



**AN ACONITE WHITE PAPER**

**PrePaid Smart Cards—  
Exploiting the Global  
Smart Card Infrastructure**



## Introduction

The growth in prepaid card products, notably in the US, has been phenomenal over recent years – annual global sales are predicted to top US\$150bn by 2009. While the overwhelming bulk of that growth has been attributed to the substitution of merchants' own paper gift vouchers by magnetic stripe cards, there has also been a steady rise in the proportion of prepaid cards issued by banks – in other words, the issuers of traditional credit and debit cards.

If prepaid and/or gift cards are such a good idea, why hasn't this growth been replicated in other markets? The answers are concerned with both culture and infrastructure. Firstly, the American public has a long tradition of gifting vouchers instead of physical presents, whereas more reserved Europeans can be a little uncomfortable giving a gift with a cash value – we don't like putting a price on our affections. Secondly, the point-of sale (POS) infrastructure in the US is geared to 100% on-line authorisation of card payments, which makes the use of a magnetic stripe gift card – where the card's remaining balance is stored in a back-office system – relatively straightforward to introduce. Thirdly, the merchant POS market in the US is controlled and operated by a relatively small number of large networks, and so the introduction of a 'one size fits all' gift card service has benefited from economies of scale. Having said that, there has been a steady move away from paper vouchers to gift cards in Europe among, for example, the large UK retail chains such as Debenhams, Boots and WH Smith.

## Business Drivers

The business drivers for gift card issuing are clear, and include:

- Payment is up front, so the merchant has the money in the bank (the 'float') before any purchase is made
- The gift card has no value until it is issued and so does not have to be securely stored prior to sale, unlike vouchers which need to be kept under lock and key
- Consumers generally spend more than the value of the card when redeeming, so incremental sales revenue is generated
- Consumers redeem gift cards to buy what they really want, so the number of returns and refunds is reduced
- A proportion of the money spent on purchasing or topping-up cards will never be redeemed – "Money For Nothing", to quote Dire Straits.

Now, with banks entering this lucrative prepaid card market, a different set of cardholder propositions has to emerge. In the magnetic stripe world, one model is based on the concept of a combined prepaid 'loyalty' and regular credit card. The prime example of this type of product is the Starbucks 'Duetto™' card issued by Bank One (in the US) or RBC (in Canada). Duetto acts as a regular credit card when used in stores other than Starbucks, except that the loyalty rewards are paid in the form of a top-up equal to 1% of the purchase amount to the prepaid account. When the card is used in Starbucks, the cardholder pays with the stored value in the prepaid account – over 10% of Starbucks' turnover is now in 'Duetto Dollars', representing a substantial saving in cash handling costs. The prepaid account can be topped up directly at Starbucks outlets and is topped up automatically by a \$20 charge against the credit account when the prepaid balance falls below \$5. This proposition works well for bank and merchant, since the bank has access to a cardbase largely made up of young, affluent professionals, whose spending on the card is likely to be well above average, and Starbucks receives 1% of the value of those purchases from the bank, paid up front into a float before the Duetto Dollars are redeemed by the cardholder. It's been said that at any one time, the value of the float exceeds \$300m – quite an investment fund to be sitting on.

## Benefits of Prepaid Smart Cards

So what is the relevance of smart cards to this growing market? The answer is in two parts. Firstly there is the global movement of all card payments over to a smartcard infrastructure based on the EMV standards (ironically, the only major territory which has no mandates to move to EMV is the USA). Secondly there is the emergence of new card propositions based on contactless card technology, which in a further irony, is most advanced in the US in the form of contactless credit cards for low value payments, typically less than \$25 and aimed at the fast food and transport sectors, and also for use in the petrol sector. Contactless cards are, by definition, smart cards, although there is a small segment of the contactless market based on proprietary, non-intelligent RFID tags. We can predict, therefore, the convergence of these trends and technologies – EMV standards, contactless cards and prepaid cards – to spawn new card propositions.

The case for EMV migration in many countries has been based on fraud prevention. It is much more difficult to clone or counterfeit an EMV card, and the introduction of chip and PIN has directly tackled lost and stolen fraud. In the UK's first year of chip and PIN operation, counterfeit fraud was reduced by 22%,



lost and stolen fraud by 25% and card not received fraud by 45%<sup>1</sup>. But while these figures are impressive, the return on the investment needed to migrate to EMV – over £1.1bn in the UK – will not come from fraud reduction alone. Banks are looking for ways to exploit the infrastructure that has been created to drive further revenue. However, EMV also delivers the ability to perform off-line payments securely and with controlled credit risk, without the need for the card issuer to authorise the transaction. These features lend themselves ideally to contactless payments based on EMV standards. The international card schemes are promoting the use of contactless products, largely based on a contactless credit card model, issued to their own similar standards – MasterCard’s PayPass and Visa Wave. These may or may not make use of PIN for cardholder verification depending on factors such as the transaction amount and the merchant proposition – fast food outlets and service stations having different requirements, for example.

