of practical applications, such as secure corporate log-ons for Windows 2000; Web and phone authentications for health plan member benefits; and medical data storage.

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## KPN Company Card

KPN, the largest Dutch telecommunications company, has deployed a new dual interface employee identity card. Called the KPN Company Card, it integrates the widely-used multi-application Chipper technology into a proven Schlumberger contactless Smart Card platform, enabling secure access to all KPN offices as well as the corporate computer networks.

"Building Chipper capability into a Schlumberger contactless Smart Card enables us to combine a holistic approach to employee identification with the convenience of a multi-functional Smart Card, with a potential electronic purse and the ServiceBoX technology, the multi-application platform," explained Carla Kieft, Manager Sales at Chipper Nederland.

Chipper acts as the systems integrator for the delivery of the 100,000 personalised KPN Company Cards which are based on Schlumberger's Easyflex card range. The contactless interface communicates on the 13.56 MHz carrier frequency according to the ISO 14443-Type A standard and the Mifare protocol. Operations are completed in less than 100 milliseconds and up to 10 cm distance from the reader: anti-collision protocols allow several cards to be present within the antenna field concurrently, further speeding throughput.

For contact applications, the card relies on the latest Chipper++ technology, a security-enhanced mask developed by Schlumberger.

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## Campus Emergency Cards

CyberMark, supplier of Smart Card-based electronic commerce solutions for the education market, and USIS America, an Application Service Provider of healthcare services, have teamed up to implement an emergency Smart Card system at colleges and universities.

Ravi Rao, USIS Vice President of Strategic Alliances, said: "The USIS Emergency Program is the first of many tools we will offer to college campuses to help provide an Internet and Smart Card-based Global Health Solution, paving the way toward an electronic campus healthcare system. We have chosen to partner with CyberMark, utilising their existing multi-application campus Smart Card to help facilitate a comprehensive solution for students and faculty."

He added that the emergency application will be available to those campuses adopting CyberMark's Smart Card initiative from August.

Tom Burke, Vice President of Marketing at CyberMark, said: "We believe a comprehensive health application will be a natural extension of our existing campus applications."

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## Oberthur E-business Centre

Oberthur Card Systems has launched an on-line E-business centre to provide its employees with up-and-running demonstrations of the company's e-business services and products.

Marc Bertin, Oberthur's Director of E-business, explained: "Wherever our people are across the globe, they have instant and secure access to our suite of demos as required.

"By offering this 'anytime, anywhere' approach we are utilising the tools we develop on a daily basis to our own advantage - literally 'practising what we preach,'" he said.

Employees can access the centre via a range of devices: laptops, set-top boxes, mobile phones and Personal Digital Assistant (PDAs).

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## ACG Now Distributor for Infineon

ACG AG has announced a distributor contract with Infineon Technologies and will use its established broker network to support Infineon as a distribution partner in the area of security and Smart Card ICs.

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# Bull Card Plant for the UK

Bull has plans to open a new Smart Card manufacturing facility in the UK before the end of the year. It will cover 58,000 sq. ft., on a four-acre site at Fareham, between Southampton and Portsmouth in the south of England. As from next year, it will have an annual production capacity of 30 million microprocessor cards.

"We have chosen the United Kingdom because it represents a big growth opportunity: nearly 50 million Smart Cards as from 2001," explained David Levy, President of Bull Smart Cards & Terminals.

"Furthermore, though the UK has naturally adopted the Smart Card for GSM, it has only this year chosen to replace the magnetic stripe technology by the safer and more reliable chip for its banking transactions."

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# Mondex for Costa Rican School

In a pioneering project, Mondex electronic cash has replaced physical cash in the Pan American School in Costa Rica. Mondex says the project is already so popular with the 240 staff and students that there are plans to include more applications on the card - starting with students and staff ID.

Michael Genis, Administrative Director of Pan American School, said: "The school card will make life on campus safer and more convenient for the students and staff. For example, we used to have a problem with the vending machines - from people not having the correct change to money going astray. These problems are solved with Mondex.

