Powerful Chips by End of 1999

Motorola Semiconductor Products and Japan's Matsushita Electronics Corporation have teamed up to develop next-generation FERAM (Ferroelectric Random Access Memory) -based Smart Card chips. They will produce chips based on FERAM instead of EEPROM memory currently used. The first chips are expected to be shipped by the end of 1999.

The new FERAM chips, according to Motorola, could have capacities of 64K bytes or 128K bytes compared with the current 8K bytes to 16K bytes using EEPROM technology.

Mike Inglis, General Manager of Motorola Smart Information Transfer Division, explained: "We are doing this to prevent Smart Card users of the future suffering the 'World Wide Wait' syndrome which now frustrates Internet users.

"As users have become more familiar with the Web the complexity and amount of information stored has rocketed, resulting in ever longer access times. Similarly as Smart Card users become more familiar with the many benefits of the technology we expect to see an increasing demand for more complex applications using ever greater amounts of memory, but without an increase in transaction speed. Smart Card users will not stand at an ATM for three minutes waiting for their information to 'download'!

"FERAM technology will allow us to meet these demands while maintaining the physical size and strength needed in a chip that is carried in pockets and wallets."

Challenge for chip manufacturers

He added that the industry was developing at such a rate that only companies prepared to make investments now would be able to provide the technologies needed to support the applications of the future.

Motorola said increasingly sophisticated applications were placing ever-greater demands on chip performance and the challenge for chip manufacturers was to deliver chips with ever greater memory capacities to run the more complex applications, with no loss of transaction speed.

FERAM technology offers the combination of speeds 20 times faster than existing EEPROM technology with up to 10 times the memory capacity, said Motorola, adding that FERAM Smart Card chips could have capacities of 64K bytes or 128K bytes.

Dr Gota Kano, Member of the Board and Managing Director of Matsushita Electronics Corporation said the use of FERAM technology had the potential to cause a fundamental change in the future of Smart Cards.

"FERAM has come to the forefront of memory development, due to its remarkable properties such as endurance, 10 million times more than that of Flash and EEPROM, incredible write speeds, and its use of only a fraction of the power of any other memory technology," said Dr Kano.

"FERAM embedded microcontrollers used in highly sophisticated Smart Cards are set to become common place before the turn of the century."

FERAM offers faster write times, lower voltage write/erase, and greater write endurance than Flash and EEPROM memories.

Contacts: Clare Lucraft/Niyi Akeju, *Hill and Knowlton* **- *Tel: +44 (0)171 413 3145/3014. E-mail: clucraft@hillandknowlton.com* • *Françoise Grandjean,*** *Motorola* **- *Tel: +33 (0)1 34 63 58 87. Tatsuo Otsuki,*** *Matsushita Corporate Research and Development* **- *Tel: +81 726 82 7094. Fax: +81 726 82 7093. E-mail: otsuki@erl.mec.mei.co.jp***

Visa Cash Multi-function trial

A Visa Cash card with combined contact and contactless technology is being piloted by Bank of America and Visa USA.

Bank of America employees at the Clock Tower building in San Francisco will test the card. In contact mode the Visa Cash reloadable card will be used for employee vending machine purchases and also PC access control and file encryption. The contactless function provides building and parking access.

The combined card was developed by Bank of America and Giesecke & Devrient America. It uses G&D's STARCOS SV operating system which enables issuers to load applications onto the card after it is issued to cardholders.

Phonecard Record by Gemplus

French Smart Card manufacturer Gemplus has announced delivery of its one billionth phonecard.

This card was produced for France Telecom which enabled the company to be launched with an initial order of one million phonecards in 1988. Now Gemplus supplies over 100 operators and claims to be the number one supplier of phonecards with a 43 per cent market share.

The company says that currently, over ten phonecards per second - or one million per day - are manufactured at its plants throughout the world to meet increasing demand.

Major customers include France Telecom, Telmex (Mexico), Deutsche Telekom (Germany) and China Telecom.

In fact, Gemplus has opened new Smart Card production plants in Cuanavarca in Mexico and Tianjin in China, to meet the demand for phonecards and both plants will soon be producing 100 million cards a year. The Chinese market alone is expected to reach one billion phonecards per year by 2000.

Marc Lassus, founder and Chairman/CEO of the Gemplus Group, commented: "Since the first phonecards were delivered to France Telecom in 1988, it has been like a landslide. Phonecards have won over the world in just nine years."

"He predicted: "Phonecards will become smarter and smarter, turning to small electronic purses - with or without contact. The market is still lying ahead of us."

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ICMA Names Standards Team

The International Card Manufacturers Association (ICMA) has elected seven members to serve on its newly-formed Standards Committee dedicated to plastic card manufacturing production issues.

They will represent four industry segments:

Secure card manufacturers - Dr John Hynes, NBS Card Services and Cesar H Abrusky, Transtex SA.

Non-secure card manufacturers - Ron Schwisow, Teraco Inc and Michael Davis, Allsafe Company;

Material suppliers - Richard Ryder, Klockner Pentaplast of America Inc and Han Salemink, Leonhard Kurz GmbH, suppliers of card core materials and magnetic media respectively; and

Card initialiser/acceptance device manufacturers - Jean Pierre Arnaudo, Sandia Imaging Systems.

The committee will work with Joseph Naujokas, ICMA's delegate to the American National Standards Institute (ANSI) and the International Standards Organisation (ISO) on all standards issues affecting plastic card manufacturing.

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Motorola and ERG Alliance

Motorola's Smartcard Systems Business (SSB) and ERG Limited, the Australia-based transit fare collection and Smart Card systems provider, are forming a marketing alliance to pursue global opportunities in transit and certain multi-application Smart Card system technologies.

Recently, ERG implemented a contactless Smart Card system in Hong Kong. This system is now handling more than 1.8 million transactions per day for six transit operators and the figure is expected to grow to more than four million per day in the coming months.

"By combining our expertise of total fare collection operations with Motorola's extensive knowledge of Smart Card product development, software system solutions and system integration and their worldwide distribution organisation, we will strengthen our position in the global Smart Card market, enabling us to offer enhanced transit solutions," said ERG's CEO Peter Fogarty.

Motorola's Smartcard Systems Business is based in Schaumburg, Illinois, USA, and plans to manufacture contactless and combined contact and contactless Smart Cards.

