



Ready for take off

Key initiatives for the commercial success of NFC

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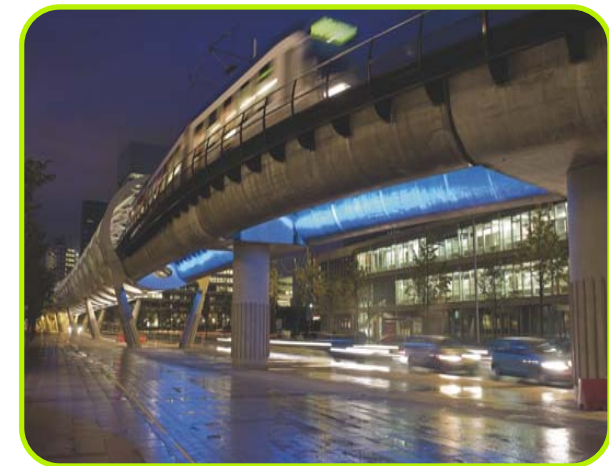


NXP Semiconductors

- ▶ **President & CEO:** Rick Clemmer
- ▶ **Headquarters:** Eindhoven, The Netherlands
- ▶ **Net sales:** \$5.4 billion in 2008 *)
- ▶ Established in 2006 (formerly a division of Philips)
- ▶ 50+ years of experience in semiconductors

NXP provides engineers and designers with semiconductors, system solutions and software that deliver better sensory experiences

- ▶ **Businesses:**
 - Home
 - Automotive & Identification
 - Multimarket Semiconductors
- ▶ Owner of NXP Software, a fully independent software solutions company



*) These figures include the Mobile & Personal business which was largely part of the ST-NXP Wireless JV in 2008

Identification: applications & market position

Smart Cards



- ▶ Banking
- ▶ Public Transport
- ▶ Smart ID (Access, Pay TV)

- ▶ #1 in contactless banking
- ▶ #1 in public transport (MIFARE™)
- ▶ Fastest transaction time

eGovernment



- ▶ Passports
- ▶ ID cards
- ▶ Health Card
- ▶ Driving licenses

- ▶ #1 in eGovernment
- ▶ 80% + of all ePP projects (60 of 71 countries)
- ▶ Highest security

RFID



- ▶ Supply chain management
- ▶ Libraries
- ▶ Animal ID

- ▶ #1 in RFID
- ▶ Complete product range covering LF, HF, UHF
- ▶ Own System Reference Design Center

NFC



- ▶ Mobile
- ▶ Infrastructure
- ▶ Consumer
- ▶ Computing

- ▶ #1 in NFC
- ▶ Co-inventor of NFC
- ▶ Co-founder NFC Forum
- ▶ Co-founder of Moversa JV

The time is right for NFC!

Technical requirements are in place

- ▶ Technical framework ready for the mobile market
- ▶ Standardization in place
 - NFC Forum technical specifications
 - ETSI SWP and HCI specifications
 - Wi-Fi Alliance:
Wi-Fi Protected Setup™ Specification 1.0
 - Bluetooth SIG: Release 2.1 + EDR
 - WUSB: Aiming at specification version 1.1
- ▶ NFC Forum and ETSI partnership
 - further promotes global interoperability
- ▶ Compliant silicon available soon
- ▶ Handset makers involved in platform development, awaiting orders and clear roadmaps from MNO's
- ▶ NFC design-ins underway for mobile handsets in volumes by late 2009



Effective NFC market pull

- ▶ NFC Forum membership increasing & industry scope broadening
- ▶ Increasing number of NFC initiatives, projects and roll outs
- ▶ Landmark roll-outs are extending
- ▶ Results show strong adoption and positive feedback from users
- ▶ Extensive experience level out of the NFC trials and on products
- ▶ Eco-systems in all geographies are shaping up
- ▶ GSM Association actively supports NFC roll-out: “Pay-Buy-Mobile“



NFC Ecosystem – members of the



Sponsor members



Principal members



91 associate members



Non-profit members



Aiming at building truly interoperable communications



Landmark roll-outs are extending

- ▶ Touch & Travel trial/Germany enters phase 2
 - National Railway, local/regional transit operators
 - MNO's: Vodafone D2, T-Mobile and O2
 - extend to 2.500 users and real ticket operations
 - Market introduction planned for 2010
- ▶ Rhein Main Verkehrsverbund whole region enabled
- ▶ Austria/Vienna moving from SMS to SIM-based solution
- ▶ First commercial launches in China (Beijing, Guangzhou, Xiamen)



