February 2002

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www.smartcardgroup.com

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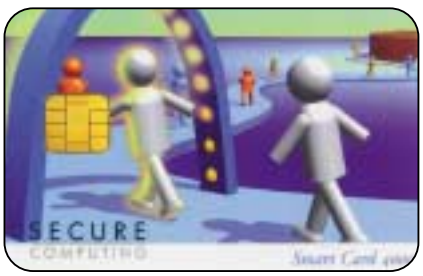

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www.gemplus.com

Gemplus

A good clean web site with excellent navigation. Whilst the appearance of the site is clearly subjective the Gemplus site must be considered better than most to any taste. The pages are uncluttered and the navigation links are clear and transparent. The content was however a bit variable and somewhat disconcerting is the apparent age of many of the pages. Copyright tags of 2000 lead you to believe that many of the pages have an ancient history. Looking in particular at the recent papers area for innovation the newest contribution was March 2001, and if you are looking for a job well "don't call us we'll call you". The on-line shop was operated out of the States and had a limited range of options but none the less overall this site is a good reference for the Smart Card industry.

Navigation ■■■■■
Content ■■■■□
Appearance ■■■■■

www1.slb.com/smartcards

SchlumbergerSema

Getting to the Smart Cards and Terminals section of the Schlumberger site was straightforward, as was the navigation of the Smart Card site itself. Here was a refreshing site: clean, simple and up to date. The site has a search engine that works and was easy to interpret. Finding your way to the scmegastore was a little more difficult but it was there and simple to navigate around. Again, the store is operated out of the States but everything seemed to work. Well done Schlumberger. This is a big improvement compared with our last review of the site.

Navigation ■■■■□
Content ■■■■■
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www.oberthurcs.com

Oberthur Card Systems

You have to battle through the Oberthur Group in order to find your way to Oberthur Card Systems, which is a bit dissappointing because there is very little there when you arrive. The site is incredibly light on content, being largely full of glossy pdf brochures. There is no search engine but since there is very little content on the site this probably doesn't matter. There is no shop and the latest news I could find was dated October 2001. Many of the copyright tags were also dated for 2000: does this really mean that they haven't been updated in the last two years? I failed dismally with the conference section which has an interesting quirk of a pull down menu for the year starting at year 0001. A dissappointing site with the simple clean appearance being its only favourable characteristic.

Navigation ■■■□□
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Is Now the Time for a UK ID Card?

Asylum seekers in the UK are now being issued with high-tech identity cards which contain their fingerprint data, photograph, name, date of birth and nationality as well as a secure updateable chip for additional information such as the cardholder's reference number, dependants, reporting dates and address.

The move is part of what UK Home Secretary David Blunkett said would be a radical and fundamental reform of asylum and immigration policy.

A phased roll-out of the card began in Croydon, near London, with the issue of the new card to all new in-country applicants and many thousands of cards will be rolled out to other locations, including arrival ports by Autumn 2002. Last year, some 76,000 people registered for asylum in Britain.

Called the Application Registration Card (ARC), it will replace the standard acknowledgement letter (SAL) currently issued to asylum seekers. SALs have become ineffective due to wide scale forgery and counterfeiting.

The Home Office says that the fingerprint technology has already been effective in detecting multiple asylum applicants. In addition the ARC is seen as having a key role in preventing fraud through illegal benefits claims.

Fingerprint data contained in the card is checkable on existing immigration and asylum fingerprint system equipment. The Smart Cards and fingerprint system was supplied by French company Groupe Sagem.

Home Office Minister Lord Rooker said: "By introducing the card, the Government is at the forefront of making the most of up-to-date technology to combat fraud and to ensure that asylum seekers are identified rapidly at all stages of their application."

National ID Card

Meanwhile, Blunkett says he wants the widest possible reaction to proposals for a compulsory ID card using technology similar to the Smart Card and biometric technology used for the asylum seeker card.

Costing an estimated £1 billion to implement, the card is being described as an "entitlement card" hinting that it could be used for other purposes, for example, the cardholder's entitlement to healthcare under the National Health Service, education and social security benefit payments.

"We are interested in looking at a card, potentially a biometric card, that would enable people to access services, or show their entitlement to them," said a spokesman for Blunkett.

Civil liberties campaigners are certain to object to the scheme on the basis that it will restrict personal freedom and be abused by police.

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UK Banks to Adopt PINs

All UK credit and debit card transactions are to be authorised by the customer keying in their PIN (Personal Identification Number) rather than by signing a receipt, says APACS, the Association for Payment Clearing Services.

The banking industry is working closely with a number of the country's best-known retailers for a public trial of PINs at till points in a town to be announced in the Spring in preparation for a full national roll-out by 2005.

Over the next two to three years all 100 million UK debit, credit and charge cards will be re-issued with chip and PIN capability. The UK chip offers global interoperability as it meets international specifications laid down by Europay/MasterCard and Visa (EMV). Most European countries are about to issue cards to the same specification, and over time there will be increasing use of these cards around the world.

With plastic card fraud in the UK currently costing card issuers more than £1 million a day, it is expected that the chip and PIN verification system will more than halve fraud losses.

The cost of implementing the PIN programme is estimated at some £1.1 billion, spread over the next two to three years.

Chris Pearson, APACS Chief Executive, said: "We are confident that the start of the PIN programme will be remembered as the defining moment in the fight against plastic card crime."

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Five French Contracts Announced

Europay International, MasterCard's partner in Europe, has won five out of nine French public sector purchasing card contracts through its partnerships with Crédit Agricole, Crédit Mutuel/CIC and Europay France.

Crédit Mutuel/CIC won the contracts for the French Ministry of Defence, the French Ministry of the Interior and the Commune of Issy les Moulineaux, while Credit Agricole was awarded the contracts for the Laboratoire National d'Essais located at Issy les Moulineaux and the Commune of Meudon.

Each of the five projects will commence with a pilot phase. The projects will be based on the Crédit Agricole/Answork purchasing solution and the MasterCard, Crédit Mutuel/CIC, Ingenico consortium solution providing management information programs and eliminating paper invoicing.

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Setec Secures Polish Transactions

Setec of Finland is delivering PKI Smart Cards for Poland's inter-bank transaction settlement system ELIXIR managed by the National Clearing House KIR (Krajowa Izba Rozliczeniowa). The integration of the cards was made by Setec's Polish technology partner CryptoTech. Eighty per cent of inter-bank transactions in Poland are conducted over the ELIXIR system. Smart Cards are being introduced to create a secure communication channel between Polish banks' branches and KIR headquarters, and in particular to generate electronic signatures and encrypt information about balance statements.

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Hypercom Contract from MSI

Hypercom has been awarded a multi-million dollar contract for 10,000 card payment terminals from Merchant Services Inc (MSI) which will provide the terminals to thousands of merchants in the retail and hospitality sectors and to other emerging markets.

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Thwarting the TV Pirates

DIRECTV Latin America has introduced upgraded Smart Cards to its customers in Latin America and the Caribbean to thwart the TV signal pirates. A total of 1.3 million new cards supplied by NDS were hand-delivered to customers in 28 countries.

