Euronet
WORLDWIDE

A Euronet Software Solutions White Paper

A New Way to Pay

An Overview of Contactless Payment

Kathy Hatcher
Product Manager, Card Associations Payment Solutions

Bringing currency to life in over one hundred & fifty five countries across the globe

Introduction

Contactless payment has become one of the latest trends as a "new way to pay" for small value transactions. It is quick, easy to use, popular, and has become increasingly important in retail payments. This overview of contactless payment will explore the basics of the technology, as well as the evolving market of contactless. Understanding the technology that drives contactless payment, will provide insight into why the product is gaining traction in the market and how using the technology will drive consumer payment choice.

There are success stories for this new type of payment. ING Bank Slaski, a Euronet customer, introduced MasterCard PayPass contactless debit cards for online and offline transactions in Poland. The contactless debit cards utilize EMV chip standards for the growing Polish market. This project opened the door for ING Bank Slaski's customers to one of the fastest growing markets in the contactless retail payment industry.

"Euronet was instrumental in our success to become one of the pioneers for the online debit contactless issuer in Poland while providing top quality software supporting contactless technology."
Roman Tyszkowski
Dyrektor Departamentu
ING Bank Slaski

Getting to Know the Basics of Contactless

Contactless is known in the industry by other names: proximity, touch-and-go, and contactless smartcards. Contactless payments are "no-signature" and "no-PIN" small payment transactions. The consumer taps or waves the contactless card in close proximity (less than 2-4 inches) of a secure reader. A radio transmitter, embedded in the card, transmits the payment information to the contactless card reader. Once the card data is transmitted to the terminal, the payment transaction is processed utilizing the same infrastructure as other payment transactions.

With a small ticket purchase (typically below $25), a consumer signature is not required for the contactless transaction. The merchant retains full chargeback protection for transactions that meet program requirements. Contactless payment can be used for transactions greater than $25. However, a signature is required in order for the merchant to maintain full chargeback rights. A customer receipt is only required upon cardholder request.

Contactless payment technology is a feature that can be added to any payment product (e.g. account-based, credit card, debit card, prepaid card).
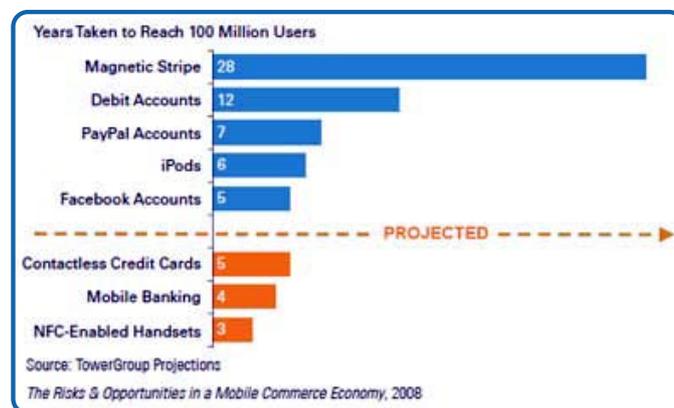
Types of cards used for contactless include the following:
- gift cards
- teen spending cards
- transit cards
- mall cards
- travel cards

The Evolving Market of Contactless

Contactless technology was first seen as a security key entrance for office buildings and turnstiles, or for closed loop proprietary markets. For example, Mobile gas cards in the late 1990s. At that time, smart cards were used in the mass transit arena as contact cards, and later, evolved into contactless cards. Transit applications are continuing to grow today, as a major user of the contactless technology.

Years Taken to Reach 100 Million Users

Magnetic Stripe	28
Debit Accounts	12
PayPal Accounts	7
iPods	6
Facebook Accounts	5
Contactless Credit Cards	5
Mobile Banking	4
NFC-Enabled Handsets	3

PROJECTED

Source: TowerGroup Projections
The Risks & Opportunities in a Mobile Commerce Economy, 2008

Contactless gained industry attention for its advanced rate of delivery, and became a solution for markets that needed to move transactions quickly. Security concerns delayed the wide-use acceptance of contactless, motivating the drive to improve the technology. Improved RF technology and the later developed EMV technology, allowed contactless payment to gain momentum in the market.

