

January 25, 2009

PROTOTYPE

Cellphones as Credit Cards? Americans Must Wait

By LESLIE BERLIN

IMAGINE a technology that lets you pay for products just by waving your cellphone over a reader.

The technology exists, and, in fact, people in Japan have been using it for the last five years to pay for everything from train tickets to groceries to candy in vending machines. And in small-scale trials around the world, including in Atlanta, New York and the San Francisco Bay Area, nearly everyone has liked using this form of payment.

But consumers in the United States won't be able to wave and pay with their cellphones anytime soon: The myriad companies that must work together to give the technology to the masses have yet to agree on how to split the resulting revenue.

"In Japan it was easier," explains Gerhard Romen, director for corporate business development at [Nokia](#). "It was just the major guys saying, 'This is how it will be.'" A single carrier, [NTT DoCoMo](#), accounted for more than half the Japanese market at the time the system was rolled out and thus had significant leverage with financial institutions and handset manufacturers.

This is not the case in the United States. For such payments to work here, cellphone manufacturers, carriers, financial institutions and retailers must all play roles. There also must be some sort of intermediary that is trusted by both the financial institutions and the carriers to activate the virtual credit cards inside the phone.

One problem is that anyone using a credit card inside a cellphone is simultaneously a customer of the financial institution and of the carrier. "At the end of the day, the question is, 'Who pays whom and how much?'" Mr. Romen says. "The carriers and the banks need to get their act together on payment." He adds that the back-and-forth is a necessary step in the creation of a complex system.

Short-range technology, called N.F.C., for Near Field Communication, enables a phone to talk to an electronic reader. It is already in widespread use — though, outside Japan, often not in phones.

In London, for example, the technology is embedded in the "Oyster" cards used to access the transportation system. The technology is also used in credit cards like payWave from [Visa](#) and PayPass from [MasterCard](#) that are waved over readers, rather than swiped through them.

For a phone, the technology to store account information securely is advanced enough so that several different virtual cards can be placed inside the phone; users can select an account by using the screen.

Account information can be embedded in the telephone or on a SIM card or microSD card, but no call over a network is needed to send the data. Proximity is the key: for the payment to work, the phone needs to be within a few centimeters of the reader.

The idea of equipping a cellphone with virtual credit cards worries some people; phones, after all, are easily lost or stolen. But Simon Pugh, group head of the mobile payments group at MasterCard Worldwide, said that if the phone were lost, the consumer could call the bank — using another phone, of course — to disable the account. He also said that consumers could choose to protect the payment part of their phone with an access code, but he added that the payment would also be secure even without such measures.

The risk of account fraud from mobile payments is “small,” according to Kevin Fu, an assistant professor of computer science at the [University of Massachusetts](#), Amherst, who in 2006 uncovered several security holes in credit cards that are waved rather than swiped. Credit-card companies say that these problems have been fixed.

Mr. Fu is more concerned about privacy. He says that it may be possible to get personal information, like a person’s name, from credit-card account data on a mobile phone.

Nonetheless, he predicts that with time, “these N.F.C. phones will become one of the best ways to do mobile payments.”

It is almost certain that mobile-phone payments will eventually come to the United States. After all, the technology promises something for everyone involved: Credit-card companies would have a new way to attract and keep customers and would save money by no longer sending cards through the mail. Carriers would enjoy another source of revenue. Retailers would benefit from a faster checkout process, and may find that people buy more when they pay with their phones.

And according to Joanne Trout, vice president of worldwide communications for MasterCard Worldwide, there will not be an additional fee for consumers to use credit cards on their phones.

Consumers, too, would probably like using their cellphone credit cards, if wave-and-pay were secure and widely available. It may be another instance of the phenomenon, so common in technology, of not knowing we want something until we have it. “People really do like it,” said Key Pousttchi, head of the Wi-mobile research group at the University of Augsburg in Germany. “It is easy. It is convenient. It helps you.” The group has surveyed thousands of people who have participated in mobile-phone trials around the world.

Mr. Pousttchi says he expects that by 2012, most phones will contain the N.F.C. technology that makes wave-and-pay possible. But he cautions that this doesn’t necessarily mean that Americans will be paying with their cellphones in three years. For that to happen, all the players will have to work together to define standards, determine revenue-sharing, expand the network of electronic readers and think through the other parts of what he calls “this 2,000-piece puzzle.”

The NFC Forum, an industry association based in Wakefield, Mass., whose 150 members include manufacturers, carriers and financial institutions, is a good start. Mr. Romen and Mr. Pugh are both vice chairmen of the group.

Nonetheless, Mr. Pousttchi warns, “it is completely possible nothing will happen in mobile payments in the next five years if everybody keeps thinking only about their own piece of the puzzle.”

Leslie Berlin is project historian for the Silicon Valley Archives at Stanford. E-mail: prototype@nytimes.com.

Copyright 2009 The New York Times Company

This article also appeared in the [International Herald Tribune](#) and [The Malaysian Insider](#), Kuala Lumpur/Malaysia as a reprint of the New York Times original article.