July 2005

Volume 14 • Number 7

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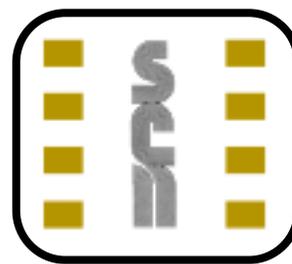Dr Kenneth Ayer
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Printed by
Hastings Printing Company Limited

Dear Subscribers,

Would a biometric ID card have prevented the horrific events of Thursday 7th. July in London? Of course not. Would the ID card have identified the individuals as potential terrorist's? No. Without the aid of a biometric ID card the authorities were still able to identify the perpetrators within days. What the card may be able to do is improve the intelligence gathering process (to which a small sector of the population is totally opposed), and it will help prevent this country's large scale benefit frauds and unqualified NHS holidays. Of course the success of a biometric ID card also depends on how well the biometrics work and today that is the subject of dispute. See Dr. David Everett's article on page 12.

Were you really surprised to read that staff in an Indian call centre have been selling bank customer's personal details and for a small amount of money. Having made such huge investments in Chip & PIN in an attempt to curb fraud it seems ludicrous to me to give it all away by cutting costs by outsourcing such a valuable resource. In a survey of the UK Chip & PIN rollout conducted by Retail Decisions they found that only 44% of adults had received their replacement chip cards. The report also said that attempted fraudulent card not present transactions on the Internet had increased by 70% from the same period last year.

Visa and MasterCard reported in June that a lone hacker had stolen 40 million credit card details in one day in May from CardSystems Solutions a company that processes credit card transactions. It has now been reported that Visa will no longer be using CardSystems to process their transactions, MasterCard has given them "a limited amount of time to demonstrate compliance with MasterCard security requirements" and American Express has confirmed plans to sever it's ties with them by October.

Governments and Organisations have a serious responsibility to protect the data they keep on us and ensure it is correct and kept secure or it will come back to haunt. We've got the technology - but do we know how to use it?

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Simpay - The Wrong Solution for the Wrong Problem

SimPay's plans to launch the first pan-European mobile phone payment platform collapsed this month. T-Mobile, Orange, Telefónica Móviles and Vodafone originally launched SimPay in June 2003. Its main objective was to create an open and interoperable framework for mobile payments in Europe. The service was primarily designed to facilitate small purchases up to between 10 and 12 Euros. The consortium hoped to have the system up-and-running in at least 20 countries by 2004 starting with Spain and Belgium, but was hit by a series of delays.

A statement posted on SimPay's website cited "Following the decision of one of its founding Members not to launch Simpay for the foreseeable future, the decision was not to pursue its activity on a pan-European scale as originally planned. Instead, Simpay's operations will be scaled back with immediate effect. Member operators will be able to exploit Simpay's intellectual property rights at a national level, although international interoperability remains a goal. The members will make known their individual plans in due course. All of the operators involved in Simpay continue to share the vision of the enormous potential of the mobile commerce market and the importance of providing a robust and straightforward payment facility to content providers." The announcement did not specify which member it meant, but a range of sources mention T-Mobile. T-Mobile recently withdrew from the SimPay alliance apparently citing major concerns about the way the system interacted with handsets, networks and other payment systems. A spokesman for T-Mobile said that they decided to leave Simpay in favour of payment systems they had developed themselves. A Vodafone spokesman said that the withdrawal of T-Mobile 'makes it difficult for the group' but added that there is 'valuable intellectual property' that can still be used.

Michelle De Lussanet, an analyst at Forrester, predicted SimPay would never have worked in the first place by saying."Simpay's pan-European mobile payment scheme was doomed from the start," There have been growing concerns for some time that some of the mobile network operators were not quite happy about the progress of SimPay and the change of the CEO in February, when Tim Jones stepped down, was an interesting signal. The new chief executive of Simpay, David Taylor, said "I can't say what the future holds, but for now, Simpay is closing."

Ashley Ward, CEO of Upaid, an Anglo-French mobile payment provider, has this view: "The demise of Simpay was inevitable because it was the wrong solution to the wrong problem. Simpay would never work because it was barely different to the current operator billing model for third party mobile content and we knew that no person accountable to shareholders could continue to sign-off such huge investments for an unproven solution with such a long-term return.

The mobile content providers we talk to desperately need a payment solution that gets away from operator reverse billing to the mobile phone account. Content providers currently lose around half of their potential revenue to the operator, just for the pleasure of being billed through them, which is entirely unnecessary. These companies cannot afford this, which has so far limited the range of goods and services that can be accessed via the mobile phone. Most potential content providers have been holding off on decisions about how to operate to see if Simpay would work, but it was never going to produce an economically different solution and was an opportunity missed from the outset."

Martin Gutberlet, an analyst with Gartner said about the situation "This is not the end of mobile commerce. There will be national solutions to cover what Simpay was trying to do." David Everett, CEO of the Smart Card Group summed up by pointing out that "it is easy to hammer nails into a coffin." However he points out that "there is still a large number of companies working on mobile commerce and the failure of SimPay is more about achieving cooperation amongst the major mobile operators than disputes over the need for a payment infrastructure." He further went on to say that the Smart Card Group has developed a new payments mechaism using a secure Multi Media Card.

Smart Cards

Alliance Forms Healthcare Council

The Smart Card Alliance has formed a Healthcare Council to bring together payers, providers and technologists to promote the adoption of Smart Cards in U.S. healthcare organisations. Smart Card technology is increasingly being used in healthcare applications to enable secure access to patient information to improve both care-giving and administration. "Smart Card technology holds great promise for the healthcare industry," said Randy Vanderhoof, executive director of the Smart Card Alliance. "The Healthcare Council provides a forum where all the stakeholders can collaborate to educate the market on how Smart Cards can be used and to work on issues inhibiting the industry."

New Future Java Card Platform

Gemplus has released a new prototype for its future generation of Java Card products. This latest innovation responds to an industry-wide need for a multi-featured micro-application server platform that will benefit from new Smart Card hardware evolutions. In a joint presentation with SUN Microsystems, Inc. where the latter outlined its ongoing efforts for future Java Card evolutions, Gemplus has issued a prototype that is positioned as a major step targeting 2008 and beyond. This prototype will enable end-users to access and manage private data from their web browser. In addition, the card issuer will be able to remotely manage the card through the network, which will be useful for updates in applications, data and even in removing redundant applications.

World's First NFC/Mifare Module

Syscan International Inc. and Arygon AG have announced the September launch of the world's first NFC/Mifare Core Module. The universally applicable Module is based on the latest Philips RFID technology and combines all the technical requirements for use in multiple market segments for traditional RFID-based applications. It supports both MIFARE family (ISO 14443A) and Near Field Communication (NFC) based on ISO18092.

New Digital Tachographs in Spain

Axalto has been chosen by the Fabrica Nacional de la Moneda y Timbre (FNMT), Spain's printer for all State documents, to supply Smart Card modules for digital tachographs in Spain.

Under the agreement, Axalto will supply EAL4+ security certified modules to FNMT to be personalised and embedded in Smart Cards for all of the road transport professionals in Spain.

$500 Oz Transport Card Contract

The Victorian Government of Australia has awarded $500 million to an international consortium in partnership with the Transport Ticketing Authority (TTA) to provide a new Smart Card ticketing system for the state's public transport system. The consortium, Kamco, will introduce the Smart Cards for use on all public transport in Victoria from 2007. The consortium members include ERG, Keane Australia, Ascom, and Giesecke & Devrient Australasia. Passengers will be able to load money onto the cards, before swiping them as they enter and exit trains, trams and buses.

