

Near Field Communication: State of Standardization

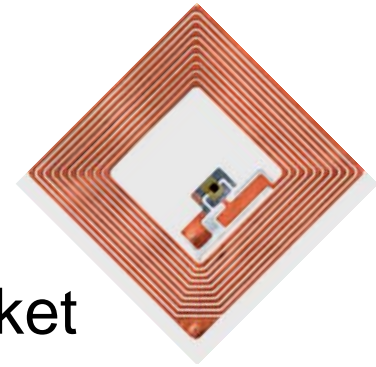
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NFC - What is it all about ...

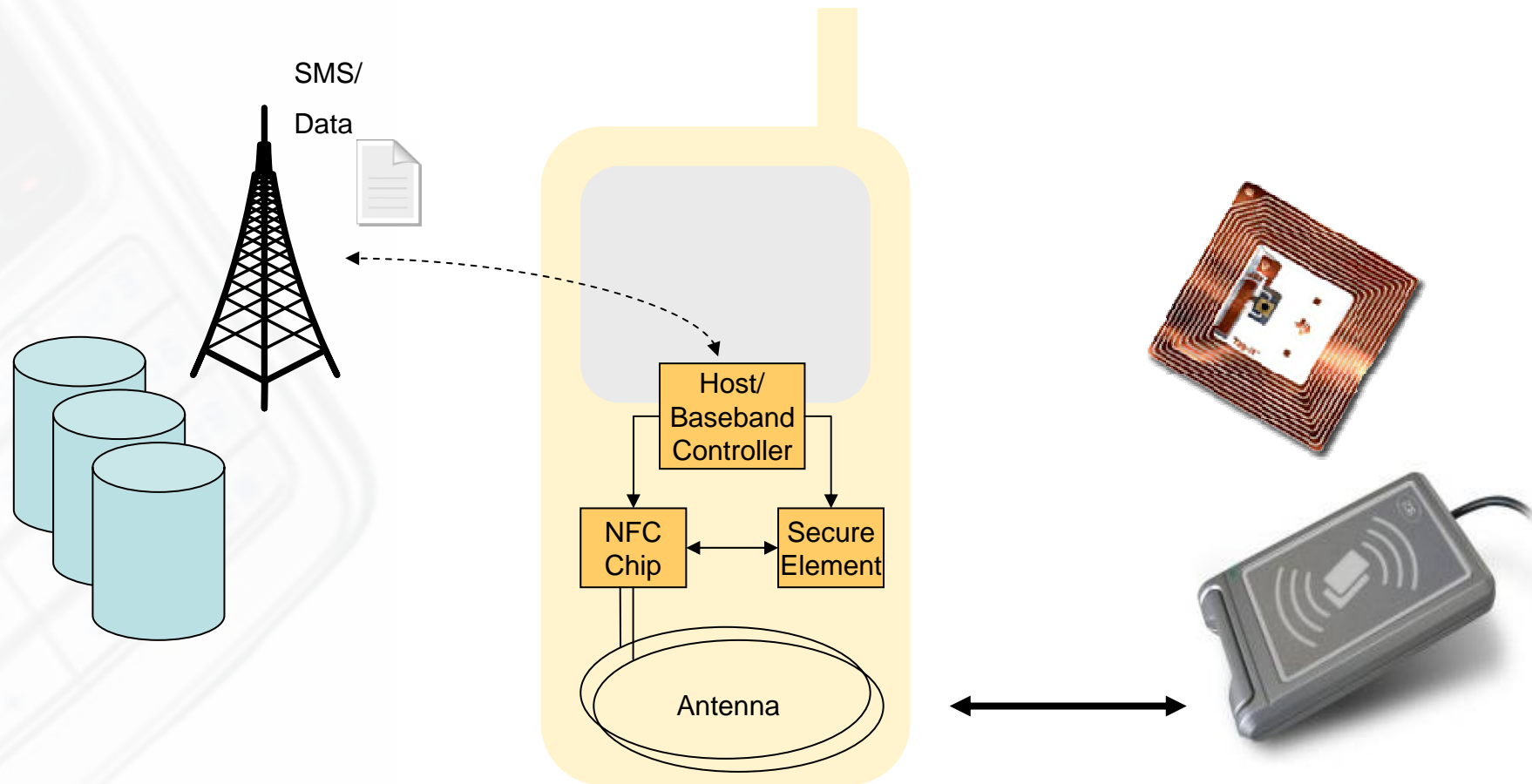
- RFID Derivate 13,56 Mhz
- Integrated in mobile devices for consumer market
- Operating Modes
 - Tag/SmartCard Emulation (PICC)
 - Reader/Writer (PCD)
 - Peer (NFC)
- Range: 0 – 10 cm (proximity Technology)
- Simplicity