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Racom Announces RX-1500 Series

Racom Systems, Inc., specialists in contactless Smart Card technology, has announced its RX-1500 series of cards and controllers offering secure transactions in both contact and contactless operation. The RX-1500 series provides a level of security and flexibility in contactless operation that previously could only be achieved in contact operation and have been specifically developed to meet the needs of multi-application environments such as transit, parking, loyalty, access control, and electronic purse. The new series will include disposable cards as well as cards and systems that support down-loadable applets with more powerful processors and larger amounts of memory for banking, biometrics and other complex applications.

The RXC-1500 Smart Card includes an 8-bit microcontroller, 2K bytes of FRAM non-volatile memory, 8K bytes of ROM, and a Racom developed Operating System. The card issuer can create up to 16 password-protected purses or data files of any length. Security is enhanced by four pass cryptographic mutual authentication in which both the card and the card reader create a random challenge which each has to respond to correctly. In addition communication between the card and the controller is encrypted.

In contactless mode, the card is powered remotely and communicates via a radio signal from the RXR-1500 contactless controller with a transaction speed, including mutual authentication, encryption/ decryption of transmitted messages and purse or file update, of less than 100 milliseconds (1/10 of a second) resulting in true "walk and wave" operation.

Contact: Bill Jacobs, *Marketing, Racom Systems* **- *Tel: +1 303 771 2077. Fax: +1 303 771 4708. Web site: http://www.racom.com***

Dense-Pac Enters Card Market

Dense-Pac Microsystems Inc., which manufactures high-density memory products, has formed a new division to enter the Smart Card market and has begun preliminary card and systems design with OEM manufacturers.

Chairman and CEO, Uri Levy, explained: "Our goal is to position Dense-Pac in growth industries through leading edge technologies. This new division will position Dense-Pac with products that are more memory application oriented. The division will expand our product line, penetrate the commercial market, and strengthen our ability to compete domestically and internationally."

Dense-Pac designs and manufactures three-dimensional high density memory products for its commercial, industrial and military customers. Products include a wide variety for telephony, personal computers, PDA's, digital cameras, automotive, and military applications.

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$16 Bn Smart Card Market by 2005

The worldwide Smart Card market will grow from $1.2 billion in 1996, to $7.6 billion in 2000, a 59 per cent growth rate, according to a new study from Killen & Associates, the Palo Alto, California-based market research and consulting firm.

It also predicts that from 2000 to 2005, the more mature market will grow at 16 per cent reaching $16 billion in 2005.

Michael Killen, President, said: "In a few short years, banks and non-banks like American Express, AT&T, Novus and hundreds of others around the world will significantly step up their purchases of Smart Cards to seize emerging opportunities to provide the wide range of applications and services enabled by multi-function Smart Cards."

The study, Non-Banks' Smart Card Strategies: New Opportunities to Increase Sales and Profits, recommends strategies to banks and non-banks, including card associations, for protection and expansion of their brands as they enter volatile new Smart Card markets. It tracks Visa, MasterCard/Mondex and Banksys' Proton initiatives, and projects likely winners in the Smart Card race.

Contact: Bob Goodwin, *Killen & Associates* **- *Tel: +1 415 617 6137. Web site: http://www.killen.com***

NBS & Bull Target North America

NBS Technologies Inc. and Bull are to jointly develop terminals for the Smart Card and electronic purse market in the US and Canada.

The first product is described as an advanced terminal with a large graphic display, integrated high-speed thermal printer, Smart Card reader, and support for multiple SAMs (secure application modules). Scheduled for early 1998, it is designed to address the needs of credit, debit, and Smart Card applications and will comply with EMV, IMV and Mondex specifications.

Eric Pradier Vice President Bull Personal Transaction Systems, commented: "This partnership with NBS is a critical step to achieving a significant position in the largest market in the world."

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Schlumberger Supports Windows

Schlumberger Electronic Transactions introduced new Smart Card products designed to support the Microsoft Smart Card Software Development Kit (SDK) at the Microsoft Professional Developers Conference in the US last month.

The products enable implementation of Smart Card-based applications for Windows 95 and NT. The new products included:

SmartWare, a comprehensive Smart Card developers' kit to build PC-based Smart Card applications using Schlumberger cards, such as Cryptoflex, Cyberflex, Multiflex and Payflex. Application developers can take advantage of standardised APIs working in the Windows 95 and Windows NT environments to build PC applications of all types such as home banking, healthcare, insurance, and personal identification.

SafePaK, a client PC package for information security supporting Microsoft Internet Explorer 4.0, based on the Cryptoflex Smart Card and a family of different Smart Card readers to fit any need. SafePaK supports Internet Explorer 4.0 and Outlook Express. It comprises Cryptoflex, a cryptographic Smart Card with 1024-bit RSA security.

Ed Muth, Group Product Manager for Security and Enterprise Marketing at Microsoft, commented: "This will enable our mutual customers to take advantage of Smart Cards to design and build unique new applications for a wide range of market segments."

A range of PC/SC compliant Smart Card readers were also announced, including:

- Reflex 20 PCMCIA-slot reader for laptops
- Reflex 60 serial port readers
- Reflex 60 Chip Set for hardware integration into Personal Computers and other devices
- Pocket Dock serial port reader with secure keypad entry and display
- Floppy Dock Smart Card reader designed to use the floppy disk drive.

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UK Loyalty Cards Near 50 million

There are nearly 50 million store and supermarket loyalty cards issued in the UK according to a Datamonitor report, UK Plastic Cards.

UK store card numbers increased by 81 per cent to 24 million between 1995 and 1996 largely as a function of heavy promotion as retail margins have been squeezed.

The number of supermarket cards is heading towards 25 million.

The launch of the Tesco Clubcard in February 1995 revolutionised the UK supermarket industry, says the report and for the first time it provided supermarket retailers with a detailed snapshot of consumer spending patterns. It also enabled Tesco to displace Sainsburys as the UK number one supermarket - a position it has maintained.

The report adds that only the largest players, Tesco, Safeway and Sainsburys have sufficient sales volumes to justify the costs of implementing a fully data based loyalty card system.

Contact: Datamonitor - Tel: +44 (0)171 625 8548. Fax: +44 (0)171 625 5080.

UK Chip Card Trials Start

UK banks started trials with Smart Card chips on payment cards on 1 October in Northampton in England and Dunfermline in Scotland. It is expected that on successful completion of the trials all UK banks will progressively introduce the new technology from mid-1998.