Oberthur and Abbey Team

Oberthur Card Systems has provided a solution and service using the latest technology in the form of a Datacard Artista Custom Card Printer to enable Abbey to become the first UK bank to let customers personalise the design of their banking cards. The Abbey Photocard is a card service that lets people put a favourite photo or picture on their debit card. Abbey customers can use the personalisation system online at Abbey.com and within a few days of submitting the card design, a fully personalised card is delivered direct to the customer from the Oberthur Card Systems' personalisation bureau in Tewkesbury, UK.

Java Solution for the Finnish EID Card

Setec and Gemplus are to supply the Finnish Ministry of Interior and the Finnish Population Register Centre with Java-based electronic identity (EID) cards. Each new card, based on Java technology, will be developed and manufactured by Setec. The new solution enables the use of versatile services with the same card in the future. Since September 2004, all Finnish ID cards, manufactured by Setec and issued by the Finnish Police Authorities have been embedded with a microchip that stores the on-board certificates used for electronic identification. This new card, available from June 2005, is based on a Java Card operating system and a more powerful 64K Java-based Smart Card developed by Setec. The card is compliant with the relevant international standards. The use of Java makes it possible to upload new applications on the chip in the future.

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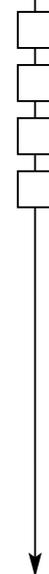
EMV Cards for Setefi

Gemplus is supplying more than one million smart payment cards to Setefi, part of Intesa Group which is one of the largest banking groups in Italy. With the EMV migration in its pilot stages in the region, it is the first bank to deliver mass volumes of cards to the market. By the end of June 2005, Gemplus delivered 500,000 cards to Setefi, Intesa Group's service centre, where the personalisation process is carried out. The cards are intended for credit and debit payment applications, as well as for Intesa Group's specific payment application, Moneta.

GemInstant PayPass Launched

Gemplus has launched its GemInstant PayPass solution for contactless payment. The company also confirmed that it received full certification from MasterCard International for GemInstant PayPass. GemInstant PayPass leverages contactless technology to simplify payment for small value transactions in venues where speed is essential. It consists of a MasterCard payment card with a built-in chip and antenna that uses short-range radio waves to allow users to simply tap their GemInstant PayPass Smart Cards on specially equipped PayPass terminals to securely transmit account details. The cards will be produced at Gemplus' recently enhanced card manufacturing facility in Pennsylvania, U.S. starting in July 2005.

EMV for Canadian Banks

Oberthur Card Systems and Metaca have agreed to a partnership to bring EMV Smart Card solutions and personalisation services to Canadian banks. In addition to delivering its personalisation systems and software to Metaca, Oberthur will provide its microprocessor chips (in micro module format) for Metaca to embed into plastic cards. With a market of approximately 55 million cards, it is anticipated that issuers will start deploying Smart Cards in 2006 with critical mass expected by 2010, after which the liability in case of fraud will shift from issuers to acquirers.

EMV Certification for MagIC X1000

Axalto's MagIC X1000 DECT Point-Of-Sale terminal has been EMV certified by the Association of Italian Banks (ABI), in compliance with its Progetto Microcircuito specification. The MagIC X1000 DECT is the first cordless terminal in Italy to receive this certification.

ACT Wins Vegas City Card Project

In a bid to provide visitors with fast and easy access to over 50 tourism attractions and retail hospitality venues in Vegas, US based Travel Fund Ltd has turned to Applied Card Technologies Ltd (ACT) for its web-enabled destination management solution. Branded Power Pass and underpinned by ACT's Discovery: Issue-Transact-ManageT Smart Card solution, the offering provides admission to every participating attraction in a number of cities offered under the scheme. Las Vegas is the first city to go live and Power Pass users will benefit from discounts at a variety of restaurants and retail outlets as well as VIP access to attractions in the city.

(U)SIM Card Renewal Contract

Gemplus has renewed its multi-year supply agreement with Cingular Wireless, the largest wireless carrier in the United States, for Subscriber Identity Module (SIM) cards and was selected as one of Cingular's primary suppliers of Universal SIM (U)SIM cards. Cingular is currently using Gemplus's SIM cards for Enhanced Network Selection and advanced data services for its GSM subscribers. More than 75 million North Americans use SIM cards today. This number is expected to increase significantly over the next few years as more and more operators continue to migrate their subscribers to SIM cards.

Smart Card OS for Digital Signatures

HiPath SIcurity CardOS is the Siemens operating system for Smart Cards, the foundation for chip-based access, identification and encryption solutions. The current Version 4.3 of the HiPath SIcurity CardOS has now been certified as compliant with CC EAL 4+ (Common Criteria Assurance Level 4+) for digital signature applications. It supports cryptographic operations with RSA keys up to 2048 bits in length. This means Siemens already meets the technical security standard which legislation is to make mandatory for legally binding digital signatures by the year 2010.

miPASS Smart Cards Get Smarter

BQT Solutions, a developer of miPASS contactless Smart Card solutions and Optimiser, a digital management specialist, have integrated their technologies, under a recently signed Memorandum of Understanding, to create "live" Smart Card-based applications and services that can be managed in the field, in real-time.

The combination of fingerprint biometric authentication with up-to-the-minute business activity monitoring will provide management features and security for both users and vendors of Smart Card-based physical access systems, Internet payment and banking services, as well as software and eCommerce applications generally. Optimiser's solution also introduces vital billing capabilities to Smart Card-based applications giving vendors flexibility for deploying new event-driven sales models, including Pay-As-You-Use (PAYU).

Smart Card Access to Liverpool

In a bid to help attract visitors to Liverpool in the run up to 2008, when the city becomes European Capital of Culture and is expected to attract an additional 1.7 million tourists, Applied Card Technologies (ACT) has been chosen by Livesmart to implement Liverpool's first smart city card system. Launched with backing from both Merseytravel and The Mersey Partnership, 'your ticket to Liverpool' is provided and powered by ACT's web-enabled destination management solution, enabling visitors and citizen's alike admission to every participating attraction with free, VIP or discounted entry. In addition, the ITSO compliant solution will integrate with the leading transport operator, Merseytravel, to allow visitors to travel to their chosen destination using "your ticket to Liverpool".

TELSTRA Buys TNS

TELSTRA has bought Keycorp Ltd's Transaction Network Solutions (TNS) business for $55 million.. At the same time, Keycorp will make a related pro-rata capital return of 41c a share to its shareholders, totalling about $33.5 million. Telstra owns about 48% of Keycorp and will receive about $16 million as a result of the capital return.

New Payment System for UK Railway

Hypercom Corporation's new chip & PIN payment technology is enabling railway commuters to use their credit and debit cards to purchase tickets at unattended ticketing machines in railway stations throughout the UK. Under the terms of the initial US$1 million agreement, Hypercom is providing Shere, a supplier of self-service unattended ticket machines for the purchase of travel tickets, with an off-the-shelf, cost-effective, EMVCo and VISA PED approved, chip & PIN-based credit and debit card payment solution that integrates directly into Shere's hardware.

ID Data Wins 4M for Smart Cards

ID Data plc has won an extra £4 million in cash to support its growth strategy in providing secure Smart Card-based transaction systems and services to the banking, retail and government sectors. The deal, announced to the London Stock Exchange on 14 July 2005, will strengthen ID Data's balance sheet, enabling the Company to build on recent success in gaining significant contracts in retail, banking and expanding government sectors for smart-card technology.

Wearable Smart Card Reader

Research In Motion (RIM), has released the BlackBerry Smart Card Reader, a lightweight, wearable Smart Card reader that enables controlled access to BlackBerry devices using Bluetooth technology and advanced AES-256 encryption. The BlackBerry Smart Card Reader is scheduled for Beta release in July 2005. The BlackBerry Smart Card Reader is a wearable peripheral that is FIPS 140-2 validated and can be used to comply with certain government or corporate security requirements.