"Even more importantly, students have responded very well to the Mondex card, as their chances of losing money have been reduced and they can marry their interest in technology with their everyday school life," he added.

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# Atmel Acquiries Thomson TCS

Atmel Corporation has finalised the acquisition of Thomson-CSF Semiconducteurs Specifique (TCS), a wholly owned subsidiary of Thomson-CSF.

TCS, which will be renamed Atmel Grenoble, brings capabilities in security and image sensor technologies, which are key to such high growth applications as digital cameras and high performance wireless communications.

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# Pathways to Acquire Ticket Plus

The Pathways Group has agreed to acquire Ticket Plus, a privately held computerised ticketing company headquartered in Honolulu, Hawaii.

Known for its development of Smart Card-based technologies and transaction processing solutions, Pathways also manufactures SPRINTICKET unattended ticketing dispensers. SmartCard Solutions, acquired by Pathways last month, provides solutions to destination resorts for point-of-sale ticketing and season passes, advanced sales, retail and rental purchasing. Ticket Plus provides for automated ticket selling for concerts and events through over 50 sales outlets in the state of Hawaii.

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# Connexions Card for the Young

A multi-application Smart Card will be rolled out nationally in the UK during the autumn of 2001 to young people aged 16 and over to encourage them to remain in education, according to Malcolm Wicks, the minister for lifelong learning.

It is understood that the government has approached WH Smith, McDonalds, Coca-Cola, National Express, the British School of Motoring and the Association of Transport Companies to join a public-private partnership to back the new Smart Card aimed at 2 million young people to encourage them to stay in education or training by being offered discounts on travel, driving lessons, burgers and books.

# G&D's Most Successful Year

Technology group Giesecke & Devrient (G&D) has reported the most successful year in its history. Turnover rose in the 1999 business year by more than 31% to 1.764 billion marks compared with 1.342 billion marks in 1998. Pre-tax profits tripled at 193 million marks from 61 million marks in 1998. The surplus for the year increased from 20 to 78 million marks.

The biggest increase in turnover was achieved by its Card, Payment and Security Systems Division with a rise of 53% to 807 million marks. Turnover increased significantly in cash cards, one reason being the cyclically related high demand for ec-cards. Telecommunications operations achieved substantial growth in turnover because of the strong demand worldwide for GSM cards.

# Card Payment for Taxi Fares

London-based Computer Cab, Europe's largest radio taxi group with 3,500 drivers, has selected Hypercom's ePic ICE card payment web appliances for its Transfare electronic card processing service, initially focusing on fleet operators and radio circuits throughout the UK.

Geof Kaley, Computer Cab's CEO, explained that the terminals incorporate the latest technology, including electronic signature capture and support for chip based payment cards. They also accept Cabcharge, the taxi industry's electronic booking card.

The company will use the ePic SmartICE 4000 handheld, battery driven, card payment web appliance for use in taxis, and the ICE 5500 for fixed locations such as taxi depots.

In addition to credit, debit and chip card transactions, the devices support browser-based e-mail, electronic receipt capture and storage, on-screen advertising, interactive electronic coupons and merchant e-commerce functions.

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# IS for 13.56 MHz RFID Technology

A communications protocol proposed by Texas Instruments and Philips Semiconductors in November 1998 and defining the way data is exchanged between the RF tag and reader, officially becomes an International Standard - ISO 15693-2 - when published by the ISO Secretariat in the next few weeks.

13.56 MHz radio frequency identification (RFID) technology is used in contactless cards and smart labels. The new standard means that RF tag and reader ICs using the ISO 15693-2 protocol will be compatible.

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# Schlumberger Debuts New SDK

Schlumberger Network Solutions introduced a new software development kit (SDK) that seamlessly supports both Cryptoflex and Cyberflex Access Smart Cards in the Windows environment. It was on show at the JavaOne Conference in San Francisco early this month.