Under the direction of APACS (the Association for Payment Clearing Services), over 100,000 cards will be issued and more than 600 retailers will have terminals capable of taking the new cards.

The chip cards can be used in cash machines and at all shops and businesses currently accepting card payments, not just those taking part in the trial. Existing methods for identifying cardholders by signature at point of sale and PIN at cash machines is being retained.

APACS says a major advantage of the chip cards is the increased security provided against counterfeit card fraud, a growing problem in many countries and now being seen in the UK.

It says that chip cards are part of the long term technical answer to this threat and incorporate highly sophisticated processing to identify genuine cards and make counterfeiting difficult and expensive.

The UK chip cards meet the international specifications developed by Europay, MasterCard and Visa (EMV) and it is expected that other countries will also adopt the EMV specifications to ensure the future compatibility of chip cards around the world.

In the meantime, magnetic stripe technology is being retained on chip cards to ensure that they can continue to be used globally.

"This is an important step forward for all those involved in the card payments industry," said Richard Tyson-Davies of APACS. "These new cards, developed in co-operation between APACS members and the international card schemes, will enhance the security and, over time, the range of services available to cardholders from payment and cash cards."

Participants in the UK chip card trials are: Abbey National, Alliance and Leicester, Bank of Scotland, Barclays Bank, Clydesdale Bank, The Co-operative Bank, Halifax, Lloyds Bank, Midland Bank, Nationwide Building Society, NatWest, The Royal Bank of Scotland, TSB and Yorkshire Bank. Card schemes: Europay, MasterCard, Visa, American Express, LINK Interchange Network and SWITCH Card Services.

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Chip Cards Can Cut Fraud

A new report says that security of Smart Cards over magnetic stripe cards in fighting fraud could substantially boost profits for US credit card issuers.

The Study on Financial Data Interchange published by Meridien Research says US card issuers could increase profits by nearly 30 per cent by eliminating credit and debit card fraud through Smart Card technology.

The report analyses Cartes Bancaires, Geldkarte, Proton, Visa Cash, Mondex, Clip and others and says the number of Smart Cards in financial services worldwide could increase from 170 million in the second quarter of this year to 400 million by 1999.

Wireless Phones for Philippines

Islacom, a GSM operator in the Philippines is to install the first wireless Smart Card payphones in the country to serve remote areas and to operate in transient applications such as on buses.

The move follows an agreement with Nokia to provide the wireless payphones and Gemplus supplying prepaid Smart chip cards.

In a pilot scheme, Islacom will deploy the wireless payphones in rural population centres, selected ferry boats and air-conditioned buses in Metro Manila.

Islacom is a strategic partnership between Asiacom Philippines and two of the world's leading telecommunications companies, Shinawatra of Thailand and German giant Deutsche Telekom.

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Mondex/Visa Pilot in New York

Chase Manhattan and Citibank are each distributing 25,000 bank Smart Cards to customers in a six month trial of Visa Cash stored value cards and Mondex electronic cash cards in New York City's Upper West Side of Manhattan.

This is the first joint venture between MasterCard-owned Mondex and Visa and is intended to introduce the concept of electronic cash to consumers and merchants in the area and to test interoperability between the two competing brands.

The Chase banking cards will be issued with Mondex electronic cash and the Citibank cards will be issued with the Visa Cash stored value product.

Over 600 merchants are participating in the program including many well known New York retailers such as Zabar's, Fairway, Duane Reade, Gristede's, Sloan's, The Athlete's Foot and Lechter's. With new merchants signing up everyday, the programme will include a large number of places which formerly accepted only cash, such as drycleaners, news stands and cafes, providing more choice and convenience in how to pay for everyday purchases.

Both cards can be loaded with up to US $500 at ATMs or via a special telephone. Residents in the trial area who do not have an account with either bank can get a stand-alone, reloadable Smart Card by visiting local Citibank and Chase branches.

New chips in trial

In the New York programme, Mondex will be using the new H8/3109 chip from Hitachi which features a crypto co-processor and offers 8K bytes of EEPROM and 14K bytes of ROM allowing for high speed numerical calculations and the longer key lengths required for public key algorithms such as RSA, DSA, Zero Knowledge and others.

Visa's Stored Value card is powered by Motorola's MSC0406 microcontroller with 1K bytes EEPROM, 9K bytes ROM and 240 bytes RAM.

VeriFone Inc has announced that it has provided several hundred point of sale terminals for retailers and that Citibank is using its VeriSmart System, a Smart Card client/server technology platform for introducing a Personal ATM device to consumers in their homes.

Citibank is thus able to offer its customers the convenience of loading electronic cash to their Smart Cards in the comfort of their homes. The Personal ATM is a palm-size device that plugs into a telephone line and moves electronic cash from the consumer's bank account onto the Smart Card.

Both banks have selected Oki's Value-Checker Plus Personal Smart Card Readers for the trial.

Gerry Vandenengel, Director of Marketing and Sales for Oki, said: "The Visa Cash Value-Checker units have been certified by Visa International, while the Value Checker PLUS has been tested and approved by Mondex International."

Several different Oki readers will be issued to customers to allow them to track the electronic cash on their Smart Cards.

A compact keyring unit or thin sleeve will be available for Citibank customers. In addition to enabling users to check the balance on their cards, it can display the last 10 purchases and down-loads they make with their cards. The sleeve model, called Value-Checker CP, is thin enough to be carried in a wallet or pocket.

Chase Manhattan Bank will supply another card sleeve model called the Value-Checker PLUS, which has a small keypad on the front cover. In addition to viewing the balance and transaction information, users can lock and unlock their cards with the same unit. A locked card prevents unauthorised use.

The Value-Checker PLUS can also be connected to a PC through the use of an adapter, offering a whole range of Electronic Commerce opportunities, including home banking, electronic cash purchases over the Internet and home ATM services.

In the future, users will be able to use their Value-Checker PLUS to connect to Chase Manhattan Bank and download electronic cash onto their Mondex cards while still at home, saving a trip to the ATM for cash.

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Athletic Smart Cards

Precis Smart Card Systems and the Oklahoma State University Athletic Department (OSU) are expanding last season's successful Smart Card implementation.

Cardholders can use the "Spirit Cash" cards to purchase $15 worth of concessions at sporting events in Lewis Stadium, Gallagher-Iba Arena and Reynolds Stadium.

Right: Precis Smart Card Systems and Oklahoma State University's "Spirit Cash".