This new payment method proved to be beneficial to the consumer and the retailer, as opportunities began to emerge in all areas of the retail payment industry. The latest market prediction is that the mobile phone will utilize contactless technology as it becomes the most preferred payment instrument.

Transport Cards Evolve into Payment Cards

The success of Barclays Bank deploying the Oyster card in London's transit system brought global attention to contactless technology. There can be no question of efficiency for the fast-paced throughput, as one simply waves the card past the reader at the gate. The Barclays transport card has now evolved into a payment card. It

can be used in shops, for parking, newsstands and vending machines.

Another successful dual transport and payment card is Hong Kong's OCTOPUS card. The OCTOPUS card is used as a transport card, a building access card, and payment card, similar to the Oyster card.

CardLine Global reports that contactless technology is being considered for use in the 2012 Olympic Games in London. Attendees to the games will be able to use their contactless card or mobile phone application to enter the Olympics, to make purchases, and to pay for transportation while in London.

Growth in the Retail Segment

With the growth of contactless, the payment applications are particularly attractive to retail segments where quick response is essential. While each retail segment differs, generally retailers realize benefits by reduced manual interaction and reduced waiting lines.

As an alternative to cash payments, this new technology attracts consumers to the places where they are offered. Surveys report that the speed and convenience are the key factors for success. However, the greatest reported benefit is improving the consumer experience.

Consumer Perspective

- Contactless eliminates the need to carry cash on hand for small pocket change items
- Consumer controls both the transaction and the card throughout the transaction
- Consumer does not have to surrender either their card or account information to an unknown third party for payment
- Contactless payments allow consumers to track spending on low-value transactions

Rising Popularity with the Mobile Payment

The mobile phone has become one of the leading technologies to embrace the new way to pay.

Mobile contactless payment is using the phone as a payment device at an enabled contactless terminal instead of a card. The payment application on phones can be password protected, so a lost or stolen handset cannot be used to make payments.

The phone applications leverage Near Field Communication (NFC) technologies to deliver contactless payment capabilities. NFC technology allows the mobile phone to securely transmit and receive information over a short range (maximum range of a few inches) when you make
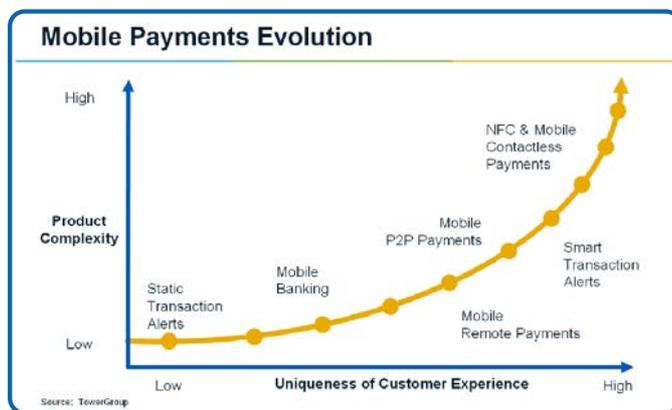
a contactless payment.

"The value of mobile payment transactions is forecast to expand 68% annually and reach almost $250 billion in 2012 from $29 billion in 2008. By then, proximity payments will represent 51% of the total m-payment transactions."
Arthur D. Little
Management Consulting Firm

Emerging Functionality at ATMs

BCR-ERSTE Bank of Romania, a Euronet customer, successfully implemented contactless functionality at an ATM. The Romanian bank demonstrated the ability to top-up contactless transport cards at an ATM for public transportation services.

Axiom Consulting reported in 2009:
BCR-ERSTE Bank (Romania) - has implemented a bank-wide program which captures all transactions for credit and debit cards, including all transactions at ATMs. Currently the Bank rewards only purchase transactions, but it has already implemented ATM contactless top-up for public transportation services. The ATM channel is central in the Bank's strategy and more announcements will follow with relation to using the ATM as a loyalty channel.

See related article in Romania's Business Weekly, Business Review, November 30 – December 6, 2009, Volume 14/Number 43

Predicted Growth to Come

In many countries, contactless is the product expected to experience the greatest growth in importance over the next five years. Success in Asia, Europe and North America has proven to the industry that it is not just a phase, it is here to stay.

