

Managing Card Issuance Nowadays

Speculation has it that 2015 will be the year when mobile payment platform becomes commonplace. In the U.S., Starbucks currently processes seven million mobile payments a week and Venmo processed a total of USD 700 million in Q3 2014, representing an annual increase of 500%. Apple Pay, on the other hand, saw one million cards registered in the first three days after its launch. According to Juniper Research, there will be altogether 450 mobile payment users by 2017, up from 245 million at the end of 2013.

By Rita Chui

Are cards no longer needed? While some would reckon the answer is a positive, Asia's situation may present a different perspective. For example, China has continued the migration to its PBOC standards, and earlier estimates on shipment volume of SIM for the production of financial cards in China by end of 2014 was in excess of 600 million. The second generation of the Macau Identity Card was fully implemented last year. Apart from the contactless function, the ID is also equipped with future payment and secure authentication capabilities to facilitate future smart transactions. The coming new Hong Kong Identity Card and Japan's National ID will most likely follow suit. One of the views in the industry holds that card itself would become an ideal medium to store secure element for a two-factor authentication application in mobile transaction.

Regardless, one thing undeniable is that new technologies are changing the competitive landscape in the card issuance industry. While card is still dominating the market today, it has already evolved into one with multiple applications. New usage may even turn it into a new form factor. Desire for innovation in card issuance never stops, all trying to move beyond the traditional generic card function used for payment or ID only.

One Card, Multiple Technologies

One of the classic examples is Transport for London's implementation of "Pay as You Go" which enables acceptance of Paypass or PayWave cards on top of the Oyster transport card. The scheme started back in 2012 and its proposition is to address visitors' need for contactless payments. Ultimately, there will be no need for daily commuters to use an Oyster card or downloaded app to travel on subway or bus. All they

need to do is to use their own financial cards to tap and go while enjoying the same pricing and capping of Oyster PLUS.

The full service, finally launched on 16th September 2014, has been well-received by users with over 300,000 journeys per day using EMV contactless cards on rail transport. Use of such cards from 36 countries was recorded.

This actually is another milestone made in open loop payment in transport. Thanks to the dual-interface card technology which enables EMV application and contactless access to transit scheme. Full interoperability of cards from different card issuers is also materialised.

Cards for Future

Today, a payment or ID card contains sophisticated mix of technologies and it is no longer a simple card made of PVC. Smart chip technology has transformed applications from having magnetic stripe to store secure element in contact chip for payment applications and simple visual security to enabling dual-interface capabilities in the arena of identification.

For card body itself, a wide range of selection from PVC, PET, PVH to PC (polycarbonate) cards is available. PC is usually used for national ID for durability, as PC card can be kept for a period of 10 years. As for driving licence, secure IDs and payment cards, which accept a shorter duration of usage but need to be more environmental friendly, may opt for a PET or PVH card. PVC cards are generally used for a period of only three years or under.

Take the recent remarkable Macau ID card as an example. The first generation card introduced in 2002 has the following characteristics:

Card:

- Material & Interface: PC, contact based smart card
- 32kB / 68kB JavaCard based, multi-application smartcard
- Applications (non-standardised): Biometric ID with Facial Image & Fingerprint, PKI Authentication & Digital Signature (non-standardised)
- Data access via SAM cards and Card Verifiable Certificates

Personalisation & Issuance System:

- Central laser personalisation system
- Sophisticated key and card application

In its second generation, Macau ID has evolved into a dual-

interface card with full contact and contactless functions:

Card:

- Material & Interface: PC, contact and contactless with new security features
- New JavaCard based with 144Kbyte for multiple smartcard applications
- Upgrade of existing applications and support of PACE Protocol incorporating Biometric ID, PKI Authentication & Digital Signature

Personalisation & Issuance System Upgrades:

- Exchange of central laser personalisation system hardware; contactless support
- Runtime library supporting both generations
- Card Application Management System
- PKI and Key Management System

The objective of the new card is to have it equipped with contactless biometric travel document functionality in a reliable card body, which is well suited for 10 years of intensive usage. A high data transfer rates at 848kbit per second is preferred. The card should also be compatible with NFC technology and built with an interface standard to work with smartphones and other kiosk terminals.

Cards with Unique Functional Features

Apart from incorporating different smart chips in a card, buoyant business growth of e-commerce has also created the need for authentication. Capitalising on the display OTP (one-time-password) and display technology, Standard Chartered Bank in Singapore has chosen Authentication Display Card for secure e-banking transactions instead of using bulky hardware tokens usually adopted by its competitors.

"In Singapore, many customers bank with multiple banks. We brainstormed on ways to make e-banking convenient and yet secure for customers. The question was: instead of sending customers another bulky token, why don't we simply replace something already exists in the customer's wallet. This is how these credit, debit and ATM cards came to mind. As a lead innovator in the banking industry, we believe this is what sets us apart from competition..." said V. Subba, Regional Head of Retail Banking Products Singapore and Southeast Asia.

Standard Chartered's initiative is the first PIN pad OTP Display Credit Card launched in Asia Pacific, and so far hundreds of thousands of cards have already been issued.

★ Management Highlight



An alternative to OTP is biometrics which provides unique credential to authenticate e-transactions. One possible application is the introduction of Fingerprint Card (FPC) which carries embedded fingerprint touch sensor and processor. This card enables fingerprint authentication in secure environment as local matching ensures biometric data will never leave the card, so privacy of the holders is warranted.