Below Left: An Internet shopper surfs the new BarclaySquare site which includes 'digital couponing', 'smart statements' and 'electronic money'. Over 1.5 million consumers have visited BarclaySquare since its launch

Below Right: Interflora joined BarclaySquare in November 1995 and are currently the most popular site on BarclaySquare [Barclays Bank PLC]

The cards are sponsored by the Bank of Oklahoma and feature current and former OSU athletes. A total of 10,500 cards will be issued during the 1997-98 athletic season. They can be used at a wide variety of events including football, basketball, baseball and wrestling.

Cards can be purchased before and during events at the stadiums. Gemplus and Verifone worked with Precis to implement the OSU cards.

Contact: Tracey Barnes, *Marketing Manager, Precis Smart Card Systems.* ***Tel: +1 405 752 5550. Fax: +1 405 752 5605.***

BarclaySquare Virtual Cash

BarclaySquare, the UK's virtual shopping environment has announced a number of developments in Internet Commerce technology.

These include digital couponing which will allow retailers to e-mail discounts direct to customers; smart statements to track the status of an order and, Barclays believes, the first UK application of electronic money.

It has developed BarclayCoin in conjunction with CyberCash in the US in response to the growing demand from consumers to make small value purchases of goods and services.

BarclayCoin will operate by enabling consumers to download an "electronic wallet" and complete a registration process linking the wallet to a Barclaycard account. Users can then transfer money from their other card accounts into their electronic wallet. This can then be used for on-line shopping.

The new BarclayCoin facility on BarclaySquare will enable retailers to accept payments which are smaller than those traditionally made with a credit or debit card. Retailers currently on BarclaySquare include Argos, Campus Travel, Eurostar, Interflora (pictured), Pooh Corner, Software Warehouse and Victoria Wines. Interflora is currently the most popular site on BarclaySquare.

Contact: Chris Tucker / Kirstie Robbie, *Public Relations Department, Barclays Bank PLC.* ***Tel: +44 (0) 171 699 2669 / 2673.***

ESCAT Hall of Fame

Michael Hegenbarth has been named by the European Smart Card Applications and Technology (ESCAT) '97 Conference as the latest ESCAT Hall of Fame member in recognition of his pioneering contributions to Smart Card standards. The medal was presented by Chairman Juhani Saari at the annual conference held in Helsinki, Finland, last month.

SesameS 97 Awards

Cyberflex, Schlumberger's Java Smart Card, was voted the Best Innovation by an international panel of industry journalists at the Cartes '97 show in Paris this month, winning the industry's prestigious annual SESAME award.

The award recognises Schlumberger's pioneering work which made it first to market with the Java card opening up Smart Card technology to the mainstream computer world, making it simple to run multiple applications on one card, and to write programs much more easily and quickly.

"It is not far-fetched to say that Java is revolutionising the Smart Card industry" noted Jacques Cosnefroy, Vice President and General Manager of Schlumberger's Smart Cards division. "It looks as if Java is the standard that will allow the computer industry to create a myriad of new applications that can be carried around in the pocket - Java cards are truly a product for the next millennium."

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Other nominees in the Best Innovation category were Philips Semiconductors (Austria) with SmartXA, a 16-bit architecture for Smart Card IC's which enables hardware secured operation of several applications on a single card; and Siemens AG (Germany) for its Smart Card IC SLE 66CX160S, offering memory sizes of 32K bytes of ROM, approx. 2K bytes of RAM and 16K bytes of EEPROM at a silicon die size of less than 20mm^2 providing a multi-application platform.

Best Application

Ascom Monétel of France won the Best Application award for its contactless IC card payphone.

Other nominees for the award were Gemplus (France) with the Cellnet/Barclaycard application based on its GemXplore SIM card enabling cardholders' secure remote access to their bank account details via the GSM network; and Korea Information & Communications (Korea) with Hanaro, for its transportation card system.

Special jury award

The awards were decided by a jury of six international journalists specialising in the cards field, including SCN's Patsy Everett.

They also decided to make a special jury award which went to Cascade, a project funded by the European Commission through the Esprit Programme and involving partners from four European countries under the leadership of Gemplus (France). The others are Advanced RISC Machines (UK), Domain Dynamics (UK), Neural Computer Science (UK), Nokia (Finland), Universite Catholique de Louvain (Belgium), Universite de Lille (France), Dassault Automatismes et Telecommunications (France) with silicon manufacturing provided by Texas Instruments.

Cascade is described as the first "system on a chip" product and offers a platform for card integration in open environments such as Java.

Left:
CarteS 97

Below Left:
The SesameS 97 award ceremony
[Smart Card News]

Gemplus $20m R&D Centre

Gemplus is investing US $20 million (£12.4 million) in a research and development centre in Montreal, Quebec, Canada, to support the development of Smart Card technology in North and South America.

The investment will be spread over a three-year period and concentrate on the development of Smart Card operating systems and support the implementation of Smart Card applications for American customers. The new centre will employ about 100 science, research and engineering staff. It will also develop new technologies driven by Gemplus' Technology Innovation Centre in San Mateo, California.

Guy Dartigues, Director, Americas Development Centre, explained: "Establishing an R&D centre for the Americas will enable Gemplus to be much closer to the evolution of new technologies such as the Internet. As a result, we will be better equipped to adapt new Smart Card products such as the Java card to the local market."

Brigitte Baumann, President of Gemplus Corporation (US and Canada), commented: "This is a major investment by Gemplus and reflects our belief in and commitment to the widespread adoption of Smart Card technology in the Americas." Gemplus already has R&D centres in France and Singapore.

Contact: Julie Tomlinson, *The Media Crystal (for Gemplus) -* ***Tel: +44 (0)1332 824781. Fax: +44 (0)1332 824755.***

DataCard Protection for Cards

DataCard Corporation has announced a new polyester overlay and a new protective topcoat designed to extend the life of photo IDs, driver's licenses, photo credit cards and other thermally printed plastic cards. The protective polyester overlay is called DuraGard and the new protective topcoat is called CardGard. Both can be applied by DataCard 9000 Series or 7000 Series card issuance systems as part of the in line card personalisation process by adding a module to handle as many as 1,200 cards per hour.

Contact: Mark Iverson, *DataCard* ***- Tel: +1 612 988 1763. E-mail: mark_iverson@datacard.com***

Options Smart Credit Card

Visa International has announced the launch of a co-branded smartchip credit card in Hong Kong.