According to the EDC Global Trends in Payment Systems, Summary of Survey Findings, Edgar, Dunn & Company conducted a survey of 645 payments professionals globally on key industry dynamics in their markets.[1]

SUMMARY OF FINDINGS

CURRENTLY

Most Important Payment Products:
- Credit Cards and Domestic Debit Cards

Most Important Payment Channels:
- Internet Banking / Payment and ATM

IN THE FUTURE (next 3 to 5 years)

Payment Products:
- Contactless and Mobile / SMS Remote Payments

Payment Channels:
- Internet Payment and Mobile

Payment Technologies:
- Mobile Based Applications

Influential Market Participants:
- Central Banks, Regulators and Merchants

Industry Events:
- Technology advancements

Edgar, Dunn & Company
Management Consultants

The questions asked revolved around five main topics:
- Current and future importance of individual payment products
- Current and future importance of individual payment channels
- Expected future importance of payment technologies
- Most influential market participants
- Key industry events that will shape payment markets

A total of 49 countries represent the survey

The Business Driver: Improving the Bottom Line
Issuer Business Case
Benefits to the Business:
- Establishes competitive edge in a new growing market
- Optimizes strategy to penetrate the cash payment market
- Low risk factor with small purchases
- Offers card issuance for customers

Value-Add Benefits:
- Provides new potential revenue streams
- Increases revenue from retail interchange
- Improves active card usage

Costs to consider:
- Software costs for new processing
- Staff training for new product
- Customer awareness to promote acceptance

Business Opportunities:
- Possible partnership with merchants to accept

contactless issued cards on a large scale (transit, entries such as ballparks and parking, mall cards, travel cards, etc)
- Offer combination of products such as ATM top-up transit cards or contactless prepaid cards
- Offer terminal rental possibilities
- Possible partnership to offer a Mobile Payments offering

Acquirer Business Case
Benefits to the Business:
- Provides competitive differentiation
- Optimizes strategy to penetrate the cash payment market
- Increases transaction throughput and reduces wait time
- Low risk factor/expanded chargeback protection
- Offers card acceptance for a new growing market
- Eliminates non-audited cash trail
- Improves customer experience

Value-Add Benefits:
- Increases revenue by driving card usage
- Improves profitability with accelerated transaction time
- Increases revenue from ATM fees and interchange
- Improves operating costs by fewer requirements to handle cash and minimal intervention from staff
- Increases upsales

Costs to consider:
- Hardware costs to build infrastructure
- Software costs for new processing
- Staff training for new procedures
- Consumer awareness to promote usage

Business Opportunities:
- In the retail market, this new payment method has been successful at a variety of merchant locations, including gas stations, quick-service restaurants, café's, and convenience stores.
- Acquirers can arrange possible partnerships with issuers to issue contactless cards on a large scale (transit, entries such as ballparks and parking, mall cards, etc).
- Contactless functionality could be added at the ATM as top-up for transit cards.
- Contactless Mobile top-up would allow consumers to visit a shop or store and add minutes to their airtime with the contactless payment card.

1 EDC Global Trends in Payment Systems, Summary of Survey Findings
2 Wikipedia; Anatomy of a Proximity Card (Copyright released to Public Domain) pictures an embedded chip and antenna.

A Look Behind the Scenes

With contactless technology, the card has its own unique built-in secured "key" used to generate a unique card verification value or a cryptogram that exclusively identifies each transaction. No two cards share the same key, and the key is never transmitted. For a contactless magnetic stripe reader, the contactless payment card creates a dynamically generated code using the unique card key. For a contactless EMV chip card reader, secure EMV technology is used.

Radio Frequency Technology

Contactless cards are designed to operate at a short range (less than 2-4 inches). An embedded chip and antenna, as pictured in 'Anatomy of a Proximity Card'[2] , enables the payment information to be transmitted to the contactless card reader. Once a contactless card is tapped or waved within the required range, this contactless payment technology uses a wireless communication via radio frequency (RF). It is not exactly the same as RFID technology. RFID technologies are used in manufacturing, shipping and object-related tracking and are designed to operate over long ranges (e.g. 25 feet). Applications using RFID typically have minimal security while RF frequencies provide stronger security.

Dual interface chip technology allows the card's chip to have two interfaces to share memory and chip resources. These cards with a dual interface smart chip can be used with either a contact reader (where the card is inserted into a reader) or with a contactless reader (where the card is tapped or waved close to the reader).

