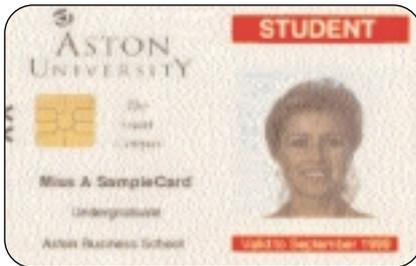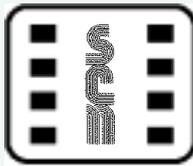# UK Government Funds Campus Card Project

Aston University in Birmingham, UK, is to develop a multi-functional Smart Card application which will enable students to have a card which will contain cash, educational details, medical records, provide access to premises, and also services such as computers and links to the Internet.

Called The Smart Campus, the three-year project is being funded with a £200,000 grant from the Department of Education and Employment's Joint Information Systems Committee's Technology Applications Programme.

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UK Campus Card Project

David Bowes, Aston University's Director of Finance and Business Services, said: "Universities can now join the Smart Card revolution. The applications we shall develop will bring many benefits to students and will help universities to improve their services. Smart Cards could have a huge impact on tightening up security. We shall be evaluating biometric authentication, which uses an individual's fingerprints or hand geometry to validate entry." He added: " Smart Cards could also be used in administering examinations and elections and as loyalty cards to reward the use of university services."

Tony Bell, Project Manager, said that the multi-function cards would not be issued to students before September 1997, although they may run a pilot scheme before that date.

The real world

While it is encouraging to see the government promoting the use of Smart Cards it appears that the Department of Education and Employment has little idea of what is already happening in the real world.

In The Netherlands, for example, 20,000 students at three Dutch universities are using multi-functional Smart Cards in a pilot which may lead to the cards being issued to all 700,000 university students in country. (SCN October 1995).

The Universitat Autónoma de Barcelona, Spain, has issued some 40,000 multi-function Smart Cards with an electronic purse to students and staff (SCN March 1996).

A SmartCampus system offering multi-purpose, secure Smart Card applications to colleges and universities is being launched at Florida State University in the United States (SCN April 1996).

In the UK, NatWest is to pilot a multi-purpose Smart Card incorporating a Mondex electronic purse at the University of Exeter (SCN April 1996).

And as far back as April, 1992, Groupe Bull demonstrated a biometric Smart Card solution to control access by season ticket holders at Expo '92 in Seville, Spain, using nearly 500,000 cards. Aston University is currently talking to various

banks regarding an electronic purse feature for the card and have not yet decided on suppliers for the project. Well, there is no shortage of experience!

Contact: Tony Bell, Project Manager, Information Systems, Aston University - Tel: +44 (0)121 359 3611, ext. 4547. E-mail: A.J. Bell@aston.ac.uk

Smart Cards in the Utilities

Major growth for customer care systems in UK utilities is predicted in a new report by strategic management consultancy, Datamonitor.

The report examines technologies involved and the factors driving the market for customer care systems in electricity, gas and water in the UK and says the current spend of £463.5 million will increase to £787.8 million by the year 2000.

Expenditure figures showed a low penetration rate of Smart Card payment systems used largely to recover debts from unreliable payers, rather than to offer value-added services to high value customers.

With this trend expected to continue, only five million cards are forecast to be in use by the year 2000, representing a market value of £2.7 million compared with £2 million in 1995, says the report. Approximately 2.3 million of these cards are expected to be used in the gas industry as British Gas' Quantum scheme is rolled out further.

Customer Care Systems in the Utilities: Strategic Investment for Market Share and Cost Control, is available from Datamonitor at a price of £995.

Contact: Sophie Smith - Tel: +44 (0)171 625 8548.

Smart Card Reader Option

Custom Micro Products has introduced a Smart Card reader option for the 1000-series Data Collection Terminals. Systems integrators can now use Smart Cards with existing application software for time and attendance reports, shop floor data collection and access control.

Contact: Nicki Sutton, Custom Micro Products, UK - Tel: +44 (0)1202 631733. Fax: +44 (0)1202 632036.

ORGA Moves into Russian Market

ORGA Kartensysteme GmbH of Germany, is to manufacture chip cards in Russia through its subsidiary ORGA Zelenograd based in Zelenograd near Moscow. The new company was formed in January of this year and is owned by ORGA (61 per cent), IDIS (24 per cent) and Submicron (15 per cent) and is headed by General Manager Alexander Nughin, from Submicron, with Dr Vladimir Tjulkin of IDIS as his deputy.

IDIS is a private stock corporation with a design centre for semiconductor technology and manufactures special semiconductors for Russian telephone cards and service station charging systems. It also has an engineering department for chip card systems. Submicron plans to establish Smart Card technology in Russia.

The new company says it will be primarily concerned with the final manufacture of chip cards and special applications customised to the Russian market will be developed. In addition, the company will also focus on marketing ORGA products. Headquartered in Paderborn, Germany, ORGA also has subsidiary companies in the UK, France, USA and Singapore.

*Contact: Bernd Schäfers-Maiwald, ORGA Kartensysteme, Germany - **Tel: +49 (0)5254 991-600. Fax: +49 (0)5254 991-619.***

VeriFone Success in China

VeriFone, a leading global supplier of secure payment solutions, has announced the delivery of its five millionth transaction system. Based on the VeriFone OMNI 390 transaction terminal, it was supplied to the Industrial and Commercial Bank of China (ICBC), the second largest government-owned bank in China. The five million VeriFone systems have been shipped to customers in over 100 countries.

The company says it has installed 55,000 systems in China and has been working with ICBC on China's Golden card Project, a ten year plan to create a nationwide financial card network.

*Contact: **Mark McMurtrie**, VeriFone, UK - **Tel: +44 (0)1895 824031. E-mail: mark_ml@verifone.com***

Oberthur Buys US Card Company

The Paris, France-based François-Charles Oberthur Group has strengthened its position in the bank card manufacturing market by acquiring the Kirk Plastic Company in the US.

It has agreed to buy-out all the shares of Kirk Plastic, a leader in the US bank card market and based in Rancho Domingez, Los Angeles.

The Group says that through its two subsidiaries, CP8 Oberthur and Kirk Plastic, it now employs over 600 people and represents an annual production volume of some 200 million cards.

*Contact: **Jean-Michel Guichot**, Deputy Managing Director, The François Charles Oberthur Group, France - **Tel: +33 1 47 63 89 00.***

ODS Fifth Anniversary at Seebach

ODS R Oldenbourg Datensysteme GmbH, headquartered in Munich, has celebrated the fifth anniversary of the opening of its card manufacturing plant in Thuringia in the East of Germany by announcing that some 100 million cards have left the Seebach factory since its opening in 1991.

The company has invested about 20 million Deutschmarks in the plant. Initially, production focused on telephone cards which continue to be an important product, the company currently supplying over one million cards to the Hungarian telephone company MATAV.

Jürgen Brüggemann, plant manager in Seebach, says they currently focus on the production of microprocessor cards and contactless chip cards for applications in local public transport, but will also be producing the new eurocheque cards with microprocessor chips for the roll-out in Germany in 1997.

ODS says it annually produces around 30 million chip cards, 15 million bank and credit cards and 15 million securities as well as 50 million eurocheque cards at its plants in Seebach and Munich.

