



Payment Services

CLEARIT

The Swiss professional journal for payment traffic
Edition 55 | March 2013

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on the verge of a breakthrough?**

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The mobile phone, wallet of the future

At a time when there is seemingly no limit to the number and types of new apps for the smartphone, the using of one's mobile phone as a payment instrument seems a logical thought. But until we're able to use our devices instead of reaching for our wallets, some significant hurdles do remain. One of them is finding a solution to the conflicts of interest among the various services providers involved.

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How safe is paying with a mobile phone?

The advantages of contactless, mobile payment include the conducting of transactions within a fraction of a second, the user-friendly operation of digital credit cards and the payment of small amounts without entering a PIN. Nevertheless, customers often associate mobile payments with a higher security risk.

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Emergency concepts in interbank payment traffic

The reliability of interbank payments is based on an infrastructure that integrates all those involved and affected. It includes close monitoring of the organization, well-rehearsed emergency scenarios with highly trained emergency staff and well-prepared communications instruments. It is supported by technical and organizational redundancy, which removes the need to look beyond what's immediately apparent.



Mobile Payment is on its way – but there are still hurdles to overcome

Almost exactly five years ago, one of the first successful trials with Proximity Mobile Contactless Card Payment took place in Switzerland. Back then, Swisscom, Swisscard and SIX Payment Services were the responsible parties. Now, the time is ripe for the commercial introduction of a centralized mobile payment infrastructure. The basic conditions are favorable, yet some hurdles still remain.

By the end of 2013, most merchants will have updated their infrastructure with new NFC payment terminals. SIX Payment Services no longer distributes anything else (e.g., Yomani). At least ten attractive NFC smartphones by Nokia, Samsung, HTC and Sony are available on the market this year. And the trend for consumers to increasingly use their smartphones for Internet access and shopping, scanning product information and paying for their purchases is apparent. Witness the popularity among Swiss users to use the smartphone app "Mobile Coupon" by SIX Payment Services for redeeming merchant coupons at a POS terminal. There is also a great demand for our "Saferpay app", which makes it possible for smaller merchants to safely accept credit card payments.

Proximity Mobile Contactless Card Payment has every opportunity to replace the traditional wallet in the future and to enable mobile payments at every POS.

However, implementation is another issue altogether; one significant component is still missing. The various players haven't been able to agree on a single business model. Negotiations between issuers/banks, Mobile Network Operators, Trusted Service Managers and wallet service providers have come to a standstill for many reasons, not the least of which is that the specific interests of the parties involved are diametrically opposed.

This can be best illustrated by the question "Who is actually providing the mobile wallet?". The mobile wallet is an app, in which the various credit cards can be activated and managed. Thus, the mobile wallet provider will have a direct relationship with the end user. If this turns out to be a mobile network operator, issuers/banks and other service providers wanting to maintain their own customer relationships are at a disadvantage. Nobody wants to lose their precious, direct customer contacts. This would create a strong interdependence, which could negatively affect the existing business models.

Another important point is the customers' perspective. For the consumer, there shouldn't be a vast number of wallets. It must be abundantly clear which one offers the necessary security, and thus merits the consumers' trust.

It is clear to all market participants that there should only be one infrastructure for the Swiss mobile wallet. That's the reason why, recently, voices calling for one independent wallet operator have been heard. This organization should not be part of the value chain and should not maintain end-user customer relationships.

I would welcome such a "Swiss Mobile Wallet," operated by one independent infrastructure provider. After all, it will be a real benefit for all parties involved, once the questions about governance, security and ownership of the customer relationship have been answered and the Swiss Mobile Wallet becomes the success story it deserves to be. That way, Switzerland could become a role model for many countries and once again take on a pioneering role in payment traffic.

Niklaus Santschi
CEO SIX Payment Services

Mobile payment – Swiss industry solution on the verge of a breakthrough?

After the smart phone has revolutionized media usage, we are now at a turning point for payment transactions. We already purchase train tickets from SBB with our mobile phone shortly before departing on a trip by train. We will soon be able to pay for our newspaper at the newsagent or quick shopping after work using our mobile phone. In an interview with CLEARIT, Sachin Mittal, Head of Project Mobile Payment at Swisscom provides insights into the Swiss industry model, the roles of the various players as well as the project's background and challenges.

CLEARIT: Mr. Mittal, have you ever paid for anything, anywhere using your smartphone?

Sachin Mittal: Yes. I have paid with it many times, both in Switzerland and abroad, at kiosks, McDonalds and even tested at Coop, for example.

What was your payment experience like?

It was very "tempting". This mode of payment is like magic because it happens so quickly that you just want to do it again and again. It was really fantastic to see the reaction of the checkout staff; they were so surprised that they called all their colleagues over to see how it worked. I would say that that's really something "Wow!". And then there was also a sense of pride in being able to use my mobile phone for transactions.

According to Capgemini, last year around 150 million people all over the world used m-payments, generating an estimated 10.7 billion transactions worth about USD 76 billion. What is the situation in Switzerland?

First, we need to understand the meaning of mobile payment. If somebody pays for an SBB e-ticket from mobile using credit card – would that be considered a mobile payment? That's the question. If somebody buys an app with a smartphone – is that a mobile payment? That's the question. We have seen people paying for goods at Selecta machines by SMS. I think we need to put all this into perspective.

