WHY AREN'T BANKS RUSHING FOR NFC PAYMENTS?

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Is there motivation for NFC Payments?

Banks have been beset by crisis during the past year. There are urgent needs in the banking industry to cut costs and generate new revenues, as payment revenues are rapidly declining. This is happening in Europe because of SEPA regulations, but the trend is also apparent elsewhere. The annual cost of cash – 80 per cent of which is paid by banks – is reckoned to be 50 billion euros in Europe alone. Thus it is easy to see that cash replacement has huge potential for banks to reduce their costs. But the alternative would need to be superior to cash: usable everywhere, omnipresent, interoperable, with great usability and exchangeability, and so on. This is rather hard to achieve via any electronic medium!

Banks currently have gaps in their offering in three main areas. The first of these gaps is in micropayments to physical merchants, or in electronic commerce or within the Internet social networking space. Electronic commerce in general presents the second gap: cards are the main payment product used, but were not originally designed for remote usage. Person-to-person payments are the third gap. There are instant needs to pay for a friend, split a bill or send money back home to relatives (international remittances). This category would also include the second-hand market. Cash is the dominant payment vehicle in most of these categories.

There seems to be a clear need for cash replacement. Mobile payment is a replacement option, with pilots showing that consumers love mobile contactless payment. The convenience is there, but it should be usable everywhere, meaning that a merchant acceptance infra should be built. Outside of London there is very little contactless infra in Europe, and although hundreds of thousands merchants accept contactless in the US, that country is large and achieving sufficient nationwide coverage takes time.

There has been a lot of unfortunate hype around NFC payments. Many have been tipping them as the next big success story. These predictions are understandable, as the results of NFC payment pilots are very encouraging: both consumers and merchants love it! Many banks would

also like to offer new and convenient payment services to their customers – besides saving some costs and generating new revenues. Operators would like to enhance their service offering as well, and payment capability would be an important enabler for many services. The problem is that these predictions seem to be put back year after year. Every year we keep hearing that next year or the year after will be the breakthrough for NFC Payments. Why? What really are the factors impeding NFC payment take-off, if it would be beneficial for all and everybody seems to want it?

GSMA has been actively pushing for NFC payments for a couple of years now. It has created the PayBuyMobile group, consisting of 50+ mobile operators committed to seeking pilot partners in their market areas, with the subsequent aim of an interoperable commercial service offering. Several pilots are ongoing as a result of GSMA activities, while a couple are in the pipeline and some have already been completed – and some even cancelled because of the delays.

Can we learn from history?

Let's take a glance backwards. Web browsers came to phones in the year 2000. Some people might also remember WAP from 1999. Banks and other service providers started to offer WAP services. Although there was only niche usage for bank services, these were the most popular WAP services. Phones were text-based, with black and white screens. The concept of WIM (Wireless Identification Module) was introduced for security-critical services. WIM was supposed to hold the private keys of the end-user for signing transactions, but this didn't quite happen in the early 2000s, as the market was not ready. Many people thought that WAP was a flop – although it was just over-hyped. It really was the start of the revolution; the foundations of today's mobile Internet, 10 years on.

Let's take another example. SMS has been available since 1995. Six years later, in 2001, it took off in the mass market. Initially only one operator in the US provided SMS. Global roaming was agreed at the end of the 1990s, but was not introduced in the US until 2003. Thereafter, as we all know, the use of SMS skyrocketed – despite the slow start.

A third example comes from banking services. In 2002 the first phones were released with java support, and in 2003 the external program writing interface was introduced for java applications. Banking application projects began in 2004. Nowadays there are various java-based applications available off-shelf for banks seeking to enhance the user experience of their clients. Here the availability of java-supporting handsets played an important role – in general there should be 15-20 per cent market coverage before a technology can really catch on.

What can be learned from these three examples? *All good things take time.* Market introduction seldom happens in one year. Often it may take six to ten years. Introduction of mobile payments in Japan took six years from the first pilots to the interoperable mass-market phase. Why should it be any faster elsewhere?

The development phases of NFC payments

The development of NFC payment services can be divided into three phases. The first phase, technical testing, took place in approximately 2005-2007. The first contactless mobile payment project had already been implemented back in 2003-2004 by Nordea Bank, Nokia and Visa. Although that project was pre-NFC, it already proved that the technology works and that consumers love it. The first true NFC payment project took place in Atlanta in 2005. Typically for trials done within this timeframe, handsets were provided to the trial users, maybe pre-loaded with value, while merchants were given the terminals free of charge, provisioning was usually done manually, and the number of pilot participants was rather limited (no more than a few hundred).

The second phase of evolution was consumer acceptance testing in roughly 2006-2008. During this period the main focus in trials shifted from the technical functionality of Secure Elements (SEs), Point-of-Sales (POS) and phones to the consumer perspective. It was noted that provisioning should be easy, and that consumers will need assistance if they are required to perform a two-minute download of a cardlet Over-The-Air (OTA) to their handset. Service scope extended during this period: it was observed that plain payment is an inadequate incentive for adoption, and that marketing and loyalty-related services are also needed. Customer care

became an essential topic of debate, together with lifecycle maintenance and security-related (back-up) services.