Latest NFC Projects

London, UK

- ▶ March 2009 – Mobile payment and ticketing
- ▶ Barclaycard, Orange



Spain

- ▶ March 2009 – Mobile payment
- ▶ Telefonica, Sermepa



Singapore

- ▶ April 2009 - Mobile payment
- ▶ Mobile One, Citibank, Visa



Milan, Italy

- ▶ 2H 2009 – Mobile transport ticketing
- ▶ Telecom Italia, ATM Milan transport operator



Market interest for NFC

GSM Association *'Pay-Buy-Mobile'* Initiative



- ▶ Announced during 3GSM in Feb. 2007
 - Defining a global approach to enable NFC payment services on mobile phones
- ▶ White Papers
- ▶ Key success factors:
 - Mobile NFC needs a stable ecosystem providing value to all participants
 - New central role of the Trusted Service Manager identified
 - UICC promoted and recommended as the most appropriate secure element in the mobile phones
 - Interoperability, backwards compatibility and standardization are essential
- ▶ Mobile NFC technical guidelines
- ▶ Recent trials have concluded that there is a great customer demand and anticipation of NFC M-Payment services
- ▶ **GSMA call for active endorsement to have NFC technology in "mainstream mobile phones by mid-2009** by using the standardized single wire protocol (SWP) interface” in Nov. 2008.



Future NFC Applications

Key application areas in the coming years



Mobile phones



Computing



Consumer electronics



Automotive

Non-mobile devices and use cases



PC and PC peripherals

- ▶ Notebook
- ▶ PC peripheral (mouse, keyboard, wireless router...)

Home reader

- ▶ Standalone PC connected reader
- ▶ USB reader dongle

Point-of-sales

- ▶ Stand-alone payment reader

Contactless terminal

- ▶ General purpose reader
- ▶ Reader module (gate, access reader)

Automotive

- ▶ Integration in dashboard
- ▶ car key integration



Example applications

- ▶ On-line banking
- ▶ E-commerce
- ▶ E-government on-line access
- ▶ PC secure log-in
- ▶ Contactless payment
- ▶ E-coupon management
- ▶ Access control for building, transport gate...)
- ▶ Easy BT pairing/configuration