Well, isn't the definition of a "mobile payment" a payment that involves crediting or debiting an account using a mobile phone?

Mobile payment should not be mixed with online payment. If I pay for something online with my mobile phone – for me that's online commerce. As far as I'm concerned, mobile payment implies that I could use mobile as payment instrument in the physical world for low value as well as high value payments worldwide, that is, when I'm interacting

face to face with merchants exchanging goods in a physical store. Taking this into account, in my view, Capgemini's figures might refer to online commerce through mobile which is also called m-commerce.

"Mobile payment should not be mixed with online payment."

That's what happens at Starbucks in the USA, isn't it? So, this means that mobile payment is happening elsewhere in the world, but not in Switzerland?

Yes, but I still think Switzerland has seen some innovation in mobile payment. Think about "Vanilla", a payment method similar to Starbucks': you could go to a "Spar" store and pay with your mobile phone and a unique barcode generated for transaction, which is scanned like they do at Starbucks with scanning QR codes. So, yes, barcode and contactless are two different technologies. Which one is more sustainable? We believe that NFC is by far best suited for the future than scanning a picture, tap experience is better than snap experience.

So you think that a dominant standard will be established worldwide for this technology?

I have no doubt. Having analyzed all the methods enabling mobile payments in a physical store, there is no better alternative than contactless, or NFC. This technology is here to stay and is destined to grow and eventually become the dominant method within the next five years. Of course, this prediction is from today's perspective. Things could change if some presently unknown new technology should emerge.

"I like the spirit of people in Switzerland; they like to try out new things."

Isn't NFC just a big hype? Apple's latest smartphone has completely ignored it.

In my view, now is the time when this hype is turning into reality. Apple usually waits until infrastructure for using new technology is in place, take example of LTE or 4G, iPhone 5 with LTE or 4G came last fall while similar phones from Samsung were introduced a year earlier. While I cannot see into the future, I can show you the signals indicating why Switzerland could be the role model for mobile payment. First of all similar to EMV adoption, Switzerland might be one of the first country to have contactless



Short bio

Sachin Mittal is working in Swisscom's Group Strategy & Innovation, leading activities to bring mobile contactless payments to market, developing local ecosystem to bring service providers on board, responsible for strategic positioning and implementing the most optimal and sustainable solution. With more than 16 years of working experience in the telecom industry, he has seen all phases from game changing to tipping points to commoditization and descend of legacy, been on top of the game changing moments.

A leading expert in NFC in Switzerland, Sachin Mittal is part of working groups covering NFC: MNO (Mobile Network Operators) Working Group and Hermes Forum (group of all issuing acquiring banks, retailers, transport operator, experts as well as mobile operators).



terminal adoption. Secondly, Switzerland has the most smartphones per capita worldwide. Once NFC is integrated into iPhone then Switzerland could be the country with the highest number of NFC phones per person in the world. In Switzerland this could be reality soon. I like the spirit of people in Switzerland; they like to try out new things.

So you wouldn't agree with those analysts who say that one major issue is the lack of a technological consensus; as a result of which each player is launching his own payment scheme that tends to be accepted by only a few merchants?

I think we have to deal with such questions whenever it comes to a change in infrastructure. It takes time. Not all the world's merchants changed their terminals at the same time, they have different end of life timing for their infrastructure. People will potentially be looking for alternatives in countries that have not yet reached the end of the lifecycle. These are "Bridging solutions". But the question is: Are they sustainable? That can only be the case if they are still working into 2020 and not just for the next few years.

"We are working with retailers and acquiring banks to convince them that contactless infrastructure is the right choice."

What exactly is the mobile payment solution now being introduced in Switzerland?

It's an industry solution. That means that we are planning to introduce mobile payment solution in Switzerland, which already exists in France, Turkey, Poland, the UK, Japan and USA. On the consumer side you need a smartphone with contactless ability, new SIM card which act as secure element to store the payment application and credentials, while on the merchant side you need the infrastructure for accepting contactless payments. Swisscom has taken an active lead in pushing this initiative on the consumer side by placing increasing numbers of NFC phones in the market, planning to introduce the new SIM cards and we are working with retailers and acquiring banks to convince them that contactless infrastructure is the right choice.

Important to understand is that we are not making any specific requirements for mobile contactless when it comes to the merchant's infrastructure. In other words, Coop and Migros do not need to specifically invest in mobile payments. Let's not forget that the contactless infrastructure which we have used for Mobile Payment trial at newsagents existed even before the mobile contactless project was started, namely, for contactless cards. We are only leveraging that infrastructure.

When will this solution be widely introduced?

We are currently in setup phase and then we need to conduct intensive testing. We hope to have customers use it commercially sometime this year. But let's not forget that before commercial launch solution should be compliant with all industry certifications, should have all end to end processes, and then ensuring that it is a really good customer experience – this all takes time. But this time is well spent and we will do whatever it takes to make sure that we get it right before we launch it in the market. We have a great deal of support throughout the market, not only from major retailers, but also from card schemes like MasterCard and Visa. The last time I went to the Glatt Shopping Mall, I saw contactless terminals in Dosenbach, Esprit, H&M, C&A and other stores. Even if we haven't yet addressed these merchants, they already have access to mobile payment with their terminals. The devices are in place and I'm sure that acquirers like SIX Payment Services will do their best to bring these terminals to life.