Cyberflex Access SDK 3.0 is a comprehensive kit for multi-function Java-programmable and cryptographic Smart Cards for PC applications, enabling developers to quickly integrate either type of card into a wide variety of applications, including securing communications over the Internet.

It is compatible with Windows 95, 98, NT4 and 2000 operating systems; and can be easily integrated into PC applications, such as Internet Explorer, Netscape Communicator and Outlook. The new SDK also includes a comprehensive cardlet development environment for Cyberflex Access.

Available in late June 2000, Cyberflex Access SDK 3.0 is priced at $499. An upgrade kit for developers who already have version 2.0 is also available for $149. Both kits can be ordered online at www.cardstore.slb.com.

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# Berlin Smart Card Transit Trial

Motorola has completed the contactless Smart Card Automatic Fare Collection (AFC) system field trial for the Transport Authority of Berlin (BVG).

During the trial of the AFC "tick.et" system, a group of public transit riders throughout Berlin and Brandenburg paid time- and distance-based fares using a Smart Card to access and transfer between buses, trains and trams run by the BVG, the S-Bahn (Rapid Train System of Berlin) and the VBB (Transport Authority of Berlin- Brandenburg).

Public transport "units", purchased with cash or electronic transfer payments, were loaded directly onto the card and then debited by contactless check-in/check-out terminals at the stations or in buses and trams.

"Using bus and rail will become much easier in the future with cashless Smart Cards and the end of tariff zones," said Peter Strieder, Berlin Senator for Urban Development.

## Technical University project

Motorola is currently implementing a Smart Card system with multiple applications for the Technical University of Berlin.

It is based on a contacted/contactless dual interface Smart Card that will be compatible with Berlin's transit automated fare collection (AFC) system. This will mark the first time in Europe that an ISO 14443 Type B dual interface Smart Card will be used for a multi-application system, and the first time a university card system will be fully integrated with a Smart Card transit AFC system.

Motorola will provide system integration, Smart Cards, card accepting devices and consulting for the TU Berlin Campus Card system - an ID card and application platform capable of securely accessing university services over the Internet.

## Award for US system

The ERG Motorola Alliance has received an award to enter into contract negotiations with the Ventura County Transportation Commission (VCTC) for the design and implementation of an integrated contactless Smart Card system that will tie together six individual transportation operators in the region.

The initial roll-out calls for 5,000 contactless Smart Cards.

The award calls for the integration of a Global Positioning System (GPS) and Automatic Passenger Count (APC) system with Automatic Fare Collection (AFC) to provide a comprehensive information-gathering network.

GPS satellites will be used to track the location of each of the 100 buses in the system and the APC will monitor where and when the riders get on and off each bus. The system will use this data to identify rider travel patterns, compare bus actual arrival times to the schedule, and spot repeating traffic bottlenecks. This information will help the VCTC to improve passenger services and optimise the use of transit resources.

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# Security for HP Notebook PCs

Hewlett-Packard Company has announced the availability of a new Smart Card kit for HP notebook PCs running Microsoft Windows 2000 that builds upon key security enhancements in the operating system to protect and authenticate sensitive user data.

The HP Mobile ProtectTools 2000 Smart Card security kit - an accessory for all HP OmniBook notebook PCs - allows users to safeguard data in an encrypted, tamper-proof removable Smart Card.

HP OmniBook notebook PC owners use the Smart Card and a PIN to log onto Windows 2000. The computer cannot be turned on if the Smart Card is not inserted.

The kit includes a PC card, two Smart Cards, including a back-up card, and software. They can be purchased directly from HP, or from HP resellers, and can be installed within minutes.

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## Amex Prizes for Blue Applications

American Express Company, along with co-sponsors Oberthur Card Systems and Sun Microsystems, has launched Code Blue, a contest with a first prize of $50,000 for developers to create innovative, new Java Card technology applications for Amex's credit card Blue. Launched last September, Blue is a traditional magnetic-striped credit card equipped with a chip.

