

Telephone turns

'Show me your mobile phone



1 Hold your mobile phone up to the smart sticker (a sticker with a 'tag') of a recipe and you will be sent the shopping list for the ingredients for the recipe by sms. 2 Smart posters send you the latest recipes. 3 Paying: hold your NFC-enabled phone up to the reader and the amount will be deducted from your debit card. 4 Smart visiting card: you can send messages to other NFC phone owners with your own NFC smart cards. From now on you can leave your pen at home, but you will never be able to go out without your mobile phone again ...

into smart wallet

and I know who you are'

Before you know it we will be paying for almost everything with our mobile phones. You will not be needing your wallet (or purse) with PIN, credit and health club membership cards, public transport tickets and small change much longer. Technically speaking, it is a piece of cake. Christian van 't Hof of the Rathenau Institute has, however, been examining the question of who is to manage the privacy-sensitive information. What will happen with our digital footprints?

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Increasing numbers of Dutch people are paying for their shopping, drinks and meals out with their mobile phones. In the centre of Rotterdam consumers can already use this method at more than fifty shops, cafés and restaurants. Trials in Amsterdam, Utrecht, Eindhoven, Arnhem and The Hague will follow shortly. The customer holds his or her mobile phone close to a point-of-sale reader, and 'Bob's your uncle'.

The technology that makes this possible has been dubbed 'Near Field Communication', or NFC for short. It is a type of wireless connections technology for short distances – a maximum of twenty centimetres – that makes communication between different devices possible. In Japan they are crazy about a similar technology: Mobile FeliCa. More than 45 million Japanese have been using their mobile phones for PIN, credit, membership and savings cards, train and air tickets, and house keys for some time now.

We have not yet reached that stage in the Netherlands, but it will probably not be very long before we do. Some experts expect ten percent of all Dutch people to be paying their bills with their mobile phones by 2015. Others think that a third of our population will be using NFC in as little as three years' time. If you include all the admission passes to offices (also an NFC application) that are in circulation – we are already well on the way.

At the moment, two tests are going on that are supposed to prepare consumers and the business community for the mobile phone as smart wallet. The larger of the two is Payter. Customers can use this system to pay

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their bills with their phone in a large number of shops in Rotterdam, primarily in and around the Koopgoot shopping centre. New customers receive a Nokia mobile phone that is equipped with the requisite chip. Anyone who deposits money in advance via Payter only has to wave his or her phone along the special checkout to pay. The supermarket Albert Heijn, clothing store WE, toyshop Bart Smit, a number of other chains and dozens of retailers, cafés and restaurants in the port are participating in this test. Payter has national ambitions.

The Radio Frequency Identification (RFID) Platform, the interest group for parties including the NFC, is supervising the other test. Last summer one hundred Rabo and KPN customers were given the opportunity to pay for their shopping at the C1000 supermarket in the village of Molenaarsgraaf in Zuid-Holland with their mobile phone for six months. Instead of



passing their PIN card through the reader, the customers held their phone in front of a sticker on the till that made contact with the chip in their phone. The amount was deducted immediately from the customers' (Rabo) accounts, as is usually the case with normal PIN card transactions. Upgrading the calling credit on the phone which is required with Payter is, therefore, not necessary in this case.

Payter, which works independently of banks and telecommunication companies, hopes for a speedy introduction and large turnovers. The more customers and applications, the better. The profit is to come primarily from advertising. The Rabobank has another motive for wanting to make payment by mobile phone a success: banks lose a lot of money keeping cash in circulation. Eighty percent of all payments in Europe are carried out with cash, but these transactions only represent

four percent of the total value of all payments. Nevertheless, a large bank spends about 15 percent of its expenditure on this – physically protecting and transporting money is expensive.

