Annex 2

Near Field Communication (NFC)

What is NFC?

Near Field Communication (NFC) is a wireless connectivity technology that can provide intuitive simple and two-way interaction among electronic devices. NFC is both a "read" and "write" technology. Communication occurs when 2 NFC-compatible devices are brought within 4 centimetres of one another. Because the transmission range is so short, NFC-enabled transactions are inherently secure. NFC operates at 13.56 MHz and transfers data at up to 424 Kbits/second. The underlying layers of NFC technology follow International Organisation for Standardisation (ISO), European Computer Manufacturers Association (ECMA) and European Telecommunications Standards Institute (ETSI) standards.

Potential of NFC

NFC can be used with a variety of devices, from mobile phones that enable payment or transfer information, to digital cameras that send their photos to a TV set with just a touch. On the mobile, NFC represents the future nexus of contactless and mobile payments as advances in mobile infrastructure make it possible for payment applications to be remotely loaded onto NFC mobile devices (a process known as Over-The Air (OTA) provisioning). It is poised to become a dominant global service offering with NFC mobile payments transaction value predicted to exceed US$75b[1] globally by 2013.

Today, more than 50 NFC trials have been conducted in Asia, Europe and America, with the transit and payment sectors being the beachheads for NFC deployment. However, the potential of NFC goes beyond payments. With a reader-writer capability, augmented by an always-on connectivity on mobile phones, NFC opens up possibilities for a wide range of innovative applications and services. These include "over-the-air" top up of stored value accounts, physical access control, airline check-in[2], real-time mobile coupons redemption[3] at payment terminals and smart poster advertising. Peer-to-peer e-money transactions and content distribution are other future NFC services envisioned by the industry. Figure 1 shows the possibilities of using NFC on mobile phones in our daily lives.

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[1] Juniper research extracts from article "NFC payments to hit $75billion in 2013, says Juniper" in EETimes.com (16 Jul 08). The report assumes 20% of the phones will be NFC-enabled by 2013.
[2] ANA provides NFC check-in services.
[3] SingTel/NETS trial allows real-time coupon redemption.

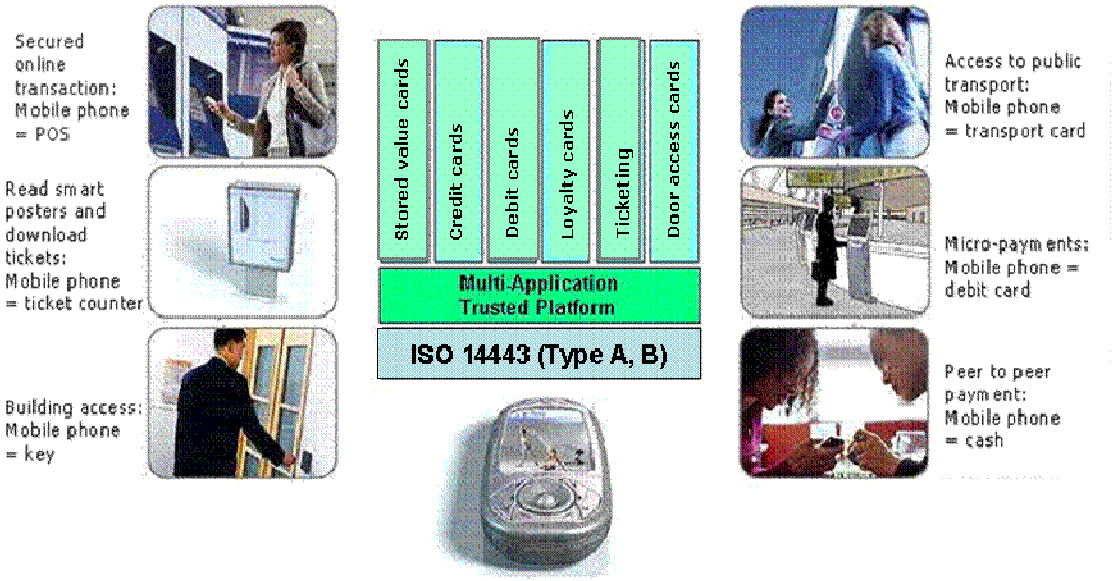

Figure 1. Possibilities of NFC usages.

Incorporating NFC into devices

To incorporate NFC technology into devices such as mobile phones, NFC chips and antennas are required to be integrated into the devices to enable the basic functionalities of NFC to “read” and “write”. For the NFC devices to support secure applications such as payments, a tamper-proof secure element capable of storing multiple applications is required in the devices. The secure element is a smart card chip which can be embedded in the NFC devices, on an external memory chip or on a SIM card (in the case of an NFC mobile phone).

Whitepapers on NFC can be downloaded from NFC Forum website http://www.nfc-forum.org/resources/white_papers/