NFC Applications in Automotive



Connectivity

Enable quick and easy long range data transfer



Transactions

Innovative telematics



Beyond car access

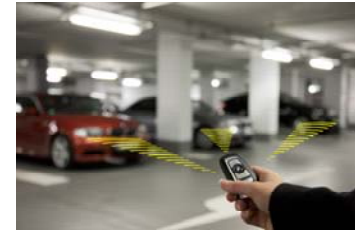
Secure data exchange & transactions

BMW Smart Key

A key as part of the mobility enjoyment



Personalized car access



Contactless payment



E- ticketing

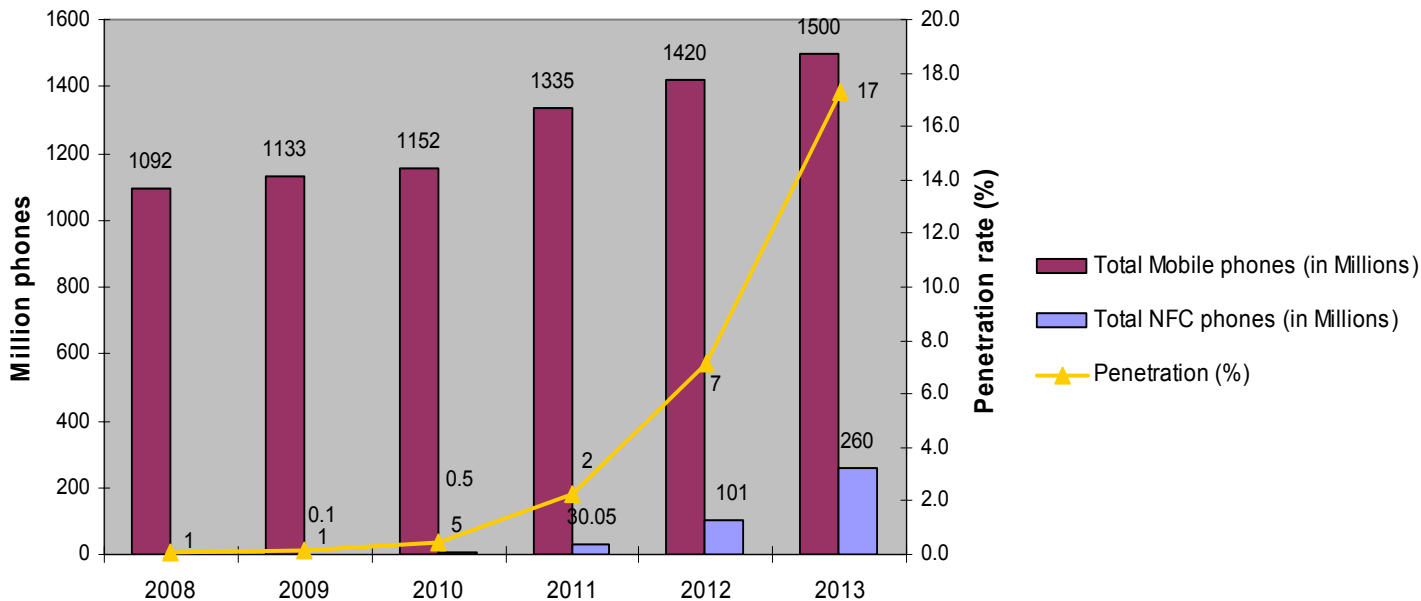
BMW Group
Forschung und Technik

The image features a graphic design with a light blue vertical bar on the left side. A large yellow arrow points from the right towards the center, overlapping a dark olive green background. The text "Market Outlook" is centered within the yellow arrow.

Market Outlook

Sizing an emerging mobile handset market

- ▶ First standardized handsets expected on the market from H2/2009
- ▶ Higher volumes picking up from 2010, with growth following from 2011 and beyond

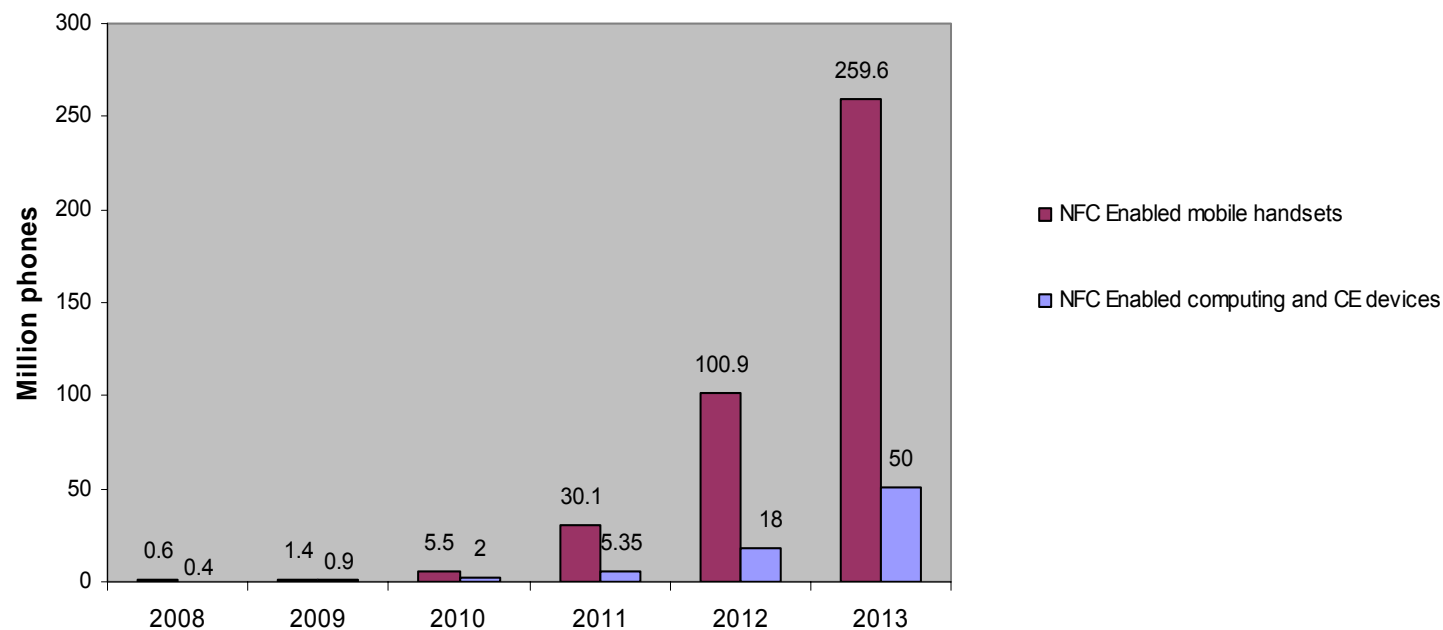


Source:

Near Field Communication (NFC) – Interim Technologies and Devices and NFC Mobile Handsets
ABI Research (Q4/2008)

Sizing an emerging NFC market

Total NFC enabled device shipments (mobile and computing/CE)



