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# The Future of Smart Cards

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Asia Pacific Smart Card Association

## About APSCA

- The only regional, independent, industry association for smart card business in Asia Pacific
- Established in 1997, offices: Shanghai, Taiwan, Japan, Malaysia. Parent smart card associations in EMEA since 1993.
- Members in China, Hong Kong, Taiwan, Japan, Korea, Singapore, Malaysia, Thailand, Australia and Pakistan
- Organised over 100 industry forums covering smart card business and technology across 9 countries in the Asia Pacific
- Extensive network of smart card end-users and suppliers, covering all business sectors.

## Key smart card business sectors...

- Credit, debit and ATM cards
- Low value contactless payment cards
- Transport contactless payment cards
- SIM cards for mobile telephony (and later payment)
- Retailer loyalty cards
- Government-issued (identity) cards
- International travel documents
- Enterprise IT
- Others ...



# Financial Payment Cards

## EMV Migration

- Driven by payment brands: MasterCard, Visa, JCB
- Driven by national bank organisations (BNM, BAROC, FSS, PBOC,..)
- Most of Europe, Gulf and Asia now in migration process
- Migration strategy is acquiring first then issuing
- Primary driver is “card present” credit card fraud
- Smart cards will later play a role against card-not-present fraud
- Product differentiation & development also a driver
- USA is only major market holding out against EMV migration

▶ Financial ATM Cards

## ATM card fraud

- A growing regional problem
- Malaysia: banks mandated to issue PMPC card in Sept 2002
- Korea: FSS mandated ATM chip card migration by 2005.. +1
- Taiwan: BOMA mandated ATM chip migration by 2005
- Japan: suffered from serious ATM card fraud
- Has produced some multi-application smart bank cards
- Converting ATM infrastructures to chip can be very expensive



# Contactless Payments

# The future of electronic payments

- Contactless makes low value epayments feasible
- But converting small cash payments to epayments will take time
- The greatest challenge is changing consumer behaviour
- There is also resistance from retailers (business case)
- Eventually medium and high value should migrate to contactless



## Outlook for financial smart cards

- All financial banks will migrate to smart cards
- ATM (Cash) cards
  - No immediate demand for contactless transactions, but ....?
- Credit (and debit) cards
  - Contactless low value payments will continue to grow
  - Mobile contactless low value payments soon
  - Medium/high value contactless transactions in the future?
- “emoney” (as legal tender)
  - When feasible, it will use contactless smart technology
- Over time, these services will migrate to NFC phones
- For business reasons, cards will continue to be issued

▶ Transport cards

## Ticketing, fare collection, transport payments

- Transport revenue collection migrating to contactless cards/phones
- Supports business case for contactless (micro) epayments
- Strong business case for NFC mobile (micro) payments/transactions
- Convergence with smart SIM cards in NFC mobile phones
- Convergence with financial smart contactless payments
- Outlook: all transport payments eventually based on smart cards
- Outlook: NFC will grow rapidly in transport (information display)



▶ Mobile telephony

## Mobile Identification and Payments

- SIM cards: largest, most mature smart card market
- ~2.5Bn GSM phones have one [and many CDMA phones]
- ~120M 3G (WCDMA) phones have one
- Drivers for mobile NFC payments, including GSM Association
- Mobile contactless payment already proven in Japan
- Internationally, business cases still need to be finalised
- International SIM standard updates should be finalised soon
- Then NFC mobile handsets will begin to appear

**NFC mobile phones will (eventually) play a major role in payment and identity transactions across all business sectors**

▶ Smart Loyalty Cards

## Smart Loyalty (Points) Schemes

- Demand from retailers for customer relationship management
- Can be combined with gift cards and co-branded bank cards
- Will grow with deployment of contactless payment infrastructures
- In the future, using NFC mobile phones
- Now beginning to see the first transport card loyalty schemes
  - Shanghai Public Traffic Card [smartclub]
  - Octopus Cards



▶ Government-issued cards

# Types of government-issued cards

- National ID cards
- Health cards
- Driving licence cards
- Local government citizens' cards
- Civil service cards
- Passports

## National smart ID cards in Asia

- Smart cards now accepted by the public sector
- Malaysia, Brunei, Hong Kong, Macau, China, Thailand launched
- Planning in South Korea, India, Indonesia, Philippines, ....
- Primary objective is national identity management
- Some countries adding other eGovernment applications
- Malaysia has 7 applications on national smart ID card



