



Mobile NFC



Korea Blazes Global Trail for NFC

Cooperation and coordination enable contactless technology to gain traction

For contactless mobile services, South Korea is fast becoming a window to the future. The country leads the world in the adoption of a global standard for mobile NFC - a contactless technology that enables people to simply tap their handset against a reader to complete everyday tasks, such as making payments, validating tickets and gaining access to buildings.

Between them, South Korea's three major mobile network operators, KT, SK Telecom and LGU+, have sold more than 10 million NFC handsets compatible with the global standard supported by the GSMA. South Koreans are increasingly using NFC smartphones to purchase goods in shops and street markets, pay fares on public transport and access buildings.

In time, Koreans may no longer need to carry wallets or purses, stuffed with plastic cards and paper receipts. Instead, they'll be able to rely entirely on their NFC handsets to complete transactions, redeem coupons, collect loyalty points, enter buildings and access a digital record of their activities. The rapid roll out of NFC smartphones puts South Korea significantly ahead of Europe and North America, where mobile NFC is just making the transition from trials to commercial deployment. In Japan, millions of people already use their handsets to access transport systems and make payments at point of sale, but the country is using a proprietary contactless technology, which is incompatible with the mobile NFC services being deployed in other parts of the world. Japan's mobile



operators are now working with their South Korean counterparts to bring the global NFC standard to Japan and enable foreign visitors to use NFC handsets to pay for goods and services [see box].

Why has South Korea been able to take a global lead in mobile NFC? The answer lies in part in an extraordinary level of co-operation between the country's mobile operators, regulators, handset makers, payment card providers and point of sale suppliers. This so-called Grand Alliance has been instrumental in enabling the co-operation and coordination required to deploy a new technology that impacts so many facets of everyday life.

The Grand Alliance and its goals

The Grand NFC Korea Alliance was formed in June 2011 at the behest of the Korean Communications Commission (KCC), which regulates the domestic telecoms and media industries. Aiming to put Korean companies at the forefront of the global

rollout of mobile NFC, the KCC called on Korean companies to quickly adopt the emerging global NFC standard. This standard stipulates that sensitive data relating to the NFC service is stored in a secure domain on the handset's UICC (commonly known as a SIM or USIM card). It also mandates the use of the "Single Wire Protocol" to connect the UICC to the handset's NFC chip.

A leading global position in NFC could generate more than US\$1.2 billion a year for the South Korean economy and support more than 5,700 jobs by 2016, according to the Commission. South Korea's mobile industry is aiming to accumulate valuable expertise that it can export to other countries. "It is about taking leadership," says John Hyuk Jun Jung, Senior Manager, Mobile Product & Marketing, Mobile Business Group, olleh KT.

KT and SK also see opportunities to generate revenue by acting as a trusted service manager, enabling service providers to store sensitive data securely

on its UICCs. John Hyuk Jun Jung notes that both consumers and service providers place a high value on security.

“We earn money from service providers whenever a service is downloaded through the NFC USIM,” adds HyeYun Chung, NFC business development manager at SK: “We are planning to launch an NFC open platform, named ‘smart touch’ - an environment for handsets, USIM and server systems for third-parties to make their own NFC applications and services.”

As well as the country’s three major mobile operators, the Alliance’s members includes payment card providers, Hana SK Card, BC Card, Shinhan Card, MasterCard and KB Kookmin Card, device manufacturers, Samsung, LG, Pantech, UbiVelox, KEBT, MtekVision and 3A Logics, and telecoms billing service providers, Danal, Mobilians, KCP and Galaxia. It is also supported by government organisations and an array of industry associations.

The Alliance was established to coordinate the simultaneous rollout of compatible handsets, UICCs, point of

sale equipment and transport validation systems. In essence, the Alliance is aiming to overcome the classic “chicken or egg” predicament, which can hold back new mobile services, as each element of the value chain waits for the other elements to move first. The Alliance is also working to ensure that NFC-based services are interoperable, so that a merchant’s coupons, for example, will work across different mobile operators and different handsets.

The Alliance’s mandate includes accelerating the deployment of NFC terminals within merchants and supporting the development of a variety of NFC applications, including secure payments, ticketing, physical access control, user authentication and coupons. It is also encouraging the deployment of NFC tags that can provide tourist information and customised advertising and the development of mobile wallets - specialist handset applications that enable a user to discover, access and manage NFC services. Moreover, the Alliance is providing a testbed that small companies

and merchants can use to trial NFC-based services prior to commercial launch.

The active support of the KCC underlines the potentially pivotal role of regulators in the successful deployment of mobile NFC services. The right regulatory framework is “very important,” says HyeYun Chung at SK. “Government regulation actually sets the role of stakeholders in the ecosystem. It also influences the business model and market activation.”

So far, the Alliance appears to be achieving the KCC’s strategic goals. Six million of KT’s subscribers have NFC handsets compatible with the global standard, while SK has sold about seven million NFC enabled handsets, of which about half are UICC-based. “This is because we have a policy of giving customers an option to choose between a general USIM and a NFC USIM card,” explains HyeYun Chung at SK.