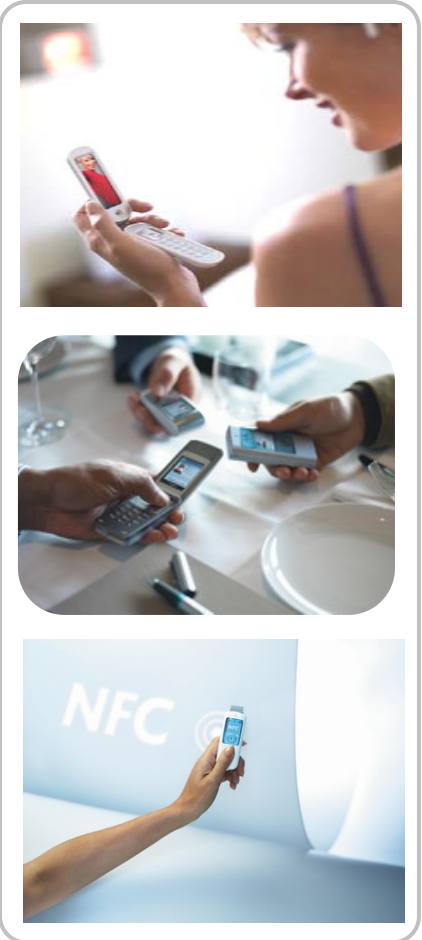
Source:

Near Field Communication (NFC) Interim Technologies and Devices, and NFC Mobile Handsets
ABI Research (Q4/2008)

NXP initiatives to enable NFC volume deployment

NXP support for mobile NFC market demand

- ▶ **Global leader** in NFC ecosystem with several field proven NFC products supporting commercial roll outs on mobile market
- ▶ **First mobile contactless solution** guaranteeing compliance with the Single Wire Protocol (**SWP**) **standard** and **compatible with** widely deployed **MIFARE™ infrastructure**
- ▶ SWP interface interoperability **tested** with major SWP SIM solutions on the market
- ▶ **Complete** NFC HW and NFC Forum Reference Implementation compliant SW **solution**
- ▶ Actively supporting creation of MIFARE ecosystem with targeted licensing, specification and standardization



Technology of choice for building successful NFC mobile ecosystem

- ▶ Product **fully compliant** with released ETSI SWP (TS 102 613 v7.4.0) and HCI specifications (TS 102 622 v7.3.0) approved in ETSI R7.
- ▶ Support for payment (ISO14443A&B), ticketing applications (Calypso B' and MIFARE CLT) and reader mode tested.
- ▶ Ensured interoperability with SWP compliant SIM cards:
 - Interoperability tested with leading SIM vendors (Gemalto, Oberthur Technologies)
 - Interoperability with ETSI Specifications
 - Interoperability with existing NFC infrastructure



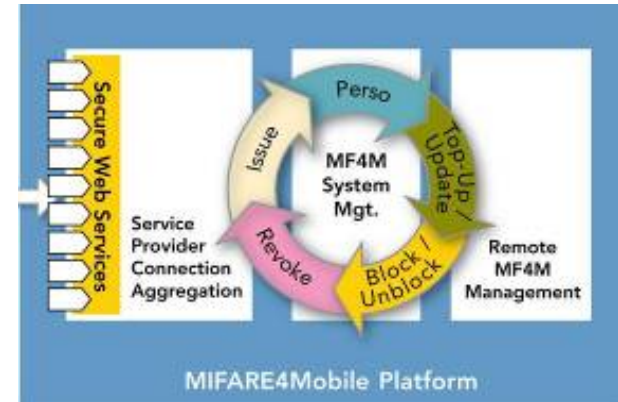
MIFARE™ technology licensing

- ▶ MIFARE is an essential part of the NFC ecosystem for payment and ticketing
- ▶ NXP is committed to license the MIFARE family to a sufficient number of IC vendors to serve the needs of the NFC ecosystem
- ▶ License agreement with Renesas since Nov. 2008 is an important step forward in that direction:
 - Includes MIFARE Classic, MIFARE Plus and MIFARE DESFire
 - Application fields include SIM and embedded secure elements



NXP enabling MIFARE™ based NFC ecosystems

- ▶ NXP to release the MIFARE4Mobile* API specification
- ▶ Addressing interoperability issues when managing MIFARE resources in NFC Secure Element
- ▶ Easing interactions between the stakeholders of complex NFC ecosystems
- ▶ NXP will license M4M IP on a royalty-free basis
 - In conjunction with licensed MIFARE SIM IC or embedded Secure Element
 - Interoperability tests with low-hurdle self-certification