The consumers participating in the NFC experiments are enthusiastic. They think that the mobile wallet is really handy. And the companies are happy, too. The shops using the system have less cash on the premises and are consequently less vulnerable to hold-ups. There is, however, more to NFC than simply paying with your mobile phone. The providers of NFC services receive detailed information about their customers. Not just about

what these customers do, but also about where they do it. The providers are, therefore, able to come out with customized advertising and provide services at useful spots. Work is currently being carried out on so-called smart posters: posters with a NFC chip up to which you can hold your phone to receive extra information. For example, trailers of films, plus the cinema times and the opportunity to book tickets. And what about a smart poster at a bus stop that allows you to call a taxi free of charge? Albert Heijn is carrying out a pilot with NFC in its cooking magazine 'Allerhande'. Anybody holding his or her mobile phone above the photo of a dish in the magazine receives an sms with the shop-

'What will happen when hundreds of service providers with dozens of services are linked to millions of users?'

> Smart phone as Privacy Coach

A mobile equipped with NFC is not only a wallet. Besides paying, a smart mobile phone enables you to make contact with other contactless smart cards such as your pass for the sports school or public transport tickets. The companies behind these cards receive a great deal of information about the consumer if he or she makes contact with his or her mobile phone. Not everyone is comfortable with this.

The Rathenau Institute and a network of experts have jointly come up with what they have called the 'Privacy Coach'. Users installing this on their mobile phones can find out precisely what the company behind a pass or smart poster wants from them. They can, furthermore, set up their own privacy profile. You may only want your health club owner to know whether you are a paying member

and, therefore, have access to the premises with your pass. In that case, you set your privacy profile to 'high'. On the other hand, perhaps you do not mind him or her knowing how long you train and on what machines if he or she gives you a free personal training programme in return. In that case, you set your profile a little lower. If your wishes correspond with those of the health club owner, the phone gives one beep to indicate that there is a 'match'. If the health club owner wants more information about you than you want him or her to have, the phone beeps twice, which means: no match. You can then ask the sports school owner precisely what he or she wants to know and decide whether you agree to it.

At this point in time, the Privacy Coach is still only a concept. A demonstration can be seen at www.difr.nl.

ping list and an email with the recipe.

And this is only the beginning. The tiny, smart NFC chip has a so-called open standard, which means that the underlying technology is public property and that a chip manufacturer, therefore, does not have to buy licences. In theory, any company with an attractive location-based service can hitch a ride for not too much money.

However, there are still a few bumps in the road. The most important question is: which of the parties will have control of the so-called Secure Element – the chip on which the user's identity and financial credit balance are safely stored. For one thing the portability, or transfer of the Secure Element from one phone to another, must be properly arranged so that consumers are not tied to a particular telephone brand. If the Secure Element was placed on the phone's SIM card, the data

would, in fact, be under the control of the telecom companies. It would not, however, be a good idea to allow a single market party to have control. Telecom companies are commercial organizations that would undoubtedly demand a lot of money from companies wanting to add new applications to the smart phone. This would raise a barrier for innovative service providers and would, furthermore, make it difficult for the consumer to switch to another telecom provider.

An even bigger problem is the management of all these data flows. Early tests involved a few transactions between A and B. But what will happen when hundreds of service providers with dozens of services are linked to millions of users? This could end up a logistic nightmare. For this reason, the Dutch companies that are working on NFC advocate an intermediary, or so-called Trusted Service Manager. The latter will

monitor all the services, data and finances relating to the transactions carried out via the smart phone.

The first tests with NFC have been successful: the technology works and is appreciated by users. And so far the free market has been doing its work. However, there will come a time that the current supervisory mechanisms for all the separate techniques (smart cards, Internet, Global System for Mobile communications [GSM], switch cards, etc.) are no longer adequate, because, as a result of NFC, all these data converge. It is still not clear who is ultimately responsible for what data and to whom the consumer can appeal if things go wrong. If companies are unable to answer these questions satisfactorily, the government will have to make the next move.

For more information, see "Near Field Communication. Convenience takes a great step forward. But what about the footprints we leave?" at www.rathenau.nl.