British Library Selects MyID

British Library are using Intercedes MyID Smart Card and identity management system to enroll, issue, manage and maintain Smart Card-based ID badges. Over 2,000 British Library staff will use their ID badge for secure logical access to British Library networks and PCs. With 3 million new items incorporated every year, requiring over 625 km of shelving and over 2,000 staff based in both London and Yorkshire the British Library recognised that legacy usernames and passwords were difficult to manage and would not meet their security requirements in the future.

Biometrics

Dept for Transport Trial Biometrics

Human Recognition Systems has just commenced a trial of biometric technology for staff access control, officially sponsored by Manchester Airport and the Department for Transport. The trial is aimed at assessing the practical use and user acceptance levels of biometric technology specifically in an airport environment. The technologies on trial include iris recognition from Panasonic and hand geometry recognition from Recognition Systems Inc.

The two systems are running in conjunction with a photo ID system which presents a photo of an individual every time they present themselves to a biometric reader. A system administrator then manually checks that the individual's photo is correct and records a valid match. Both manual and system logs record several data sets including false accept rates, false reject rates and transaction speed times. Manned for 14 hours every day, for a two-month period, the trial is expected to amass some 500 participants. Pre and post trial user questionnaires will also provide an indication of user acceptance.

Contactless Palm Vein Authentication

Fujitsu Limited has launched its contactless palm vein authentication device for biometric authentication security. Fujitsu aims to establish a de-facto standard in the area of biometric authentication with its palm vein authentication technology, and from July this year will collaborate with its group companies in North America, Europe, and Asia to aggressively drive its palm vein authentication business in these regions, with other regions to follow. In addition to being contactless and thereby hygienic and user-friendly in that the user does not need to physically touch a surface and is free of such hygiene concerns, Fujitsu's palm vein authentication is highly secure in that the veins are internal to the body and carry a wealth of information, thereby being extremely difficult to forge.

NFBC Selects Bioscrypt

The Niagara Falls Bridge Commission (NFBC) has selected Bioscrypt V-Prox biometric access control readers to assist in their function of making sure facilities, such as bridges and plazas, are secure for safe movement of both people and goods. The system will also aid in controlling liability claims. Areas within the newly constructed, NFBC headquarters requiring the highest level of security, such as server rooms and telecommunication rooms, have been equipped with Bioscrypt technology. Adding a second component of verification, matching an individual's fingerprint at the point of entry with information stored on their employee card, provides the multi-factor authentication capability that strengthens access control.

Biometric Data on Lufthansa Tickets

Lufthansa has started testing new tickets encoded with passengers' thumbprint data - in a bid to speed up the check-in process without compromising security.

The airline is carrying out a 14-day test period with their employees. A statement by the airline said that if all goes well then they will start rolling out the system in 2006. Passengers would be issued tickets encoded with their thumbprint data, then check themselves in by placing their thumbs on a machine. Frequent fliers would have their thumbprint data encoded on their frequent flier cards instead of their tickets. The German government is also starting to make use of biometric data in travel documents and will start to issue passports with facial data encoded in them this November. A fingerprint will be added starting in March 2007.

Precise Opens in UK

Precise Biometrics is opening an office in London. The aim of the new office is to further strengthen Precise Biometrics' position on the biometrics market and to actively increase participation in the coming schemes to introduce national ID cards throughout Europe, starting with the United Kingdom.

Liska's MOU with Saudi Minerva

Liska Biometry has signed a strategic Memorandum of Understanding (MOU) with Saudi Minerva Company Ltd. of Saudi Arabia, a security systems integrator. The MOU outlines the development strategy of business opportunities for biometrically enabled ID management systems and customised security solutions. Safety concerns in Saudi Arabia are fueling a rapid expansion in the security market.

A recent survey conducted by Hitachi Data Systems Middle East revealed that 56% of Saudi firms were planning to introduce iris scanning and fingerprint recognition systems for increased security at office buildings. Biometric technology is already being adopted by Saudi border control and public sector organisations.

Cogent Receives $31.75 Million Order

Cogent Systems has received a letter of intent for a $31.75 million follow-on order to add capabilities to its Automated Fingerprint Identification Systems (AFIS) solution for the National Electoral Council (CNE) in Venezuela. The follow-on contract is for the joint development by CNE and Cogent of a completely paperless national voter registration and authentication system for an upgraded database of 24,000,000 voters.

First ID Card Palm Vein Technology

Chiba Institute of Technology, Fujitsu Limited, and Dai Nippon Printing Co., Ltd. has announced that the Chiba Institute of Technology will deploy the world's first student I.D. system that combines contactless palm vein authentication technology from Fujitsu and multi-functional Smart Cards manufactured by Dai Nippon Printing (DNP), to verify the identity of students and enable them to securely access their academic transcripts and other personal records through information kiosk terminals installed at various set locations on campus. This system will be operating from July 1, 2005.

BIO-key Announces IdentityMatch

BIO-key International, Inc has unveiled Identity-Match, a new web-based fingerprint identification system that will significantly improve the effectiveness of law enforcement personnel by positively identifying suspects at a crime scene in seconds. The IdentityMatch system leverages the power and security of BIO-key's WEB-key architecture and patented Vector Segment Technology algorithm to identify criminals with fast and accurate results. This solution can be deployed in a highly-scalable regional setting or used by individual agencies.

Radio Frequency Indentification

Whos Pet is it Anyway? [2]

EU legislation has recently mandated the use of identification techniques for dogs, cats and ferrets traveling into and between member countries. The primary driver behind the initiative is to prevent the spread of rabies in Europe. As of October 1st, 2004, for an eight-year transitional period, animals are regarded as identified only if they bear either a clearly readable tattoo or an electronic identification system (an RFID transponder). After this transitional period, only the electronic ID system will be valid (UK, Ireland and Malta already require the transponder). The microchip number must also be reported in the "pet passport", a booklet bearing records of vaccinations, tick treatments, clinical examinations and other data related to the animal.

After insertion of the microchip, the pet will be vaccinated against rabies and a passport will be sent directly to the veterinarian, who can then enter the details of the rabies vaccination and blood-test results, along with details of the microchip number, the date of its insertion and its location in the animal.

The transponder will allow for easy identification of the pet and will authenticate its corresponding official pet passport papers containing medical and vaccination history. Animals with pet passports will avoid the mandatory 6-month quarantine upon crossing state borders. RFID tagging is considered the most advanced and permanent form of animal identification available today.

ACG Completes Dual ISO Reader

ACG Identification Technologies has launched its new fully ISO 14443 A and B compatible RFID reader in a Compact Flash card form factor. The new RFID read/write handheld module completes ACG's HF Dual ISO Reader family, which already comprises an OEM module, a Plug&Play board and a fully packaged desktop reader. The new HF Dual ISO Handheld reader is easily integrated into mobile devices such as PDAs and laptops.

RFID Worth US$26.9 Billion by 2015

According to industry statistics, the worldwide market for RFID technology was US$1.49 billion in 2004. The growth prospects for the RFID market are very bright. The demand for RFID Systems is ever increasing. The market research report by Research and Markets entitled "RFID Industry-A Market Update", states that RFID Industry figures will to go up from US $1.95 billion in 2005 to $26.9 billion in 2015. The RFID vendors are increasingly gaining from the sale of RFID hardware components.

Zebra Joins RFID Licensing Program

In a move to drive continued development and deployment of RFID systems and to accelerate adoption of RFID, Intermec Technologies Corp. and Zebra Technologies Corp. have announced that Zebra has joined Intermec's Rapid Start RFID intellectual property licensing program. The Licensing Program provides Zebra access to a number of Intermec portfolios of patented RFID technology, including RFID tags, fixed and portable readers, and fixed and portable printers.

New RFID Test Center

CAPE Systems Group, Inc has established a RFID Test and Integration Center at CAPE's dedicated 15,000 square foot facility located in South Plainfield, New Jersey, USA. CAPE is currently certified to provide Wal-Mart compliant RFID tagging solutions to its vendors. It is intended that the Center will provide full testing, evaluation and integration of the latest RFID technologies.