"The new cards will provide the additional security needed to deter signal piracy, while allowing us to provide additional services to our customers," said Raymond H Lekowski, Senior Vice President and Chief Engineer for the company.

The Smart Card contains all the information regarding the customer's subscription, including programming packages and pay-per-view purchases.

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Secure Computing Supports CAC

Secure Computing Corporation, a provider of network access control solutions, has announced that its SafeWord PremierAccess now supports the Smart Card technology selected by the US Department of Defense (DoD) for the Common Access Card (CAC) to be used for personal ID, secure building and system access, electronic signature and e-commerce.

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SCA Award for DoD Card

The US Smart Card Alliance has awarded the Department of Defense (DoD) the Most Innovative Issuing Organisation award for the implementation of its Smart Card-based Common Access Card program.

"Issuing organisations, like the Department of Defense, are demonstrating that Smart Cards enhance the security of facilities and systems worldwide and can support many important applications," said Donna Farmer, the Alliance President and CEO.

"The Common Access Card Program demonstrates the significant use of Smart Card technology at the federal level and the project's size and scale of Smart Card deployment makes the DoD the Alliance's choice for the most innovative issuing organisation."

The Project involves the deployment of four million Smart Cards at 900 sites around the world.

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Govt. Order for USB Tokens

Datakey and Rainbow eSecurity have announced that they have won an order estimated to be worth $1.2 million to deliver iKey USB authentication tokens and software to an international government agency.

Government employees are expected to use the iKey solution for secure e-mail applications. The order is scheduled to ship by the end of the first quarter of 2002.

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RSA Security Encryption Software

RSA Security has released version 6.0 of its encryption software RSA BSAFE Crypto-C.

John Worrall, RSA Security's Vice President of Product Marketing, said: "Enterprises are taking more steps to protect crucial data residing on servers and to comply with government regulations. RSA BSAFE Crypto-C 6.0 encryption software helps enable applications to encrypt and share information securely, verify the correspondent's authenticity and confirm data integrity."

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Contactless Ticketing in Paris

Ascom has announced that it has installed a contactless ticketing system at 2,000 access control gates on the RER network and RAPT underground railway in Paris. The installations form part of the Paris Navigo project which has seen 1,400 systems come into operation since November last year.

The Ascom contactless ticketing validators are designed to allow passengers to validate tickets by moving within a 'target mark,' in an attempt to ease congestion at stations. The equipment is also interoperable and, at some time in the future, passengers will be able to use the same tickets for transport on both the RATP and the national SNCF networks.

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TransLink Fare System

A six-month trial of the TransLink contactless Smart Card fare system for the Metropolitan Transportation Commission and six of the region's largest transit operators started this month in the Bay Area, San Francisco with 4,300 volunteers. It is planned to expand the system to all 21 Bay Area transit systems which include a mix of rail, bus, streetcar and ferry networks collectively carrying more than 1.6 million travellers a day.

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Twin Cities Contract for Cubic

Cubic Transportation Systems announced a $15.2 million contract for a Smart Card fare collection system for light rail and bus rapid transit for the Minnesota cities of Minneapolis and St. Paul.

The system will use both magnetic and Smart Card products. A central computer will integrate bus and station equipment to a central source for revenue and data management and the system will use Cubic's Nextfare Business Management System and Tri-Reader, the only card reader that processes all ISO-compliant and Cubic GO Cards.

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SCA White Paper

The Smart Card Alliance in the US has released a white paper positioning Smart Cards as an accurate and secure means for personal identification while protecting the privacy of users. Called Secure Personal Identification Systems: Policy, Process and Technology Choices for a Privacy-sensitive Solution, the paper is available at www.smartcardalliance.org

Donna Farmer, CEO and President of the SCA, said: "The paper shows that Smart Card-based identification solutions meet the requirements of a wide range of policy and legal mandates, offer unmatched flexibility and incorporate privacy-sensitive features."

Smart Cards also offer tamper resistant security features and support the highest degree of system security when combined with other technologies such as biometrics, passwords and PKI encryption. The document was produced by a task force of more than 20 organisations including Atmel, Datacard Group, Datakey, Gemplus, IBM, Identrus, MasterCard, Oberthur Card Systems, SchlumbergerSema, SCM Microsystems and Visa.

Utimaco and Oberthur Partner

Utimaco Safeware and Oberthur Card Systems are partnering to integrate Oberthur's Smart Cards into Utimaco's PKI-enabled applications to target both new (e-government) and established (banking and e-business) industry sectors.

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Security Pilot at Gatwick Airport

A Smart Card security pilot was launched at London's Gatwick Airport last month for a major US carrier. The scheme allows the airline to offer its passengers a faster check-in, and provides confirmation of a passenger's identity using finger geometry at checkpoints through the airport and at the boarding gate.

ICTS International and ICTS Europe Holdings, specialist in aviation security, are heading the pilot. Fortress GB is the integrator and Smart Card and biometric technology provider. Passengers will be given the option to receive a Smart Card that stores their biometric information.

At the check-in, passengers will insert their card in a terminal, identifying themselves through their biometrics and automatically receive their boarding pass.

Passenger identity will be verified again using the card before boarding the plane, ensuring that only those passengers who pass these security checks can board.

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Keyware Smart-Shopper Contracts

Keyware, a provider of biometric authentication solutions, has announced that it will supply loyalty program company, Valor, and the hypermarket chain, Cora, with its Smart-Shopper loyalty applications.

Valor, which markets a loyalty card that can be used at more than 900 affiliated shops across Belgium, has ordered 2,200 of Keyware's latest multi-functional terminals running on Smart-Shopper, Keyware's loyalty software. For the first time in Valor's history, 1,000 terminals will be equipped with software combining electronic debit card payment (Bancontact / Mister Cash) with loyalty features. The remaining 1,200 terminals will embed Keyware's Smart-Shopper loyalty software exclusively. These 2,200 terminals will be added to Valor's 15,000 existing terminals, which are already equipped with Keyware's software and offer combined loyalty features and electronic credit card payment (Visa, MasterCard, Diners Club, etc.).

The contract will generate revenues of $1 million from software licensing and terminal sales, starting in Q3 2002. Cora, a leading French hypermarket chain, will start a loyalty program featuring Keyware's Smart-Shopper loyalty software. In the initial phase, Keyware will deploy this infrastructure in a pilot project at the Cora hypermarket in Luxembourg. Success with this project will lead to consideration of a wider deployment in the Cora Group, for 7 hypermarkets in Belgium, and 59 hypermarkets and several supermarket and specialty retail chains in France.

The deployment of the loyalty solution at Cora includes the delivery of Keyware's Smart-Shopper integrated on ICL's POS (Point Of Sales) software installed at Cora's counters. The pilot contract will generate revenues of $100,000, starting in Q1 2002, from licensing revenues for the use of Keyware's Smart-Shopper software and the Smart Cards.

