The Innovation Connection: How NFC is Driving New Global Opportunities

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Sony
Chairman, NFC Forum

NFC World Congress
September 19, 2011
Marketplace Situation
Global Market Developments

- Business models are coming together to launch major NFC initiatives
  - MNOs and financial service providers are collaborating
  - Handset manufacturers, governments, financial service providers, universities, and retail companies are joining forces
- Transport operators are mandating use of NFC
- Stadiums are implementing NFC for ticketing
- NFC enables quick and secure connection handover, which is useful for Bluetooth pairing, WiFi set up, and more
  - 10,647 new Bluetooth-approved devices just in the last year (source, Bluetooth.com)
- SNS check in, and many other services, increasing
- Consumer acceptance and excitement are high with approval ratings up to 85%
NFC Phones Here Now

Available in the market…

- Google Nexus S
- Samsung S5230
- Samsung SHW-A170K
- Samsung GALAXY S II
- Sagem COSYPHONE
- Nokia C7
- Pantech Sky Vega Racer
- Motorola MC75A HF
- Fifth Media Axia A206
- Casio Ruggedized IT-800RGC 35

ALSO:
- Hedy/Unicom phones
- Shanghai Simcom/Eastcom phones
NFC Phones on the Way

Coming soon…

- Nokia Symbian Belle 600
- Nokia Symbian Belle 700
- LG T530
- Sonim XP3300 Force
- Sony Ericsson Xperia
- Huawei Sonic
- BlackBerry Bold 9900/9930
- Samsung Wave 578
- HTC Incredible S
- Nokia N5
- Gentag GT-601
- Fonelabs X-series
- Toshiba Regza

ALSO:
- ZTE phones
- Additional Android “Gingerbread” phones

Docomo
KDDI
SoftBank
NFC Phones Rumored

Speculation…
And Introducing -- NFC Tablets

A fast-moving new segment, with several models recently announced and demonstrated:

- Samsung Windows Tablet prototype – demonstrated and handed out at Microsoft Build conference, September 13-16
- Sharp RW-T107 Android Tablet with NFC functionality built in – launched in Japan
- TazPad from TazTag aimed at retail use – launched in France
NFC Is More Than Payment and Mobile Phones

- NFC mobile phones are for more than payments:
  - Secure access to buildings and PCs
  - Inventory control with tags and readers
  - Security patrols
  - Patient monitoring
  - Information gathering with educational tags

- NFC brings value to many electronics in addition to phones --and these are shipping as well!
What the Analysts are Saying

- **Juniper Research:**
  - NFC-based mobile transactions are expected to reach nearly $50 billion worldwide by 2014
  - 1 in 6 users worldwide will have an NFC-enabled phone by 2014
  - 500 million people around the world will use their mobile devices as travel tickets on metros, subways and buses by 2015; NFC will drive this growth

- **Frost & Sullivan**
  - By 2015 NFC technology will be the most-used solution for mobile payment

- **Forrester Research**
  - Named NFC to its Top Mobile Trends for 2011

- **Yankee Group**
  - Global mobile transactions predicted to be US$241 billion in 2011 growing to more than $1 Trillion by 2015
Mission and Goals

- The mission of the NFC Forum is to advance the use of NFC technology by:
  - Developing standards-based specifications that ensure interoperability among devices and services
  - Encouraging the development of products using NFC Forum specifications
  - Educating the market globally about NFC technology
  - Ensuring that products claiming NFC capabilities comply with NFC Forum specifications
We’re Well Into The Journey

Define and Stabilize Technology

Support Interoperability
Enhance Technology
Support Ecosystem

Refine Technology
Expand Ecosystem
Promote End User Usage

2008 2009 2010 2011 2012/13
Members – September 2011

### SPONSOR MEMBERS

- Broadcom
- Nokia
- Samsung Electronics
- Microsoft
- Renesas
- STI
- NXP
- Inside Secure
- NTT Docomo
- Sony
- NEC
- Visa
- MasterCard Worldwide

### PRINCIPAL MEMBERS

- American Express
- LG
- Rogers
- DNP
- PayPal
- Sony Ericsson
- AT&T
- Marvell
- SEL
- Dentsu
- Qualcomm
- Texas Instruments
- Toppan Forms
- CSR
- Motorola
- Sequent
- Google
- RIM
Members – September 2011