Glen Salow, Executive Vice President and Chief Information Officer at American Express, said: "By incenting the best technology developers to create imaginative, new Java Card technology based applications for Blue from American Express, Code Blue will spur innovation within the Smart Card industry."

The Code Blue contest will occur in three phases:

Phase I: Participants have until 21 July to submit their ideas for a new smart chip application for Blue.

Phase II: American Express will select 20 finalists who will be given Oberthur's GalactIC developer kits based on Java Card 2.1. Developers have until 1 December, 2000 to submit their actual Smart Card application. All finalists who submit an actual new Smart Card application will receive a $5,000 prize.

Phase III: Three top winners will be selected in early 2001 on the basis of their submissions' technological superiority, innovation and ability to be implemented. First prize will be $50,000; second prize, $25,000; and third prize, $15,000.

For information about the Code Blue contest, visit www.codebluecontest.com

## Ticketing System for Sydney

Cubic Transportation Systems (CTS) Australia has won a $3.1 million contract from CityRail for a Smart Card project enabling commuters in Sydney to pay for rail tickets at vending machines.

Under the contract, Cubic will convert 20 ticket vending machines at certain Sydney locations to "touchscreen" operation, upgrade the software on existing ticket vending machines to accept more advanced applications, and supply an additional 56 electronic gates to the Sydney rail network.

Cubic, which is already supplying a number of touchscreen machines to the new Airport Link rail service to Sydney Airport, will upgrade 20 of the 320 large size ticket vending machines in the Sydney network with the touchscreen model.

The new machines are easier to use, allow riders to purchase multiple tickets and provide ticket selection in 13 languages.

Separately, CityRail and Cubic have signed a multi-year and multi-million dollar maintenance contract covering total hardware and software maintenance on the Sydney ticketing system. The awarding of the two new contracts builds upon Cubic's nine-year relationship with CityRail as a systems and services supplier.

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## HyperSecur Reports $4.3m Loss

HyperSecur Corporation has announced a net loss of $4,311,147 for the 14 months ended 31 December, 1999.

On 11 May, 1999, the company acquired 100 per cent of the stock of a Canadian company which owned the worldwide pending patent application for a technology known as HyperProximity. The financial results are reported for the 14-month period ended 31 December 1999, during which the company was in the product development stage and had no revenue.

The consolidated financial statements include the accounts of HyperSecur Corporation (the US company) and its wholly owned subsidiary, HyperSecur Corporation (the Canadian company).

Under the terms of a co-operation agreement with semiconductor manufacturer STMicroelectronics, the HyperProximity technology will be a standard feature on their new secure contactless micro-controllers. This technology will be first implemented in the ST16HF52 contactless microcontroller.

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# Proton World Wins US Award

Proton World has won a Computerworld Smithsonian Award in the Finance, Insurance & Real Estate category for innovative use of information technology to benefit society in its electronic purse systems. The award was presented at a gala dinner in Washington DC earlier this month to Daniel Skala, Proton World's Executive Vice President, Sales, who said: "We at Proton World firmly believe that technology is making everyone's lives better, easier and more secure, and I thank you for recognising our contribution, and that of Smart Cards in general, to this."

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# Major GSA Contract

The US General Service Administration (GSA) has awarded contracts for a Smart Access Common ID project valued at over $1.5 billion over ten years.

"Smart Cards will greatly enhance the security of government facilities and systems on a worldwide basis and have the potential of providing millions of Federal employees with a Smart Card," said Sandra Bates, Commissioner of GSA's Federal Technology Services.

"They will use chip card technology and support many important applications, such as electronic signature, training certification and e-commerce."

Electronic Data Systems Corp (EDS) was one of five prime contractors named, and Leapfrog Smart Products has announced that it will serve as the Smart Card biometric and hardware provider to EDS.

Leapfrog will provide interoperable, multi-application software and hardware that will feature identification and authentication, physical and logical access control and other value-added features.