Retired Board Member at Supercom

SuperCom Ltd has announced that Mr. Menachem Meron has retired from the Board of Directors of SuperCom, Ltd. for personal reasons effective immediately. The Board expects soon to name a new Director to take his place.

New Appointments at UPM Rafsec

UPM Rafsec has announced the appointment of four new board members. Mr Samuli Strömberg was appointed Vice President, Marketing. He reports to Christer Härkönen, Senior Vice President, UPM Rafsec.

Samuli Strömberg

Mr Marcus Vaenerberg was appointed Vice President, Sales. He reports to Christer Härkönen. He is located in Tampere. Mr Steve Egeland was appointed Business Controller, USA. He reports to Antti Rauhala, Vice President, Finance, UPM Rafsec. He is based in Fletcher, NC. Mr Jan Svoboda was appointed Business Development Director, USA. He reports to Samuli Strömberg. He is based in Fletcher, NC. All these appointments are effective as of May 23, 2005.

EMEA Marketing Manager at Zebra

Zebra Technologies Europe Ltd has appointed Marion Obergfell as EMEA channel marketing manager, a new role the company has created to bring a fresh focus to its channel operations.

Zebra is uniting responsibility for the company's EMEA partner strategy and programmes under Obergfell.

Aconite Expands Smart Card

Aconite Technology Ltd has announced the appointment of Senior Consultant, David Worthington, as part of its international expansion plans to meet growing demand for EMV technology know-how in the UK, Middle East, Asia and Canada. David brings over 17 years experience in Smart Card and EMV technology David will advise clients on EMV migration and exploitation of new technologies, as well as programme planning and implementation.

Infineon Board Member Steps Down

Effective immediately, Dr. Andreas von Zitzewitz, is stepping down as Member of the Board of Infineon Technologies AG. He informed the Chairman of the Supervisory Board, Max Dietrich Kley, about his decision. Dr. von Zitzewitz is under investigation based on allegations of Udo Schneider, Managing Director of BF Consulting GmbH.

This is in context with payments made for contracts regarding motorsport sponsoring. Infineon is not under investigation and cooperates fully with the authorities. Dr. von Zitzewitz declared his resignation, to spare the company the burden of the ongoing investigation and to be able to fully concentrate on the expected court case.

W.R. Timken Jr. Retires From Diebold

Diebold, Incorporated has announced that W.R. "Tim" Timken Jr., non-executive Chairman of the Board for The Timken Company, has retired from Diebold's Board of Directors effective June 30, 2005.

Timken has been a member of Diebold's board of directors since 1986. While on the board, Timken held various committee responsibilities, most recently serving as member of the compensation committee and chair of the board governance committee. The Timken Company is based in Canton, Ohio and manufactures highly engineered bearings and alloy steel, and provides related products and services.

New HID EMEA Sales Manager

HID has announced that it has increased its sales support for the EMEA region with the appointment of Larissa Kaiser as regional sales manager.

Kaiser will be based in Bad Vilbel, Germany with sales responsibilities for Southern Germany, Austria, and Switzerland.

World News in Brief

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US Confirms Delay In Biometric Passport Requirements

Department of Homeland Security (DHS) secretary Michael Chertoff has announced this month that Visa Waiver Program (VWP) countries will be required to produce passports with **only** digital photographs by October 26, 2005. On that date, all VWP countries must also present an acceptable plan to begin issuing integrated circuit chips, or e-passports, within one year.

This announcement relates to the Enhanced Border Security and Visa Entry Reform Act of 2002 requirement that any passport issued after October 26, 2005, and used for Visa Waiver Program (VWP) travel to the United States, must include a biometric identifier based on applicable standards established by the International Civil Aviation Organization (ICAO).

"The electronic passport is the path to secure and streamlined travel among Visa Waiver Program countries", said Secretary Chertoff. "These passport requirements will maintain and strengthen the integrity of the Visa Waiver Program in a manner consistent with congressional intent and international standards. We are pleased by the progress of many Visa Waiver countries in complying with these requirements and we look forward to working with all participating countries toward their speedy and complete adoption."

After extensive consultation with Congress and the Department of State, DHS is requiring by October 26, 2005, a digital photograph of the passport holder's face printed on the data page of the passport. DHS will impose an October 26, 2006 deadline for the integrated circuit chip, or e-passport, capable of storing the biographic information from the data page, a digitized photograph, and other biometric information in travel documents. Valid passports issued before October 26, 2005, will still be accepted for travel under the auspices of the VWP, provided that the passports are machine-readable. In order to facilitate compliance with e-passport requirements, DHS will create a validation process for VWP countries to test their e-passport prior to issuance. An upcoming technical conference with VWP countries and the United States government will clarify the details of this validation process, which will require that all e-passports be submitted by September 1, 2006 in order to be validated by October 26, 2006.

In addition to the digital photo and chip requirements, DHS is taking steps to strengthen document integrity by requiring VWP countries to commit to several measures concerning lost and stolen passports. Among them, DHS will require VWP countries to report all lost and stolen passports to INTERPOL and DHS, report all intercepted lost and stolen passports and increase information sharing between VWP countries and the United States government on trends and analysis of lost and stolen passports.

In another step toward the implementation of the e-passport, DHS and the Department of State are conducting a "live test" with the governments of Australia and New Zealand. The "live test" ia being carried out at Los Angeles International Airport and at the Sydney Airport in Australia, and will continue throughout the summer. Airline crew and officials from United Airlines, Air New Zealand and Qantas Airlines have volunteered to use the e-passport when arriving at either airport. Their participation will enable DHS to further test operations, equipment and software needed to read and verify the information contained in an e-passport.

The 27 countries participating in the VWP include: Andorra, Australia, Austria, Belgium, Brunei, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxembourg, Monaco, the Netherlands, New Zealand, Norway, Portugal, San Marino, Singapore, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom. As previously announced, effective June 26, 2005, any traveler from these 27 countries is also required to be in possession of a machine-readable passport to enter the United States. Last year, approximately 15 million VWP travelers visited the United States.

RFID Offers Prospects for Mobile Operators

Although by no means a new technology, Radio Frequency Identification (RFID) is generating increasing interest in Europe due to its many advantages over the currently used trace-and-track technologies. RFID projects are proliferating in a variety of markets such as retail, transportation, pharmaceuticals and livestock, propelling companies and suppliers to adopt the technology in a bid to cut down costs in the supply chain while enhancing productivity.

Global growth consulting company Frost & Sullivan estimates that spending on RFID-related hardware, software and services in Europe will exceed 5 billion euros in 2007. While the retail and government vertical markets are likely to lead this spending, transport and logistics as well as manufacturing are also likely to contribute significant shares.

Currently, the high prices of transponders or tags are a major obstacle to the mass adoption of RFID. Manufacturers need to price these components more realistically for RFID to enter the mainstream and realise its true potential in the supply chain. Although this could take time, tag costs are already dropping. Further price decreases are likely to positively impact manufacturers' unit shipments and encourage them to attempt more large-scale projects.

As far as the opportunities for mobile operators are concerned, Frost & Sullivan believes that RFID holds great potential for operators seeking to increase average revenue per user (ARPU), especially revenue from the low-margin data services. "European operators have a key role to play in the transport of RFID data from field locations to the back office for at least either one of these two reasons," notes Frost & Sullivan ICT Consultant Mr. Andrew Tanner-Smith.