The card is called the Options Smart Visa Credit Card in conjunction with the Jardine Matheson Group and Standard Chartered Bank.

The new card, with all the features of a normal credit card, offers users the opportunity to instantly redeem bonus points for cash discounts at any of the 400 Jardine Matheson Group outlets with no minimum level of spending. Leading retailers in the Group include Wellcome, Mannings, IKEA and Maxims amongst others.

Cardholders will be awarded a cash discount of HK$1 for every 200 points collected.

Contact: Anita Mitter, *Visa International.* ***Tel: +65 437 5518. Fax: +65 437 5567.***

Deutsche Telecom Card Centre

Deutsche Telekom has ordered two chip card personalisation systems from ORGA Kartensysteme GmbH for its new Card Center in Nuremberg. The new Card Center (ZKT) is a service business offering internal and external customers full service on all matters involving chip cards. In addition to logistics and marketing, the center will handle complete card processing, including personalisation, letter shop, shipping and customer service.

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Loose Chippings

- UK: Minister's red boxes, used to carry the nation's most sensitive information, could soon be replaced by a laptop computer. Metallic cards would be used as security. Removing the card would scramble the computer's hard disk.
- USA: Kiel Center and St. Louis Blues have announced that the Blues will be the first National Hockey team to issue Smart Cards.

Poland Orders Chip Card Phones

Polish telecom operator TPSA has placed an initial order for 5,000 outdoor and indoor chip card payphones with Ascom Monétel in France. Together with an associated supervision system, the contract is worth 35 million French francs.

The first payphones will be installed next month in the cities of Kraków, Katowice and Wroclaw. TPSA is using the Ascom ProSAM security modules technology for authentication of the Eurochip cards in all its payphones. Up until now, payphones in Poland have been operated with magnetic stripe cards, tokens or coins.

Ascom says the contract represents the first stage of a supply programme estimated at more than 120,000 payphones over a five-year period.

The new contract for Ascom is its fifth payphone export order this year and follows major contracts in Vietnam, Mexico, Malaysia and Hungary.

Contact: Claude Garoyan, *Ascom Monétel* **- *Tel: +33 (0)4 75 81 41 14. Fax: +33 (0)4 75 81 41 00.***

L&G Joins Chipcard Alliance

Landis & Gyr Communications, a supplier of electronic payment solutions, including Smart Cards from its subsidiary ODS, has joined the Global Chipcard Alliance of major telecom operators.

The Alliance was formed to promote electronic commerce and facilitate international inter-operability and the use of Smart Cards worldwide.

It was founded by Bell Canada, Deutsche Telekom, GTE, PTT Telecom Netherlands, Telekom Malaysia, US West, American Express and Oracle.

It has further strengthened its position with the addition of L&G and other new members including IBM, Microsoft, Telstra (Australian national operator), Nortel (Northern Telecom) and SPT telecom from the Czech Republic.

Contact: Adolf Deyhle, *Landis & Gyr Communications* **- *Tel: +41 22 749 3510. Fax: +41 22 749 3539.***

Loyalty Card for US Midwest

Holiday Companies of Minneapolis, which operates a chain of convenience stores and gas stations throughout the US Midwest, is to launch a Smart Card loyalty scheme early next year.

The new system, which consists of Gemplus Smart Cards, DataCard Corporation's Jigsaw Smart Card point of sale reader and FARPOINT software, was on show at the National Premium Incentive Show in Chicago this month. Holiday Companies plans to roll-out the electronic gift certificate system to about 250 locations.

People on the Move

Henry Polmer, a Washington attorney and an expert in electronic banking law, has joined Mondex USA as General Counsel of the US franchise, based in San Francisco, and President of Mondex USA Originator, the legal entity responsible for funding and risk management of the electronic cash system.

Previously he was a partner of Bell Boyd & Lloyd for 17 years. He was deputy general counsel of the National Commission on Electronic Fund Transfers in the 1970s and has been general counsel to the Electronic Funds Transfer Association for more than 15 years. He also serves on the American Bar Association's task force on stored value products.

Polmer replaces **James Rudd** who becomes Chief Technology Officer of Mondex USA. He was with Wells Fargo before joining Mondex earlier this year.

ORGA Kartensysteme GmbH has announced the appointment of **Winfried Gottwald** to the Executive Board. He will be the spokesperson for the Board and responsible for the departments of Corporate Planning and Development, Marketing and Sales as well as Systems Design. Previously he was a General Manager of Preussag Mobilfunk, the Talkline Group and Hagenuk.

Patrick J Nichols, US Consul-General in Munich until July 1997, has joined German Smart Card manufacturer Giesecke & Devrient. Based in Washington DC, he will advise G&D's Reston, Virginia subsidiary and take an international role in business development and government relations.

Experts to Study Smart Cards

Two experts from universities in the UK and Australia are to examine trials into how Smart Cards could revolutionise the way we shop and spend money. They will report their findings, including consumer concerns for security and privacy.

Professor Steve Worthington, Staffordshire University's Britannia Professor of Marketing and Financial Services, has teamed up with Vic Edwards, Director of the National Centre for Banking and Capital Markets at the University of New South Wales, Australia.

Vic Edwards explained: "At the moment, Britain and Australia are two of the most fertile testing grounds for Smart Cards with 50 per cent of the world's trials being conducted in the two countries."

He said that they would be examining the ethical aspects of what Smart Cards can do because they are such powerful tools. For example, he said, parents could use them to restrict how their children spend their pocket money.

"Children could be issued with a card for school which allows them to travel on a bus or train," he said. "It could also be used at an approved tuck shop which only sells healthy food - however, the card would not be able to buy cigarettes or other items parents would disapprove of."

Contacts: Vic Edwards - Tel: +44 (0)1782 294045. Professor Worthington - Tel: +44 (0)1782 294144.

US Treasury e-Check Pilot

The US Treasury is launching a Smart Card-based electronic cheque (e-Check) pilot late this year for secure electronic payments by its Financial Management Service (FMS) to its suppliers.

The FMS is responsible for the Government's payments, collections and central accounting functions and is currently researching new payment options in an effort to comply with the Debt Collection Act of 1996, which mandates that all federal payments must be processed electronically by January 1999.

In the pilot scheme, a group of government suppliers will be paid with electronic cheques sent via Internet electronic mail. They will then validate the authenticity of the cheques, endorse them with a digital signature, and forward them to their respective banks for rapid deposit.