Market Moves toward EMV

The risk of global fraud is a leading factor in moving the contactless market toward EMV. EMV chip technology creates a secure layer for contactless. It enables protection to cardholders from fraud, as well as security to the bank's own liability risk. Issuers should understand regional acceptance and fraud tolerance before determining whether a magnetic stripe or chip card is the best solution for their market. A contactless card can be either non-EMV magnetic stripe only, EMV chip only or supports both magnetic stripe and EMV chip transactions. The investment in chip technology for a contactless product is best suited for markets with high chip card adoption.

Flexible Form Factors

The flexibility of contactless technology enables innovative form factors to be used beyond the standard plastic card. A variety of form factors include mini card, key fob, keychain, stickers and even the mobile phone. The contactless payment device (card, fob or other form factor)[3] uses radio frequency technology to send payment account information to the point-of-sale terminal.

Many consumers like having the choice of what fits their personal lifestyle best. Some form factors are perceived to be more secure and less likely to be mislaid. The versatility of use is what gives contactless technology so much attention today. However, the most common contactless payment form factor today is still the standard plastic card.

Contactless Device Availability

Growth and acceptance in the global market is greatly influenced by the device infrastructure. A news report stated that the number of locations that accept contactless payments is set to increase by more than 12.5 million by the end of 2013, according to research from IMS Research. In its latest report on "The World Market for EFT-POS Terminals & Contactless Readers," IMS Research forecasts that the number of contactless-enabled points of sale (POS) in existence will grow more than six times faster than the overall point-of-sales market.

Card Associations anticipate an aggressive growth pattern as contactless devices become more available in the market place.

Card vendors and banks are now issuing more and more contactless cards, and consumer awareness is starting to grow in a number of countries. This is leading to more of a demand from merchants for contactless-enabled terminals.

A common acceptance mark for contactless payment at the merchant point-of-sale device was an important factor in gaining consumer awareness. To meet this need, American Express, Discover Network, MasterCard, and Visa agreed to use a common contactless symbol to communicate the acceptance.

Gaining Traction in the Market

A challenge of contactless payment in the market is the balance between the card issuance and the card acceptance. Issuers may offer contactless cards but card acceptance is determined by where the card can be used. Acquirers may deploy contactless infrastructure but card issuance is necessary to create consumer usage. Despite the challenge, there is an industry push to implement contactless.

UNITED KINGDOM

It was reported in the UK that approximately 7.8 million

payment cards have been issued with contactless technology (as at the end of 2009); the number of cards doubled in the last five months of the year. The number of contactless terminals in the UK more than doubled in the second half of 2009 - to over 22,500. Based on actual trends from the previous 6 months, we can expect over 12 million cards to be issued by the middle of 2010. Approximately 1 in 6 cardholders in the UK are expected to have a contactless card by the end of 2010.[3]

In a recent UK news report, Philip Aldrick reported that contactless debit cards will become commonplace in Britain this year, as banks double the number in circulation to about 10m, according to Visa… Speaking as the payments group unveiled its annual results, Peter Ayliffe, chief executive of Visa Europe, said 2010 would be "the tipping point" when the British consumer finally adopts the new technology, which it hopes will replace cash for small purchases. "A number of banks want to issue contactless cards in the UK this year. We're also seeing it across Europe," he said.[4]

POLAND
PKO Bank Polski, Poland's largest debit card issuer, is spearheading the move with the announcement that it will begin replacing all its 6.5m debit cards with contactless Visa PayWave cards from mid-2010.[5]

HUNGARY
The OTP Bank of Hungary has announced the country's first rollout of MasterCard PayPass contactless cards, according to realdeal.hu. OTP, the largest bank in Hungary, plans to issue 15,000 PayPass cards this year, with 350 points of sale available by the end of[6] October.

ITALY
Intesa Sanpaolo, Italy's largest banking group with 11 million customers, has become the first bank to commit to a large-scale roll out of contactless technology.[7]

MIDDLE EAST, AFRICA AND ASIA PACIFIC
Rising applications of smart cards in various fields, including security, payment and ticketing, is expected to spur a 33% growth rate in contactless cards over the next three years, according to a report from a research firm based in India.