South Korea’s mobile operators are sharing their expertise and learnings with their counterparts in Japan, China and Europe. Both SK and KT are working with Deutsche Telekom, France Telecom, Telecom Italia,

NFC Roaming: Laying the foundations

In a harbinger of things to come, Koreans can already use their NFC handsets with NFC services in Tokyo, as Japan begins to deploy global standard mobile NFC infrastructure alongside the existing Mobile FeliCa contactless technology.

Japanese mobile operator NTT DOCOMO is working with KT of South Korea to enable cross-border NFC services between the two countries. KT customers visiting Japan can now use NFC handsets to redeem coupons at more than 200 different outlets in Japanese airports and downtown Tokyo. KT customers can download the coupons by tapping on smart posters placed at international airports and shops

“We are pioneering the market for what we call, NFC Service Roaming,” says Kyoshi Mori of NTT DOCOMO. “NFC Service Roaming will enable a mobile user to use the same mobile NFC handset with NFC services in the home country as well as other parts of Asia, in such a way that the mobile user enjoys greater convenience and benefits while travelling abroad”

At the end of this year, NTT DOCOMO plans to begin offering its own customers hybrid NFC

handsets that will work with both UICC-based services and Mobile FeliCa services, says Kyoshi Mori, adding “We are hoping to get our handsets compatible with these services, so our customers will be able to download apps in the Japanese language and use the services when they go to Korea.” The rollout of Android-based smartphones in both Japan and Korea has created a common platform for the development of mobile NFC services, he adds.

In October 2012, DOCOMO and KT announced that they will develop a cross-border service that will enable DOCOMO customers with compatible smartphones purchased in Japan to use the Cashbee prepaid e-money service in South Korea. The agreement was reached together with eB Card, the LOTTE-affiliated South Korean prepaid e-money service provider which developed Cashbee in August 2010. DOCOMO and KT plan to jointly deploy a new system to enable this and other cross-border NFC services between their two countries by September 2013.

DOCOMO and KT are also working with China Mobile to extend NFC Service Roaming to China as well. At the GSMA’s Mobile Asia Expo in Shanghai in June 2012, DOCOMO, KT and China Mobile

demonstrated coupon redemptions using NFC Service Roaming at the GSMA booth.

Also at the Mobile Asia Expo, SK Telecom and Japan’s KDDI jointly demonstrated ‘NFC & JOY,’ a NFC-based service SK has deployed in South Korea’s Munhak baseball park, home to the SK Wyverns. ‘NFC & JOY’ enables customers to purchase tickets, order food and record the location of their car using NFC tags installed throughout the baseball park. SK and KDDI are exploring deploying the ‘NFC & JOY’ service at baseball stadiums in Japan.

Kyoshi Mori says DOCOMO is aiming to make NFC Service Roaming as beneficial as possible for consumers and service providers. “If you try to take too much out, by charging the users and the service providers, you’ll destroy the whole thing,” he adds, “You need to first grow the NFC ecosystem.” Eventually, DOCOMO is hopeful that mobile NFC roaming will encourage greater use of its data roaming services as NFC prompts consumers to download information and use related services. Once the market is well established, DOCOMO also plans to establish business alliances to further harness the mobile NFC opportunity.

Telefonica and Vodafone in the GSMA's NFC Fast Track Project.

Moreover, the country's device vendors have achieved a leading position in the global market for NFC handsets. Samsung Electronics, for example, is reported to have shipped 20 million units of its NFC-enabled Galaxy S3 smartphone within 100 days of its launch at the end of May.

Rolling out NFC services

The most popular NFC services in South Korea today are related to transport, according to the country's mobile operators. SK estimates more than two million people have used their mobile handsets to pay transit fares via the T-money prepaid system, which is accepted by buses, subway trains and some taxis in Seoul and other parts of South Korea.

KT says that more than half a million of its subscribers have signed up for its prepaid Cashbee service, which enables them to use NFC handsets to pay for travel on buses, subway trains and taxis. About 80,000 of the subscribers are "active," in that they are tapping their NFC phones to pay fares on a regular basis. KT has said that subscribers used the Cashbee prepaid transit service 30 million times in 2011 spending 11 billion Korean won (US\$9.5 million). John Hyuk Jun Jung says KT has also deployed about 22,000 NFC tags at bus stops throughout Seoul and the surrounding region. A traveller can tap the tag with their NFC handset and get information about the bus route and departure and arrival times.

A pre-paid electronic money service developed by eB Card in August 2010, Cashbee can also be used for retail purchases at participating merchant locations, including Seven Eleven, Buy the Way, Lotteria, Angel-in-us, Naturu, Lotte Cinema, Lotte Super and Krispy Kreme Doughnuts. KT's mobile wallet, olleh Touch, also supports MasterCard PayPass and Visa payWave applications by BC card, as well as Shinhan Card, KB Card and Lotte Card. The wallet helps users manage different NFC applications, stores credit cards, transportation cards, membership cards and coupons and

enables the handset to read and write to NFC tags. Olleh Touch users can also check the balance on transportation cards, their payment history and download NFC-related applications.