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Iris Recognition Pilot at Heathrow

Iris recognition is being piloted at London's Heathrow Airport in a five-month trial designed to speed up to 2,000 frequent flyers through passport control and immigration by verifying that arriving passengers are legitimate entrants to the UK. EyeTicket Corporation supplied its JetStream iris recognition-based travel processing equipment for the trial. Selected British Airways and Virgin Atlantic passengers will have their iris scanned. Digital data from the image is encoded and later compared with the person's iris when he or she goes into the immigration hall. Also participating are BAA and the UK Immigration Service.

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Atmel Announces New Chip

Atmel Corporation has announced the availability of its AT91SC321RC security chip aimed at securing sensitive information for government and high value commercial applications. The chip is available in both Smart Card modules and 24-pin SOIC packages for use in embedded systems.

The 32-bit ARM core-based chip is capable of streaming encryption bandwidths up to 2M bytes per second using an on-chip DES accelerator and a high speed USB I/O port. An asymmetric cryptographic engine supports on-chip key generation of Public Key Infrastructure (PKI) key lengths to 2048 bits. An ISO 7816 interface is included for Smart Cards.

The chip was developed in partnership with SSP-Litronic and is being used in the firm's USA (Universal Secure Access) Forte Smart Card.

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Samsung EMV Chip Certification

Samsung Electronics has received EMV (Europay/MasterCard/Visa) Level 2 certification for its 8-bit 8K bytes EEPROM Smart Card chip for GSM SIM (Subscriber Identity Module) cards. The company revealed that it plans to expand into Smart Card chips for finance related products and target the rapidly growing world credit card market.

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Java Chip for Mobile Wireless

Nazomi Communications has unveiled the JA108, a new Java accelerator chip targeting mobile wireless applications such as 2G/2.5G/3G phones. The list price is $5.59.

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Motorola Indonesian Contract

Motorola has signed a $170 million deal with Indonesia's leading mobile operator, Telkomsel, for the supply of GSM 900 and GSM 1800 network infrastructure services and equipment. Telkomsel plans to deploy this network expansion in the regions of Jabotabek, West Java and Kalimantan.

In a separate agreement, Motorola is to provide a General Packet Radio Service (GPRS) trial for Telkomsel in the city of Jakarta.

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Growth in Cellular Handset Sales

Retail sales of cellular handset will increase from 393 million in 2001 to 870 million phones by 2006, according to a new study, Worldwide Cellular Handset Forecast (2001-2006), from Strategy Analytics.

At this point, says Phil Kendall, a Director in the firm's Global Wireless Practice, Southeast Asia will account for 40% of the total, more than double the size of any other region. Western Europe and North America will see their share of handset sales fall significantly over the next five years from over 50% in 2001 to 36% in 2006.

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China First in Mobile Phone Users

China, the world's largest mobile phone market, has topped 145 million subscribers according to the Ministry of Information Industry.

The only major cellular market currently exeriencing rapid growth, China, which has two mobile network operators - China Mobile Communications Corp and China Unicom - last year surpassed the US as the largest cellular market.

Website

- 💻 www.mii.gov.cn

Lifestream Growth Forecast

Lifestream Technologies forecasts consolidated net sales to exceed $10 million for the year 2002, representing a 164% increase from the $3.8 million in consolidated net sales for the previous year. Since its launch in January 2000, the Lifestream Smart Card-based Cholesterol Monitor is now available in major department store retailers and drug store chains, including Bealls, Eckerd, Longs Drug, Albertson's (Sav-on and Osco Drug) and CVS.

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Infrared Point & Pay Standard

IrDA, the Infrared Data Association which has been working on the development of a Universal Wireless Payment Standard, has released the Infrared Financial Messaging (IrFM) Point & Pay Profile for public review on its website at www.irda.org.

The Standard enables the development of wireless proximity transaction solutions for a wide range of consumer payment environments, for example, making payments at in-store payment terminals, vending machines, drive-thru restaurant terminals, petrol pumps or public transportation terminals such as bus, subway, taxi or toll-booths.

IrDA says the Standard provides a road map for hardware, software and systems developers to ensure interoperability and compatibility on a global basis and incorporates existing pament instrument's (magnetic stripe, credit/debit cards, Smart Cards etc) technology and standards to enable rapid deployment. Field trials and implementations are starting now.

This month, Visa announced its support in its Visa Financial Messaging Profile for Proximity Payment document aimed at helping application developers and card issuers to develop new payment services for consumers who use portable devices such as mobile phones and handheld computers. The technology allows payments to be beamed securely from a handheld device to a merchant terminal using infrared technology.

The specifications build upon the work carried out by the Infrared Financial Messaging Group, said Sue Gordon-Lathrop, Visa's Vice President, Emerging Consumer Environments.

"Visa has customised this standard to meet specific Visa requirements. Now that we have specifications in place, developers will be able to build applications confident that they will conform to Visa requirements."

The Visa specifications are available at www.visa.com/specs-downloads.

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Chip Card for Business Travellers

A multi-application chip card for business travellers in Europe is being co-ordinated by Groupement des Cartes Bancaires (France) with SSB (Italy), SITA (The Netherlands), Gemplus and Sagem (France).

Called the c-TRAVEL project it comes under the European Commission's Information Society Technologies Framework Programme and will be carried out over a peirod of 18 months.

The card is being designed to access airline, hotel accommodation and car rental services on the Internet. When used in a dual slot mobile phone, it enables the traveller to change arrangements while on the move. In addition, the system will allow airline boarding passes to be issued via automated e-ticketing machines located in airports.

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National Healthcare After Madison

National Healthcare Technology has entered into a Letter of Intent to fully acquire California-based Madison Technology Systems whose healthcare Smart Card technology enables patients to securely store medical records on a personal card. The system also includes a patented reader/writer that allows physicians to access and update medical data.

Why Is No One Trying to Sell Me An Electronic Wallet?

by Peter Hawkes - Smart Card Consultant

It is thirty years since Revenue Systems Ltd of Harpenden, devised an Electronic "Purse" and twenty-five years since I saw the first Press Release on what we would now call a Smart Card.

After many years of neglect by the UK Financial Institutions, smart chips are at last appearing in some UK bank cards but not all. Even today, the magnetic stripe part of these cards is the only part that gets used.

Meanwhile, my letterbox is choked with offers of credit cards from yet more likely and unlikely sponsors. I already have four and use only two. The other two offer me poor value. One also supplies negative service. For example, when I recently tried to use it to buy £12 worth of goods in Tesco's, a remote operator of the card issuer forced the nice lady at Tesco's to ask me questions about my Bank account. I failed when asked how long I had had a Bank Account. I knew the answer was less than 100 years but the operator at the "Help" desk were not satisfied that I was me. All I get from this card issuer are letters exhorting me to borrow money and reinsure my car.

Bearing in mind this context here is an opinion on something which I think will appeal to many people once the benefits are deliverable. Hopefully the right Entrepreneur will read this opinion and launch a suitable product.