Information Resource Engineering Inc., (IRE), a leading provider of encryption-based Internet security systems based in Baltimore, Maryland, has announced that its Smart Cards and readers - developed in conjunction with the Financial Service Technology Consortium (FSTC) - will be used in the processing of electronic cheque deposits and that BankBoston and NationsBank will use IRE products to process the electronic cheques for deposit into their clients' accounts.

The FSTC, of which IRE is a member, is using the pilot as a live market demonstration of its electronic check (e-Check), an all-electronic payment system to be used by bank customers for a wide variety of applications.

Anthony Caputo, IRE Chairman, said: "After two years of careful research and development by the FSTC, we are looking forward to demonstrating the power of strong information security. Without a means of verifying the authenticity of both the message and its sender, this application, along with the possible cost savings, would not be possible."

The FSTC, formed in 1993, sponsors research and development of technical projects that affect the financial services industry and its users, with emphasis on electronic commerce. FSTC members include the nation's leading financial institutions, industry partners, national laboratories, universities and government agencies.

Contact: Roberta Thuman,** IRE - **Tel: +1 410 931 7583. E-mail: rthumanire.com • Jim Luisi,** FSTC - **Tel: +1 312 527 6724

Dai Nippon Opens Mondex Bureau

Dai Nippon Printing Co. (DNP) has opened a Mondex Smart Card Bureau Service at its plant in Japan to support the global implementation of Mondex electronic cash.

DNP is now offering the full range of Mondex Smart Card products and services including personalisation, enablement and customisation, carrier services and bulk mailing.

EarthCard on Show at CarteS 97

Gemplus unveiled its new environmentally friendly "EarthCard" (see front page) at its stand at the CarteS '97 show in Paris this month.

Developed in partnership with Melinex, a leading supplier of polyester film to the card industry, the new card is aimed at markets which place a premium on environmental performance and at card issuers looking for a tough, durable product with a high visual impact.

Gemplus has named the new card the EarthCard because of its environmental benefits: long life and chlorine and halogen-free composition. The card on show did not contain a microchip and was designed to promote the new technology and show the finish on the card.

According to Gemplus, the Melinex Polyester film used in the composition of the EarthCard presents no risk of contamination to run-off or underground water supplies when buried. If incinerated, emissions are comparable to those of wood or paper.

The card manufacturer claims that the cards perform more than 50 times better than traditional materials under ISO standards flex-crack tests, and can withstand temperatures of up to 130C with no change in its physical properties, as opposed to 50C for the cards on the market today.

Thierry Mesnard, Plastic Cards Business Unit Manager at Gemplus says: "Developing the EarthCard means we can now offer our customers cards with the benefits of durability, heat stability and excellent print quality - cards which provide an ecological alternative to more traditional card materials." He added: "Our partnership with Melinex was invaluable, allowing us to draw on their technical know-how and resources to produce a product tailored to the needs of the market."

The EarthCard is the product of a two year partnership between Melinex and Gemplus, during which time researchers from both companies specified and then produced a 'bespoke' film meeting Gemplus' criteria in terms of durability, thermal stability and production efficiency.

Contacts: Magali Fioux, *Gemplus* ***- Tel: +33 (0)4 42 36 51 30. E-mail: magali.fioux@gemplus.com Rachel Jarvis,*** *Melinex* ***- Tel: +44 (0)1642 432191.***

Smart Card Diary

European Payments '97, Sheraton Grand Hotel, Edinburgh, Scotland, 18/19 November.

SETG - Tel: +44 (0)129 231 3203.

Smart Card Applications International, Le Meridien, London, UK, 1/2 December plus post conference workshop, ***Principles of Programming for Java Card***, 3 December.

IBC UK Conferences - Tel: +44 (0)171 637 4383. Fax: +44 (0)171 636 1976.

Smart Card '98, Olympia 2, London, UK, 17-19 February, 1998.

Turret RAI - Mrs Debby Cummins (Exhibition) - Tel: +44 (0)1895 454534. Fax: +44 (0)1895 454588. Mrs Julie Barrett (Conference) - Tel: +44 (0)1895 454533. Fax: +44 (0)1895 454578. E-mail: 100730.1313@compuserve.com

NZ Retail Solutions 98, Auckland, New Zealand, 23-25 March, 1998.

AIC Exhibitions - Peter Darley - Tel: +612 9210 5781. Fax: +612 9223 8216. E-mail: pdarley@aicconf.com.au

Proton on the Internet

In co-operation with Banksys, Unisource NV is extending its Internet electronic payment system to include payments using electronic purses based on the Banksys Proton operating system.

"This agreement is a new step ensuring inter-operability between the different Proton technology based Smart Card schemes, in Europe first and worldwide later," says Armand Linkens, Banksys' Director of Marketing and Sales.

Unisource is a pan-European telecommunications company owned by Telia of Sweden, PTT Telecom of The Netherlands and Swisscom of Switzerland.