Since 2007 there have been commercial roll-outs in the market. The current phase could be called the "ecosystem building" phase, with the main topical questions in the industry debate related to the business model and to formulating the business case required for a commercial roll-out. The challenge seems to be that commercial activities do not begin when the pilot phase has ended. This seems to be a global phenomenon. There are only 3-4 commercial implementations in the world at the moment, although there have been more than 100 pilots testing the technology and consumer acceptance.

Another important factor is creating and unifying the consumer experience: creating repetition and consumer habits. The consumer habit doesn't become established if there are three different ways to pay by mobile. Some *standardisation* of the consumer user experience is required! It might be hard to get the industry parties to agree on this, as usability has traditionally been a competitive factor.

Business model options

1) The Collaborative Model, f.ex. French Payez Mobile project

This model seeks to use the UICC or SIM as a Secure Element for a large number of service providers co-operating in the marketplace. Therefore there is a need to share the SE between a large number of independent market players. A Multi-Service Provider Ecosystem and customer portability are important targets for this kind of ecosystem. This model can take place under "hotel", "rental" or "co-ownership" rules (see the Mobey Forum "Best Practice for Mobile Financial Services – Enrolment Business Model Analysis" White Paper).

The biggest benefit of this business model is that it would ultimately be the most consumer-friendly model enabling consistent service provisioning. It will also enable easy access for Service Providers to mass markets, once the complexities are solved and there are clear

business rules in place. It is also good that the concept of having a SIM card exists – although current SIM cards would need to be replaced by more capable UICC cards to serve as an SE for NFC services. There would be no need for a bank to invest in Secure Elements directly, so this should be an economical solution when common hardware space (UICC) is shared for multiple purposes. This model also has the best buy-in from the operator community; the GSMA is strongly supporting this model. Handset roll-out is expected to be faster with MNO support than without. The collaborative model also enables joint marketing efforts aimed at the end-user.

Because the business model needs to be defined between banks (as SPs) and MNOs, they will also have to agree on their role in the payments value proposition towards the customer. While banks will seek to deliver the actual payment services, MNOs could enable these services by leveraging their infrastructure. However, it sounds like the industry-level business model agreement is nowhere near conclusion as yet.

Maybe the biggest challenge in the collaborative model is that there are rather strong dependencies between bank and operator business processes. In order to succeed, a sufficient number of individual business players – banks, operators and merchants – will have to reach a positive business decision based on their own independent business case evaluation *simultaneously*. By today's assumptions, a Bank as an SP will have to reach a commercial agreement with every operator on its market to serve all of its customers – either directly or through TSM(s). There are also complexities with the interoperability of TSMs.

2) *The "Joint Venture" Model, f.ex. Barclays & Orange*

This model describes a situation where a major bank and a major operator engage in a joint venture, or in close bilateral co-operation. The solution may be open for competition to join later, or it may work on the basis of exclusivity. Business partners usually aim to share the SIM / UICC cards that are used for offering services to their combined customer base. In an equal co-operation the conceptual model might be "co-ownership" of the UICC – as in the Malaysian case – or another chosen model.

The main benefits of this model are that it is rather simple to effect a limited implementation, allowing a quick time to market. With reliable and well-known business partners this can work well. The business model issues are easier to agree with a familiar partner in a specific market.

The obvious drawbacks of this solution are that this is a "walled garden" approach, allowing neither the bank nor the operator to offer the same services to their entire customer base. Furthermore, interoperability will be a challenge if the market starts with multiple walled gardens – with varying implementations. This also only works if the combined customer base is large enough.

3) The SP-driven model, f.ex. Rabobank in the Netherlands

This model includes several implementation options and several Secure Element alternatives. One common element is that there is no initial requirement for sharing the SE, as the SP serves as the SE issuer. In some cases the SP can also serve as the TSM, or it may – and in some cases must – use an external TSM.

Technically there are the following alternatives, which are also slightly different from the business model perspective:

a) Banks issuing mini-SD cards to their customers. Here the bank "owns the entire house", and can also serve as the TSM. This would exclude other Service Providers from the same SE. An increasing number of handsets support SD cards, but there is only one SD card slot in the handset. Consumers cannot be expected to swap SD cards based on the services that they intend to use. Although there is no need for B2B agreements in this case, it would be advisable for the bank to open up the application space to other SPs. In this model, however, there would be healthy competition in the marketplace – if the bank doesn't open its SE, then there is likely to be another SE in the handset – the UICC

issued by the operator. Thus, the other SPs would have a choice of selecting whether to partner with the bank that owns the SD card, or with the MNO that owns the SIM.

From a time to market perspective, it is estimated that it would be possible for an SP to go to market with this model within a year, i.e. during 2010 (Mobey estimate). There are already pilots under way with this model.

b) Using a non-removable SE integrated into the phone hardware, either dedicated as in the Embedded Chip, or as part of the phone hardware (e.g. Trusted Base, OBC). In this case it would be necessary to have an external TSM, which would control the master keys for the handset-based SE. The built-in character of the SE makes this case a little different from the other cases.