*Contact: **Monika Schlesinger**, Marketing Manager, ODS R Oldenbourg Datensysteme, Germany - **Tel: +49 89 15019-163. Fax: +49 89 45019-315.***

Incentives Key to Card Uptake

Incentives for customers are a key factor in the uptake of Smart Card technology according to new research announced by Card Technologies Australia following the completion of the first phase of major trials of its contactless Smart Card, the CiT Transcard, on buses in Sydney, Australia.

The survey indicates that Australians are keen to adopt Smart Card technology, particularly when the cards provide consumers with significant purchase incentives.

CiT Transcard was introduced by Westbus for its routes running from the Hills District to the central business district in May, and the company claims that within four weeks of their introduction, more than 1 in 3 passengers were using the Smart Cards.

Take-up factors

David MacSmith, Managing Director of Card Technologies Australia, says the high take-up rate was reflective of a number of factors:

* the card is incentive based. Issued at a cost of Aus.$9.95 to consumers, every 11th trip is free so the card quickly pays for itself and provides considerable savings for customers.

* CiT Transcard has many alternative uses. It can be used for cashless travel on transport but also has a wide range of retail purchase applications.

* the card is contactless providing significant reductions in both queuing time for boarding and cash handling for drivers resulting in faster travel and more efficient use of resources for transport companies.

"The results confirm our views that Smart Cards, to be successful, need to be incentive based like CiT Transcard," said Mac.Smith.

"A number of cards currently being trialed offer consumers no direct benefit or incentive to use the card. The success of CiT Transcard can be directly linked to its ability to offer value to consumers through its programmed money-saving incentives." He added: "The results also confirm that public transport applications are a key factor in driving consumer acceptance of Smart Card technology. For the first time, commuters receive sig-nificant benefits in the form of savings on their everyday travel activities. These benefits are available to card users not only on public transport, but wherever they use their cards."

Westbus has installed the system on a number of its other bus routes spanning from Western Sydney through to North Sydney, Wynyard and the central business district.

Take-up rate astonishing

John Mostyn, Chief Executive Officer of Westbus, said: "The take-up rate has been astonishing. We have received positive feedback from our customers who have been quick to take on the new cards. The success has been particularly impressive considering, at this stage, we have limited promotion to a brochure available on the bus."

In addition to the Westbus agreement, Card Technologies Australia also has a series of agreements with leading banks including St George, Advance Bank Australia and Bank SA. It has also conducted trials with major companies including McDonald's, Shell and Video-Ezy and is currently in the process of rolling out its card system with newsagents and other retailers from Western Sydney through to the central business district.

Contact: David MacSmith, *Managing Director, Card Technologies Australia -* ***Tel: +61 2 932 4955. Fax: +61 2 332 1285. John Mostyn,*** *Chief Executive Officer, Westbus -* ***Tel: +61 2 890 0000.***

Post Office of the Future

The first "Post Office 2000" has been opened in the Danish capital of Copenhagen. The new concept features a self-service communication wall making the following services available - payphone, facsimile, stamp postage machine, personal computer (to access the Internet) and photocopying machine. The DANMØNT Smart Card electronic purse is used to pay for the services.

In another development, 550 public payphones in Copenhagen have been changed to accept DANMØNT cards. A further 720 payphones in the rest of the country will be changed by the autumn.

Contact: Henning N Jensen, *Managing Director, DANMØNT -* ***Tel: +45 43 44 99 99. Fax: +45 43 44 90 30.***

Korean Bus Fare System Expands

The Korean contactless Smart Card bus fare system has taken off since our front page report last month. System integrator INTEC Ltd., which installed the electronic ticketing system in all buses in Seoul, has now been awarded a further contract to equip an additional 4,300 buses in Kyung Ki Province with contactless card terminals.

The company says that with this agreement, 13,000 MIFARE bus card reader terminals and 3,500 card reloading stations will be in use nationwide by the end of this year, while it is planned to issue four million contactless Smart Cards during the next 18 months.

The system used MIFARE technology supplied by Mikron, the Austrian-based subsidiary of Philips Semiconductors. The company supplied the MIFARE core modules to INTEC who built the card reader terminals for the buses and card loading stations. Mikron/Philips also produced and supplied the chips for the cards which were fabricated and directly supplied by French Smart Card manufacturer Gemplus.

It is planned to include additional functions on the card in the future. Seoul City Government officials have announced that the Seoul Subways and Seoul Bus Union must have compatible ticketing systems, and INTEC says it will start operational tests in the capital's underground next month.

The card will also be used as an ID card by Ahn Yang city officers, an electronic purse in co-operation with Lucky Goldstar Credit Card Corporation's LG Credit Card, and as a customer loyalty card.

Contacts: Don-Yong Yun**, INTEC Ltd., Korea - **Tel: +82 2 577 3611. Fax: +82 2 529 0424.** **Alexander Harrer**, Mikron, Austria - **Tel: +43 3124 299950. Fax: +43 3124 299270.

Smart Cards in Schools

Smart Cards are being increasingly used by pupils and students in UK schools to pay for their lunch. Since SCN reported the first major pilot scheme in a group of schools in the Highlands of Scotland (SCN December 1994) the concept has taken off and now over 100 schools throughout the country have adopted the technology and the number is expected to more than double in the next year.

Software designer, Smart Card Solutions, says it is installing a further 30 systems in schools during this month and next month and forecasts that more than a hundred additional schools will be equipped during the next year.

Educational establishments using the system include the County Councils of Cheshire, Devon, Dudley, Durham, Exeter, Hertfordshire, Lincolnshire, Nottinghamshire, and Sussex; Highland Regional Council, Islington Borough Council, Manchester City Council, Thameside Council, plus Central Lancashire University and some 20-30 grant maintained schools and colleges.

The system uses Cash registers with Smart Card readers from Sharp Electronics and Gemplus 2K bits memory cards with a Siemens chip. Over 200,000 cards have been issued for the schemes.

Cards are issued free to all pupils. Parents can pay for their childrens meals as far in advance as they wish and the amount paid is recorded electronically on the card which carries the pupil's name and an identification number.

Companies who provide school meals services have to be highly competitive and have found that the number of lunches taken at school increases dramatically with the introduction of Smart Cards. They also help to reduce queuing and, as the money is held on the card, it stays within the school rather than being spent at fast-food outlets or shops outside.

A particular advantage for children of low income parents who qualify for free meals is that their card is exactly the same as those used by pupils who pay for their meals.

Another feature of the system is that it can encourage healthy eating. Pupils are awarded points according to the type of food they choose from the menu, for example, well balanced meals attract two points, diet canned drinks and fresh fruit receive one point, while fried foods and puddings attract no points. Rewards for points include free entry to swimming pools and sports centres etc.

***Contact: Bob Cuthbertson**, Smart Card International, UK - **Tel: +44 (0)1482 650999. Fax: +44 (0)1482 652271**.*

First Smart Card in Myanmar

Asia Wealth Bank (AWB) has launched the first Smart Card electronic banking product in Myanmar. The official launch last month was attended by members of the State Law and Order Restoration Council and VIPs from Myanmar and neighbouring Thailand.

Customers can apply for a Credit or Debit Smart Card, both of which can be used instead of cash for purchases at participating outlets.