"First, it is the best technology to allow remote access on a large scale, and second, through the process of fixed-mobile substitution, it replaces fixed telecommunications lines where these have been the preferred data transport method in the past." While it is not expected that significant opportunities in RFID projects will materialise until 2007, it is recommend that mobile operators start developing and putting strategies in place to take advantage of these opportunities. The belief is that the market will start gaining traction around 2007 due to the ongoing fixed-mobile substitution. Currently, the extent of the operator's role in a RFID implementation seems to be confined to acting as a conduit for mobile and data traffic. However, many larger European operators are beginning to realise that their contribution to the market could be significantly higher.

"For example, by developing mobile applications, operators are beginning to add value to the mobile enterprise," remarks Mr. Tanner-Smith. "In the future it is expected that operators will increase the range of applications they offer to include those that may make use of RFID data, with some companies perhaps beginning to offer enterprise mobility services in this area."

As the market develops, mobile network operators and wireless local area network (WLAN) providers are likely to gain over fixed telecom networks in terms of carrying increased RFID data. The volume of data generated should increase tremendously - to the point where mobile operators could well be transporting volumes of RFID generated data that could be measured in terabytes through their networks in 2009. "This is not an insignificant amount of data, and operators need to ally themselves with key participants in the RFID industry to turn this projected scenario into a reality," says Mr. Tanner-Smith. "

They need to identify the right vertical markets for their organisations to target and be realistic about the pricing of their data transport services." There is a huge base of potential end users seeking the most economical way of transporting data from the field to the back office. Mobile operators can successfully convert these end users into RFID clients by offering attractive pricing structures and bundling voice and data services into one cost-effective option.

Can Biometrics Replace Smart Cards?

By Dr David Everett, CEO, Smart Card Group

The events of the 7th July in London have increased the focus on identity cards and biometrics. Both concepts are under attack, in many cases with convoluted logic, but invariably out of scope of the objectives and the resultant risk model. We hasten to add that there is no suggestion here that ID cards are going to stop terrorism but we do suggest that there is a distinct lack of understanding about what such technologies can or can't do.

Dr David Everett

Our everyday world is founded on the significant advances in science and engineering that have taken place over the last 50 years. The quality of life for those in the developed countries at least has increased beyond all bounds in this time period and we can propose here that if you can define a problem that doesn't break any of the basic laws of physics then you can always find a solution.

Identity verification or authentication is the cornerstone of many problems we face today in both physical and logical access control. Going back to first principles we know that we can use,

- ❑   Something you own (e.g. a Smart Card)
- ❑   Something you know (e.g. a password or PIN)
- ❑   Something you are (e.g. a biometric such as a fingerprint)

as a way of creating the necessary confidence about authenticating an individual. It is common to use the term Factor (F), so 1-F means single factor authentication where just one of the list is invoked for the authentication process. It is generally accepted that 1-F is weak authentication and that at least two factors should be employed, hence the 'Chip & PIN' which is effectively 2-F authentication, the Smart Card and the secret PIN. Clearly it would be even better to use all three characteristics for 3-F authentication.

Now here lays the plot, the general populace don't like the inconvenience of 3-Factor authentication so they would prefer just one factor like say a fingerprint. This means you don't have to carry a card and you don't have to remember a password. In order to log into your computer you only have to present your finger to the reader and with the help of Microsoft you can obtain such readers for £25. Is this the way to go?

No, no, and no again. In the first place single factor authentication is by default weak but biometrics in particular produce their own problems. If you use a card or token then there is a risk you may lose it, if you use a password then you may inadvertently reveal it to others or more likely forget it.

In all these cases you can revoke the card or password as no longer being a valid authentication token for your identity. A fingerprint or Iris scan is more difficult to revoke it's not something you can easily change, revocable biometrics is currently a major research topic, and commercial products today have no answer for this problem.
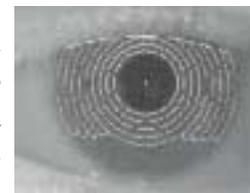
Everybody accepts that a password must be kept secret, but how about your fingerprint or its template reference? What is the risk that some perpetrator can emulate your fingerprint or Iris scan? Well, extremely high because it has been practically demonstrated by Professor Matsumoto (Yokohama University) and others.

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This means you have to treat the biometric the same as a secret password, protected by cryptographic means wherever exposed, in practice this would mean using tamper resistant modules like a Smart Card! Nobody seems to have realised how much this matters, its even worse because Professor Matsumoto is also capable of leaving fingerprints that emulate some innocent party. This could provide some excitement in the legal world where the forensic evidence relies on a fingerprint!

So where is the good news? Well it gets worse because all biometrics suffer from errors often called the 'False Accept' and 'False Reject' error rates. In general a biometric scheme can be adjusted to bias towards one of these errors. In the military world you want a low 'False Accept' and don't mind the 'False Reject' being higher. In the commercial world it's probably the other way around.

Now the manufacturer's brochure will talk about errors of 0.1% or less but in the real world that's not what happens. Start to think about 1 - 10% errors or more and make a note that there is a significant sector of the population that fail particular biometrics. Fingerprint for example doesn't work well in any dirty manual environment such as a building site nor with more elderly people. Iris scan also has its problems with visually impaired people or people with some forms of eye injury or surgery such as cataract removal.

So where do we go next? The thing about biometrics is that they should not be considered as a single factor (1-F) authentication scheme but in conjunction with something else.

Then you can look at passwords or a Smart Card. Given the difficulty of managing passwords this is not a debate, the Smart Card wins hands down and furthermore it can be used to do the biometric comparison.

On a passing note we have deliberately avoided discussing facial biometrics, right now it looks to be the most unreliable of the more common biometrics but this is probably where the future lays and is currently where we are focussing our attention.

Events Diary

August 2005

4th	Banking Technology India 2005 - *Bangalore, India - www.bharatexhibitions.com/english/Banking2005.shtml*

September 2005

13 - 15	SmartCards Expo 2005 - *New Delhi, India - www.electronicstoday.org/SMARTCARD05.htm*
14 - 15	The 4th Asian High Security Printing Conference - *Hanoi, Vietnam - www.cross-conferences.com*
21 - 23	e-Smart and World e-ID Conferenced 2005 - *French Riviera - www.strategiestm.com/conferences/*
21 - 24	Labelexpo Europe 2005 - *Brussels, Belgium - www.labelexpo-europe.com/*
26 - 27	6th International Conference Smartcards in Transport - *Paris, France*
27 - 29	Loyalty World - *London, United Kingdom*

October 2005

1 - 2nd	eyefortransport RFID Opportunities for Transport and Logistics Providers - *Las Vegas, Nevada, USA - http://www.icma.com/meetings/annual-expo.htm*
6th	Radio Rrequency Identification 4 Reatilers - *London, UK*
17 - 19	Banking Technology - *Budapest, Hungary*
18 -21	2005 Annual Fall Smart Card Alliance Conference - *Miami, Florida, USA - http://www.smartcardalliance.org/*
10 - 12	RFID Journal Live Europe - *Amsterdam, Hotel Okura - www.rfidjournallive.com/europe*

Chip and PIN - £1.1bn Well Spent?

By Steve Carter, Senior Consultant, Savantor

{ Savantor }

Steve Carter

Chip and PIN deployment in the UK is well under way. At a cost of approximately £1.1billion to rollout the system, it is bringing about the biggest change to the card industry since ATMs were introduced. At the start of 2005, more than three quarters of UK card holders had been issued with a Chip and PIN card and a vast amount of businesses are now using this new, more secure payment system. More than 45 successful Chip and PIN transactions take place every second in the UK and counterfeit fraud has already fallen by 2% to £123m, thanks to the chip.

However, the implementation of this new system of payment is not without its problems. Fraud in other areas is more prevalent and media scaremongering over the divulgence of a personal pin number is not making the successful migration to Chip and PIN easy. But, as the UK prepares to convert to Chip and PIN by the 2006 deadline, it's time to ask how secure it really is, who will benefit most from its introduction, and is it really £1.1bn well spent?