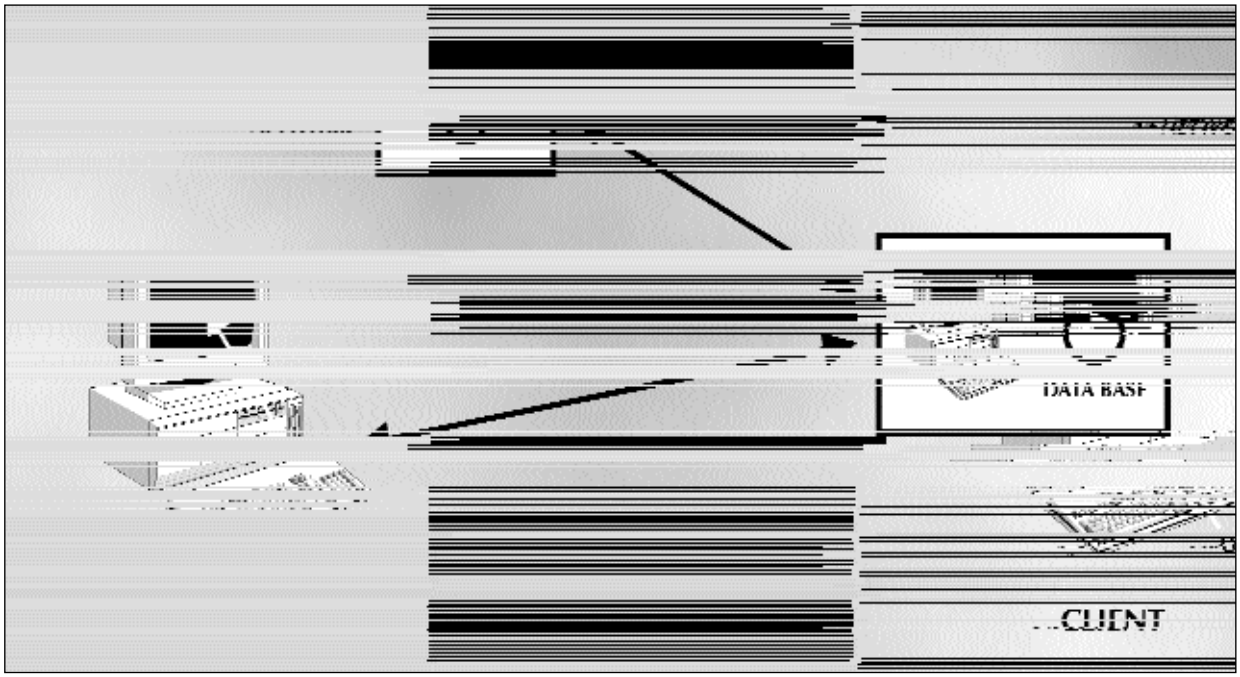
Contacts: Cees Steijger, *Unisource* ***- Tel: +31 23 569 7902. E-mail: cees.steijger@att-unisource.com • Youri Tolmatchov,*** *Banksys* ***- Tel: +32 2 727 6666. E-mail: tolmatchov.y@banksys.be***

Integrated Circuit Card Standards and Specifications - Part 13

Electronic Payment Systems

This month we are going to have a look at the SSL (Secure Socket Layer) protocol used for establishing message security when using the World Wide Web. This protocol is still probably the most common protocol for passing credit card details across the Internet when making payments through a WEB browser such as Netscape's Navigator or Microsoft's Internet Explorer.

Right:
Figure 1
Credit Card Payment
Over The Internet



Lets have a look at how we might buy a bottle of wine on the Internet using our Web browser. In *figure1* we can see the primary connection for the payment protocol. In this diagram we have conveniently ignored the distribution problems that are clearly necessary for the overall business. You will also notice that the Smart Card seems particularly lacking in this discussion, its role in such payments will become clearer later.

The client interacts with the server's data base to chose the appropriate bottle (crate) of wine. At the end of this interrogation process the server will send an electronic order form to the client to allow the purchase to proceed. Information surrounding the selection of the wine will already be filled in, so at this stage the customer must fill in his own personal details, name and address and of course the all important credit card details. The form will usually have a "submit" button at the bottom of the form to initiate the transaction. With a conventional HTTP (Hyper Text Transfer Protocol) protocol as used on the World Wide Web this information would be transmitted to the server totally unprotected in plain text. Now the Internet does not pretend to be a secure communications environment so the idea of transmitting sensitive information such as credit card details is not likely to find favour with any of the authorised participants.

We can easily establish the security services we would like to see provided for such as an electronic payment:

- encipherment of the card information
- authentication of the server (are we paying the right person)
- message integrity (to ensure the correctness of the information)

and ideally:

- authentication of the customer.

SSL was developed by Netscape as a general purpose protocol for protecting information sent over the Internet. It was initially built into the Netscape Navigator browser but is now also supplied by Microsoft's Internet Explorer.

At the current time we are on version 3 of SSL which has been submitted to the Internal Engineering Task Force (IETF) as the basis of a Transport Layer Security protocol (TLS).

The SSL protocol includes a number of security mechanisms to achieve an overall secure Messaging protocol which includes the following key elements,

- Server authentication
- Secret key exchange
- Message encipherment
- Message compression
- Message integrity
- Client authentication

The data compression and client authentication services are not normally implemented.

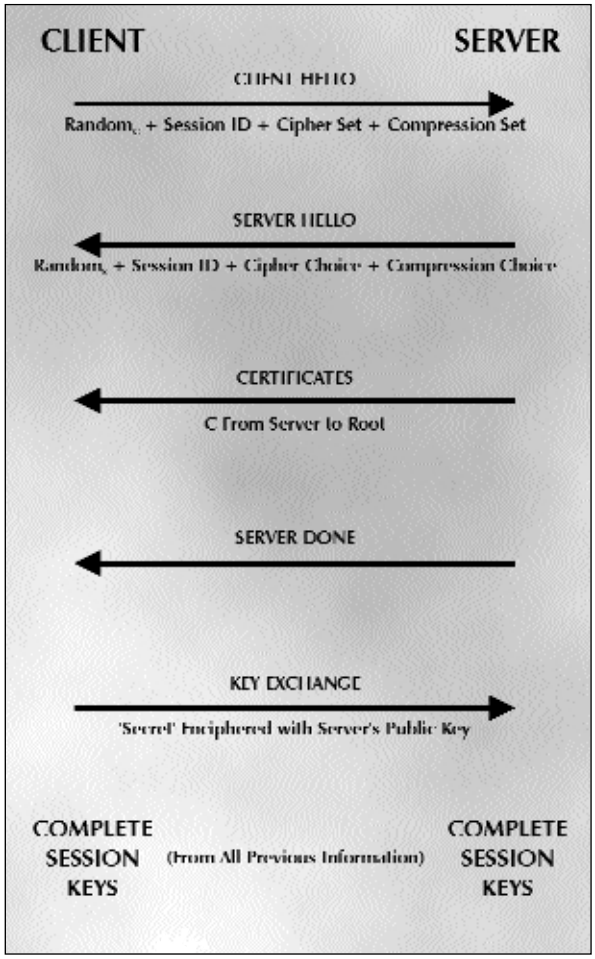
We have described these security services previously so we can now look at how they are applied by the SSL protocol.

The user can very easily establish as SSL interaction with the server by just modifying the form of the URL (Universal Resource Locator) which effectively identifies the address of the HTML (Hyper Text Mark up Language) page to be accessed. Normally we define the HTTP protocol e.g http://www.smartcard.co.uk for a normal HTML page access. There are preferred logical ports for all Internet protocols and this would normally default to port 80. In order to use the SSL protocol all that is necessary for the user to do is define the protocol as HTTPS which will normally select port 443 for an SSL interaction. Even this process can be largely transparent to the user who may select a hyperlink reference without even realising that the HTTPS format is utilised. The only visible clue is the key shown in the bottom left hand corner of the Netscape Navigator frame (*figure 2*), Internet Explorer uses a padlock to convey the same information.