The card is used with a PIN and customers can add value to their card or repay their outstanding credit by depositing cash or transferring funds at any AWB branch. Apart from the customer convenience of being able to pay for goods with cash, AWB stresses that the Smart Card is more secure for the customer, the merchant and the bank. AWB Smart Card customers do not have to carry large sums of cash for purchases and the card can only be used for purchases when the correct PIN is entered. Unlike cash, if the card is lost or stolen it can be replaced.

Future applications may include storing emergency healthcare information, electronic bill payment and making telephone calls using Smart Card payphones.

U Aung Zaw Naing, Director of AWB, which is one of Myanmar's largest private banks with branches in Yangon and Mandalay, says: "Smart Cards have become increasingly popular in Europe and throughout Asia due to their convenience and security and we are certain they will be popular in Myanmar."

The system was provided by Loxley Myanmar, a subsidiary of the Thai conglomerate, Loxley Public Company. VeriFone Electronic Data Capture Smart Card reader terminals are used in the system and AWB plans to install hundreds around Myanmar soon.

Visnu Rujikietkamjorn, First Senior Vice President of Loxley Public Company says: "We believe that the improving economy of Myanmar will ensure the rapid acceptance of Smart Card technology to help improve people's lives."

Contacts: Tanatip Jotikashira, *Country Manager, Loxley Myanmar -* ***Tel: +95 1 526 431. Fax: +95 1 526 323. Natalie Leerapun,*** *Loxley Business Information Technology, Bangkok -* ***Tel: +66 2 201 3195. Fax: +66 2 201 3189. E-mail: danny@loxinfo.co.th***

VISA Cash in Hong Kong

Schlumberger has announced that it has been selected as one of the suppliers of stored value Smart Cards and terminals for the VISA Cash project being launched in Hong Kong with the Bank of China Group and Standard Chartered Bank.

The French-based company says it is supplying its cordless Delta 21 terminals which enable retailers to offer a more efficient and friendly service by taking the compact, hand-held terminals to the customer for immediate payment authorisation.

The transaction information is stored in the terminals for off-loading onto the central network at a later time, further reducing operations costs.

Schlumberger says it will supply each bank with Smart Cards, many of which will carry special commemorative artwork. The cards have been designed at Schlumberger's headquarters in France and are being manufactured in the United States at the Visa-certified Schlumberger Malco factory.

J P Mollet, Schlumberger's Vice President and General Manager for Electronic Transactions for Asia, says: "Hong Kong is one of the world's leading financial centers and the appropriate location for Asia's largest electronic cash project." He added that local support for the project would be provided through its new advanced Technical Center in Hong Kong.

Contact: Sally Chew, *Schlumberger Measurement & Systems Asia, Singapore -* ***Tel: +65 746 6344. Fax: +65 742 6484.***

IBM Adds to Electronic Purse Team

IBM Smart Consumer Services has announced the appointment of Hans Ebbeling as Project Executive for Smart Card solutions, strengthening their expertise in the field of electronic purses.

Hans, who joins from CMG, was previously with Europay International where he had responsibility for implementing Smart chip technology (debit/credit/purse and electronic commerce) in the Europay membership and was a member of the EMV Executive Management Team.

He will be based in Amsterdam, The Netherlands.

"Read Everything" Terminals

Dione Developments, UK supplier of EFTPOS terminals, has announced a "read everything" architecture for Smart Card terminals which it says is capable of supporting virtually all current and subsequent market developments.

This next generation architecture, based on terminal interpreter technology, effectively allows several applications to run discretely, explains the company. It gives as an example, a merchant or bank implementing VISA Cash and Mondex today, and adding a customer loyalty scheme at a later date using a single footprint at the point of sale.

"EMV(Europay/MasterCard/Visa) have done a great deal to tie Smart Card applications into one standard," says Enrique Garrido, Managing Director of Dione, " but there are many schemes that existed before EMV or fall outside the standard.

"Banks and merchants need a single interoperable solution and Dione's modular software and flexible hardware will provide our customers with a single future-proof platform."

According to the company, the multiple application platform will be capable of supporting all electronic purse schemes, EMV compliant applications, purchasing card, retailer Smart Card schemes including customer loyalty and staff discount, traditional credit and debit and virtually all other Smart Card initiatives.

Dione is currently introducing their "read everything" architecture into a family of new products, the first of which will be available November 1996.

***Contact: Richard Parsons**, Marketing Executive, Dione Developments, UK - **Tel: +44 (0)1494 429614. Fax: +44 (0)1494 429650**.*

AU-System Hong Kong Office

Swedish systems integrator AU-System has opened a sales office in Hong Kong to support its SIM Applications Business Unit in the Asia-Pacific region.

With the GSM standard now widely established in the Asia-Pacific region, AU-System is extending its market area..

Ulf Jonströmer, President and CEO, says: "The wide acceptance of GSM in Asia means that GSM is now a truly global standard. It also means that suppliers to this market must be prepared to do business globally. Our Hong Kong office gives us presence in high-growth markets, and will be key to the continued success of our SIM Applications business."

The unit focuses on products for personalisation and programming SIM (Subscriber Identity Module) Smart Cards for the mobile phone industry. Products include AviSIM, a SIM personalisation system for GSM/PCS operators; AviSIMPOS, a point of sale personalisation application for retailers and AviSIM OTA Server, a software platform for Over-The-Air (OTA) SIM management.

Over-The-Air (OTA) SIM management technology allows wireless updating and personalisation of SIM cards and related services based on the Short Message Service (SMS), normally used for text messaging.

Using SMS as a vehicle for distributing software updates and operating system commands, the SIM card can be reprogrammed automatically so that new services are made available immediately without the need for card replacement.

AviSIM allows cellular operators to manage their entire production of SIM cards in-house. It supports Smart Cards and personalisation stations from all major vendors and is ready for emerging mobile communications technologies, including DCS1800 and PCS1900. It also supports the PDC standard where SIM cards were recently added to the specifications.

The Stockholm-based company's products are currently used by more than 15 cellular network operators, mainly in Europe.

The address of the new office is: AU-System, 1802 Asian House, 1 Hennessy Road, Wanchai, Hong Kong.

Contacts: Per Dahlberg**, Business Manager Asia-Pacific, Hong Kong - **Tel: +852 2866 9486. Fax: +852 2861 2335. Anders Hardebring,** Sweden - **Tel: +46 8 726 7546. Fax: +46 8 193322.

Safeguarding your Cards

If you have ever forgotten to pick up your Smart Card, ID card or credit card at a point of sale after making a purchase you will have experienced the anxiety of thinking it may have been stolen, the trouble of trying to recall where you last used it, the inconvenience of reporting the card missing and then obtaining a replacement.

Now a Canadian company has come up with a simple solution to prevent card loss. Card Guardian, based in Toronto, Ontario, has a family of card holders with built-in electronic alarm systems to remind you to retrieve your card at the point of use.

Sensors in the card holder pockets detect when a card is withdrawn and activate a timer. When a pre-set transaction period elapses, an audible alarm is set off. The time delay is manually resettable and the alarm can be suppressed for longer transactions. In addition, an LED flashes when a card is removed, indicating visually that a card has been removed and also that the system is functioning.

The device is available as a complete wallet, purse or billfold or as an add-in alarm system that clips into the existing card holding pockets of a wallet etc., in which case a sensor detects if the system becomes unclipped and sounds an alarm.