**ASSOCIATE MEMBERS**

- AND
- ERICSSON
- RFI
- 正隆
- KOVIO
- stolmann
- Aplus
- FIME
- Rohde & Schwarz
- SanDisk
- MediaTek
- TMC
- Micropross
- TeliaSonera
- Hitachi
- DSIP
- muRata
- Toshiba
- CGC
- Sharp
- SGS
- NFC Forum

**IMPLEMENTER MEMBERS**

- 3Alogics
- Adamosoft
- itn international
- SYSNET
- Hitech
- HTC
- Poken
- Wince
- Winter
- Cassis
- MAGTEK
- TIMUG
- HTC
- IIJ
- Sony Ericsson
- MediaTek
- Nxp
- NEC
- Danalock
- fhigh

**NONPROFIT MEMBERS**

- YRF
- ITSO
- Technology Research Centre for Mobile Information Security
- Engineering of India
- Oulu JICSAP
- Transport for London
- Forum Services Mobile
- ARTS
- VTT
NFC Forum Activities
Current Focus of Work

- Establish the N-Mark as the global symbol of NFC functionality
- Continue to develop and enhance specifications to meet market demand
- Expand and simplify the Certification Program to speed products to market
- Focus on educating the ecosystem about the potential of NFC
N- Mark

- Consumer-facing mark
- Shows where to touch another N-Mark to use NFC
- No cost to use, free license, available to everyone
- For use TODAY on smart posters, cards, labels, etc. using NFC Forum tags
- For use as a touchpoint on certified devices
NFC Forum Brand Book

- Under development
- Promotes the NFC Forum Brand
- Defines and establishes guidelines for using the NFC Forum Marks
- Outlines rules for using Forum Marks with other industry service marks, gives examples
- Describes geographical and product usage restriction
## 16 Specifications Published

<table>
<thead>
<tr>
<th>Specification</th>
<th>Milestone</th>
<th>Date</th>
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<tbody>
<tr>
<td><strong>Data Exchange Format Technical Specification</strong></td>
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<tr>
<td>NFC Data Exchange Format (NDEF) Technical Specification</td>
<td>Adopted</td>
<td>24-JUL-2006</td>
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<tr>
<td><strong>NFC Forum Tag Type Technical Specifications</strong></td>
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<tr>
<td>NFC Forum Type 1 Tag Operation Specification 1.1</td>
<td>Adopted</td>
<td>13-APR-2011</td>
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<tr>
<td>NFC Forum Type 2 Tag Operation Specification 1.1</td>
<td>Adopted</td>
<td>31-MAY-2011</td>
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<tr>
<td>NFC Forum Type 3 Tag Operation Specification 1.1</td>
<td>Adopted</td>
<td>28-JUN-2011</td>
</tr>
<tr>
<td>NFC Forum Type 4 Tag Operation Specification 2.0</td>
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<td>28-JUN-2011</td>
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<tr>
<td><strong>Record Type Definition Technical Specifications</strong></td>
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<tr>
<td>NFC Record Type Definition (RTD) Technical Specification</td>
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<tr>
<td>NFC Text Record Type Definition (RTD) Technical Specification</td>
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<td>24-JUL-2006</td>
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<tr>
<td>NFC URI Record Type Definition (RTD) Technical Specification</td>
<td>Adopted</td>
<td>24-JUL-2006</td>
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<tr>
<td>NFC Smart Poster Record Type Definition (RTD) Technical Specification</td>
<td>Adopted</td>
<td>24-JUL-2006</td>
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<tr>
<td>NFC Generic Control Record Type Definition (RTD) Technical Specification</td>
<td>Adopted</td>
<td>7-MAR-2008</td>
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<tr>
<td>NFC Signature Record Type Definition (RTD) Technical Specification</td>
<td>Adopted</td>
<td>18-NOV-2010</td>
</tr>
<tr>
<td><strong>Reference Application Technical Specifications</strong></td>
<td></td>
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<tr>
<td>NFC Forum Connection Handover 1.2 Technical Specification</td>
<td>Adopted</td>
<td>7-JUL-2010</td>
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<tr>
<td><strong>Protocol Technical Specifications</strong></td>
<td></td>
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<tr>
<td>NFC Logical Link Control Protocol (LLCP) 1.1 Technical Specification</td>
<td>Adopted</td>
<td>20-JUN-2011</td>
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<tr>
<td>NFC Logical Link Control Protocol (LLCP) 1.0 Technical Specification (deprecated)</td>
<td>Adopted</td>
<td>11-DEC-2009</td>
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<tr>
<td><strong>NFC Device Internal Technical Specifications</strong></td>
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<tr>
<td><strong>Certification Documents</strong></td>
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<tr>
<td>NFC Forum Device Requirements (.zip file including the document and two exceptions)</td>
<td>Adopted</td>
<td>24-OCT-2010</td>
</tr>
<tr>
<td>Device Test Application Specification for NFC Digital Protocol and NFC Forum Type 1/2/3/4 Tags</td>
<td>Adopted</td>
<td>27-OCT-2010</td>
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Last updated: 06-JUL-2011
NFC Modes