I do not want any more Card Services. What I would really like is to be able to buy and use my own multi-function Smart Card and Electronic wallet. The multi-functions would be loaded to suit my needs and the virtual card issuer's service. If the "service" did not meet the marketing hype I would delete it. As a frequent traveller on public transport, I would prefer the card to be contactless or dual contact/contactless.

I like to load my physical wallet with cash for both unexpected and routine purchases. I would therefore like to have both E-Wallet and E-Purse functionality for both macro and micro payments. The micro payment feature would be particularly good for parking meters. The one at my local Wanglia station demands £4.30 daily so I get weighed down with a week's worth of coins when I travel to work in London.

Since I have bought the device you can be sure I will look after it and report its loss if stolen. Since it is my money, I will set the daily or per transaction limits for Purse money loading and value dispensing appropriate to my needs. The same goes for personal ID by PIN or Biometrics. If I feel insecure, I will specify a remote biometric verification means and pay willingly for the extra peace of mind. Most of the time, I will stick with a PIN. As with my wallet, I will carry the liability associated with the E-money stored and removable if the security is compromised.

Events Diary

March

4-5 The Institute of Economic Affairs' 3rd Annual Conference: Retail Banking in Europe, Hotel Lutetia, Paris, France

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Marketing Executive, Institute of Economic Affairs

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6-8 Smart Card Technology India 2002, Pragati Maidan New Delhi, India
(Recheduled from 7 - 9 January due to political tensions in the region.)

Tel: +91 11 463 8680 84
Website: www.exhibitionsindia.org

21-22 Smart Labels USA 2002, University Park Hotel @ MIT, Cambridge, Massachusetts, USA

IDTechEx Ltd

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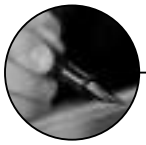
Email: info@idtechex.com
Website: www.idtechex.com

April

9-11 Voice World Europe Conference & Exhibition
Olympia Conference Centre, London, UK
Website: www.voice-world.com/Voice2002EU/

16 Cards Asia, Singapore



Most particularly, I want the minimum feature set to include card payment over the Internet. Therefore, my device must have a secure interface to any networked PC or other E-Terminal. Thanks to Moore's Law, I believe all this is achievable for the price of a good leather wallet or handbag.

I recall that over a decade ago, Chris Stanford and Bob Carter got together and devised just the type of products I describe above. They called it CAFÉ. It was a vendor independent Electronic wallet and card. They went to the European Commission Research people. As always for a good case Research money was made available by the EC and the CAFÉ Project went ahead. Hardware and software was produced. Deliverables made included a full pocket sized Electronic Wallet with Smart Card chip inside. Chris tells me there was also a minimalist version programmed in to a Smart Card. Chris had worked for GEC Card Technology and was well aware of Bank and Retailer requirements. Bob had years of experience in the Midland Bank and knew what the End User, the Public including me, needed.

The two of them promoted the CAFÉ concept widely at Conferences and in the media. I recently asked Chris what happened to CAFÉ. Sadly, so far, the answer was "Nothing, yet...". We went through the arguments for owning a wallet. I found them as persuasive as ever. Naturally, the availability now for more powerful Smart Card chips with more memory and fast secure encryption means makes it easier to offer more functionality and faster operation from a tamper resistant device which, is truly pocket portable. Chris confirms my impression that progress with the new ISO Standards for contactless cards has been good. He says that we shall soon see such cards in service and perhaps, even disposable 1-day travel cards based on a minute chip.

So why has nothing much happened in the UK? I wish I knew the answer. There were a few signs of progress. For example, about a year ago, I came across the "First Click Power Pad" in PC World. This USB Mouse Mat tablet product comes with a Smart Card. The ensemble cost £20-30. According to Press Reports of November 2000, Freeserve ISP planned a service for E-payment and normal credit card based on this Smart Card. However, I have seen no further news. I suppose some people think that buying one's own card is going to be resisted by the public. I disagree. There was a time when buying a telephone was impossible. Later on, computer experts doubted that a Personal Computer would be bought and used by the Public. Fortunately for all of us, they were proved wrong.

I would welcome other people's opinion on why CAFÉ and like concepts have not yet prospered. In my opinion, it is because the necessary benefits are not yet obvious to the public. As with Word Processing and Computer Games, we need a "must have" or "killer" application. I fear this may have to come from the USA. If and when it does, I trust that the pioneering work of Chris and Bob will be remembered.

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Footnote
The opinions expressed herein are purely those of the Author and not any other individual or organisation.

16-18 Information Security World Asia 2002, Singapore
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23-25 The Advanced Card Awards, Olympia, London, UK

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23 - 25 Smart Solv Expo, Olympia, London, UK

24 - 25 SIM 2002 - The Annual Meeting Place of the SIM Community

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An Open, Independent and Free Smart Card Operating System

by ACG AG

Important technological evolutions often develop in unusual places: Bill Hewlett and Dave Packard developed their first devices in 1938 in a garage, which is now famous. Sandy Lerner and Leonard Bosack, the founders of Cisco Systems, designed and assembled their first router in their living room in 1982. The developers of the Danish company Logos Smart Card A/S are located in a former church in Lyngby, on the outskirts of Copenhagen. With flashCOS® they have developed a Smart Card operating system, which works independently of every semiconductor- and Smart Card manufacturer.

The experts point out that certain restriction still hold back the global success of the Smart Card.

Market analysts identify the limited storage capacity of the microprocessor card, poor security standards and the lack of interoperability among the existing Smart Card Systems as some of the obstacles. So far, the market is dominated by proprietory operating systems and the cards can only be used for a specific application.

The resulting dominating position of the proprietary systems of the big players within the Smart Card market is not without problems. Quite a few independent small and medium-sized card manufacturers are very active in this field. The latter do not have their own operating systems, as development costs amount to figures of around €1million. Such development costs can only be recouped with high production volumes, a condition which is rarely met by smaller companies . By using the competition's proprietary systems, the independent card manufacturers and system integrators do not only back up their own competition but also make themselves dependent on them.

Microprocessors for Smart Cards are mostly dedicated towards the operating systems of one of the big card manufacturers and contain ROM technology. "If you are a small or medium sized card manufacturer - small means a volume of 50,000 to 100,000 cards - and you are going to develop an application for such an operating system, you will have an issue to solve" says Olaf Jacobi, chairman of the Smart Card and RFID business at ACG AG. "On one hand you risk that the big manufacturer regards you as a competitor and won't forward any information, on the other hand it wouldn't be in your best interest either to give them much information regarding your own developments."

In the end, the card manufacturers will have to develop their own operating system, a complicated and not really profitable procedure, as the development costs won't pay off and at this very point ACG AG intends to crack this market.

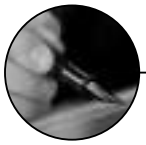
Flexible Functions

The Danish company Logos Smart Card A/S was founded in March 2000 as a joint venture between Logos Design A/S and Wiesbaden-based ACG AG. The company is an independent R&D company, specializing in developing operating systems for card microprocessors. flashCOS® complements ACG's concept of breaking the supply chain for the Smart Card market, to give independent card manufacturers and system integrators the opportunity to purchase products or parts of products from this chain without needing to apply to specific producers.