*Contact: Card Guardian Ltd., Canada - **Tel/Fax: +1 416 322 0572.***

Smart Phones for North Korea

GPT Payphone Systems in the UK is supplying Smart Card payphones to the People's Democratic Republic of Korea in part of a £3 million deal for the telecommunications infrastructure for a new free economic and trade zone being established on a greenfield site at Rajin Sonbong.

GPT says it is the first company to sell Smart Card payphones to Korea and is supplying 80 Sapphire payphones which include dual Smart/credit card readers enabling the phones to be upgraded to accept international credit cards in the future as the free trade zone expands. The company is also supplying a digital public telephone exchange and

transmission equipment plus 100,000 Smart phone cards.

The equipment is being supplied through a joint venture company, NorthEast Asia Telephone and Telecommunications, formed by Loxley Pacific Limited and the Korea Post and Telecoms Company.

GPT Sapphire payphones are already in operation in the Asia-Pacific region, in Thailand, Indonesia, China, Macau and Hong Kong. Other models are serving Singapore, Malaysia and the Philippines. According to the company, the Rajin Sonbong site is being modelled on successful free trade zones in China in Hainan, and in Shenzhen in the Gungdong province.

*Contact: **Brian Dolby**, GPT Press Office - **Tel: +44 (0)115 943 3687. Fax: +44 (0)115 943 3661**.*

ID Printer for Proximity Cards

The increasing production of contactless cards which, in some cases, are thicker than ISO ID1 standard size, has prompted DataCard in the United States to introduce a modified ImageCard II PLUS photo ID printer that allows users to print full-colour images on plastic cards ranging in thickness from .507 mm to 1.78 mm

According to Dave Gilbert, Marketing Director for DataCard's instant issuance business unit, "More and more, our customers want the flexibility of printing images on proximity cards and other thicker card stocks that are typically used for access control. This new thick card capability meets that growing demand." He claims that the image quality is excellent and the photos, text, logos and other graphics printed on thicker cards are as crisp and clean as those printed on standard cards. "The modified printer also meets or exceeds standards for bowing, finish and other technical specifications," he said.

Minneapolis-based DataCard offers a range of card-related products and services, including digital photo ID systems, card personalisation systems, transaction terminals and systems integration services.

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

Cosmetic Smart Card

Smart Card Solutions has put together a customer loyalty programme for the cosmetics company Estee Lauder, which they are piloting in Canada and Denmark. Information stored on the chip includes the customers name, account number, profile information and beauty concerns such as wrinkles and skin type.

So far 8,000 cards have been issued by 12 participating stores in Toronto, Canada and 1,000 by six stores in Denmark. The cards are manufactured by Solaic, the chip is an SGS Thomson ST16601 and the terminals are manufactured by De la Rue Fortronic.

Before becoming a Smart Card holder the customer is issued with a temporary card, and after three purchases membership becomes permanent. The company claims that average sales to card holders are 45% higher than to non-card holders.

Before the Smart Card was introduced Estee Lauder kept customer records on hand written cards and then on PCs at the point of sale terminal. The first method was time consuming and the second costly. The Smart Card system allows Estee Lauder to resolve the issue of customer registration and more effectively target their consumer base. The card allows the company to deal in facts, not forecasts.

Each week data is collected from 95% of the stores which provides an invaluable source of information. The knowledge is so specific that Estee Lauder are able to target specialist groups. For example from a database of 14.000, 4.066 were found to have listed dry skin as a beauty concern. These customers were mailed details of a product which may improve their condition - 27% responded in store. Customer benefits include a more personal and efficient service.

Estee Lauder hopes to roll-out the scheme across America with the possibility of London, England to follow. The company would not comment on the London stores that may participate, however it can be expected that the scheme would be multi-retailer like both Canada and Denmark.

Smart Card Solutions, a software engineering firm set up this summer, have worked closely with Estee Lauder on this project, arranging the necessary technology. William Biwer, President of Smart Card Solutions, has been involved with the project since its beginnings in 1994, under the company Stone West. He believes the card to be so unique that he has entered it for the Sesame Award at Cartes '96.

A *Smart Card News* source revealed that Estee Lauder have absolutely no interest in turning the card into an electronic purse. The source stated that they "don't want to be in the banking business and that this is a retailer issue". Estee Lauder claim they are not concerned about rival beauty companies setting up competing schemes as they consider themselves well ahead of the competition.

Contact: William Biwer, *Smart Card Solutions* **- Tel: + 1 414 369 3400. Fax: +414 369 3401. e-mail: @sc-solutions.com**

Cash Dispenser for the Disabled

A prototype cash dispenser designed to make cash withdrawals easier for the disabled was unveiled at the Royal National Institute for the Blind (RNIB) in London early this month.

The cash dispenser features choice of character size and screen colour, voice messages and more time for the transaction. The system uses a contactless Smart Card which can be read at a distance of up to five cms, eliminating the need for a disabled person to insert a card in a slot.

The prototype is an NCR interior Automated Teller machine with an integrated Smart Card reader from Gemplus.

It is part of the Saturn Project which is studying the needs of disabled and elderly people in relation to Smart Card systems and is being supported by the Commission of the European Union through the TID (Technology Initiative for Disabled and Elderly people) programme.

The Saturn Consortium partners are: RNIB, NCR (Scotland) Ltd., Telia AB, ICL Financial Terminals, ICL Payment Security, Gemplus, University of Hertfordshire and Human Factors Solutions.

The problems presented by self-service terminals were discussed with elderly, visually and auditory impaired, intellectually and motor disabled as well as a control group of non-elderly, non-disabled. None of the control group had difficulty in using a cash dispenser in comparison to 86 per cent of the visually impaired people interviewed.

Dr John Gill, Saturn project Leader, says: "This revolution is made possible by the new smart cards which can store far more information than the traditional magnetic stripe cards. Details about the cardholder's requirements can be stored on the actual card which will improve access to terminals for all, including disabled people."

He added: "Financial organisation switching to Smart Cards will therefore be able to offer a better service to their existing customers, and attract new ones, at little extra cost."

Contact: Olivia Belle, RNIB, UK - Tel: +44 (0)171 636 1153. Fax: +44 (0)171 388 8316.

Photo-Me with Mondex

Mondex, the electronic cash card being piloted in Swindon, England, has adapted the first self-photography machine in the UK to accept the card as an alternative means of payment to coins.

Ann Adams, Senior Manager, Mondex, says; "Vending machines are an area where Mondex offers clear advantages over traditional cash. Apart from being easier to use and carry around than a pocketful of change, Mondex offers real benefits to the providers of vending systems. Reducing the quantity of coins in vending machines will make them less attractive to vandals and will save vending operators' costs on both cash collection and banking."

The Photo-Me booth is located in Fleming Way Post Office in Swindon.

Contact: Martin Jones, Band &Brown Communications - Tel: +44 (0)171 704 2010. Fax: +44 (0)171 226 9742.

PC/SC Interoperability Plan

An international group of leading Personal Computer and Smart Card companies including Bull CP8, Hewlett-Packard, Microsoft, Schlumberger Electronic Transactions and Siemens Nixdorf, is developing open standards to integrate Smart Cards with Personal Computers and provide interoperability of Smart Cards, card readers and computers made by different manufacturers.