NFC Card Emulation Mode
- Card Emulation
  - Smart Card Capability for Mobile Devices

Peer-to-Peer Mode
- LLCP
  - Logical Link Link Protocol

Reader/Writer Mode
- RTD
  - Record Type Definition
- NDEF
  - Data Exchange Format
  - Tag type 1,2,3,4

Mode Switch
- RF Layer ISO 18092 + ISO 14443 Type A, Type B + FeliCa

NFC Forum Protocol Bindings
- IP, OBEX, ....
Potential New Technical Work Streams

- Keeping up with market demand
  - Incorporation of Peer to Peer Active Mode in the NFC Forum specifications
  - Securing NFC communications
  - Supporting ISO 15693
  - APIs for NFC Support in Operating Systems
  - Support of Higher Bit Rates
  - Use of alternative technologies for touch based communications
Ecosystem Components

- Efforts focused on defining and implementing low-level NFC communications protocol, radio frequency functionality and related infrastructure
- Support industry efforts to standardize various parts of the ecosystem
- Also support the use of existing standards-based building blocks that meet industry requirements
  - No specific technology preference
- Scope may change depending on:
  - missing building blocks identified by respective verticals
  - how critical these are to the deployment of NFC technology
Compliance Committee
Outreach

- Program and announced players in place for first Certification Wave
- Work continues on second Wave activities
- Business Goal: Make certification easier, faster and more economical for vendors
- Strategy: Develop B2B relationships to endorse or potentially cross-recognize our program
  - Discussions underway with EMVCo to analyze specs and testing for commonalities and discrepancies
  - Reaching out to other liaison partners
  - Identifying key bodies representing vertical industries to approach
NFC Forum Certification Mark

- Industry-facing mark
- Granted to products that complete NFC Forum certification
- For NFC Forum members only
- Available TODAY
Activities to Expand Opportunities

- Formal opportunities for members to share business developments at face-to-face meetings
- LinkedIn group just formed
- Twitter
  - Communicate relevant information about NFC, Forum announcements
- Event partnerships with Yankee Group (4G World) and SCA
- Spotlight events for developers
- White papers
  - Smart Posters
  - NFC in Public Transport
  - National Retail Federation Mobile Blueprint (collaboration)
- Competition to encourage innovation
- Webcasts on both technical topics and business use cases
Outreach is Critical

<table>
<thead>
<tr>
<th>Liaison</th>
<th>Category</th>
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<tbody>
<tr>
<td>GSMA</td>
<td>Mobile</td>
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<tr>
<td>EMVCo</td>
<td>Payment</td>
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<tr>
<td>Asia Pacific Smart Card Alliance (APSCA)</td>
<td>Smart Cards</td>
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<tr>
<td>National Retail Federation (ARTS)</td>
<td>Retail</td>
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<tr>
<td>Mobey Forum</td>
<td>Mobile</td>
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<tr>
<td>American Public Transport Association (APTA)</td>
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<tr>
<td>Open Mobile Alliance (OMA)</td>
<td>Mobile</td>
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<tr>
<td>Smart Card Alliance</td>
<td>Smart cards</td>
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<tr>
<td>ETSI</td>
<td>Telecom</td>
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<tr>
<td>IN DISCUSSION</td>
<td>Heath care, advertising</td>
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Ongoing technical and business development conversations for joint programs
NFC is a “Horizontal” Technology

- Reaches across multiple devices and multiple use cases
- Our work is to ensure smooth and timely deployment
  - Specs that cover all uses now and in the future
  - Certification program that ensures compliance without undue complexity
  - Educational programs in conjunction with vertical market players to show and encourage the breadth of possible uses
Thank you!