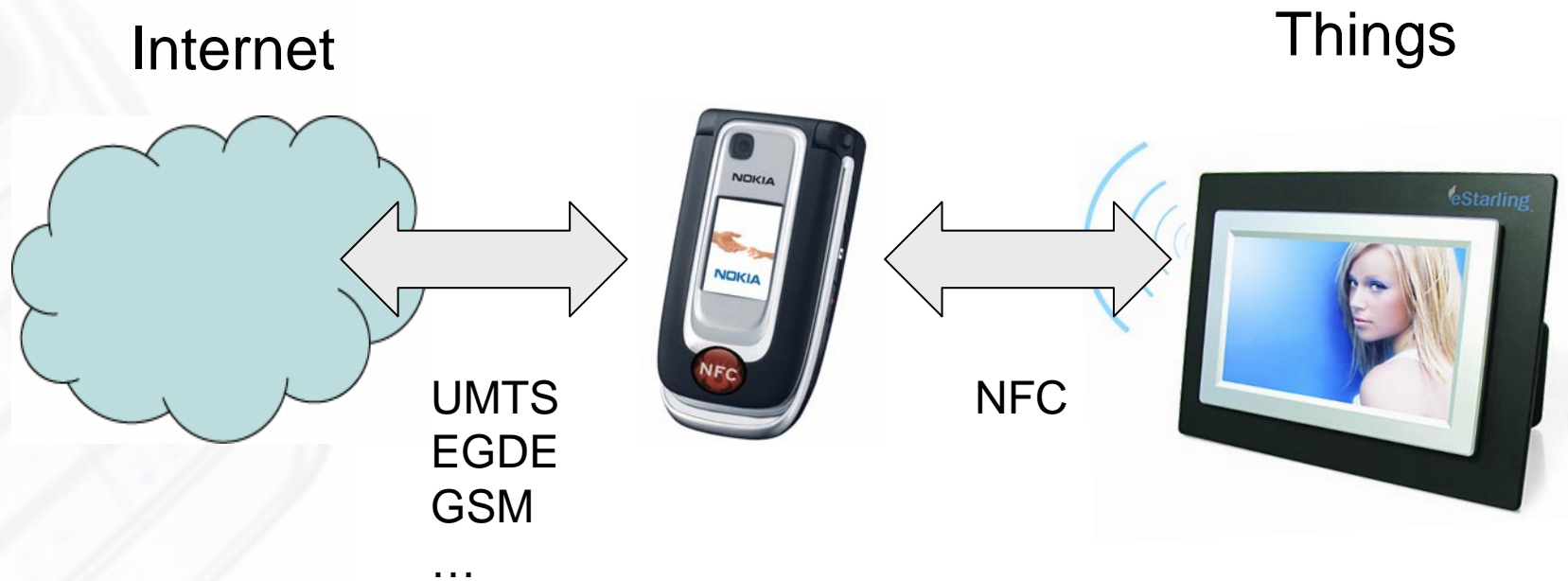
NFC Device *Operating Modes*

- Data exchange (P2P – NFC peer-to-peer)
 - Bidirectional connection to exchange data between devices (ISO18092)
 - WiFi, BT, P2P Payment, Contacts, vCards, ...
- Reader/Writer mode (PCD – Proximity Coupling Device)
 - Mobile Device is able to read external tags/smartcards (ISO14443)
 - SmartPoster, WiFi Config, Ring-Tones, ...
- Tag emulation (PICC – Proximity Card)
 - Reader can't distinguish between smartcard & tag emulation
 - Handset could contain multiple smartcards (smartcard chips)