The group says that the new technology will allow application developers to take advantage of the Smart Card's portability and hardware-based security, which are critical to enabling new Smart Card-based PC applications for healthcare, banking, corporate security and electronic commerce.

A PC/Smart Card work group was set up last May and the technology is scheduled to be available to the industry during the last quarter of this year. Built on existing industry standards, these specifications will be open, platform-independent and application-neutral, providing a comprehensive solution to OEMs, software developers and end users. Working together, members of the group will develop the hardware and software technology necessary to implement the group's specifications.

Microsoft is to incorporate support for Smart Cards and readers into its Microsoft Windows operating system and Internet products and expects to provide preliminary releases for key Windows components and tools to developers in the fourth quarter, 1996.

Hewlett-Packard will provide Smart Card readers and applications for their standard Windows PC products line in 1997.

Schlumberger and Bull CP8 will offer Smart Cards supporting cryptographic and secure storage services and Smart Card readers for Personal Computers adhering to the specifications starting in the last quarter of this year.

Siemens Nixdorf will integrate Smart Card readers and applications into their Windows PC products line and offer Smart Cards for delivery by the 1997 CeBIT Fair.

The group says that products from the participating companies will be available through normal direct sales and retail channels.

The technology being developed by the work group includes:

*   Specifications for cryptographic functionality and secure storage

*   Programming interfaces for communicating with Smart Card reading devices connected to a PC

*   A high level applications interface to make it easier to build and maintain Smart Card applications.

It is intended that the specification developed by the work group will be proposed to independent standards bodies with participation open to interested parties. The technology will build on the industry's current ISO 7816 standard and support current business-specific application standards such as VME (Visa, MasterCard, Europay) and GSM, the Global Standard for Mobile Communications. The specification will be made available at no charge.

As a result, the group says:

*   End users could purchase items on the Internet using payment information stored securely on their Smart Cards.

*   Business could have a single identification card that controls access both to physical buildings as well as computer network resources.

*   People could carry their computer-based medical and insurance records on a Smart Card, giving immediate access to critical patient information in emergency situations.

Comments from the group

"The development of standards will significantly increase the use of Smart Cards and provide a foundation for industry competition that will lead to even greater advances in Smart Card technologies," said Walter Rossler, member of the board for Siemens Nixdorf Informationssysteme. "By solving the issue of interoperability, the industry can now focus on bringing the advantages of Smart Cards to the installed base of personal computers."

Jacques Clay, General Manager of Hewlett-Packard's Extended Desktop Business Unit, said:

"Smart Cards provide corporate, small business and home PC users alike with a highly secure and cost-effective means of carrying out electronic commerce and communication. Standards will drive the development of the Smart Card market and help make them as pervasive a PC component as the CD-ROM drive."

"Interoperability is a key factor to the growth of the Smart Card market and enables a whole new range of electronic commerce applications," said Geraldine Capdeboscq, President of Bull CP8.

Jean-Paul Bize, Vice President of Schlumberger's Electronic Transactions business unit, commented: "The Smart Card is uniquely positioned to invigorate the PC industry through data- and network-access security and innovative new networking applications."

"With the creation of standard Smart Card interfaces to the PC, applications will be able to interoperate with readers and Smart Cards from multiple vendors and this interoperability will speed the adoption of this critical technology," said Brad Silverberg, Vice President of Microsoft's Internet platform and tools division. "The combination of the PC and Smart Card technologies will accelerate the deployment of Internet applications such as on-line banking and secure electronic commerce."

Contacts: Bill Bradley, Bull HN Information Systems - Tel: +1 508 294 5812. Larry Sennett, Hewlett-Packard - Tel: +1 408 553 2916. Julie Hatchett, MacKenzie Kesselring (for Microsoft) - Tel: +1 801 359 1005. Nicolas Suraqui, Schlumberger Electronic Transactions - Tel: +33 1 47 46 55 44. Walter Rossler, Siemens Nixdorf Informationssysteme - Tel: +49 821 804 3680.

New Role for Mondex Co-founder

Tim Jones, co-founder of Mondex, the electronic Smart Card cash payment system, has been appointed Managing Director of NatWest UK's Retail Banking Services.

Announcing the appointment this month, NatWest said that Tim Jones, who is also Managing Director Electronic Markets, will retain his current responsibilities for developing electronic markets.

He succeeds Tony Warren who has been appointed Senior Managing Director, a new role created to further develop the opportunities across NatWest's retail banking, life and investments, mortgage and general insurance businesses.

Tim Jones, a graduate of Cambridge University was co-founder of the Mondex initiative and was appointed Chief Executive, Mondex in December 1993 with a brief to create Mondex International as a new global payment system. Following the recent successful incorporation of Mondex International Ltd, he took up the position of Managing Director, Electronic Markets within NatWest UK. He remains a Director of Mondex International.

PR appointment

Gerry Hopkinson has been appointed head of corporate affairs for Mondex International, a consortium of 17 financial institutions in four continents.

Hopkinson, a director at Mondex UK's PR agency, Band & Brown Communications, will take up his in-house role in November. His task is to establish a central PR strategy.

Aged 32, he has headed the account for Mondex's UK operations since 1994 and helped launch the electronic cash pilot in Swindon.

Electronic Cash Patent in Japan

An application for a patent for a new electronic money system may result in the system becoming the basis for electronic money in Japan.

An institute related to the Bank of Japan, and a research laboratory connected with Nippon Telegraph and Telephone Corporation, have applied jointly for the patent.

The new system brings together Smart Cards and computer networks for electronic money transactions, for example, a Smart Card could be used both to make a purchase at a point of sale and to access the Internet to carry out a money transaction in Cyberspace.

Electronic Payment in Ukraine

Ukraine will be the first eastern European country to launch a nationwide Smart Card system for electronic payments.

The system will be set up by Ukrkart AG, a joint stock company owned by the National Bank and principal commercial banks in Ukraine, and Giesecke & Devrient (G&D) of Germany.

According to G&D, the cards used in the electronic payment scheme will incorporate a microchip and will function as an electronic purse and can also be used as debit and credit cards.

"Our innovations in the areas of special security features for Smart Cards, customised chip operating systems and terminals are opening up new growth markets for our organisation all over the world, including eastern Europe," said Jürgen K Nehls, a member of the Munich-based company's Board of Directors and responsible for its card and payment systems operations.

The company's involvement in the development of Austria's eurocheque card with a microchip and in designing cards and terminal systems for the new German Smart Card, were key factors in awarding the contract to G&D said Ukrkart's Managing Director Victor Zhabrovets.

Ukraine, a country about the size of France with a population of 52 million people, now had the necessary environment for implementation of an electronic payment system, explained Anatoly Savchenko, a Director of Ukraine's National Bank in Kiev.

"We have expanded and modernised our country's banking infrastructure and are now ideally equipped to provide the services and security concepts that a modern payment system of this kind requires," he said.

Recently, G&D signed an exclusive marketing agreement for the UK with ID Data Systems to target the UK electronic purse market, particularly VISA Cash (SCN July 1996).

Contact: Verena Munz, G&D, Germany - Tel: +49 89 4119 668. Fax: +49 89 4119 536.

CarteS SESAMES 96 Awards

CarteS '96, the leading plastic card conference and exhibition in Europe, has attracted a large number of entries from around the world for the SESAMES '96 Awards for the year's best innovation and application. The show takes place in Paris, France, next month.