Most of the trials have used this model, and some of these are already commercial. Mobey Forum estimates that there would be larger mass market potential for this model as of 2010. As a business model, this concept is expected to come closest to "hotel" or "rental" models. However, while no rental fees are expected for the space from banks to handset vendors, there is likely to be a service fee for lifecycle management of the applications for the TSM.

c) SIM / UICC: the bank launches its own Mobile Virtual Network Operator (MVNO) and distributes UICC cards to its customers including payment and ID applications. Here the obvious drawback is that the bank will have to enter and invest in an entirely new business area with which bankers are seldom familiar. However, in most markets there are MVNOs available for a reasonable price nowadays, and so buying the operations is a reasonable option.

The obvious benefit is the same as with the SD card: the bank retains full control of the hardware and "owns the entire house". This means that the bank can provision as many applications to the same SE as it chooses, and sell or rent part of the SE space to partners or, for instance, to merchants for loyalty or other applications. Although there is no need for B2B agreements in this case, it would be advisable from the broader market

perspective for the bank to open up the application space to other SPs, i.e. it would use an external TSM, at least in the long run.

There are already commercial operations based on this model.

d) Banks issuing “Stickers” that can be attached to mobile phones. This model is viewed rather as a bridge until other business models are mature enough for commercial use. There is no connection between the Sticker attached to the handset and the phone functions with current technologies as yet, but presumably this could be developed through Bluetooth, for example. This is the easiest model, involving no need to conclude any kind of B2B agreements before launching the service. This may explain why there has been a huge trend in the market this year for banks to issue Stickers to their customers!

If the SE is used by one SP only, then the business model is much easier with the SP-driven approach, as the bank is in charge and in full control of the SE. There are no business dependencies, which makes liability-bearing and assurance of related security much easier. Obviously in these cases (except the phone hardware-based option) banks will have to bear the issuing costs of the Secure Element and organise lifecycle management, so higher initial investments are forecast. On the other hand, there is better control over the maintenance and lifecycle management costs during the operational phase.

Which business model to select then? Banks do not care as long as they can provision the payment application to the mobile with minimal changes to existing processes and secure a reasonable business case. It seems that business case negotiations with the collaborative model are stalled at the moment. This may explain why we are seeing an increasing number of one-to-one and SP-driven cases.

Business requirements

Mobey Forum issued its "Best Practice for Mobile Financial Services – Enrolment Business Model Analysis" white paper in June 2008. This white paper is publicly available on the Mobey Forum website www.mobeyforum.org. The Task Force that produced the white paper was the first cross-industry group to make a serious effort to crack the remaining business model challenges for the collaborative model, i.e. the business model that would prefer to share an SE like UICC between a large number of stakeholders.
The Initial Requirements (i.e. the requirements that need to be taken care of before starting a serious pilot) specified in that document are as follows:

A1. Business case
A2. Transparency of ecosystem
A3. Mass-market potential
A4. Lifecycle management of FI applications
A5. Open standards
A6. Additional new value
A7. Services adaptable to all customer segments

Evaluating the current market situation, we may observe that there have been severe difficulties, especially for banks, in formulating a business case with the operational models currently available on the market. Transparency of the ecosystem is also questionable in many cases. Mass-market potential certainly is not there yet, with both the merchant acceptance infra and suitable phones not yet in place. As for lifecycle management of FI applications, there are solutions available, but for the time being the price quotations have been very high. There are open standards available, but these should enable all business model options, and not limit the choice of market players. It should not be in anyone's interest to exclude anyone from the market – be it the MNO, the bank, or the merchant seeking to encourage uptake of NFC services. The last two requirements on the list seem to be easier to satisfy at the moment.

The operational requirements (that would also need to be met before going commercial) are as follows:

B1. Business sustainability
B2. Retained control and management of your own business
B3. Branding
B4. Clarification of roles
B5. Risk management
B6. Consumer freedom to change service providers

Business sustainability means that “continuity of existing business without unnecessary changes to business processes must be ensured”. There is still work to be done in this area before full-scale commercialisation can take place.

The second point on the list, “retained control and management of your own business”, might be an even tougher challenge. This means that all parties can practice and manage the business on their own, without unnecessary dependencies. In the collaborative model this requires extensive agreements between stakeholders. “Branding” might be easier, although this requires agreements in the collaborative model.

Clarification of roles is an area where a lot of work is currently being done by industry groups such as Mobey Forum, EPC, GSMA, and the like. Understanding the business fundamentals of the partner is a crucial requirement: this comes into question with the risk management requirement. Usually it is the financial institution involved that will have to bear the financial risk and be liable for the payment transaction and security. There is a fundamental rule in the industry that the party liable for the transaction should also take charge of security and should be able to take any required measures at any time related to the security of the entire payment, from hardware to software and all related components of the transaction. How this will be ensured in a commercial environment is a good question currently under consideration by many of the stakeholders that have tested the concept in pilots.

Ensuring consumer freedom to change service providers is a point on which regulators are likely to intervene if the market players fail to solve this issue.