"The banks' role is not changing at all."

You mentioned the different roles of the stakeholders – yours, the merchants', the acquirers' – what about the banks?

The banks' role is not changing at all. Payment is their business and I think they know their business very well. To say that anyone else can assume that role is a real stretch. What we're trying to do is to create a model where the traditional roles are retained and respected, and through which we can get the job done. For example: A retail bank like Raiffeisen will continue to sell banking products – a payment card being a product in their portfolio, today they offer a plastic card, but tomorrow it may be virtualized in mobile. This means that there's really not much change on the process side, however they would be able to create a much better customer experience on mobile for end consumer. So their role remains intact. The additional role of other stakeholders, such as the operators, is to enable a payment instrument to be securely and intelligently available on the mobile phone.

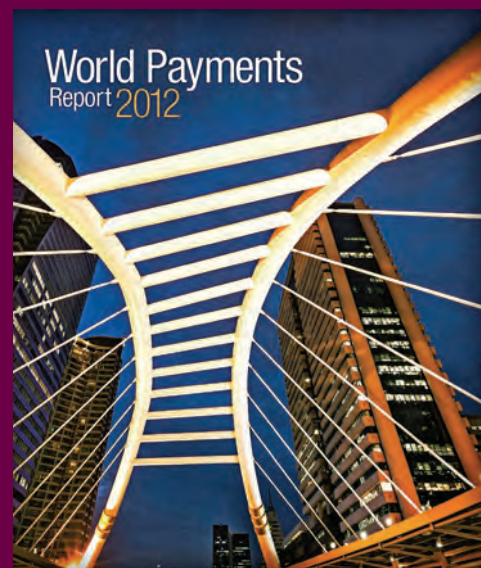
All this said, why then do analysts say the existing deep mistrust among stakeholders is the reason for the lack of a globally or locally standardized service?

Take Google for example; it arose from the online world and became the dominant player with its search engine,

M-payments gain the largest market share

According to the "World Payments Report", which appeared last October, in addition to debit card payments, payments over the Internet (e-payment), particularly mobile payments (m-payment), are growing increasingly important.

The Capgemini Study, which does not encompass the Swiss payment market, generally confirms the sustained exponential growth of the number of payment transactions in the e- and m-payment sectors. A total of 22.5 billion transactions were processed worldwide in 2010, 4.6 billion of them were mobile payments. An increase to more than 48 billion transactions is anticipated for this year, whereby 17 billion of them may be payments made using mobile end devices. Since only around 2% of those owning mobile devices use the payment function, the highest annual growth rate is expected in this area (52.8%).



The World Payments Report is available online at: www.capgemini.com

advertising and marketing. And then they launched the Google Wallet on mobile phones. They seek to consume all the information involved with payments too. This was a major threat to banks. This posed a major question regarding the role of banks, which have been shoved aside in the process. Recent announcements may have also fueled this mistrust. Some mobile operators have launched their own payment products, including Belgacom with PingPing, which is almost like a separate scheme. Some other Telecom groups have also come up with exclusive partnerships with payment card

schemes. This represents one industry going out and trying to take over the role of others. In Switzerland, it was very important to build up this trust right from the start in order to be successful. That's why we first clarified the position of the Swiss telecoms. We made it clear to them that we don't want to get into the payment market, but we do intend to create a neutral, non-discriminating open platform where all parties – banks and non-banks – can participate and provide services to the end consumer. Consumer belongs to service providers and they keep the direct relationship as today, this was critical factor to establish trust in my view.

When did this project start?

It started within the "Hermes" project around four years ago. This industry group was formed as a platform where all the banks, retailers and operators could meet to discover all the possibilities regarding mobile payments.

"I believe that the technology is a given. That's never a problem."

What have been the most challenging issues?

There were three crucial success factors: First, the consumer side, second acceptance at merchants and third trust within the ecosystem. On first point, though there are many bestselling phones with NFC capabilities already available, we are still waiting eagerly for Apple's decision to bring NFC to iPhone, that still remains a big challenge. Second point is about quantity and quality of acceptance terminals with NFC interface, lot of retailers have already deployed and others have announced the deployment, however we need to wait and watch until the infrastructure is ready. The third issue is to keep the trust in ecosystem. So far we have seen lot of progress on all three points. The timing has been excellent. It's all coming together.

So there were no technical problems?

I believe that the technology is a given. That's never a problem. How one implements, executes and provides it – that's where we should focus and we are doing it.

Looking a little into the future, when will it be possible to settle card, credit transfer or direct debit transactions through a single device?

[Laughs] I think it's better to ask the banks this question. Our job is, as I said, only to provide technology that meets the requirements of service providers. It's up to the payment industry to know how soon they want to provide debit transactions in contactless mode and how soon they want to launch a wallet-to-wallet credit transfer in the mobile world. If the banks decide they want to, it can happen tomorrow.

Three questions for the Executive Vice President of the Swiss Retail Federation

CLEAR IT: Mr. Buholzer, which conditions must be met to enable mobile payment throughout Switzerland for your members?

Max Buholzer: Dissemination must be promoted and the infrastructure costs at the POS must be lowered. The ongoing fees are significant. Smooth processing and perfect wireless connections are indispensable.

How has mobile payment been received thus far among consumers?