Entries include:

Aproks (Czech Republic) - Energy pre-paid system.
Banksys (Belgium) - PROTON
Card Guardian (Canada) - Card Guardian, a patented family of card holders
Card Technologies (Australia) - CiT Transcard
CPS Technologies (France) - Bus Plane Card
Doyle Argosy Innovators (Canada) - Capacitive Stored Value Cards
Eastman Kodak Company (USA) - The Intelligent Magnetics Card
Encotone (Israel) - TeleID Token
Fortress U+T (Israel) - Smart Card application development environment
Gemplus (France) - Vaccicard
Gemplus - Smart driver's license
Gemplus - ESMS (Enhanced Short Message Service) Protocol
Hewlett-Packard (France) - Smart Card-enabled information management
Incard Spa (Italy) - Viapass Card
Inside Technologies (France) - Mixcom stored value chip (InCrypt)
Intec (Korea) - Automatic fare collection system with contactless smart card
Intellect Europe ProData (Belgium) - Microbank personal terminal
Mikron (Austria) - Contactless and multi-functional proximity Smart Card system MIFARE
Motorola/Gemplus (France) - A stand-alone Smart Card view reader with virtual display concept
La Poste (Belgium) Multiservices client card
Sandia Imaging Systems (France) - Dataglyphs
Schlumberger (France) - Polymer flipchip module
SCM Microsystems (France) - Digital TV access control module
SEPT (France) - Secured authorisation access to buildings with electronic lock
Shell Case (Israel) - Shell-pack
Siemens (Germany) - S-family
Solaic (France) - Secure Internet payment system
Valgay (Switzerland) - Valgay card reader for smart point electronic label in a plastic card
Veron (Italy) - TPV terminal

Smart Card Diary

Smart Cards for the Airline Industry: Practical Uses and Future Development, The Café Royal, London, 16/17 September.

The airline industry is looking at the potential for the use of Smart Card technology to complement the growing number of ticketless travel schemes with possibilities for use in immigration, customs & excise, loyalty schemes and as an electronic purse. International Conference Group - Tel: +44 (0)181 743 8787. Fax: +44 (0)181 740 1717.

Co-branding, Affinity and Loyalty, The Churchill Inter-Continental, London, 1 / 2 October.

As the customer loyalty battle hots up this conference features expert speakers and case studies. There is a workshop, Using Database Marketing to Build Genuine Loyalty, on 3 October at The Montcalm, London. IIR - Tel: +44 (0)171 915 5055. Fax: +44 (0)171 915 5056.

CardTech/SecurTech Government 96, Hyatt Regency Crystal City, Arlington. Virginia, USA. Date: To be announced.

Geared towards executives and managers working in federal, state and local government agencies, the seminar includes six self-contained sessions with over 30 speakers focussing on technologies and major application areas within government. The exhibition features more than 60 booths displaying the latest in card, biometric and security technologies. Ben Miller, Conference Chairman or Kelly E Kilga, Marketing Manager - Tel: +1 301 881 3383 or Web site at http://www.ctst.com

Smart Card Technologies: New Policy Frameworks, The Landmark Hotel, London, 16/17 October.

Conference embraces regulation, data protection, new technology advances and policy issues with hot topics like national ID cards and privacy of personal information. IBC Technical Services - Tel: +44 (0)171 637 4383. Fax: +44 (0)171 636 1976.

ICMA 6th Annual Card Manufacturing Expo, Bermuda, 21-25 October.

The annual gathering of the International Card Manufacturers Association which has taken The Globalisation of the Plastic Card Industry as this year s conference theme. Lynn McCullough, ICMA - Tel: +1 609 799 4900. Fax: +1 609 799 7032.

CarteS 96, CNIT, La Defense, Paris, France, 29-31 October.

International forum for plastic card technologies and applications with a major conference and exhibition. CEP Exposium / Cartes - Tel: +33 1 49 68 52 87. Fax: +33 1 47 37 75 09.

CardTech/SecurTech West 96, Convention Center, San Jose, California, USA, 10/11 December.

The third West conference will showcase over 80 exhibit booths. The focus of the show will be secured Internet commerce, multi-media applications, encryption issues, transportation and digital cellular programs. Kelly E Kilga, Marketing Manager - Tel: +1 301 881 3383.

Asia Card Technology 97, Singapore International Convention and Exhibition Centre, Suntec City, Singapore, 23-25 April, 1997.

International exhibition, conference and technical workshops on business applications and technological developments for the Smart Card and associated industries in Asia organised by Reed Exhibition Companies. Ms Serina Tan - Tel: +65 434 3693. Fax: +65 338 2112.

CardTech/SecurTech 97, Orlando, Florida, USA, 19-22 May, 1997.

Now established as the biggest Smart Card conference and showcase in the world, the 1966 conference attracted a record 5,543 attendees. Ben Miller, Conference Chair - Tel: +1 301 881 3383.

Integrated Circuit Card Standards and Specifications - Part 1

Every young engineer is soon introduced to Murphy's first law " What can go wrong, *will* go wrong". The world of ICC technology is no exception and in this article we are going to look at the current state of the ISO 7816 standards and the EMV (Europay, Mastercard and Visa) specification for payment system's Integrated Circuit Cards. In particular we are going to discuss those aspects of the standard and specification that can cause problems in practice. We shall see it is the differences of interpretation and implementation of the terminal hardware that results in faulty operation. It is this very fact that leads to changes in specifications even though they are based on International Standards, albeit that these standards are themselves the subject of change. For the purpose of our discussion we will take the ISO 7816 series of standards, and in particular ISO 7816-3 (electronic signals and transmission protocols) which currently exist as a 3rd committee draft of the original standard. The EMV '96 Integrated Circuit Card specification for payment systems currently exists as version 3.0 (June 30 1996).

Why are we still having these problems, after all the Smart Card was invented back in the 70's and they have been in very active use for the last 5 years at least. The original part 3 standard of ISO 7816 was first published in 1988 and took a number of years before becoming an International standard. Well, the chip which is at the centre of the Smart Card action has evolved considerably over the years. Ignoring tags for the moment the early IC cards were effectively memory-only cards. The problem related purely to connecting a memory device with its own serial communication interface into a terminal. In many ways these relatively primitive devices were quite resistant to operational abuse and apart from static problems and a reluctance to be overvoltaged on the Vpp (EPROM Memory programming voltage) interfaces they were relatively easy to control. Then along came the microprocessor, a much more sophisticated beast along with a recognition of the security issues surrounding the long term future of the IC card. Apart from the need to offer the implementation of cryptographic algorithms, manufacturers also needed to take account of the physical security offered by their chips for which

a number of special circuits were introduced to enhance their resistance to attack. Of course you don't need Murphy to tell you that the more sophisticated the electronic circuitry the more there is to go wrong. No doubt Intel are still bemused by the media attention that surrounded the floating point error in the early Pentium chip. You can almost hear them wonder why their critics failed to point out the true technical brilliance of a design with 3.1 million transistors in a silicon area not much over a square centimetre. It is of course these tremendous advances in technology that make our world so interesting and although we don't yet have a Pentium in our Smart Card we do now have devices from several manufacturers (Hitachi, Motorola, Philips, SGS-Thomson and Siemens) that can perform powerful cryptographic algorithms such as RSA in a fraction of a second.