Logos Smart Card and ACG solved the problem for small and medium-sized card manufacturers by developing an operating system that is totally self-sufficient and not dependent on any semiconductor producer or card manufacturer, available across all hardware platforms and sold free of charge as API (Application Programming Interface). flashCOS® can be used for almost any Smart Card application as an operating system and is based on the widely used programming language C. Any application-specific software written in C can be run under flashCOS®. Thus, the functions of the operating system can be extended and new interface commands can be added. It is also possible to overwrite existing information and create new functions. Thus, flashCOS® can be customized to meet the requirements of almost any existing Smart Card application.

Modular Software Concept

The core of the flashCOS® concept is fully realized software modularity. The two main modules are the hardware abstraction layer (HAL), and a full implementation of the ISO 7816-4 command set, which runs on ROM as well as with flash hardware. Therefore, flashCOS® is available as flash as well as in ROM



versions. The advantage of flash over ROM technology is the increased hardware efficiency. A 16kB flash product offers a 32kB ROM functionality. Whereas with ROM, the chip production follows development, with flash technology, production and development are performed in parallel. The software is written onto the finished module.

The modularity of flashCOS® is based on open standards and allows the compiler-backed development of applications directly at the PC without any specialist knowledge of the Smart Card hardware.

High Security Standard

Regarding the security aspects, flashCOS® offers a command and response encryption (secure messaging), a secure file system and DES, 3DES, and RSA security function libraries. Files can only be read, written or otherwise changed if card reader and user own precisely defined access rights. This prevents unauthorized access to files on the card. flashCOS® can be used as a single or multifunctional card, but only one party controls the card. With the Java version of the operating system, which is currently under development, several independent issuers can access a card without access to the data of the other parties. The Java version will be available in the third quarter 2002.

Special Version for the Mobile Phone Market

The development of software for SIM Cards is one focus of the business of Logos Smart Card.

For the biggest microcontroller market, the mobile phone market, a special derivative version of flashCOS® has been developed.

flashCOS® GSM covers the low end phase II market, the medium level market for Phase 2+ with STK as well as the high end phase 2+ market with PKI requirements. The product range varies from small memory capacity up to a 128Kb EEPROM. flashCOS® GSM is available with a variety of standard applications: An API programming interface, a scripting and byte code interpreter (LSCript), which speeds up the writing of SIM Toolkit Applications, a Wireless Internet Browser (WIB), and a user localization interface.

Advantage: Pre-Personalization

flashCOS® reduces production costs by approximately 30% due to an efficient pre-personalization. Process data that would normally be written on the card during the production process can be uploaded by ACG during module production. This is extremely cost-effective. Personalization at the card manufacturer's end is reduced to a few bytes, as opposed to several Kb in the past. The only data that needs to be uploaded to individual cards are the user specific details such as keys, PINs and serial numbers. The production costs of a flashCOS® based card are therefore not significantly higher than those of ordinary pre-paid telephone cards.

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Visa EU's Chip Migration Programme

January 2002 has seen the introduction of a common Euro currency to twelve countries in Europe, offering consumers standardisation and interoperability in their daily lives. This has been largely successful. Visa, whose systems were prepared to support this transition since 1999, has seen strong increase in card payments as people opt for the convenience and confidence of the universal currency offered by a plastic card, whilst also avoiding the mental arithmetic of currency conversion and obtaining notes in relevant denominations. Over the next few years Visa anticipates a similar transition for a variety of card based products. Currently in excess of 150 million chip cards exist in Europe that support domestic, non-interoperable, electronic purse products. As the global EMV standards for chip payment cards are adopted by the majority of EU countries, banks have the ability to offer their consumers true portability and utility of supply in all of their spending experiences. With the addition of increased protection and potential for a range of new services offered by chip cards, this evolution is set to extend to an ever expanding range of channels to ensure Europeans continue to enjoy the convenience demanded by their business lifestyle.

More details of Visa's EU chip migration programme can be found at www.visaeu.com

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Losses and Job Cuts at Gemplus

Gemplus, the largest Smart Card manufacturer, reported a net loss of €59.9 million in Q4 2001. The latest losses saw Gemplus post full year net losses of €100.2 million compared with a €99.1 million profit in 2000.

The company also revealed further restructuring plans which are expected to include further redundancies. The company has already cut 1,149 jobs since the beginning of the year, bringing employee numbers down to 6,721, and is currently in talks with French unions over an estimated 1,000 further cuts.

Motorola Reports Losses

Motorola reported sales from ongoing operations, which excludes exited businesses, of $7.3 billion in Q4 of 2001 - a decrease of 25% from $9.8 billion a year earlier. Excluding special items and exited businesses, the company incurred a net loss of $90 million compared with net earnings of $362 million in the year-ago quarter.

Edward Breen, President and COO, said: "While the end markets Motorola serves continue to be weak, the company is making good progress in improving its strategic focus and in reducing its cost structure. We are confident we are taking the right steps to position the company to return to the level of profitability that it is capable of generating as its end markets recover."

The full-year net loss during 2001, excluding the results of the two businesses sold during the year and special items, was $697 million compared with full-year net earnings of $2.0 billion in 2000.

Worst is Over Says Infineon

Semiconductor manufacturer Infineon Technologies announced revenues of €1.03 billion for its Q1 2002 - a decrease of 5% from the previous quarter and a decrease of 38% from Q1 of fiscal year 2001.

Revenues decreased primarily as a result of difficult market conditions for the semiconductor industry, in particular for wireline communications and chip card ICs. However, the quarter also saw first positive signs in demand for mobile communication products and pricing for memory products as well as relatively stable demand in chips for automotive and industrial applications.

Quarterly net loss amounted to €331 million, a sequential improvement from a loss of €523 million in the previous quarter but down from net income of €280 million year-on-year.

"We believe that we have seen the worst of the most dramatic downturn in the semiconductor industry," said Dr Schumacher, President and CEO.

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Oberthur Meets 2001 Target

Oberthur released its Q4 figures for 2001 which saw a 30% increase in revenues (to €144.9 million) on the previous quarter and enough for the company to meet its full year growth objective recording a result of 7.3% The company said it was hit by the slowdown in SIM card sales with a drop of 33%, but this was compensated with a 41% increase in its microprocessor cards division and good performances by its "other cards" and "services and solutions" divisions which were up by 6% and 32% respectively.

Managerial Shift at Gemplus

Following the major management shake up at Gemplus in December (SCN, January 2002, p.12) the company has announced that Chief Financial Officer Steve Gomo will step down in March.

Wood Joins @pos as President

John Wood, founder of Australian-based Keycorp, has been named President, CEO and Board Chairman of @pos, a provider of secure, interactive electronic transaction technologies. He currently serves as a non-executive Vice Chairman for Keycorp and is Chairman of the MULTOS Consortium responsible for promoting the Smart Card operating system.