Talking about applying biometrics, OTP can also be in the form of sound. Recently, a start-up named Tune2Pay has introduced a payment card with NFC contactless functionality and built-in microprocessor which can generate unique encrypted acoustic message for payment authentication. The card can also be recharged via OTA (over-the-air) connection by means of the 13.56MHz NFC operation.

Card issuance is not a personalisation and printing process anymore.

Considerations in Conventional Card Issuance

Conventional card issuance utilises mostly centralised card personalisation system with high security module in issuing payment and identification cards especially for volume printing of a standardised design. Concern is more on unit cost per card and card quality in production.

The introduction of desktop printing offers an alternative of card issuance in small batch. However, the process is limited by dye-sublimation printing and simple simplex personalisation. Card printing quality is mostly restricted to standard resolution of 300 dpi. Then came the invention of retransfer printing process which could enable over-the-edge printing with a better colour saturation.

Print speed however is still rather restrained in decentralised printing and personalisation. Even though most of the desktop printers claim that they are able to print between 120 to 200 cards over an hour, users are still scrutinising the stability of achieving such persistent figure over long hours of production. Achieving a true industrial grade printing and personalisation of cards at a rate of 1,000 or more per hour by decentralised printing is still far from possible when compared to the centralised practice.

The good news is, utilising desktop retransfer printing allows personalised picture graphics or information on top of a chipped card or cards with sophisticated electronics inside. To achieve this kind of flexibility is costly if done by traditional centralised issuance due to the possible damage to the electronic component and the inefficiency caused by the small batch of production. Besides, a number of brands like GET, Evolis and Matica have introduced a high resolution printing of 600 dpi, offering more options to card issuers.

For example, one of the latest models presented by Matica at CARTES Paris showcased the ability to print micro-text and graphics in 600 dpi on card surface. This visual security feature can only be obtained in the past by the use of holographic overlaminates.

Networkability also improves agility in desktop printing. Existing IP technology empowers one single workstation to connect up to ten desktop printers to work collectively for one printing / personalisation production, achieving a print speed of 1,000 cards per hour with full duplex personalisation and encoding ability, yet at a lower per print cost than having them printed the centralised way.

When the payment and consumer markets are applying more “Me-Marketing” in promotion, retransfer desktop solution is expected to be a good alternative to card issuers.

The need for laser engraving is another consideration. Whether the laser engraver is applied in centralised or decentralised personalisation operation, the high security laser visual security feature has made laser engraving a top priority application in high security identification such as national IDs. Many governments have plans to incorporate this feature into their national IDs. In fact, the first eID issued in the world by the Malaysian government has adopted both centralised and decentralised issuance to print eID with laser engraved features on top.

The future of Card Issuance

How to facilitate future smart and e-transactions has been a major topic to card issuers and governments. Gurus in the industry have adopted different directions.

For instance, Datacard has acquired Entrust and repositioned the corporation to better serve the future digital world through offering more diversified and secure credential issuance apart from the traditional card practice. That includes the issuance of virtual financial cards on mobile devices.

Zebra, on the other hand, has invested intensively in how to synchronise corporate development with the new IoT (Internet of Things) world. A true IoT solution should not be constrained by devices of one particular brand. In the case of Zebra Technologies, the corporation has created the Zatar tm platform, a cloud-based software service. Provided on a subscription basis, Zatar tm can connect sensors and devices embedded in business operations and gain access to accurate, real-time data.


The fact is, IoT is literally a network of inter-connected devices which can be one's smartphone or tablet, and it can also be printers or any connected card issuance devices. Extracting data generated from these devices or the communications between them will be useful asset intelligence. Business entities will be able to grow by harnessing such critical data and make relevant business decisions, and this applies to card issuers too.

So far, the most critical move in card issuance is the separation of the credential, the core of the secure element, from the storage device, that is, the traditional card body itself. The card issuance process is very critical, for it entails the process of embedding, encrypting and decrypting significant personal information during transactions, such as payment and identifying oneself to obtain certain crucial government services.

In the past, the credential lies in the magnetic stripe or contacted chip of your payment card but in today's digital world, it can be embedded everywhere like in the SIM of a smart phone, a microSD or your ID card. One of the directions of eID development is to enable retrieval of a person's credential via NFC in mobile commerce so as to provide a second factor in the authentication process without it being easily lost or stolen as it is stored offline.

Another move, which is considered easier, is the recent advocate of tokenisation usage in the payment industry that can facilitate card authentication when working with virtual card issuance.

Tokenisation is the replacement of a consumer's Primary Account Number (PAN) with an alternate number which will be delivered to a mobile device through a digital process. All "tokenised" card details are to be sent to mobile devices or servers for more secure payments such as credential authentication in HCE application. Card is no longer a card, but a form factor that can facilitate the storage of credentials.

Card issuance will be more than just an application of certain identity status but an overall user experience of the service offered by the issuer or the government. The authentication may not be limited to one purchasing / identification process. In a connected world, the same credential will be utilised and go through multiple authentications in the future TSM process before payment while users are qualified to get or redeem all loyalty benefits in one single action. How to enhance customer engagement and by what kind of smart technologies is the next step all card issuers have to consider. 

Connected Device: More Opportunity for Engagement and Commerce