OTI also shared in the contract as part of two consortiums and says it is consolidating advanced contactless multi-application capabilities with high encryption levels. Also involved is PRC, a subsidiary of Litton Industries which says it proposed an interoperability solution to define Smart Card standards for use government-wide.

"The Smart Card will be based on an integrated circuit chip and will likely include a variety of technologies including magnetic stripe, biometrics and other media, as required by individual agencies," said Cathy Whalen, Litton PRC Vice President.

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# End-to-end Java POS Technology

Oberthur Card Systems is to supply Banksys with Java 2.1 cards which, combined with the C-ZAM/SMASH card terminal, will enable end-to-end Java point-of-sales technology.

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# Verifying Prepaid Cards

Schlumberger has launched a stand-alone system for verifying prepaid cards which may have incurred defects after shipping from the manufacturer, enabling card issuers to improve customer service. Called KeyOps Authentis, the PC-based software package works with all prepaid Smart Card applications, such as phone cards, loyalty cards and e-purses, regardless of card supplier.

Lucas Witkam, Schlumberger's product line manager prepaid Smart Cards, said: "KeyOps Authentis enables issuers to put the prepaid card testing process directly in front of the customer, singling out cards with a genuine defect introduced in the field."

The suspect card is inserted in a reader attached to the PC and the KeyOps Authentis software checks for example, serial number, validity dates, card manufacturer and application code, and verifies that the card is not on the issuing company's blacklist. The software then goes on to validate the card's security credentials, including its secret anti-clone key. Faulty cards are identified quickly and can be replaced immediately.

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# Briefing Notes on Multi-Application Smart Cards - Part 7

Communication between the Smart Card and the interface device is defined by ISO 7816 part 3 and part 4. Communication starts after the Answer To Reset (ATR) by the interface device sending a command TPDU (Transmission Protocol Data Unit) to the card and receiving a response TPDU from the card.

At the application level we are concerned with APDUs (Application Protocol Data Units) which contain either a command message or a response message. The card must reply to every command so we are dealing with command – response pairs. A command may include data for the card to process or may request the card to return data to the interface device. In total there are four options for data in the command – response pairs which are defined by ISO 7816 – 4 as follows:

| CASE | Command Data | Response Data |
|------|--------------|---------------|
| 1 | No Data | No Data |
| 2 | No Data | Data |
| 3 | Data | No Data |
| 4 | Data | Data |

The command APDU is structured with a mandatory header of 4 bytes and a variable length body:

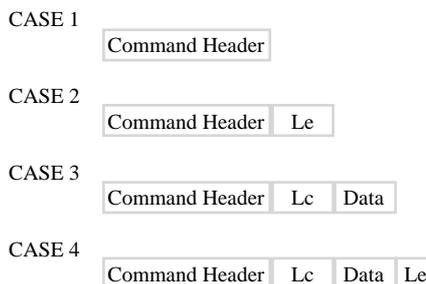| Header | Body |
|--------|------|
| CLA  INS  P1  P2 | Lc  DATA  Le |

The class byte 'CLA' was originally chosen by the card manufacturers for their own identification purposes but this has been reclaimed by ISO 7816 - 4 to indicate conformance or otherwise with the command - response pairs defined in that part of the ISO standard. There are 18 such commands of which only two are widely used. When using these commands the class byte would normally be set to 00 (hex).

The instruction byte 'INS' is used to code the particular command instruction which for the ISO commands is defined by the standard. For propriety commands the instruction code is defined by the application provider. By means of this single byte up to 256 (00 hex - FF hex) basic instructions may be defined. The two additional parameter bytes P1 and P2 allow further qualification of the basic instruction, more than enough combinations for most people.

The body part of the command APDU defines the length of the data in the command by 'Lc' or the number of bytes expected in the response APDU by 'Le'.