In May 2012, KT teamed up with Shinhan Bank to launch ZooMoney to enable shoppers in Namdaemun Market, one of the most popular traditional markets of Korea, to pay for goods by tapping a NFC handset against a NFC tag, by scanning a QR code or entering the membership number of the shop. The transaction is registered on the stall owner's handset, so they don't need a conventional point of sale terminal. KT says that a ZooMoney transaction also costs the merchant less than a credit card transaction.

SK is also encouraging its customers to use NFC to complete financial transactions. More than 300,000 SK customers have downloaded a credit card application on to their USIM, according to HyeYun Chung. Some leading retailers are also enabling payments via NFC. "A mobile wallet service was launched by the largest retailer in Korea, named Shinsegae, last month (June 2012)," says HyeYun Chung. "It provides an integrated payment system which enables membership coupon issuance and concurrent mobile payment through a single mobile interface. Also, NFC payment-enabled POS terminals will be ready in all their branches nationwide. This service is triggering the mobile wallet market to expand."



Deploying readers and terminals

South Korea is increasingly well-equipped with NFC readers and terminals – both Visa and Mastercard have supported the deployment of NFC readers within merchants to enable shoppers to pay with contactless payment cards. SK estimates that there are now more than 200,000 contactless terminals across the country.

The Alliance and its members have also created special zones to showcase NFC services and raise awareness among consumers. For example, the Alliance has equipped Myeong-dong, Seoul's busiest shopping district, with a wide range of NFC services, including payments, loyalty programmes, couponing, smart posters and digital receipts. More than 200 merchants accept payments made with NFC handsets, while some cafes and restaurants enable diners to order by tapping an NFC tag. Shoppers can download coupons and advertising information from smart posters, while downloaded coupons can be used to obtain a price discount or a free drink.



This year's World Expo, which took place in Yeosu in South Korea between 12th May and 12th August, is also showcasing NFC-based services, such as payments, food ordering and entrance tickets. Visitors can use a NFC-enabled parking app to help them locate their vehicle in the enormous car parks at the Expo site, while visitors can order items from a virtual store on a "shopping wall" at a touch of their NFC phone.

While these zones are raising the profile of mobile NFC, South Korea still needs more NFC infrastructure to harness the full potential of the technology to enrich everyday life. How best to fund the rollout of mobile NFC-compatible readers and terminals is one of the key issues for mobile operators looking to deploy mobile NFC services both in South Korea and globally, according to John Hyuk Jun Jung at KT. He says KT is in talks with many different companies to increase the number of NFC terminals. To reduce the cost of deployment, John Hyuk Jun Jung says KT is also exploring solutions that will enable a merchant to accept payments with a NFC-enabled phone or by attaching a NFC dongle to an existing mobile phone.

Building a NFC handset portfolio

Both KT and SKT have approximately 15 different NFC handsets in their device portfolios. Although they are mostly premium models, the first mid-tier models are also beginning to appear. KT also offers an NFC-enabled attachment, called iCarte, for Apple's iPhone 4 and 4S, which contains a NFC chip and an embedded secure chip. Made by Canada-based Wireless Dynamics, the case enables the user to tap the iPhone against an NFC reader to validate a transport card and complete a credit card transaction. KT's Cashbee app is available for the iPhone.

HyeYun Chung says SK offers 16 NFC enabled handset models from 3 manufacturers. "We sell Samsung Galaxy branded Android phones such as Galaxy II, Galaxy III, and Galaxy Note. Also the Optimus phone from LG and Vega Racers from Pantech," she adds. "We are anticipating that in the future almost every high profile smartphone rolling out in Korea will support NFC functions."

What comes next?

HyeYun Chung at SK attributes South Korea's leadership in mobile NFC to the country's early adoption of mobile payments. "We have literally created the history of mobile payment over the last decade. So, we have exceptional service experience and technical expertise," she says. HyeYun Chung also expects many more NFC applications, such as a mobile employee identification service, to be deployed in the near future. "NFC has recently been recognized as a key bridge technology that can make life more convenient," she says.

For John Hyuk Jun Jung at KT, the next step is to further raise awareness of NFC services by deploying NFC services in very busy venues, such as movie theatres, and demonstrating to consumers how easy these services are to use. "NFC is not really widely recognised by consumers – about 10% to 20% of customers are active users for NFC services," he says. "We need to increase awareness of NFC - what it does and how it is going to work."

By working with the public sector and companies from other industries, John Hyuk Jun Jung believes the mobile industry can make mobile NFC part of everyday life. "Within a two year timeframe, the majority of the population will be very familiar with NFC services," he predicts.



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About GSMA

The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world's mobile operators, as well as more than 200 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers, Internet companies, and media and entertainment organisations.

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