The world in which we operate our Smart Card is really severe. The chip is embedded in a piece of thin plastic (0.76mm thick) which is then sat on by its owner and yet expected to work reliably for a number of years. The chip contacts are exposed to a range of nasty materials and yet we need to achieve a reliable connection with the terminal time after time. It should be noted immediately that contactless cards have much to offer in terms of chemical resistance but they also have their own problems and as yet they really are the newcomer in the ICC technology. For the moment the majority of large scale operations are using contact cards based on the ISO 7816 standard and that is where we will focus our attention.

So lets start with the mechanical characteristics of the ICC which is covered in Part 1 of the EMV Spec and Part 1 of ISO 7816. In both cases we are really starting with the conventional ID card so widely used today. It is here that the first problem of thickness arises. Wouldn't it be nice to have an IC card just a bit thicker, in fact if you look at the small calculator world you will notice that 1mm thickness is commonplace. But of course they don't fit in the existing infrastructure of the ATM terminals and it was the French Banks that were one of the earliest adopters of Smart Cards. It is none the less interesting to challenge this premise as to whether we really do need compatibility with existing financial cards. The answer comes in two parts, in the first instance the change in an infrastructure is both expensive and difficult to

achieve because of backward compatibility issues. In the second instance we will conjecture that the reliability of IC cards will substantially improve over the next few years as manufacturers develop new materials and fabrication technologies.

The physical characteristics of an IC card are defined in ISO 7816 part 1. This standard applies to the ID-1 identification card specified in ISO 7810 and includes cards which may have embossing or magnetic stripes. Whilst we are all familiar with the use of imprinters to obtain a printed version of the embossed characters on some paper voucher, their viability on an IC card must be questionable.

The physical properties of the contact IC card are referenced against earlier card standards and we will look at each of them in turn.

ISO 7810 Identification cards: Physical Characteristics (1985)

This standard specifies the physical characteristics of identification cards including card material, construction, characteristics and nominal dimensions for three sizes of cards (ID -1, ID -2 and ID -3). It is the ID -1 card that forms the basis of ISO 7816-1.

The principal parameters of ISO 7810 are the dimensions of the ID -1 card which are defined to be 85.6mm x 53.79mm x 0.766mm.

ISO 7811 Identification cards: Recording Techniques (1985)

This standard is in five parts and covers the specification of the magnetic stripe and the card embossing

Part 1 Embossing

This part specifies the requirements for embossed characters on identification cards for the transfer of data by imprinters or by visual or machine reading.

Part 2 Magnetic stripe

This part specifies characteristics for a magnetic

stripe, the encoding technique and coded character sets which are intended for machine reading.

Part 3 Location of embossed characters on ID-1 cards.

As the title implies this part of the standard specifies the location of embossed characters on an ID -1 card for which two areas are assigned. Area 1 is for the number identifying both the card issuer and the cardholder. Area 2 is provided for the cardholder identification data such as his name and address.

Part 4 Location of magnetic read only tracks- tracks 1 and 2

This standard specifies the location of the magnetic material, the location of the encoded data tracks and the beginning and end of the encoding.

Part 5 Location of read - write magnetic track- track 3

This standard has the same scope as part 4 except that it defines the read-write track 3.

ISO 7812 Identification cards: Numbering System and Registration Procedure for Issuer Identifers (1987)

This standard relates to the card identification number or PAN (Primary Account Number) which consists of three parts, the issuer identifier number (IIN), the individual account identifer and the check digit.

ISO 7813 Identification cards: Financial Transaction Card (1987)

This standard defines the requirements for cards to be used in financial transactions. It specifies the physical characteristics, layout, recording techniques, numbering system and registration procedures. It is defined by reference to ISO 7810, ISO 7811 and ISO 7812.

In particular the standard defines more precisely the physical dimensions of the card as follows:

Width	85.47mm - 85.72mm
Height	53.92mm - 54.03mm
Thickness	0.76mm - $\pm$ 0.08mm

The thickness of the card is particularly important for Smart Card readers because of the mechanical construction of the card connector mechanism.

This device often consists of a movable carriage that positions the card under the connector head whilst applying the necessary wiping and pressure action. Variation in thickness or even slight warping of the card can cause communications failure.

The physical dimensions of the IC card are defined as that specified in ISO 7813. It should be noted that the thickness dimension does not include any allowance for embossing. More particularly the terminal slot for a card may include an extra indentation for the embossed area of the card. In effect it acts as a polarisation key and may be used to aid the correct insertion orientation of the card. This is an additional characteristic to the magnetic stripe which may be used to open a mechanical gate on devices such as ATM's where some vandal proofing techniques are required. The ISO 7816 part 1 standard also defines additional characteristics that should be met in the manufacturer of an IC card. These characteristics fall into the following categories:

*   Ultra violet light
*   X-rays
*   Mechanical strength (of cards and contacts)
*   Electrical resistance (of contacts)
*   Electromagnetic interference (between magnetic stripe and integrated circuit)
*   Electromagnetic field
*   Static electricity
*   Heat dissipation

It has to be said that this part of the standard could be improved and ISO 10373 (Identification cards - Test methods) is significantly more useful in this area. The three most widely used tests applied by fabricators are specified in the annex to the standard:

A1   Bending properties
A2   Torsion properties
A3   Static electricity

Whilst this is certainly one way of comparing cards fabricated by different companies, whether


Figure 1
Bending Test
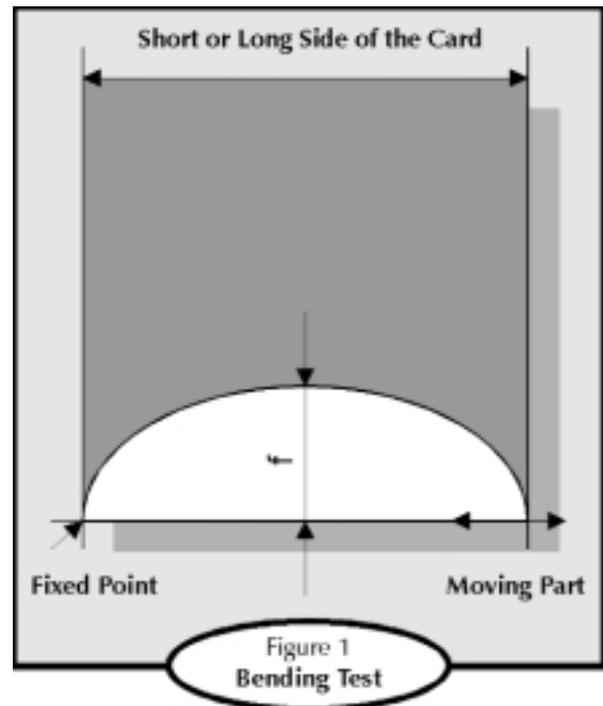
it bears any relationship to the use of IC cards in the field seems debatable.

The bending properties are tested by deflecting the card on each axis as shown in fig. 1. With a periodicity of 30 bendings per minute the card is deflected to 2cm at its centre from the long axis and 1 cm from the short axis. The recommended test requires the card to withstand 250 bendings in each of the four possible orientations (i.e 1000 bendings in total).