Tackling Fraud: The primary reason for the introduction of Chip and PIN to the UK was to assist in the fight against fraud. Despite early setbacks, counterfeit fraud is falling, thanks to the chip. But as we're all aware, fraud doesn't simply disappear - it finds other ways and areas in which to rear its ugly head, and this is demonstrated in current UK fraud figures. Card Not Present fraud (CNP) rose dramatically by 29% to £139 million in the year to July 2004. Fraudsters are increasingly turning their attention to the Internet, MOTO (Mail Order Telephone Order) and even Interactive TV where PIN validations are not needed in order to complete a transaction. Systems are already in place to help combat MOTO fraud, such as address verification system (AVS) and CVV2 (the three digit number on the back of the card). However, studies have shown that the CVV2 method of authentication is only requested in one in three Visa transactions, and VbV/SecureCode is not yet attracting merchants in numbers necessary to make this system viable as a fraud prevention.

Figures from Visa now show that the average e-commerce transaction value now outstrips the average high street card transaction. Increased consumer confidence comes from a familiarity with this buying channel plus the improved security available for online shoppers. However, as Chip and PIN has in some ways steered fraudsters towards CNP fraud, security continues to be a concern with prominence given by the press to phishing scams. Issuers do need to address cardholder concerns in this area. One way to achieve this is with improved authentication methods, rather than simple passwords as used today to gain access to online banking or even to pay for purchases.

One method currently being trialed is the Chip authentication Programme (CaP) or two factor authentication. This calculator sized device, allows the owner to insert their card and enter their pin, to generate a one-off series of numbers which can then be entered into the merchant site. Whether banks will issue this free of charge to its cardholders or whether users will be charged a nominal fee remains to be seen. But for the first time Visa and Mastercard have agreed to operate on the same platform, making this a potentially seamless implementation. CaP has been successfully piloted in countries such as Belgium and Sweden.

The real benefit of this approach is that it can be used as a single, highly secure authentication method, across multiple delivery channels, not just Internet payments. But the banking and finance industry has to put the effort behind these CNP prevention initiatives to avoid having to wait, as it has with Chip and PIN, for fraud to reach big enough levels for someone to shout. So while we can argue that, as Chip and PIN is addressing the types of fraud it set out to address, and plans are in place to combat the other areas of fraud which are currently seeing a rise in 'popularity', one must question where, then, fraud will move once the UK completes its migration to Chip and PIN.

opinion

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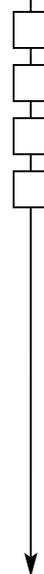
North America and Africa are undoubtedly the next targets of the fraudsters. As countries where Chip and PIN has not been implemented they're susceptible to the fraud that we are forcing out of our door. It's not until they notice a dramatic surge in their levels of fraud that these countries will have to weigh up their options.

The Myths: The £1.1bn spent on introducing Chip and PIN to the UK is undeniably a sum well spent. As mentioned earlier we've already seen a reduction in fraud, which will increase even further when migration is completed mid 2006. But as with the introduction of anything new and different, the UK media has been hot on the heels of the scare mongers desperate to prove that Chip and PIN is not the failsafe weapon against fraud that it's claimed to be. Recent investigative documentaries claimed to have uncovered a security flaw in Chip and PIN payment cards, which allegedly allows fraudsters to disable and over-ride Chip security measures using information embedded in the magnetic strip. Notably, a recent current affairs programme, showed an anonymous 'industry insider' cloning a Chip-based card using software and a skimming device bought on the Internet.

References were also made to a supposed 'golden pin', which would allow retailers to access the details of individual card holders to make fraudulent transactions. This is a complete nonsense. What these programmes, which set out to prove that Chip and PIN is a failure, have conveniently missed out, is that it is a migration. While we still have PIN bypass at POS and fallback available from Chip to magnetic stripe, there will still be loopholes available for fraudsters to use. This was a joint industry decision between the banks and retailers, both of whom were worried about upsetting their cardholders by putting too much pressure on them, by asking them to remember four numbers. But by this time next year, that loophole will be shut, and no doubt we'll witness a dramatic fall in card present fraud.

Shoulder surfing is the other hot topic of the moment. There is the suggestion that Chip & PIN is inherently weaker than magnetic stripe, because fraudsters can look over a customer's shoulder and see their PIN, before stealing their card. This would then, supposedly give the fraudster the option of using a stolen card at an ATM as well as POS. How this is easier than copying a signature which is conveniently displayed on the back of a card, and which retailers never look at anyway, is a mystery. Fraudsters already target branches to make cash withdrawals over the counter with stolen/fraudulent magnetic stripe cards. If card holders look over their shoulders first, avoid writing down their pin number, and make sure they change their PIN to a number they can remember, then Chip and PIN seems like a more secure system. While the myths can be dispelled, the realities of introducing a system like Chip and PIN must be dealt with. Consumers and retailers have voiced criticism over its introduction. Indeed a recent survey of 1000 UK adults suggests that UK consumers are finding it so difficult to remember multiple personal identification numbers, since the introduction of Chip and PIN technology, that they are cutting down the number of plastic payment cards they use.

Retailers meanwhile, are still reluctant to embrace the new solution. A study carried out earlier this year by payments software vendor Retail Logic revealed that fewer than half of UK retailers are using the Chip and PIN system for processing card transactions. While small businesses have been able to implement the system using bank owned terminals, and larger high street chain stores can afford the software necessary to roll out the system themselves, mid tier retailers remain exposed. They have held back from implementing Chip and PIN due in part to a lack of integrated systems suitable for them, the cost involved, and also because some retailers, for example, florists, simply don't see themselves as targets of fraud. However, all this will have to change once the Chip and PIN roll out is completed. Demand from customers will no doubt force mid tier retailers to adopt the technology. Of course there will be exceptions to the Chip and PIN rule and issues which will need to be considered, even when PIN bypass is completed. While it's easy to say that card holders will have to remember their PINs, there will undoubtedly be occasions when minds draw a blank. How then can petrol stations and restaurants, for example expect people to pay for their goods (which they've already consumed) if they are unable to key in their PINs?

Conclusion: In summary, I believe that Chip and PIN is undoubtedly £1.1bn well spent. Every new initiative has both its cynics and its critics and while current fraud figures show that an eradication of fraud is still a long way off, there is most definitely a light at the end of the tunnel.

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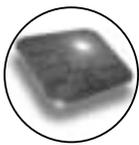
A Primer on 'Flip Chip'

By George A. Riley, PhD, FlipChips Dot Com

George Riley

As technology life spans go, flip chip interconnection should by now be doddering to its grave. Instead, it is still growing like an adolescent. Let me explain what's behind this age-defying technology's eternal youth. Flip chip was born at IBM in the early 1960s, to support their now-dinosaur mainframe computers. GM developed their version of flip chip for automotive electronics in the 1970s, and now use over 300,000 flip chips a day. The first consumer flip chip products appeared as cheap calculators in the early 1990s, followed closely by inexpensive digital watches. Since then, flip chip has blossomed into today's cell phones, hearing aids, digital cameras, PDA, pagers and many other portable devices. Over the past decade, flip chip has also become the preferred assembly method for hundreds of millions of smart/RFID cards annually.

WHAT? Flip chip assembly is the direct electrical connection of face-down (hence, "flipped") electronic components onto substrates, circuit boards, or other components, by means of conductive bumps on the chip bond pads. In contrast, wire bonding, the older technology that flip chip replaces, uses face-up chips with an individual wire connected to each bond pad. *Figure 1* is a conceptual view of a flip chip and substrate.

Flip chip was first used with semiconductor devices. Now semiconductors, passive components, antennas, sensors, optical and electromechanical devices are all assembled in flip chip form. Flip chip is also called Direct Chip Attach (DCA), a more descriptive term, since the chip is directly attached to the substrate, board, or carrier by the conductive bumps.