Mobile payment usage is doubtless a question of age. Young consumers will be more likely to use it.

What benefits does the new payment procedure offer your federation?

Faster handling of the payment process at the POS. Elimination of fees for the point of sale. Any fees occurring should be allocated according to the user pays principle.

Interviews:

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The mobile phone, wallet of the future

At a time when there is seemingly no limit to the number and types of new apps for the smartphone, the using of one's mobile phone as a payment instrument seems a logical thought. But until we're able to use our devices instead of reaching for our wallets, some significant hurdles do remain. One of them is finding a solution to the conflicts of interest among the various services providers involved.

Mobile payments are on the rise. Anyone reading payment-industry publications, or the corresponding industry web postings, couldn't possibly miss the mobile payment topic over the past weeks and months.

It's important in this discussion to fully understand the differences between the various mobile payment types and mobile commerce applications. Today, there is no one mobile payment concept. Depending on the provider, these concepts vary greatly and are based on different technologies and standards. One of the systems worth mentioning is the Starbucks mobile payment concept: It's based on an m-wallet, with the owner's credit card information on file and QR code scanning. Then there is the "Mobile Contactless Card Payment" concept, which is based on the existing contactless card payment standards payWave and

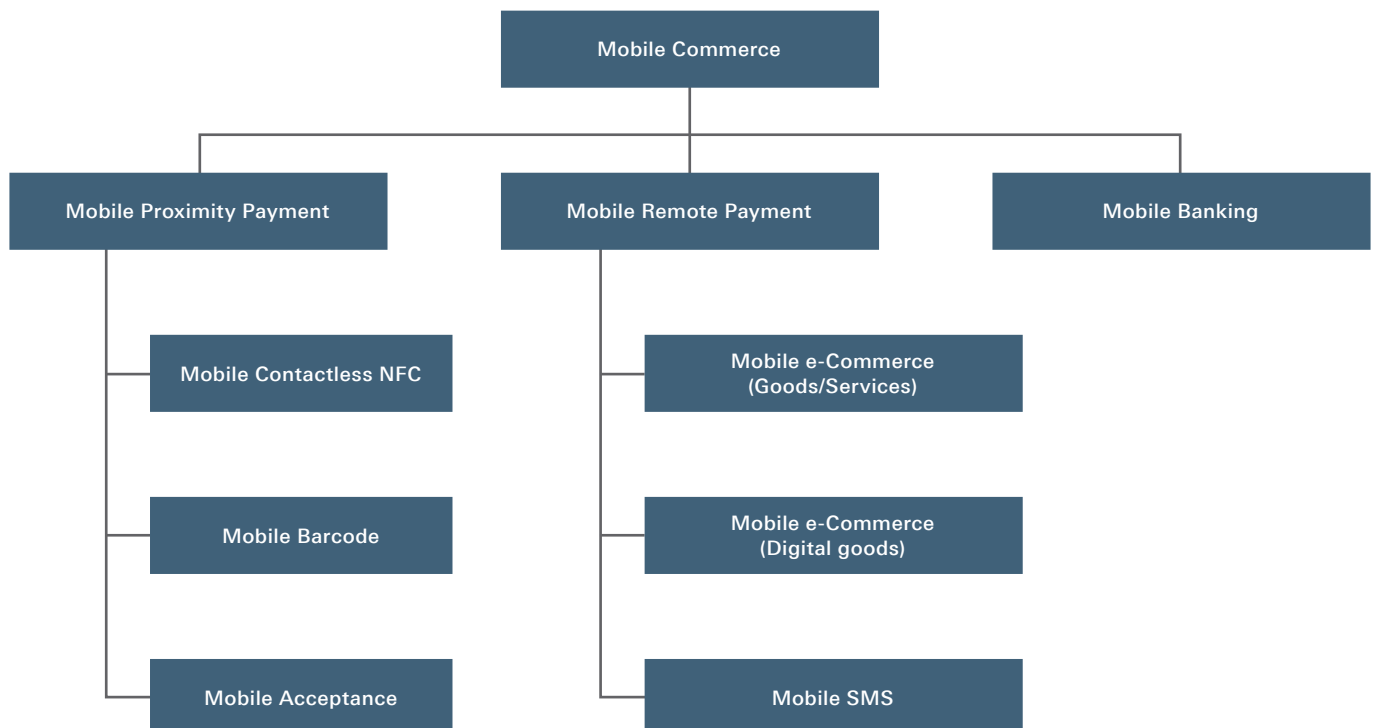
PayPass, provided by Visa and MasterCard respectively. Furthermore, it's possible to shop on the Internet using smartphones. In that case, e-commerce technology with a PSP solution apply.

What exactly makes up mobile commerce?