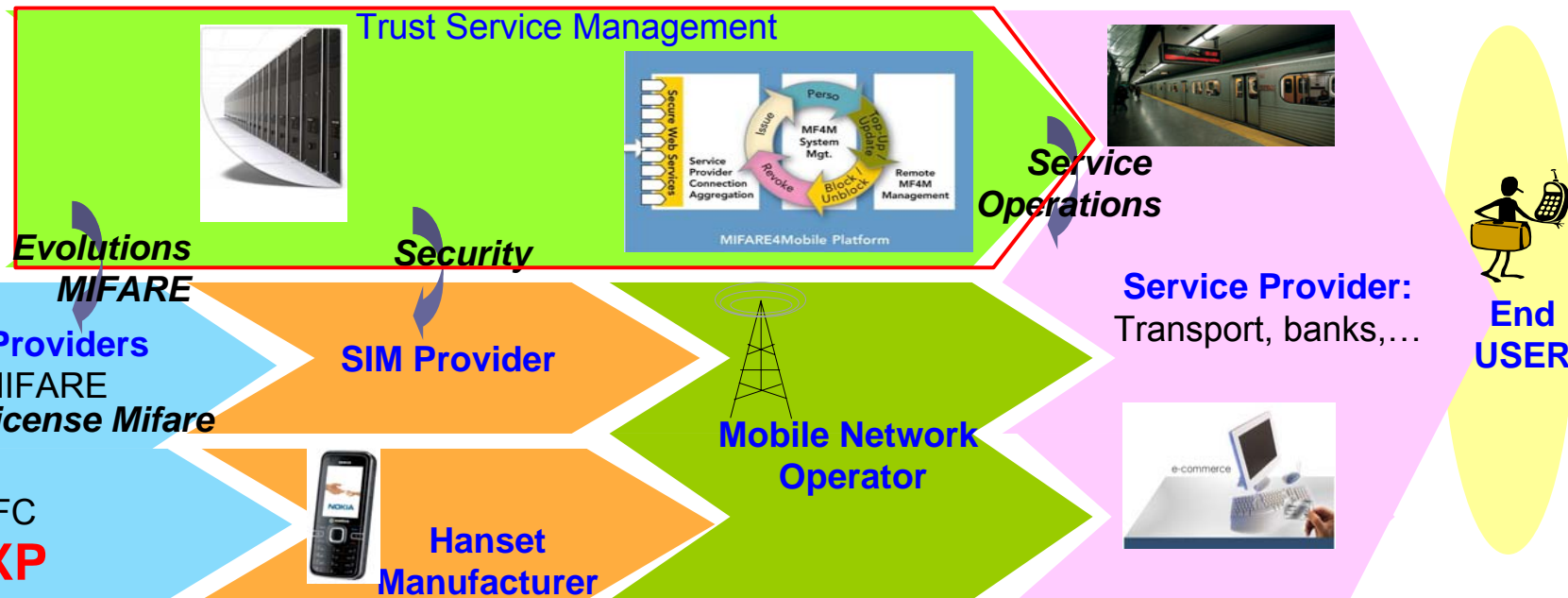


* Secure end-to-end method for managing multiple MIFARE cards and applications in the Secure Element of an NFC handset

Transfer of NXP's Mobile Services Business

Simplifying the Value chain and strengthen global MIFARE support

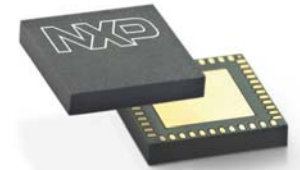
Activity transferred from NXP to Gemalto



Nokia and NXP team up for NFC HAL API

- ▶ Nokia announced NFC HAL API for public release
 - *“It harmonizes access to NFC features across NFC technologies while given full access to all necessary functions”*

NOKIA
Connecting People



- ▶ NXP will offer the HAL implementation for PN544 fully compliant and validated with Nokia NFC HAL API
 - Complementary to overall NXP H/W and M/W offering
 - Release of compliant HAL planned mid. April 09
- ▶ NFC HAL API will ease Middleware integration and facilitate interoperability across NFC enabled handsets

Summary and Outlook

- ▶ Eco-System and technical framework becoming ready for global NFC market take up in mobile
- ▶ NXP taking specific initiatives to drive NFC deployment worldwide
 - Provide complete, standard compliant and field proven NFC portfolio and S/W stack
 - MIFARE licensing for SIM vendors
 - Opening up APIs for MIFARE for Mobile deployment
 - Deliver NFC HAL compliant with Nokia NFC HAL APIs
- ▶ Increasing NFC infrastructure is complementing the drive for NFC deployment in mobile phones
- ▶ Driving use cases and implementations beyond mobile will open additional market opportunities