Problems of export controls on cryptographic algorithms still abound so export versions of SSL have restricted key lengths for the cryptographic algorithm.

When the user requests an SSL session with the server an initialisation process takes place to set up the format for the successive message interchange. The basic form of the protocol is as follows (*figure 3*):

Left:
Figure 2
Netscape Navigator
SSL Indicators



Left:
Figure 3
The SSL Handshake
Protocol

The SSL protocol allows a wide range of ciphers to be used for the negotiation protocol. These are arranged in suites defined as follows:

- SSL _ key exchange alg _ WITH _ bulk cipher alg _ MACalgorithm

For an export version of SSL as used in the UK we might expect to see as an example:

- SSL _ RSA _ EXPORT _ WITH _ RC4 _ 40 _ MD5

Using the newly revised version of the Barclay Square shopping mall (www.barclaysquare.com) we can intercept the HTTP packet protocol to see the exchange in *figure 4*.

Right:
Figure 4
SSL on Barclay Square

The Server Hello response indicates that the server will use RC4_128_ EXPORT 40_WITH_MD5 (see highlighted part in the second screen shot).

There is just one little point that we should consider further, the root of the certificate chain. When Netscape and Microsoft send out their browsers they contain a small number of root keys. Any server who wishes to use SSL has to get his public key signed by one of these certificate authorities.

The commercial risk incurred using SSL is therefore dependent on trusting the chosen C.A (Certificate Authority).

Next month - Electronic Payment Systems continued

David Everett

Smart Cards and Sushi

A chain of 20 restaurants called Genryoku Sushi Club in Hong Kong is to implement an electronic purse and loyalty scheme to promote sales.

A local technology company, Advanced Card Systems Ltd (ACS) is to supply the Smart Cards and readers.

Contact: Simon S. Liu, *Product Marketing Manager, Advanced Card Systems Ltd.* ***Tel: +852 2796 7873. Fax: +852 2796 1286.***

Firsts in Electronic Commerce

Visa International has completed the world's first Secure Electronic Transaction (SET) 1.0 in Latin America and SET 1.0 transaction with an EMV chip card in the Asia-Pacific.

A host of leading technology companies including Cybercash, IBM and Microsoft played key roles in helping Visa and its members complete these transactions.

The SET standard allows both the cardholder and merchant to authenticate each other as well as the encryption information while it is passed over the Internet. SET 1.0 was published June 1st 1997 and has been widely endorsed as the global standard for use of payment cards on the Internet.

Contact: Colin Baptie / Ian Gatherum. *Visa International.* ***Tel: +44 (0) 171 937 8111.***

Round Table Meets

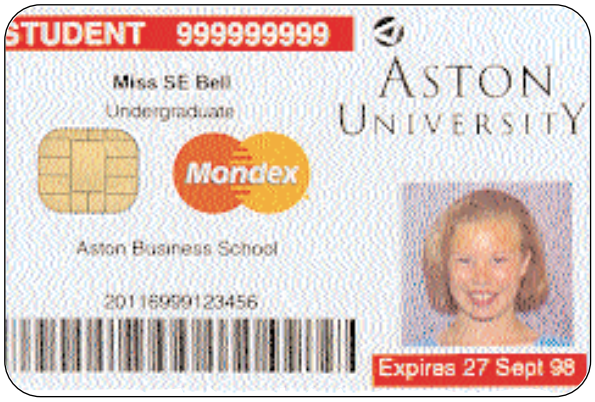
A meeting was held by the Federation of Electronic Industry (FEI), with the co-operation of the Department of Trade and Industry (DTI), to examine the need for a European Forum to support the Smart Card Industry. Some 56 companies and organisations attended. The Forum Start-Up Group plans a meeting in November to agree a final set of recommendations aimed at facilitating a first meeting of the main Forum in January 1998.

Contact: Keith Wood, *FEI.* ***Tel: +44 (0) 171 331 2000. Fax: +44 (0) 171 331 2040.***

Aston University Card Launch

Right:
Aston University's Mondex Student Card

Below Right:
Student Sarah Johnson with Aston University's new 'Smart Campus Card' [Aston University]



Aston University in Birmingham, UK, has introduced a multi-purpose university Smart Card incorporating Mondex electronic cash.

The University is developing a multi-function Smart Card application in its Smart Campus project which is funded with a government grant of £200,000 over a three-year period.

The new card is being issued to Aston's 6,500 students and staff and combines the following features:

- Mondex electronic purse for cashless purchases in campus shops, restaurants, bars and photocopiers.
- Access control to campus buildings
- An identity card for staff and students
- Library card
- Student voting registration
- Aston Students Guild and National Union of Students Membership

The university says it will develop further applications for the cards based on MULTOS, the new high security operating system for Smart Cards that enables a number of different products or services to be held securely and independently on one card.

MULTOS, developed by Mondex, MasterCard, Dai Nippon Printing, Gemplus, Hitachi, Keycorp, Motorola and Siemens, also allows consumers to download new products or services onto their Smart Card via the telephone, ATM or the Internet.

New applications

New applications to be developed by the university may include students automatically recording their educational achievements on the card.

When the government grant was announced last year, the university said it would also be evaluating biometric authentication.

Meanwhile, Aston is setting up a demonstration centre at the university to act as a showcase for Smart Card applications to the higher education sector.

Contacts: Public Relations, *Aston University* ***- Tel: +44 (0)121 359 3611, ext. 4819. • Dan Brockbank,*** *Mondex UK* ***- Tel: +44 (0)171 557 6820.***

Mondex / Cellnet Agreement

Mondex International and Cellnet (the UK GSM mobile phone network) are to jointly develop solutions to allow electronic cash to be transferred via digital mobile phones over a GSM network and will make these solutions available to any network provider using the GSM standard.

Contact: Gerry Hopkinson, *Mondex International* ***- Tel: +44 (0)171 557 5016.***

Gemplus Public Key Smart Card

Gemplus has announced the immediate availability of the new GPK4000 Public Key Smart Card which features an advanced cryptographic coprocessor for secure access and authentication using RSA.

Contact: Flavie Gill, *Gemplus* ***- Tel: +33 (0)4 42 36 56 83. E-mail: flavieg@ccmail.edt.fr***