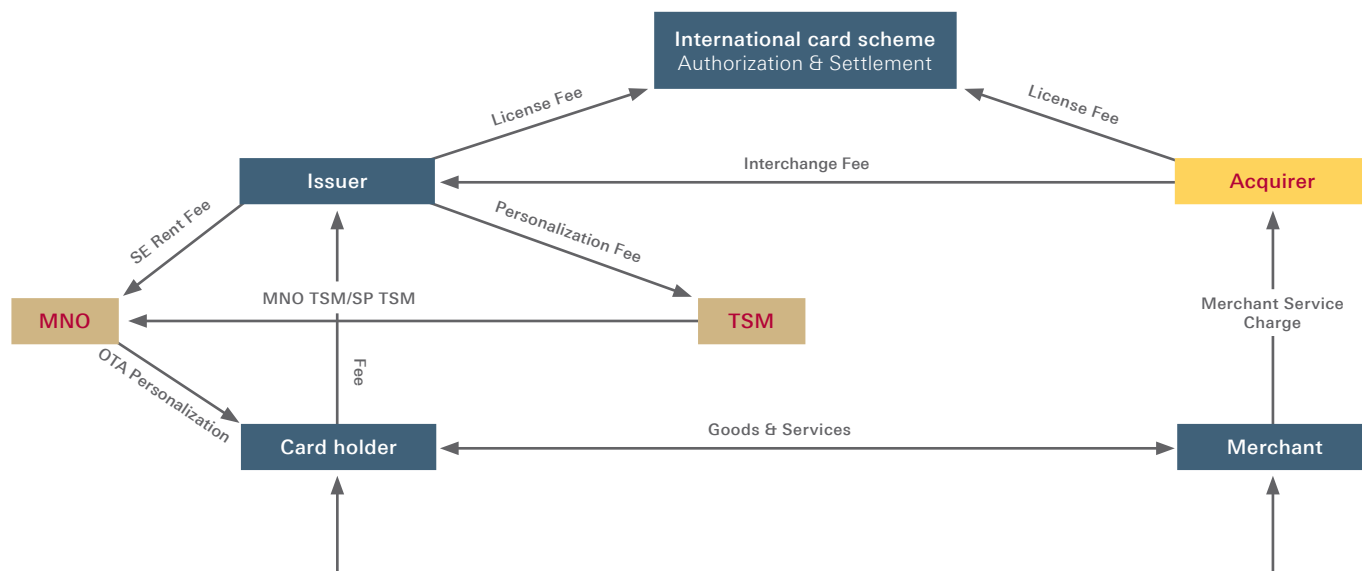
Clearly, it's important to identify and categorize the corresponding and appropriate areas of usage and the technical concepts.

The following chart categorizes the Proximity Mobile Payment (on-site payment) and Remote Mobile Payment (payments not on site) areas of smartphone usage. There are various technical concepts currently being applied by several market players.

Every market player attempts to use their competitive advantage by trying to establish their concept. Thus, the large card organizations focus on their contactless card payment standards, payWave and PayPass, based on NFC technology ("Near Field Communication", a term coined for contactless data exchange using electromagnetic waves). PayPal, on the other hand, pursues an approach using the QR code scanning technology via their existing e-wallet. Mobile network operators are pushing a solution based on SIM cards, etc.



Regarding today's mobile initiatives, the existing 4-party system remains unchanged.



Sticking to the 4-party system

The NFC concept is important to the credit card industry because it's based on the contactless card payment standards by MasterCard and Visa. This concept can build on an existing infrastructure at the retailers (payment terminals) as well as at the banks/issuers, a decided advantage for rapid market penetration. For this process, the 4-party system largely remains in place. It's simply expanded by adding new mobile-specific roles.

A key plank of this concept is the Secure Element (SE), which safely stores the credit cards. Currently, there are three options for storing this Secure Element in a smartphone: On the mobile network operator's SIM card, in the actual smartphone hardware, or on an external micro SD memory card.

How to appropriately handle the Secure Element?

In addition to the MNO (mobile network operator) operating as the Secure Element issuer, there is the new role of TSM (Trusted Service Manager). It's the TSM's responsibility to act as the interface between the issuer and the MNO. This pertains primarily to provisioning and personalizing the Secure Elements with the issuer's credit card data. This role is central and extremely important, particularly in countries with many MNOs and issuers. The TSM can simultaneously act as a mobile wallet provider.

The MNOs are trying to position their asset, the SIM card, and have conducted various pilot runs in cooperation with banks and/or issuers. The SIM card has a few advantages over the other two concepts, such as a very high security level, flexibility when switching or replacing smartphones, and over-the-air provisioning.

Mobile network operators are a new market player entering the value chain, thus expanding the classic credit card industry 4-party system.

No uniform international strategy

At this time, there is no recognizable uniform strategy in place, in terms of the mobile network operators' business model. The strategy varies, depending on the respective MNOs market position and the country. The MNOs aren't necessarily interested in participating in earning fees on the actual payment transactions, because they have realized that the existing margins are rather small. Instead, they are demanding a SIM rental fee for space on the Secure Element. Additionally, they generate income with loyalty and marketing services.

Recently, another development could be observed, focusing on the question of ownership of the customer relationship in the mobile wallet area. End users can activate their credit cards through the mobile wallet, as well as organizing coupons and loyalty programs. Technically speaking, the mobile wallet is a smartphone app, which in turn has access to the Secure Element. Now the question of who will offer these mobile wallets in the future arises. This provider automatically and directly has a customer relationship with the end user. Today, issuers/banks, mobile network operators and loyalty card issuers have an end-user relationship, which they, understandably, don't want to turn over. Especially when context services from payment and loyalty are concerned, ownership of the customer relationship is the deciding factor, because, after all, this is about customer and transaction data, which can be capitalized upon.