ORGA Offloads Interfaces Business

ORGA has transferred its Smart Card interfaces business to the newly founded SC ITEC, based alongside ORGA in Paderborn, Germany. Rainer Neumann, the head of the ORGA System Business unit, claimed the transfer was in line with the policy of structural change in system business at ORGA's Paderborn location.

Beyond the Card

Smart Cards Now talks to Frederic Engel (left), Director of Marketing and Communications (EMEA) at ActivCard.

ActivCard is not a Smart Card company. Frederic Engel even suggests that a change to the company name may be required to avoid any confusion: "We no longer see ourselves as a card company. Today ActivCard is a software company," he says. "We need to move away from the concept of the Smart 'card' and talk more of the Smart 'chip' which is far less limiting."

Engel may be dismissive of the terminology but his belief in the technology shows no sign of abating. Engel's grand vision for the Smart Card is as a tool to aid the "convergence of technology" and notes ActivCard's mission to build a bridge between the online and offline worlds.

ActivCard's attempts to break the traditional Smart Card mould have seen it distance itself from its competitors. According to Engel, ActivCard's strategy of integrating its technology with "everyone it can", is in stark contrast to its competitors: "RSA and Gemplus don't partner and integrate, they expand through acquisition because its cheaper to buy than invent," he says. "We are able to integrate our product because we manufacturer what other companies can't afford - or are unwilling - to produce themselves."

It is the lack of integration between competing products that has, in Engel's opinion, been largely responsible for putting the brakes on the digital identification revolution which ActivCard has so energetically pursued. "The more you choose different or unconsolidated credentials the less secure you become because breeches are usually between two different keys and two different locks" he says. "If you multiply the number of keys and locks - whether they are software or hardware - the weaker the solution is."

"Identity authentication must be integrated as a feature between the operating system and the security gates and services, in order for it to be well integrated and enable applications to provide services in an automated, transparent, cost efficient manner," he continued.

To this end, Engel's views the Smart chip as digital ID's "holy grail", providing it with the operating system that can process the keys and provide the storage for a host of other capabilities. The other vital key to integration, in ActivCard's opinion, is the Java platform which relinquishes the need for the proprietary OS supplied by the likes of Gemplus and Schlumberger.

Engel highlights ActivCard's major involvement with the US Department of Defense, HP and Sun as evidence of this strategy in action. The next step, he claims, is for the telecoms companies to approach the customer with the model: "Electronic Service Providers (ESP's)will approach their corporate customers using the US telecoms business model," he says. "That application can then just be downloaded at a low cost to thousands of users and here is your business. We will begin to use network applications like we now use electricity - it will have become a network based commodity. The ESP's who already own the network and infrastructure will want to own the feature that makes the user active and this is where ActivCard plays its role."

For all ActivCard's attempts to disassociate itself from its traditional competitors, they did not manage to totally avoid the effects of the 2001 slowdown and a company restructuring program, which will see 20% of the global workforce cut, is already underway. More worrying is the inevitability of the industry big boys, having been stung by their forays into the wireless world, aggressively pursuing ActivCard in the digital identity arena instead. But for the time being at least ActivCard remain one step ahead of the chasing pack.

Matt Ablott

Memories Are Made Of This ~ 2

FRAM (Ferroelectric Random Access memory)

FRAM is an idea first pursued commercially by Ramtron some 15 years ago but which has only just started to appear in commercial products. The name is somewhat misleading in that iron as such does not appear (the hysteresis problems associated with magnetic iron is however prevalent). The FRAM capacitor that stores the memory state operation by an electric polarisation of a free atom (e.g. Zr/Ti) in the crystal lattice is actually constructed of a ceramic material such as PZT (Pb (ZrTi) O_3). However this is a non-volatile memory in that the polarised state is maintained when the power is removed. The big advantage of FRAM over E^2 is the write cycle time which equates to the more acceptable read time of other non-volatile memories. There are however a number of problems with FRAM memory. In theory a memory cell consists of one 1 transistor and 1 ferroelectric storage capacitor but in practice 2 transistors / 2 capacitors (2T2C) have been found necessary to achieve adequate reliability. The FRAM memory cell actually undergoes a destructive read in that a write cycle is necessary for every read operation. The endurance of the FRAM cell is 10^{10} operations for either a read or a write cycle. For a typical Smart Card application this limitation is insignificant but this may not be true in any environment where the Smart Card is constantly powered and in operation. This occurs in some retail environments and in such cases the life of the FRAM memory could be measured in months not years if it were involved in supporting core application software modules.

Applications Static Non Sensitive Data Storage	→	(1) ROM (2) Flash (3) FRAM (IT/IC) (4) EEPROM
Senstive Data Storage	→	(1) EEPROM (2) FLASH
Working Space	→	(1) RAM (2) FRAM (3) EEPROM

Table 2
Memory Optimisation

Ask the Experts

Q: What is the best wireless standard (mifare, temic, legic etc.) to use for a authentication application and what software should I use to develop my applications (preferably visual basic compatible).

A: You should refer to the ISO 14443 standard for contactless cards type A or B. Mifare is currently the most popular contactless card.

Q: Will USB tokens take off or will it be a smart USB interface? What impact is USB having on Smart Card manufacturers, if any; and is it a market that is worth investing in, taking into account the ROI?

A: There are two issues behind your question: Form Factor and Communications Protocol.

The most common form factor will remain with the ISO ID-1 and the ETSI ID-000 (SIM) but there will be lots of other options including key fob type devices.

In terms of the communications protocol the USB option has a lot to offer in the PC world but has limited advantage outside of this market. If you look at the market projections for Smart Cards you would probably deduce that the USB option would be less than 5% of the market.

Q: Are Smart Cards smart enough to identify if the transaction is being secretly monitered by the service provider.

A: Any transaction that can be traced to a particular regis-

	RAM	ROM	EEPROM	Flash	FRAM
Security	Warning	Cell state can be optically read	High	High	Warning
Non Volatile	No	Yes	Yes	Yes	Yes
Mutable	Yes	No	Yes	Yes	Yes
Read Cycle	50-100nS	100-150nS	150-200nS	100-150nS	150-200nS
Write Cycle	50-100nS	3 Months	1-10mS internal high voltage	1 sec per sector	150-200nS
Data Retention	N/A	Unlimited	10 years	10 years	10 years
Endurance		Unlimited	10^5 write cycles	10^4 write cycles	10^{10} cycles read or write
Cost	High 6T per cell	Low 1T per cell	Medium 2T per cell	Low 1T per cell	2T/2C Medium 1T/1C Low

Table 1
Comparision of Different Memory Types

The properties of the different memory types are summarised in *table 1* and as we can see the Smart Card chip needs a variety of memory types to optimise program and data memory storage. In *table 2* we show the optimum fit in order of preference for memory type against the storage of applications and data.

Dr David B Everett

tered Smart Card can by its very nature be tracked. Sometimes transactions need to be identified, but it is perfectly possible to design anonymous transactions when required. Mondex is effectively anonymous if the card is not registered.

Q: What is the technology that allows the contactless Smart Card to communicate with the card reader without any power present inside the card? Is there any power source present inside the card's cuircuit?