In its "Smart Card Market Forecast to 2012," RNCOS notes that the contactless smart card industry will be least affected by the current global economic crisis. The report breaks the global smart card industry into three areas of the world: the Americas, Europe Middle East and Africa and Asia Pacific.[8]

Contactless Transaction

1. The cardholder passes the contactless card close to the contactless card-reader POS device within the range of approximately 2 - 4 inches from the device. The card-reader captures the data encoded on the contactless card.
2. If the transaction is a small ticket amount (under the floor limit), the merchant passes the transaction to the acquirer. The acquirer identifies the transaction as contactless and treats the transaction as a POS transaction.
3. The acquirer forwards the transaction to a Network switch interface. The Network performs any required processing edits and then forwards the transaction to the Issuer.
4. The Issuer
   • Validates the dynamic card verification value or cryptogram depending on the type of card and the type of card device reader
   • Authorizes the transaction and determines approval or decline
   • Processes the transaction and then responds back to the Network interface
5. The Network interface forwards the authorization response back to the Acquirer.
6. The Acquirer forwards the authorization response back to the merchant.
7. Once the merchant receives the response, the transaction is complete. (The merchant is required to provide a receipt only if it is requested.)

3 Contactless Key Facts and Stats, The UK Cards Association, 26/01/10
4 Reported by Philip Aldrick, Banking Editor; Published: 8:40PM GMT 19 Jan 2010 (TELEGRAPH.CO.UK)
5 Near Field Communications World, Poland and Italy commit to contactless payments, By Sarah Clark, January 21st, 2010
6 Contactless News, Hungary deploys first contactless payment cards, Monday, February 8, 2010 in News (referenced news article: OTP Bank first in Hungary to issue MasterCard "PayPass" cards, by MTI-ECONEWS, September 25, 2009)
7 Near Field Communications World, Poland and Italy commit to contactless payments, By Sarah Clark, January 21st, 2010
8 Contactless News, Contactless smart card market to grow by 33% in three years, Friday, March 27, 2009 in News

- Supports Issuer and Acquirer processing
- Supports contactless Issuer validation during the authorization process
- Supports clearing of contactless transactions
- Supports debit, credit, and prepaid
- Supports small ticket ceiling limits processing
- Supports chip personalization guidelines for embossing contactless chip cards
- Supports magnetic stripe and EMV chip contactless cards

Euronet is ready to help you work towards making the future a reality in providing quality products that will position your business as a leader in the market. We will be there with you, ready to address your customers''92 expectations today in a competitive market.

SINGAPORE

A Research and Markets report predicts '…contactless to reach $1356.0 million in 2014.'

[9]

TAIWAN, KOREA AND MALAYSIA

In the promising EMV-contactless market, Gemalto has already delivered over 3 million EMV contactless cards during the first Asian deployments. Being the first dual-interface offer certified both by Visa and MasterCard, Gemalto's reliable products have been massively adopted in Taiwan, Korea and Malaysia.

[10]

Example of a Contactless Transaction

The example is a POS transaction performed at a contactless card-reader device at a merchant location that supports contactless. A contactless plastic card will be referenced. However, any contactless form factor may be used that fits within standard guidelines.

Leverage Investment with Euronet

Factors for success are not just weighed by finding the product that meets your market need. It is finding the best solution provider for that product. Euronet enables processors, financial institutions, retailers, and businesses to be at the industry forefront to drive an ever increasing market trend for contactless payment. If you are looking for an in-house solution for contactless payment, Euronet provides that solution. If you are looking for an out-source solution to provide ability to compete in this market, the Euronet EFT division provides that solution. Whatever type of solution meets your processing needs, Euronet provides the best solutions to improve your competitive edge.

Euronet is a leading global provider of payment solutions for issuers, acquirers and processors with online authorization and clearing support. As a proven leader in payment solutions, Euronet will provide the capability to be a differentiator through leveraging contactless technology and product strategy to meet the opportunities of the retail payment market. The Euronet contactless/proximity solutions provide integration of MasterCard PayPass® and Visa PayWave® processing standards with Euronet's Integrated Transaction Management® (ITM) product suite. This core ITM architecture is part of a larger picture of our Euronet Confluent Payments Hub (CPH) strategy.

9 Research and Markets report: Article: Asia Pacific Contactless Smart Card Market
10 Gemalto - Contactless payment solutions, Convenient and fast payment transactions, A growth opportunity for the payment

For more information write to us at: pakistan-info@eeft.com