Proximity Mobile Payment

There are three different basic technical concepts in mobile contactless payment for positioning the Secure Element

	External	Device-Centric	SIM-Centric
Secure Element location	 <ul style="list-style-type: none">Micro SD card	 <ul style="list-style-type: none">Handset embedded chip	 <ul style="list-style-type: none">SIM/UICC card
Secure Element owner	Issuer	OS provider/MNO	MNO
Mobile handset	<ul style="list-style-type: none">Smartphone or NFC smartphone	<ul style="list-style-type: none">NFC smartphone	<ul style="list-style-type: none">NFC smartphone
Sustainability	<ul style="list-style-type: none">"Bridging" solution	<ul style="list-style-type: none">Long term	<ul style="list-style-type: none">Long term

In order to further the "Mobile Contactless Card Payment" concept and to establish it successfully in the market, a win/win must be created for all parties involved. Currently, that is the biggest challenge within this fascinating area.

What's next for Switzerland

In an article dated July 22, 2012, the weekly "NZZ am Sonntag" wrote that Swisscom and Sunrise, together with Migros and Coop, would enable smartphone payments in Switzerland. This article contained several items of news.

First: That the retailers would introduce new payment terminals by SIX Payment Services equipped with the contactless technology.

Second: That Swisscom and Sunrise would also like to offer smartphone payments using NFC technology, starting in 2013. To this end, NFC-enabled smartphones are equipped with a special SIM card containing a Secure Element and a mobile wallet app. In turn, the established contactless credit cards by the issuers UBS Card Center, Swisscard, Viseca and Bonuscard are personalized.

Thus it will be possible for Swiss consumers, too, to join the ranks of those who pay for their purchases by waving their smartphones at the POS terminal readers.

Favorable conditions

The time for the market introduction of the "Mobile Contactless Card Payment" is ripe. The conditions are favorable.

- By the end of 2013, most retailers will have replaced their card-reading POS terminals with the new NFC-equipped generation.

- At this writing, at least ten attractive NFC-equipped smartphone models from Nokia, Samsung, HTC and Sony are being sold. The iPhone isn't on that list yet; Apple is betting on the Passbook with QR scanning technology. However, once almost every point of sale has an NFC processing terminal, Apple will need to adapt its strategy.
- The various market players in the value chain, such as the MNOs, banks (credit card issuers), acquirers, and credit card organizations (MasterCard, Visa) will come together eventually and develop a joint process and business model.
- Consumers want to use the "smarts" in their smartphone to make it a universally usable mobile phone for cruising the Internet, scanning product information, and, most of all, paying for their purchases.

Thus, the Proximity Mobile Contactless Card Payment will at least partially replace the wallet as we know it, making it our daily reality.

Tobias Wirth, Senior Product Manager e-/m-Commerce, SIX Payment Services

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How safe is paying with a mobile phone?

The advantages of contactless, mobile payment include the conducting of transactions within a fraction of a second, the user-friendly operation of digital credit cards and the payment of small amounts without entering a PIN. Nevertheless, customers often associate mobile payments with a higher security risk.

Criticisms include the potential of receiving malware on the customer's mobile phone, through which the contents of the memory card could theoretically be stolen. There is also the fear that credit card data transmitted from digital credit cards could be intercepted by fraudsters and misused for additional transactions.

Fraud scenarios

These fears are further enflamed by the active discussions about potential security gaps for contactless credit cards and mobile phones equipped with NFC technology in numerous articles. For example, scenarios are described in which fraudsters with special reading devices can extract the credit card data of passersby at a distance, even if the victims' smartphones remain in their pockets. So-called payment card readers impressively demonstrate how easily the data needed for a credit card transaction can be extracted. This specifically includes the card number, the card validity and the transaction amount. However, the cardholder's name, which is also needed for a successful transaction, cannot be extracted and therefore the information needed to create credit card clones is incomplete.