A: The contactless Smart Card absorbs power from the wireless signal which is then regulated to generate the DC power supply needed on chip. You should note that the power is limited which sets the range of the card from the reader and as a rule of thumb about 10mA is the limit.

Q: How are the 'write-once', 'write-or' and 'write-and' behaviours implemented in a Smart Card. Does a card typically support all the different types or does it support only the one depending on the type of EEPROM it has?

A: Many Smart Card chips have a one time EEPROM function where the memory is not allowed an erase/re-write cycle

Q: Can DNA be embedded in a smart chip for verification of identity?

A: Yes you could embed the DNA code in the EEPROM memory.

If you have a question you would like our panel to answer please complete the form at: www.smartcard.co.uk/consultancy/experts.html

Daily News On Line Round-Up

Smart Card Group's Daily News On Line service is emailed to subscribers every working day, reporting on industry events as they happen. This service is available FREE to *Smart Cards Now* subscribers (£100 per year for non-subscribers). For further details and to sign up please contact Amanda Pearce - amanda.pearce@smartcard.co.uk; tel: +44 1273 515651 - or complete the form below (further contact details are on page 23). Here's a selection of the headlines we covered in January:

Corporate

- Gemplus Reshuffe Costs to Reach €25m
- Chip Makers Look Forward to 2003
- ARC Appoint New CEO
- First Data Complete Full Acquisition of Cardservice
- Gemplus Support China Unicom CDMA Network
- ActivCard Product Wins 'Crossroads' Award
- Chip Market Shares Make Gains
- Infineon Shares Fall Over Bond Issuance
- Gemplus Selects New IC Design Supplier
- Uncertainty at Gemplus Rumbles On
- Keycorp Founder Joins @pos
- Eagle to Build on Strong 2001 Results
- VASCO Expands Partner Network
- First Data to Process Chase Acquisition
- Lifestream Enjoy Lucrative Fourth Quarter
- Infineon Results Highlight Industry Slump
- Motorola Q4 Results: Sales Slip 25%
- SAGEM Announce Strong AFIS Sales
- Struggling Baltimore Sell Subsidiary
- Motorola Restructuring Underway; Jobs Go in Japan
- Utimaco and Rainbow Sign Product Agreement
- Ericsson Hit By Record Loss; ARM UP 42%
- Chip Market Instability Remains With More Losses Expected
- Ingenico to Develop Terminals for First Data
- GO and @pos Join Forces

Government

- Datakey Win US Government Smart Card Contract
- NEC to Build Smart Card System for Hong Kong e-Govt Project
- ORGA Indian Smart Card Looks Nationwide
- First Biometric Election Runs Smoothly
- London 'Smart Card Portal' in the Pipeline
- German Government to Adopt Digital Signatures
- Smart Card launched for US Government CBT
- UK Asylum Seeker Smart Card Set For Launch
- "US Immigrants May Be Chipped" says CEO
- Europay Secure Five French Card Purchasing Contracts

Banking

- Polish Banking System Selects Setec Smart Cards
- SchlumbergerSema win IT contract at Co-op Bank
- US Bank and Firstar Join Verified by Visa
- Oberthur Develops New Visa Smart Card Application
- New Visa Solutions From Datacard
- Ultimaco Extends Contract With FöreningsSparbanken
- CIBC And Amex Deal Launches Canadian Smart Card
- Visa Completes Infrared Transaction Spec.
- Welcome Real Time Loyalty Wins APAC Contracts
- Turkish Bank Adopts Welcome Real-time Card
- Visa and WildCard Sign Global Alliance
- Samsung Chip Awarded EMV Certification

Healthcare

- Netsmart Wins Smart Card Patient Management Contract
- Sun Launches HIPAA Solution For US Healthcare
- Datacard and FormFast Unveil Form Solution

ID & Authentication

- US Airports to Adopt Visionics' Biometrics
- G&D to Issue Smart ID Cards in Macao
- SchlumbergerSema and BioNetrix Authentication Solution Unveiled
- Protocom Software Adds Biometric Capability
- RSA Launch Smart Card Enabled Token
- New Smart Card Security Solution From Ecebs
- Smart Card Alliance Release Privacy Study
- Secure Computing Offer DoD Support
- eConnect Launches Security Deal with ISC/Gemplus
- CardBASE Receives RSA Certification

Transport

- Cubic Win CTA Smart Card Contract
- Schlumberger/EDS to Back London TranSys System
- Minnesota Cities Select Cubic Transit System
- Ascom Delivers RATP Contactless Systems
- UK Airport Trials Biometric Smart Cards
- TransLink Card Ready To Go In Bay Area

Telecoms

- First GAIT Compliant Phone From Nokia
- Amex And HP Join Wireless Forum
- Smart Communications Adopt Prism SIM
- GSM Solution Connects Cocos Island
- Oberthur Makes CDMA Breakthrough in China
- Bluefish and VIPMobile Launch SIM Rich Data Platform
- China Mobile Subscribers Reach 145m
- New Mobile Payment Standards Group Launched
- Turkcell Subscribers Pass 12m Mark
- Airify and Helic Launch Chipset for Cellular-WLAN Convergence
- interWAVE Continue GSM Expansion in Mauritania
- Enfora GPRS Modem to Use Texas Chipset
- AT&T and Rogers Wireless Expand GSM/GPRS Roaming
- Infineon Launch New LIU Solution
- ID Data Go Direct in £1m Deal
- Philips Extends SmartXA architecture

Retail

- Swiss Retailers to Use SCM Smart Terminals
- New Smart Card For US Car Dealerships
- Mosiac to Integrate Retail Decision Transaction Solution
- Prism Fuel Smart Card Pilots in Saudi
- Smart Card System Debuts on Compaq PCs
- Gemplus and Atmel to Promote Smart Card Interface
- Hypercom Awarded Third EMVCo Level 2 Accreditation
- PRE Solutions Select Trintech Technology

Leisure

- StatCard Launch First Smart Trading Card
- New Smart Cards To Fight Digital TV Signal Theft

Misc

- New Microsoft OS Receives Smart Device Support
- Smart Card Conference Announced in Texas
- Ultimaco Offers UK PKI Upgrade Deal
- ORGA to Showcase Smart Cards at VHE Event

What Has Happened to the Multi-Application Smart Card?

A few years ago multi-application was the force in Smart Card speak. Most of the major companies turned their attention to what was to be the future of Smart Cards. JavaCard, Multos, and Windows for Smart Cards (WfSC) were all in their ascendancy. Today in 2002 it has all gone a little quiet and the plethora of Smart Card management systems lay idle. There is no major commercial card scheme pursuing post issuance provisioning.