For the four cases described previously the following options are available:

CASE 1

| Command Header |
|----------------|

CASE 2

| Command Header | Le |
|----------------|----|

CASE 3

| Command Header | Lc | Data |
|----------------|----|------|

CASE 4

| Command Header | Lc | Data | Le |
|----------------|----|------|----|

The response APDU is defined as an optional body and a mandatory trailer:

| Body | Trailer |
|------|---------|
| DATA | SW1   SW2 |

The body contains the data (Case 2 and Case 4 only) whilst SW1 and SW2 are the two status bytes. These bytes indicate the successful implementation of a command by '90' '00' (hex) whilst warnings and errors are included by other options as defined in the standard.

The APDU has to be mapped onto the TPDU which is the actual transmission protocol used between the card and the interface device. There are two protocols currently defined in the ISO 7816 – 3 standard, $T = 0$ and $T = 1$. The protocol $T = 0$ defines the half duplex transmission of asynchronous characters whilst the $T=1$ protocol defines the half duplex transmission of blocks of data. Half duplex is the term applied to a communication protocol where the flow of data takes place in one direction at a time. Historically Smart Cards used a single I/O (input/output) line compared with the RS232C serial port on the PC which uses two separate lines for the transmission and reception of data, this is referred to as full duplex. The asynchronous nature of the communication protocols means that the interface device and the card synchronise when the data is transmitted and in the case of $T = 0$ just for one character or in the $T = 1$ case for the length of the block.

The $T = 0$ communication protocol is widely used and may be described by means of *figure 16*. $T = 0$ is the default protocol but this can also be indicated by TD1 in the interface bytes returned by the Answer To Reset. These interface bytes will be described in more detail later.

For the TPDU the header consists of 5 bytes. The fifth byte P3 is defined as follows:.
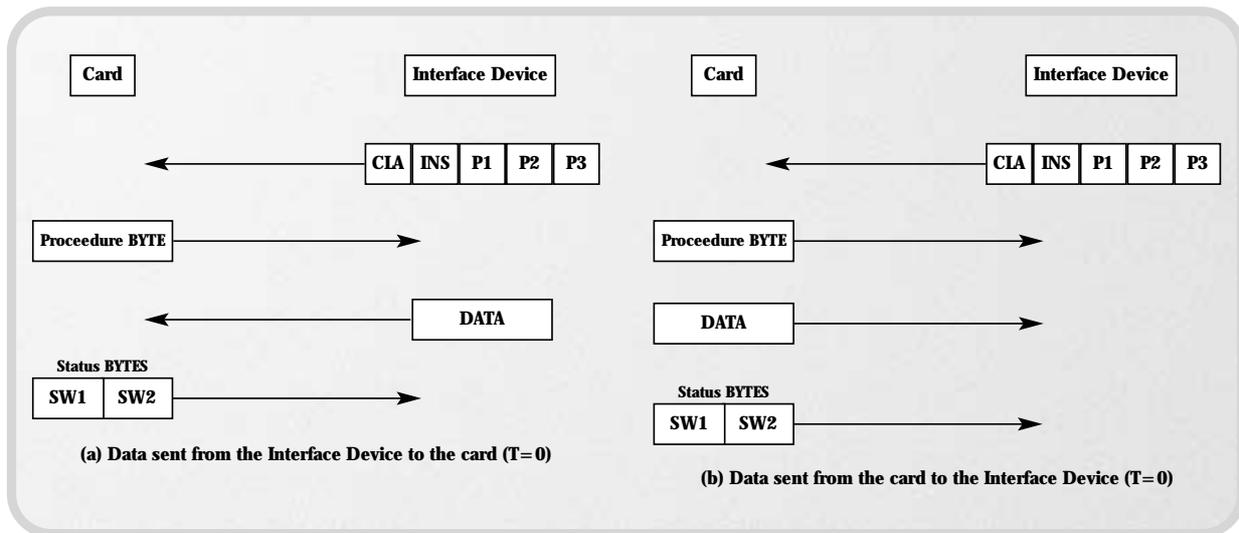
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**Figure 16**
The T=0 Message Protocol

| APDU | CASE 1 | P3 = '00' hex |
| --- | --- | --- |
| APDU | CASE 2 | P3 = Le (expected length of response data) |
| APDU | CASE 3 | P3 = Lc (length of command data) |
| APDU | CASE 4 | P3 = Lc (length of command data) |