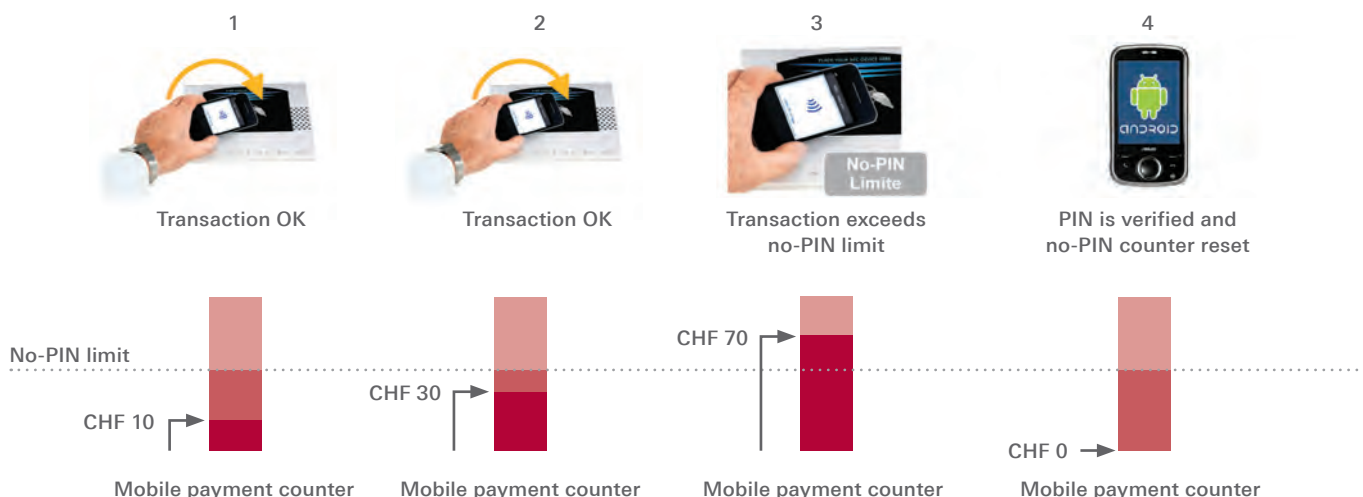
Higher protection

Counter to the widespread assumption, the additional interface needed for mobile payment based on near field communication (NFC) offers greater protection against various attack vectors, such as eavesdropping or malware, when implemented correctly in conjunction with contemporary security mechanisms. On the one hand, the credit card industry has set high security requirements with Payment Card Industry (PCI) standards to prevent the misuse of credit card data. While on the other hand, the credit card organizations have established comprehensive security requirements in their specification documents. Furthermore, the credit card issuing banks take various measures to reduce the financial risk and apply fraud management methods to keep the success rate for attacks as low as possible.

In addition to adhering to binding standards by the credit card industry and technical measures, such as the encrypting of transactions and authentication according to the latest standard, the following fundamental mechanisms provide critical protection from misuse.

A mechanism known as a no-PIN transaction counter limits the number of transactions involving small amounts that can be conducted without PIN entry. To prevent a fraudster from using a stolen mobile phone for credit card payments, this counter reduces the number of transactions below CHF 40.

No-PIN transaction counter



As soon as the no-PIN transaction limit has been exceeded, the cardholder is requested to enter the PIN before the next transaction can be conducted. The theoretical loss is normally covered in the general business terms and conditions of the credit card issuing bank. The financial risk during transactions involving small amounts without cardholder verification can therefore be considered quite low.

A related method, known as the offline transactions counter, regularly counts whether the cardholder's identity has been verified through an online connection to the credit card issuer.

The cardholder can only conduct a certain number of offline transactions. Once a set limit is reached, the cardholder is requested to confirm the transaction by entering the PIN.

A worthwhile target?

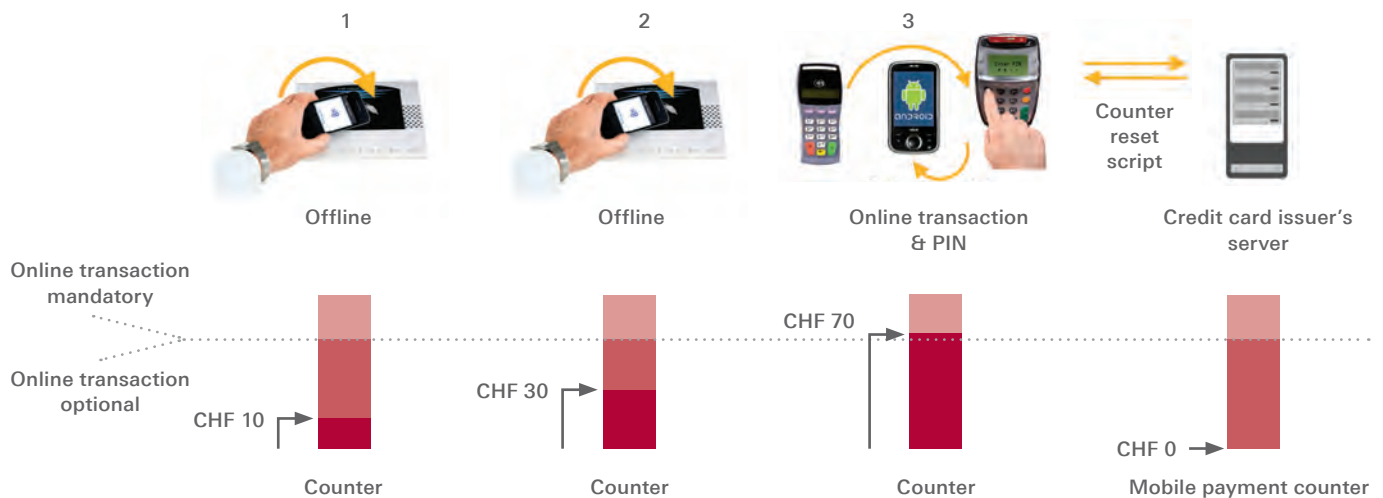
Many of the attacks on contactless and mobile payment methods considered to be theoretically possible by security experts cannot be carried out under real conditions at the present time. A more sober view of the potential weaknesses and the existing technical security measures reveals that other attack methods are more promising. Among most common forms of fraud today are cases involving online commerce where the credit card need not be present and shown. These include credit card data stolen by means of phishing, counterfeit Internet services, attacks on e-mail accounts or data leaks, and then used to

purchase services and products on the Internet. This fraud pattern comprises over 80% of the total losses incurred.

What is often overlooked in the ongoing discussion of potential security risk in the area of mobile payment is that the new technology also improves certain security aspects, especially by means of the security procedures described above. In view of the increasing complexity of mobile phones and the associated potential weaknesses, it is to be assumed that the security risk posed by malware or eavesdropping on mobile phones will tend to increase. However, this risk is calculable and very low, as long as the mobile payment application is properly implemented, fundamental security settings are in place and cannot be circumvented by users.