The torsion properties of the card are tested by displacing the card $\pm$ 15° about the long axis at a periodicity of 30 torsions per minute (fig.2). The standard requires the card to withstand 1000 torsions without chip failure or visible cracking of the card.

Figure 2
Torsion Test

Figure 3
ESD Test
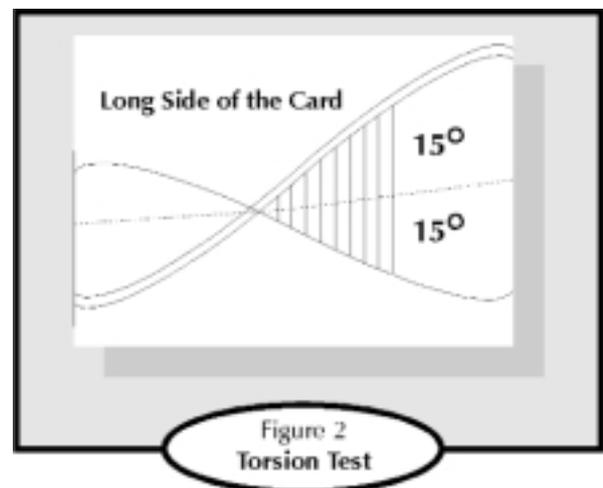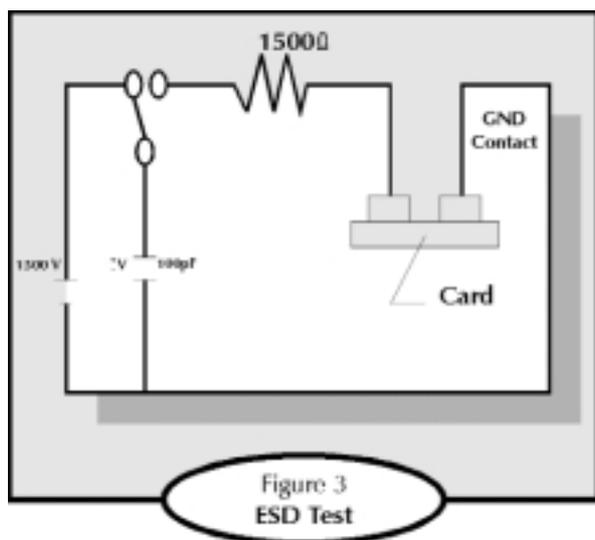
The resistance of the card to static electricity is defined by a test set up as shown in fig 3. The test voltage is defined to be 1.5KVolts. The specification requires this voltage to be discharged across each of the contacts in both normal and reverse polarity. The IC should still be operational at the end of the test.

One of the issues surrounding the use of the IC card relates to the temperature range for operational use. ISO 7810 defines that the ID-1 card should be structurally reliable and usable between -35°C and +50°C. The EMV Specification points out that it is the plastic (typically PVC) not the chip that sets the Icc Temperature range.
To be continued.
David B Everett

SCN Website Has Moved!
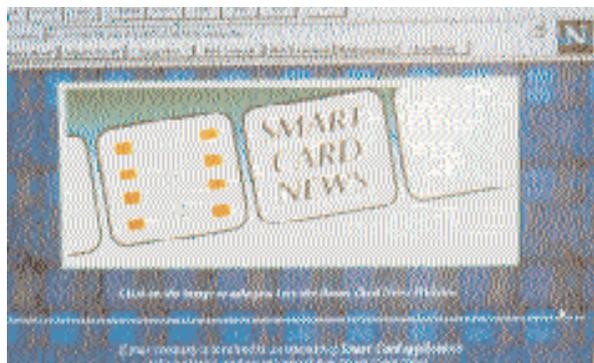
Smart Card News' Website, as featured last issue (*SCN*, August), has moved. If you wish to read our pages, you should now go to the following address:
http://www.smartcard.co.uk
Regular visitors should update their bookmarks.

Golf Club Smart Card

The Corinthian Sports Club in Kent has been using a Smart Card system since March 1995 which has been jointly developed by Smart Card International, based in Hull and Cash Card Systems, London. The system offers members increased security, an electronic purse function, the chance to save holiday points and proof of identity all on one card. In the near future Veronica Clifford, the club's manager, also hopes to make the vending machines 'smart'.

There are approximately 400 golf members and all have been issued with multi-application Smart Card membership. A full year's membership costs £299.86 plus an additional £190.35 joining fee. A year's social membership, which includes use of the bar, sauna, solarium, weights room and squash court, costs a bargain £25, plus a joining fee of £5. Social members are also issued with Smart Card membership.

Another nearby golf club named Redlibbets has issued 300 cards and has installed the same system. The cards are manufactured by Schlumberger and the terminals are provided by Cash Card Systems. The card is an ME 2000 2K microprocessor.

Members are able to load value onto their card at any point of sale terminal. Veronica Clifford estimates that an average cash balance of £2,500 is held on the cards. Individual balances range from £2 upwards.

Use of the electronic purse function on the golf Smart Card gives the member the opportunity to enjoy an immediate 10% discount and to collect one point for every pound spent. A local travel agent, Sunways travel, offers holiday discounts according to the number of points collected. The 10% discount is given regardless of amount spent or item purchased. The cards can be used to pay for food, drink and any items from the on-site shop, whose products range from golf balls to clubs.

The card also offers greatly increased security to its members. The access control function on the card allows access to be programmed according to the type of membership. For example a weekday member can be denied entry to the club at the weekend. Cards can also be programmed even more specifically, in terms of hours. For example the cleaner can be given a card which allows morning access only. Veronica explained that the system was considerably more reliable than the previous push-button system where guests and maintenance workers became familiar with the codes.

Most Smart Card members have increased peace of mind in the knowledge that if a card is lost or stolen it can be easily blacklisted and equally easily reinstated once recovered. If it is not recovered money on the card can be refunded due to till records. The point of sale terminals act as a reader and the customer can use receipts as a record of their cards balance.
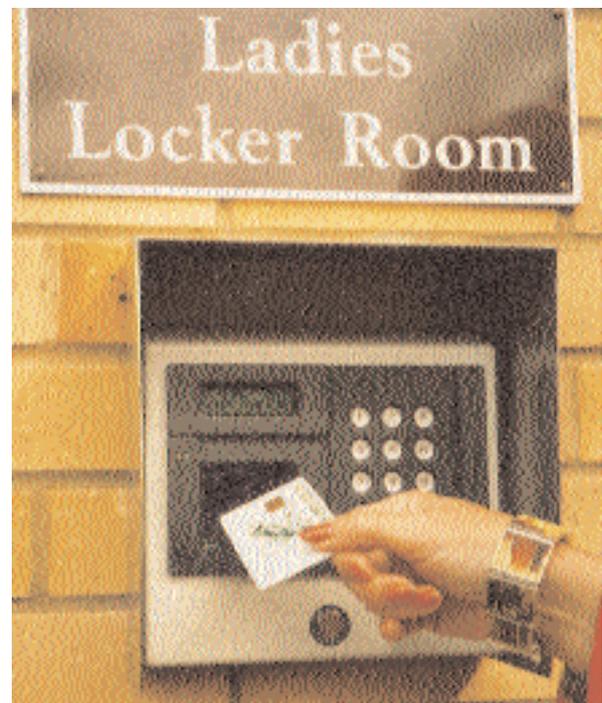
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