**6<sup>th</sup> Asia Pacific Government Discussion Forum**

**Electronic Identity Documents**

**December, Brisbane, 2007**

## National smart ID cards in Europe and Gulf

- Belgium, Italy, Spain, Estonia deployed or rolling out
- UK, France planning national schemes
- Sweden, Finland: optional: and so small numbers issued
- Many countries now issuing ICAO standard ID/passport cards
- Oman, UAE, Saudi Arabia, Bahrain now issuing smart ID cards
- Yemen, Qatar, Kuwait, others: planning and researching
- Gulf Co-Operation Council proposing interoperability
- Morocco to issue first contactless national smart ID card
- Most of these national smart ID cards include biometrics

There is now a clear trend towards national smart ID cards aimed primarily at national identity management

## Health and social security cards in Asia

- Major opportunity for smart health cards and eHealth applications
- Health is often the primary national application after ID
- Often requires patient cards and health professional cards
- China: social security card piloted in Shanghai, now other cities
- Taiwan has issued: 24M national health insurance cards
- Business case is fraud/cost containment & eHealth applications



**1st Asia Pacific Discussion Forum on Smart Health Cards**

**(Government Health Agencies)**

**November, Taipei 2007**

## Health and social security cards in Europe

- Germany: 80M issued, new eGesundheitskarte now piloting
- France: 50M citizens cards + 0.5M health professional cards
- Belgium: 10M Social Identity Cards
- Austria 8M Social Insurance e-Cards
- Slovenia: 2M health insurance cards 70K professional cards
- Pilots also in UK, Finland, Italy, Czech Republic
- French and German health professional cards are PKI
- Other health-related smart card applications include:
  - E-prescriptions and doctor's notes
  - Occupational health cards, cross-border health care

## Smart driving licences

- Malaysia: as a national smart ID card application
- India:
  - developed national interoperable standard for smart card licences
  - 3M issued in Gujarat, Madhya Pradesh, Goa, Sikkim, more ...
- Japan: rolling out 80M contactless driving licences
- Australia: Queensland plans 2.5M starting 2009
- Hong Kong: planning as a national smart ID card application
- Several European countries planning smart driving licences

## Citizens' card schemes

- Smart cards for closed local government community schemes
- Often where national ID cards are blocked due to privacy issues
- Functions related to local authority and commercial applications
- Japan:
  - Basic residency card issued by local authorities since 2003
  - Government now considering issuing “more useful” card
- UK:
  - Large number and variety of local government schemes
  - Majority are commercially driven with real business cases
- Doubts as to whether this is a long-term, sustainable application
- Smart cards for citizens better driven by central government?

## Civil service smart cards

- USA leading with smart cards for government employees
- USA is driven by post 9/11 security initiatives
- Elsewhere lack of pressure will necessitate business cases
- USA: Department of Defense “Common Access Card”
  - 4M PKI cards for military and civilian personnel
  - De-centralised (global) issuance
  - Now being upgraded to larger memory and dual-interface
- USA: Transportation Worker Identification Credential [TWIC]
  - Issued by Transportation Security Administration (TSA)
  - TSA plans to issue 12 million smart cards with PKI

▶ International travel documents

## Next-generation biometric passports

- Specifications defined by International Civil Aviation Organisation
- ICAO: specialised UN agency, 188 member states
- Existing ICAO standard for machine-readable passports
- Targeting counterfeit passports and identity crime
- Secondary objective of risk-based passenger facilitation
- Driver 1: US visa waiver programme for 27 countries
- Driver 2: EU mandate for e-passports by August 2006
- Potential market of ~750 million passports worldwide
- Specifications can be downloaded from ICAO web site

## Impact of ICAO ePassport

- First international specifications for contactless eID
- Driving migration of government documents to contactless ID
- ICAO ePassport also driving government adoption of biometrics
- Governments objectives towards national identity management
- Expected to influence all government-issued identity documents
- Some countries considering ICAO standard for national eID

**The ICAO ePassport has been the key driver of the eID market over the last four years**

# Enterprise IT

- Physical/logical access control and applications
- Smart cards for corporate identity management
- Migration from “prox” cards to contactless smart cards
- Logical access control complicated by computers
- Smart card readers still not standard issue on PCs/notebooks
- Possible that NFC may solve this problem in the future

## Smart cards online ...

- Still little use of smart cards to secure online transactions
- Lack of PC smart card reader infrastructure is the challenge
- Not feasible for consumers/citizens to install their own readers
- Challenge may be addressed when PCs come fitted with NFC
- Does it work in Japan? Where PCs come fitted with FeliCa?
- Commercial drivers for smart cards online do exist ...
- Card-not-present fraud, transport reloading, eGovernment, ...
- PC manufacturers are not affected by these commercial drivers

## Questions?

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