FIGURE 1.: *A flip chip and substrate, shown with the bumped active face of the die to be placed face down upon the matching substrate.*

WHY? The continuing boom in flip chip packaging results from flip chip's advantages in size, performance, flexibility, reliability, and cost over other microelectronic assembly methods.

Smallest Size -- Eliminating bond wires and cumbersome individual packages reduces the required board area per chip by up to 95% and the height by more than 50%. Weight can be less than 5% of the packaged device weight. Flip chip is the simplest minimal package, smallest because it is very close to chip size.

Highest Performance - Because of its small size, flip chip offers the highest speed electrical performance of any assembly method. Eliminating bond wires reduces the delaying inductance and capacitance of the connection by a factor of 10, and shortens the signal path by a factor of 25 to 100. The result is high speed off-chip interconnection.

Greatest Connection Flexibility -- Flip chip gives the greatest input/output connection flexibility. Wire bond connections are limited to the perimeter of the die, driving die sizes up as the number of connections increases. Flip chip connections can use the whole area of the die, accommodating many more connections on a smaller die, and placing them most efficiently. Area connections also allow 3-D stacking of die and other components.

Most Rugged -- Flip chip is mechanically the most rugged interconnection method. Flip chips, when completed with an adhesive "underfill," are solid little blocks of cured epoxy. They have survived laboratory tests simulating the forces of rocket liftoff and of artillery firing, as well as millions of cumulative total hours of actual use in computers and under automobile hoods.

Lowest Cost -- Flip chip can be the lowest cost interconnection for high volume automated production, with costs of a fraction of a cent per connection.
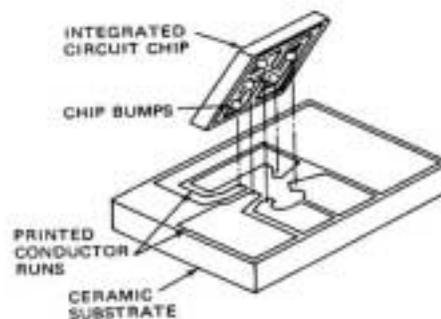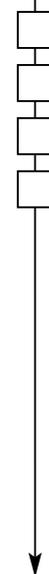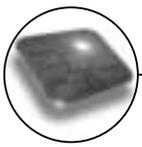
This explains flip chip's longevity in the cost-conscious automotive world, and growing popularity in Smart Cards, RFID cards, cellular telephones, and other cost-dominated applications.

HOW? There are three steps in making a flip chip connection: putting conductive bumps on the die bond pads, attaching the bumped die to matching pads on the board or substrate, and filling the remaining space under the die with a protective, electrically non-conductive adhesive. The conductive bump composition, the attachment materials, and the assembly processes used differentiate the many varieties of flip chip assemblies. The cost, performance, and space constraints of the application determine which flip chip process is the best solution. We'll focus here on gold-bumped adhesive assembly, one of the most practical flip chip bumping and attaching methods for Smart Cards/RFID.

Gold bumps may be deposited by plating, sputtering, or direct bonding. Plated gold bumps require pre-processing to remove the insulating aluminum oxide before plating gold bumps onto the wafer bond pads. Plated nickel-gold bumps are formed on the semiconductor wafer by electroless plating of the aluminum bond pads of the chips. After plating the desired thickness of nickel, a gold layer is added, and the wafer is sawn into bumped die. Alternatively, pure gold bumps may be electroplated onto processed bond pads before sawing, or gold stud-bumps may be directly mechanically placed on the pads using gold wire in a ball-bonder.

FIGURE 2: *ACF film before assembly, with the spheres uniformly distributed and making no electrical conducting paths.*

The preferred adhesive assembly method for Smart Cards/RFID goes by the mouth-filling name of "anisotropic conducting film," or ACF. ACF consists of millions of microscopic conductive spheres distributed uniformly throughout a non-conductive polymer adhesive film. The spheres have a thin outer insulating layer, and are normally not touching each other, so the film is an electrical insulator. *Figure 2* gives a conceptual view of ACF film before assembly.

In the ACF assembly process, heat softens the film, while pressure forces the die and substrate bond pads together, trapping some conductive spheres between them and breaking through the sphere insulation to form conducting paths from die to substrate pads. Cooling the film locks the pads and trapped conducting spheres in position, while non-trapped insulated spheres remain distributed, with no electrical contacts. *Figure 3* is a conceptual view of the ACF film after assembly. The entire ACF assembly operation is carried out by high-speed automated equipment, for high throughput and low cost.
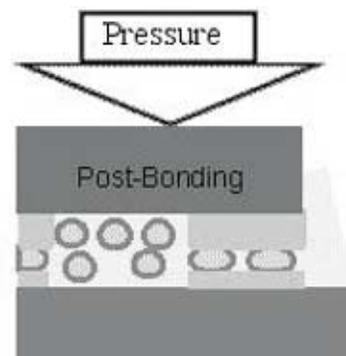

FIGURE 3: *ACF film after assembly, with the conducting spheres locked between the chip and substrate bond pads.*

The non-conducting ACF film also acts as the "underfill" adhesive, filling all of the space under the die to lock together and protect the die and substrate. Because cured ACF conducts only in the vertical, pad-to-pad direction, it is sometimes called "Z-axis" film. ACF has been used commercially since 1992, and now provides billions of interconnections per year, including hundreds of millions of Smart Cards/RFID.

CONCLUSION: Flip chip in general is still growing at 30% to 40% per year, and could have a long and happy life for high volume, low cost, Smart Card/RFID assembly. As always with micropackaging technologies, smaller and possibly less costly contenders are creeping out of the laboratories. Leading candidates now include the nanotechnology family. Possibilities include nanofilms, a version of ACF with aligned conductive filaments replacing distributed conducting spheres, and nanoparticle adhesives with uniquely improved behaviors. Will flip chip be the champion in Smart Card/RFID a decade from now? Only time and cost will tell.

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Time to Re-Evaluate the Business Case for Smart Cards in Transport

By Jason Smith, Staff Reporter, Smart Card News Limited

In 2000 the UK Department of Transport (DfT) released a report entitled "Transport 2010: the Ten-Year Plan", which set out their long-term strategy for delivering transport policy objectives. It recognised the potential for embracing new and emerging technologies and, specifically, identified contactless Smart Cards that enable convenient and versatile ticketing systems as an important element in the provision of better public transport. To achieve the plan the report stated that transport operators would need to develop common solutions avoiding the requirement for passengers to carry a variety of tickets to travel through several areas or across modes.

Jason Smith

Early trials of contactless Smart Cards demonstrated their capability to store details of tickets on a secure, reliable and fast medium which could be interpreted by transport operators at ticket barriers and kiosks, or by using portable handheld devices. The development of complex back office ticketing systems, linked with the Smart Card media, provided the opportunity for the customer to 'roam' competing public transport operators and seamlessly travel.

Now in 2005 the advantages of contactless Smart Cards for ticketing are by now well understood. Just look at the Oyster Card in London as an example. The Oyster card is a contactless Smart Card that is currently used for concession passes, weekly, monthly, and longer period Travel cards as well as a flexible "Pre Pay" stored value e-purse facility which enables automatic payment for single journeys on London's transport system.

Some 16,000 Smart Card readers give Oyster card holders access to the world's largest and most complex urban-transport system, including some 273 Underground stations and over 8,000 buses. This contactless system has helped smooth out London's urban transport for the 8 million passenger-trips a day on the public transport network.