This is consistent with the first byte of the APDU body defined previously (and is necessary for backward compatibility with part 3 of the standard). The single byte data length definition only allows for up to 256 bytes of data to be transmitted or received (P3 = '00' hex is defined to mean 256 bytes for Le in case 2. ISO 7816-4 allows the data length to be extended by redefining the meaning of P3 = '00' in cases 2, 3 and 4. Clearly both the card and the interface device need to be aware of this interpretation.

The card must return a procedure byte in response to this 5 byte TPDU header. In normal operation the card returns the INS from the header as the procedure byte.

The normal response for SW1, SW2 is '90' '00' (hex).

To be continued
*David B Everett*

## Installing the Toolkit

The toolkit is supplied with a CD-ROM that contains the software we will use to speak to the Smart Card. To install the software run the setup.exe on the CD - simply double clicking on the file will do this.

The installer will guide you through the process. You must indicate where you would like the software installed to, although the supplied default option will be fine for most people.

The installer performs several tasks. Firstly, it copies the JPython software onto the hard disk. This involves copying the Java code and a complete Java Runtime Environment to execute the code. The next thing the installer does is install the PC/SC software which extends Windows so that Smart Card readers & cards can be accessed. Finally, the installer adds the drivers for the Smart Card terminals we will use with the toolkit.

Although we supply card terminals with the toolkit, you can use any existing PC/SC reader as long as you have the drivers for it installed. This is a very useful feature of PC/SC, as it means you don't have to switch readers for different software.

As we are using PC/SC you must restart Windows once the installer has finished so that PC/SC becomes usable. If you are using a card terminal that plugs in via the serial port be sure to have a Smart Card in it and the terminal plugged in when Windows restarts. PC/SC detects all readers when Windows starts up, and if the terminal isn't plugged in with a card it will not be detected. If this happens you must connect the reader and restart Windows once again.

If you are using a PCMCIA reader such as the Gemplus GPR400 this restriction doesn't apply. Whenever the reader is plugged in PC/SC is informed of its presence and it can be used immediately.

Once the installation process has finished there will be a new icon on the desktop entitled BeanShell. This is the front end we will use to interact with the Smart Card - more on this in later articles.

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There will also be a new menu item under the 'Start' button entitled 'SCN Toolkit'. If you select this menu item you will see several options, some of which you can use to see if the installation has gone successfully.

The first item to use is the 'Check PC/SC' option.

This invokes the Gemplus Diagnostic Tool which will show the status of the PC/SC subsystem and any registered readers. Click on the 'Check' button and a window will appear with the result of several tests. All the test status results should be PASSED. Make sure that the last few lines contain a line verifying communication with your reader. For example:

```
Verifying communication with the reader...  PASSED
   Reader name is "TOWITOKO CHIPDRIVE 0".
   There is no card in the reader.
```

If you have a card in the reader the last line will be replaced with details of data read from it. You can insert a card and click the 'Check' button once again to repeat the tests and see if the card is recognised.

Now we know the card readers are OK we can see if JPython can see them also. Under the 'SCN Toolkit' option select the 'Get ATR' option. This will start JPython and run a simple script to read data from the card. You will see a rudimentary console window start up with some text output. If there isn't a card in the card terminal the program will wait until one is inserted. When a card is inserted the result of talking to the card will be displayed and then the program will pause until you press a key, when it will exit.

Once this test has been passed the software is installed, and we are ready to start interacting with the card from the BeanShell environment. You can start this software now and experiment with the console, which gives you a nice environment to experiment with JPython.

**Jon Barber**

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