The distribution of microprocessor based Smart Cards fall into two main application areas roughly equally divided between the financial application area and mobile telephony (GSM). Three silicon houses led by STMicroelectronics have between them over 80% of the market. Each of these companies has taken a different approach with varying degrees of success. Cost is always an issue but never more so than in the financial market where the banks have gone for the cheapest solution possible for their EMV cards, no sign of multi-application cards here. This is one of the reasons that STM has done so well in the financial market where their focus has been on the cheaper microcontroller cards and also their attention to the common criteria evaluation procedures necessary to receive Visa and Mastercard accreditation for financial applications. Not that Infineon and Hitachi have ignored this area, they just seem to be somewhat behind.

Infineon has taken a lead position in the PR ratings over the last five years with their emphasis on security (SLE44/66) and top of range capability although the much promoted SLE88 RISC device which seems to be noticeably missing in real life. STM has concentrated on the 8 bit ST19 family although they do have a RISC offering with the ST22 family. Hitachi meanwhile has been developing its AE range of chips with the AE3xx for mobile applications and the AE45/46 for the multi-application environment.

So when will the multi-application card really take off? The financial sector seems unlikely to move this way for the next few years at least. Clearly the business case for a basic credit/debit card is not there and it would appear that the banks are currently looking no further. The GSM area is where it has to be and it is currently where most of the JavaCards are going. Microsoft withdrew from the race in the face of the French card manufacturers and Multos with their unacceptable business model (now much modified) has never really got going. If you look at the GSM JavaCards they are not yet being exploited but are just functioning under the SIM and SIM Toolkit specifications. It looks like a dreary picture and with some analysts arguing that you don't need the SIM card at all it could hardly get worse.

Top 10 Year 2000

(Gartner– Dataquest April 2001)

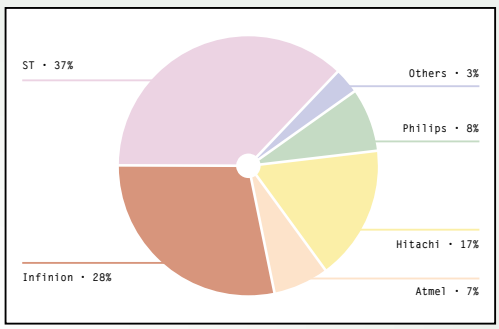
1. Intel
2. Toshiba
3. NEC
4. *Samsung*
5. Texas Instruments
6. ST
7. Motorola
8. Hitachi
9. Infineon Technologies
10. Micron Technology

Top 10 Year 2001 (Preliminary)

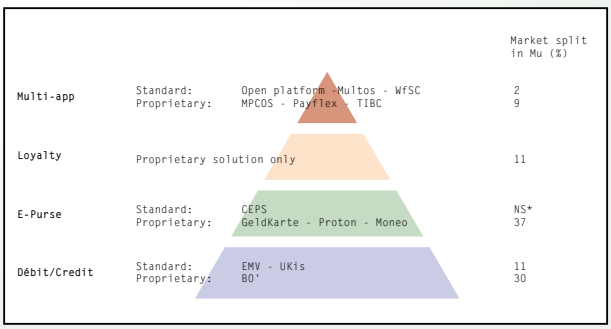
(Gartner– Dataquest January 2002)

1. Intel
2. Toshiba
3. ST
4. Samsung
5. Texas Instruments
6. NEC
7. Motorola
8. Hitachi
9. Infineon Technologies
10. Philips Semiconductor

Left:
Top 10 Worldwide Ranking
Source: Gartner/Dataquest



Right:
2000 Market Share
MCU for Smart Card in Mu
Source: Gartner/Dataquest



Right:
2001 Financial
Market Split
Source: ST

The battle has yet more to run and it is the core attributes of a Smart Card that will reverse this gloomy picture. Security is fundamental to any form of identification and authentication procedure. This property is fundamental for both GSM SIM applications and financial applications. The Smart Card is probably the most effective way of achieving the necessary security requirements which cannot easily be managed in the telephone handset. So the only question that remains is whether there is a need for post issuance provisioning which is very much at the core of the multi-application Smart Card. Provisioning in this sense refers not only to application data but to the applications and the chip operating system itself. Can you imagine a computer incapable of such upgrades? Since the mobile handset is likely to become the personal computer for most of the worlds population it seems inescapable that multi-application has to come, even if you handle most of the application in the handset the Smart Card has to provide the security kernel for those applications. Can that be a single once in a lifetime operation? Seems unlikely to me and yes where have those financial applications gone? They are probably going to end up in the phone.

New Channels Double Acceptance Levels for EMV Chip Cards

Waqar Qureshi, Head of Chip Infrastructure, Visa International EU.

The future airline experience:

A customer books a flight on the Internet via his PC using his Visa multi-application chip card to pay for and reserve the flight and seat. The ticket information would be downloaded onto the chip card resulting in payment, authentication and electronic ticket applications being activated.

The customer arrives at the airport and goes to the automated check in terminal and checks himself in using the electronic ticket, which is stored on the chip card. At the same time a contactless luggage tag is programmed with the customer's flight and personal details. The customer attaches this to his luggage and loads it onto the conveyor belt, which weighs and adds the value to the tag, while updating the central reservations computer.

The customer arrives at the electronic immigration counter and inserts his chip card which has his passport stored on it. His ID is verified using a biometric authentication system. The customer's other travel details are checked on his chip card, his electronic airline ticket and luggage details. With all parameters checked, the gate is opened to allow the passenger to proceed to the boarding gate, where similar security measures are again controlled through personal information stored on the chip card.

Airline security has increased significantly and many large airports are piloting different types of biometric systems on chip cards to increase passenger security as well as the throughput of passengers. Electronic baggage tagging using contactless chip cards is being considered as a positive security measure to connect the luggage to the customers' electronic ticket on the same chip card.

All this may seem far away, but the technology exists and is being proliferated by the ubiquitous use of Visa EMV chip cards. It's only a question of time before the humble payment card offers more than just payment!

When pay TV set-top boxes were developed, the inventors were far sighted enough to include a second chip card slot in most of the latest set-top boxes. Consumers have always wondered what this "interactive" slot could be used for. The answer to the question is EMV payment, or TV shopping in total confidence.

How many times have you parked the car and realised that you do not have enough change to pay for the parking meter? Well, all that may soon be over. With EMV chip card acceptance terminals significantly reducing in cost due to mass production, we could soon see the introduction of "Insert and Pay" parking meters. This level of convenience is only possible thanks to the security provided by EMV and PIN, with the facility for the issuer to "authorise offline". Parking operators would save significantly from integrating this technology, as cash handling and recovery would be completely eliminated.

Specifications are currently being developed to define pan European requirements for the transportation industry. EMV chip card users will be able to load electronic tickets using contactless chip cards which are used to "Touch and Go" through the train, metro or bus ticket authorisation gate. This will accelerate the flow of passengers through the transport networks of large cities. London, Paris and Athens are currently piloting Contactless Ticketing and this will later be connected to the EMV chip card payment systems.

Traditional, face-to-face card acceptance devices represent around 4.5 million units in the EU. With fraud as the primary driver for migrating these devices from magnetic-stripe to EMV, new channels of EMV card acceptance are coming to the forefront to extend chip card proposition. These new devices could double the number of card acceptance devices to around 10 million. •