For transport operators, contactless Smart Cards provide a smooth, seamless travelling experience by enabling tickets to be purchased or topped-up from one operator and used with any other operator throughout the region or country. They also provide opportunities for multi-purpose ticketing - for example, having station car park, rail travel and event entry included on one ticket - and more sophisticated loyalty/reward schemes. Contactless Smart Cards also eliminate the high maintenance costs of magnetic-stripe readers and generate data valuable for traffic management and logistics. Multi-application smart tickets can also enable the travel fare and entry to an event such as a concert or football match to be included on a single ticket, for example. Many government agencies would like to see more flexible ticketing to encourage the use of public transport. Work patterns are changing - fewer and fewer people work nine to five. More sophisticated, flexible ticket types will help support these trends. However to develop and deploy a contactless Smart Card Scheme for mass transit, a transport operator faces three main challenges;

Cost - contactless cards don't come cheap! This is due to the relatively high cost of the Radio Frequency Identification (RFID) chips required within the cards. This means that for a number of lower-value ticket types, contactless Smart Cards are an expensive option, forcing public transport operators to consider the deployment of multiple technologies - a move that is widely regarded as inefficient and undesirable. In addition, some local Smart Card schemes throughout the UK, have been built using proprietary systems, creating uncertainty among transport authorities and operators about investment. A DfT-sponsored business case analysis for low-cost (or disposable) smart ticketing - also known as Limited Use smart tickets - found that they become viable when the unit cost of the ticket medium falls below 0.25 euros and provided a positive return on investment when the cost of the medium falls below 0.15 euros. The unit cost of the most widely deployed transport Smart Cards today is less than 1.50 euros. This has limited their use to high-value, multiple-use applications such as season passes and concession cards.
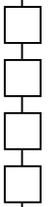
Standardisation - national and international standards are vital to the success of contactless ticketing in mass transit applications, so that local government and operators can specify and procure solutions with certainty. For Smart Cards to deliver their promise of seamless national travel, reduced costs and improved resource planning, the availability of standards that enable interoperability is essential, as is the expansion of these standards to cover Limited Use ticket types. The key international standard for interoperability of proximity Smart Cards is ISO 14443, which was published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) in 2000. However, many existing local Smart Card schemes have been implemented using proprietary data structures, without the adoption of common national - or international- standards.

In the UK, the Department for Transport (DfT)-supported Integrated Transport Smartcard Organisation (ITSO) was set up in 1998 to establish standards for interoperable Smart Card ticketing across the country's rail and bus network. Members of ITSO include the UK's regional Passenger Transport Executives (PTEs), rail and bus operators and vendors.

ITSO is designed to ensure that developing systems are interoperable through the creation and maintenance of a specification - based on relevant international standards - for secure end-to-end ticketing transactions. The UK Government has mandated that transport ticketing projects must comply with ITSO specifications in order to receive central funding.

The Transport Card Forum (TCF) is a UK DfT-sponsored group of experts on Smart Cards drawn from local government bodies, transit authorities, operators and technology companies formed to assist the implementation of the UK Government's integrated transport policies. The work of the TCF is carried out in Working Groups, which report to the DfT. TCF Working Group 8 (WG8) was set up in 2001 to examine the opportunities for Limited Use smart tickets. Low-cost Smart Cards were not included in the original remit of ITSO. However, having demonstrated the business case for low-cost Smart Cards, TCF WG8 has now developed an extension to the ITSO standard for Limited Use Smart Cards, with a view to setting the groundwork for the three UK demonstration projects.

The DfT approved the extended standard, ITSO v2.1, in March 2004. The ITSO standard's first major operational test is now under way with the NoWcard, an initiative undertaken by a group of county councils in north-west England covering Lancashire, Blackburn with Darwen, Blackpool and Cumbria. An expansion of London's Oyster Card scheme to Limited Use smart ticketing is being considered for 2005/2006. In addition to ITSO, ISO now has two work items under way to expand the scope of ISO14443 for Limited Use smart tickets.

Technology - with policies and standards falling into place, the next challenge has been for technology innovators to create workable solutions at the required price-point for mass transit applications. Driving the mass adoption of smart ticketing in transport means making low-cost, disposable Smart Card tickets a viable proposition. And this requires low-cost RFID tags that can be integrated into Limited Use tickets through new production techniques, in high production volumes. To achieve this cost level, Limited Use Smart Cards need to be made of cardboard or paper, and must dispense with the on-board microprocessor and other capabilities of high-value Smart Cards. Industry analysts believe that if Limited Use contactless Smart Cards can be manufactured for about each, 0.15 euros each ,then the market for these cards could be substantial.

In fact, the total available market for Limited Use tickets is projected to grow from 277 million units in 2006 to 8.6 billion units in 2009 according to Innovision R&T's White Paper on 'Smart ticketing for mass transit - the new global opportunity created by low-cost, contactless ticketing'

At the UITP World Congress in Rome this month, Trevor Crotch-Harvey, a Smart Card expert at Innovision Research & Technology, and chair of the UK's industry working group focusing on Low Cost Smart Tickets, has called for the transport sector to re-evaluate the business case for Smart Cards in transport. During the conference Mr Crotch-Harvey presented a paper entitled 'Low Cost Tickets & their impact on the Business Case.'

The arguments for a more aggressive uptake of smart ticketing could not be more straightforward, according to Innovision R&T, which has been driving the adoption of Radio Frequency Identification (RFID) technology in ticketing applications over the last year since the launch of its Jewel RFID chip. However, according to Trevor Crotch-Harvey, more emphasis needs to be put on educating operators about how they can best capitalise on the benefits of this rapidly growing market.

Mr Crotch-Harvey said "The industry is demanding low cost Limited Use smart ticketing, but very few are prepared to step up to the mark and fully commit to it. Cost has certainly been an issue up to now for low value ticket types such as daily passes or single trip tickets. But recent developments in RFID components and improvements in silicon chip manufacturing are rapidly driving down the unit cost, to the extent that it should no longer be a major concern."

Innovision R&T's 'call to action' is echoed by other industry experts and Innovision R&T partners, who also recognise the growth potential of the Smart Card market. Hassan Tavassoli, Vice President of Industry & Government at global Smart Card manufacturer Giesecke & Devrient, said: "We recognise the significant market potential for Limited Use contactless Smart Cards and are predicting good growth this year within the mass transit sector, as transport agencies and operators start technology trials and implementations. The cost of the technology is no longer a barrier to adoption - operators can now enjoy a positive return on investment and passengers can benefit from seamless travel."

Innovision R&T's Trevor Crotch-Harvey accepts that there are technical and mechanical production challenges that need to be overcome in order to achieve a robust and reliable high volume process, capable of meeting the demands of such a high volume market, but believes these are being addressed. "Challenges at the technology level tend to focus on chip design and layout. But now with the introduction of custom RFID chips specifically designed for low cost ticketing such as Innovision R&T's Jewel product, manufacturers of tickets and contactless reader technology need to start taking advantage of these developments by designing interoperable systems.

"In parallel with this, the latest regulatory specifications from ITSO in the UK and ISO have been modified to reference low cost ticketing, limiting product performance to what is absolutely necessary in order to achieve lowest cost. The message is loud and clear. Many of the barriers to adoption are being removed and, while there are many contactless ticketing trials now in place, it is up to the transport operators, authorities, systems integrators and vendors to seriously re-evaluate this opportunity and make low cost smart ticketing for mass transit a reality."

Conclusion: Smart ticketing offers the mass transit industry a significant opportunity to reduce costs, improve efficiency and enhance the travelling customer experience. Low-cost contactless ticketing will fill the gap between the current high-end Smart Card-based solutions and traditional Limited Use ticketing, without the high running costs associated with magnetic stripe-based solutions.

Bringing down the cost of the chip will have a significant impact on the cost of Smart Cards and the launch of Innovision R&T's Jewel RFID chip last year is helping address this major issue.

It is now up to the transport operators and authorities, system integrators and solution vendors to grasp the opportunity presented by contactless ticketing technologies. This process is being initiated through pilot trials around the world aimed at proving the commercial and passenger benefits. The first steps towards a future of totally contactless mass transit ticketing are well underway.