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Offline transaction counter





Olten, an important hub for rail and payment traffic.

Emergency concepts in interbank payment traffic

The reliability of interbank payments is based on an infrastructure that integrates all those involved and affected. It includes close monitoring of the organization, well-rehearsed emergency scenarios with highly trained emergency staff and well-prepared communications instruments. It is supported by technical and organizational redundancy, which removes the need to look beyond what's immediately apparent.

Generally speaking, everything is almost always just humming along. The daily bread is fresh. The coffee smells delectable every morning. The necessary freight logistics that make it so can be relied on. The commuter train takes you to work on time. And if we should be late anyhow, we make a call. We have come to rely on a mobile network that always works. If it ever fails, even for a few short minutes, that failure makes it on the nightly news. Assuming we have sufficient funds, we can always pay for breakfast, tickets and telephone bills. When it comes to reliability, payment traffic even beats the proverbially punctual Swiss trains and the mobile telephone network.

This holds especially true for interbank payments. SIC has been up and running dependably for a quarter century, and the few incidents that did occur were handled swiftly and very well. A good thing, too, because when it comes to money, peoples' nerves fray even faster than when there is something wrong with their mobile phone.

Crises prevention

This reliability of the SIC system is no accident. The Swiss financial center has built a solid infrastructure, and its users and operator protect it with considerable effort. SIX, the Swiss National Bank (SNB) and most participants maintain comprehensive crisis contingency plans, emergency task forces and technical backup solutions. The SIC operations are continually monitored by highly trained specialists, both by SIX Interbank Clearing, the technical operator, as well as by the SNB, the system manager. They recognize problems early on and are ready to intervene wherever necessary.

The SNB SIC Center is available to participants for support in case of any problems. In case of an emergency it may act on behalf of a participant – at the latter's request,



and within a clearly defined framework. When significant failures or emergencies occur, it can act early on and preemptively avoid other participants being affected, as well as protecting the financial center from damage due to the participants' interdependence. Many potential crises have been avoided, thanks to this system.

Whenever possible, critical decisions are coordinated and decided jointly. For crises, and even a mere case of doubt, the Interbank Alarm and Crisis Organization (IACO) can be activated. Its members are the SNB, SECB (the euroSIC system manager), SIX Interbank Clearing, the Swiss Financial Market Supervisory Authority FINMA, as well as decision makers from the six largest financial institutions. They can be notified and brought together for a telephone conference on very short notice. There, information is exchanged and next steps are decided upon. Depending on the focus or aspect of the emergency, IACO crisis management staff responsible for the various operations areas from SIC/euroSIC, liquidity management, IT and Business Continuity can be notified through IACO, with the distribution of information to all SIC participants being a part of this scenario. In a first step, the SIX

Interbank Clearing Operations Center voice mail messages are recorded. Additionally, a special messaging system at the SNB is specifically designed to actively inform all participants within minutes.

Redundant technology

In the unlikely situation that part of the IT infrastructure or even the entire SIC computer center would fail, SIX operates a second computer center in Schlieren, near Zurich, and a third one for SIC in the further distant city of Olten. Both are fully equipped to take over operations at a moment's notice. The same is true for the SNB and its responsibilities: In an emergency, managing liquidity within the SIC system and executing critical functions for the daily start-up and day-end can be processed at the second computer center in Berne. Both SIX and SNB computer centers are regularly monitored by the "Oversight", an independent organizational unit within the SNB. Switching between the regular and the emergency computer centers is tested at least once per year – a practice common at many banks, too.

What if all systems are running, but the connections are failing? An entire or partial failure of the network connections is unlikely, but not unrealistic. It could prove to be devastating for the Swiss financial center. That's why the miniSIC solution is maintained. The name doesn't in any way stand for a smaller SIC. Instead, every SIC participant is committed to writing all their payment data to a data carrier and to be able to submit it to SIX, where that data is then entered and processed. The incoming payment are returned to the participants in the same way. This process, too, is tested minimally once per year with all the SIC participants, and the results are verified by the SNB.

Sometimes, in the heat of the moment, we tend to forget that a solid, resilient infrastructure cannot be taken for granted. It is only this stable because its participants, operator and users continually invest in it, and because they are willing to prepare for situations that hopefully will never occur.

We can't possibly know what the next crisis will look like, nor when it will hit us. So let's remember Pericles' ancient wisdom, who, almost 500 years B.C. said: "It is less important to foresee the future than to be prepared for it."

Do you know how you would react, if your most important applications were to fail?

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Impressum

Publisher

SIX Interbank Clearing Ltd
Hardturmstrasse 201
CH-8021 Zurich

Ordering/Feedback

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Edition

Edition 55 – March 2013

Published regularly, also online at www.CLEARIT.ch. Circulation German (1,300 copies), French (400 copies) and English (available in electronic format only on www.CLEARIT.ch).

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Translation

French: Word + Image, English: HTS

Layout

Felber, Kristofori Group, Advertising agency

Printer

Binkert Druck AG, Laufenburg

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Additional information about the Swiss payment traffic systems can be found on the Internet at www.six-interbank-clearing.com