If we now add prepaid smart cards into the mix, several new business models and potential card products emerge. Prepaid smart cards represent zero credit risk to the card issuer since the funds available for purchases are authorised and allocated in advance, sometimes stored in a ‘shadow account’ in the issuer’s system, and the amount of the prepaid available balance is held on the card and is reduced each time a purchase is made. When the card is topped up with prepaid value, EMV technology is used to update the available balance on the card. The card can therefore be used to make off-line purchases with no risk to the card issuer, since the prepaid available balance held on the card cannot be exceeded.

The prepaid account can be operated in a number of ways – combined with a debit account such as a current or checking account, combined with a credit account offering revolving credit or stand-alone, not directly linked to any other account. The prepaid element may be branded with one of the international card scheme brands – so called ‘open’ cards, allowing prepaid purchases at any card-accepting merchant, or may operate in a ‘closed loop’ under a proprietary scheme, such as the Starbucks card.

### New Card Products

From this array of features we can envisage new products that will appeal to new and diverse segments of the cardholder market. Some examples are:

Features	Product
EMV Credit + Closed Loop Pre-paid	‘Smart’ version of the Starbucks Duetto card featuring the enhanced security of EMV for both credit and prepaid purchases in on-line and off-line environments
EMV Credit + Closed Loop Contactless Prepaid	Enhanced smart version of the Starbucks card. Offers faster transaction time at checkout so ideal in fast food environment and for low value payments
EMV Debit + Closed Loop Contactless Prepaid	Regular debit card for general purchases combined with proprietary contactless prepaid for applications such as transport
Stand-Alone Open Prepaid	<ol style="list-style-type: none"> <li>Salary Card aimed at the unbanked in both developed and emerging economies. Card scheme branding ensures utility, making it less likely that the cardholder will withdraw the entire balance in cash. Can be topped up at an ATM or dedicated device as soon as the employer releases the funds and can be further topped up using cash.</li> <li>Government Benefits Card for pensions and social security. Similar features and benefits to the Salary Card, in addition to countering benefit fraud and making the collection processes more efficient and less costly to operate.</li> </ol> <p>Both these examples would be issued by a bank in partnership with the funding organisation—employer or government.</p>

<sup>1</sup> Source: APACS



Features	Product
Stand-Alone Open Contactless Prepaid	Teen Card or Pocket Money Card—the cardholder has no access to the funds in a linked account, such as a parent’s account, but top-ups can be set up on a periodic basis or manually. The card can also be topped up using cash.
Stand-Alone Closed Loop Prepaid	Corporate Card, Campus Card, Canteen Card, Shopping Mall Card.

In the examples where prepaid is combined with EMV credit or debit, there will most likely be two EMV applications on the smartcard – the regular EMV payment application for credit or debit, and a second EMV application for the prepaid function. The POS terminal or device will select the appropriate application depending on the merchant set-up. For example, a mass transit ticketing terminal would only recognise the prepaid contactless application, whereas a terminal in a regular merchant would look for the standard EMV application first. This illustrates one of the great advantages of EMV prepaid smart cards – they can be used at any POS terminal where regular EMV cards can be used, without any terminal modifications, since all of the prepaid decision making takes place within the card.

### Conclusion

Prepaid smart cards will support the development of new and exciting card propositions and will allow card issuers to appeal to market segments that have previously been off-limits due to age, credit rating or lack of credit history. There are the attractions to merchants of being able to accept card payments in sectors which have traditionally been cash-based, such as fast food, coffee shops and convenience stores, especially where driven by contactless technology with its greatly reduced transaction times. The conditions for greater issuance, greater acceptance and therefore greater numbers of transactions are then set. More transactions equates to more revenue, going further towards the ROI for EMV migration which the card payments industry is looking to achieve. However, some of the assumptions concerning the way in which prepaid smart cards will be used and adopted by card issuers may well turn out to be false, and it is imperative that issuers and merchants carefully consider and take expert advice on the propositions that will be viable and successful and which will appeal to all elements of the value chain – including the cardholder.

### About the Author

Nigel Beatty is an experienced business consultant with a broad and extensive knowledge of the payments industry. He has worked with clients providing consultancy at senior levels within the UK’s leading financial institutions and has particular expertise in the area of EMV smart cards. Nigel works with clients to develop strategies, define business cases and deliver solutions throughout the electronic payments industry.

### About Aconite Technology Ltd.

Aconite delivers smart card payment solutions and consulting expertise to card issuers and processors around the world, providing a rapid and cost-effective route to smart card deployment and the delivery of innovative card payment solutions to new and existing markets.

Incorporating a unique blend of proven software solutions and professional services, Aconite solutions can be tailored to meet individual business requirements without the need to replace legacy systems and with minimal impact on staff and processes. Based in the UK, Aconite has a presence in five regions: Europe, Middle East, Asia, The Americas and Southern Africa.



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