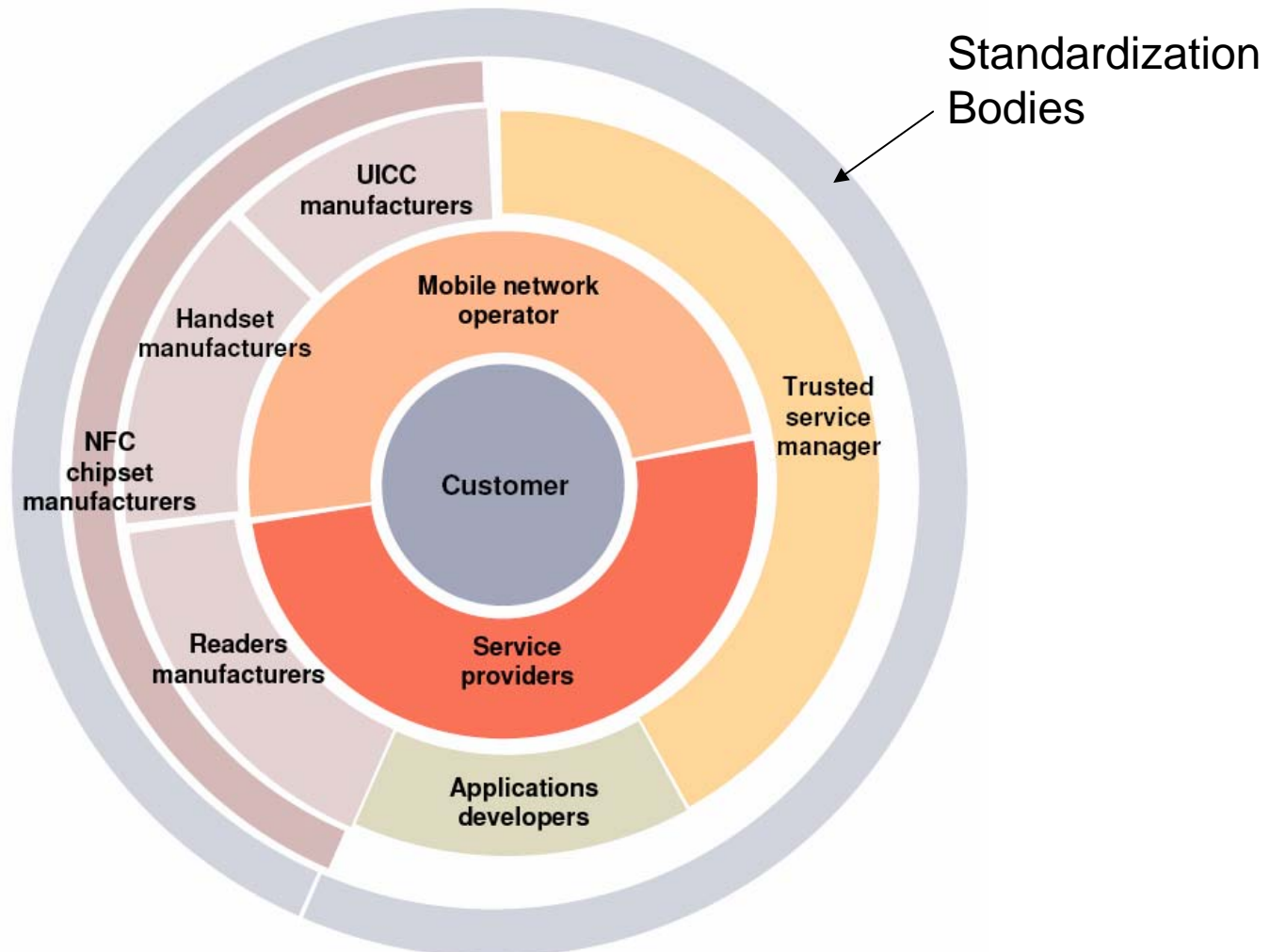
NFC Device: Overview



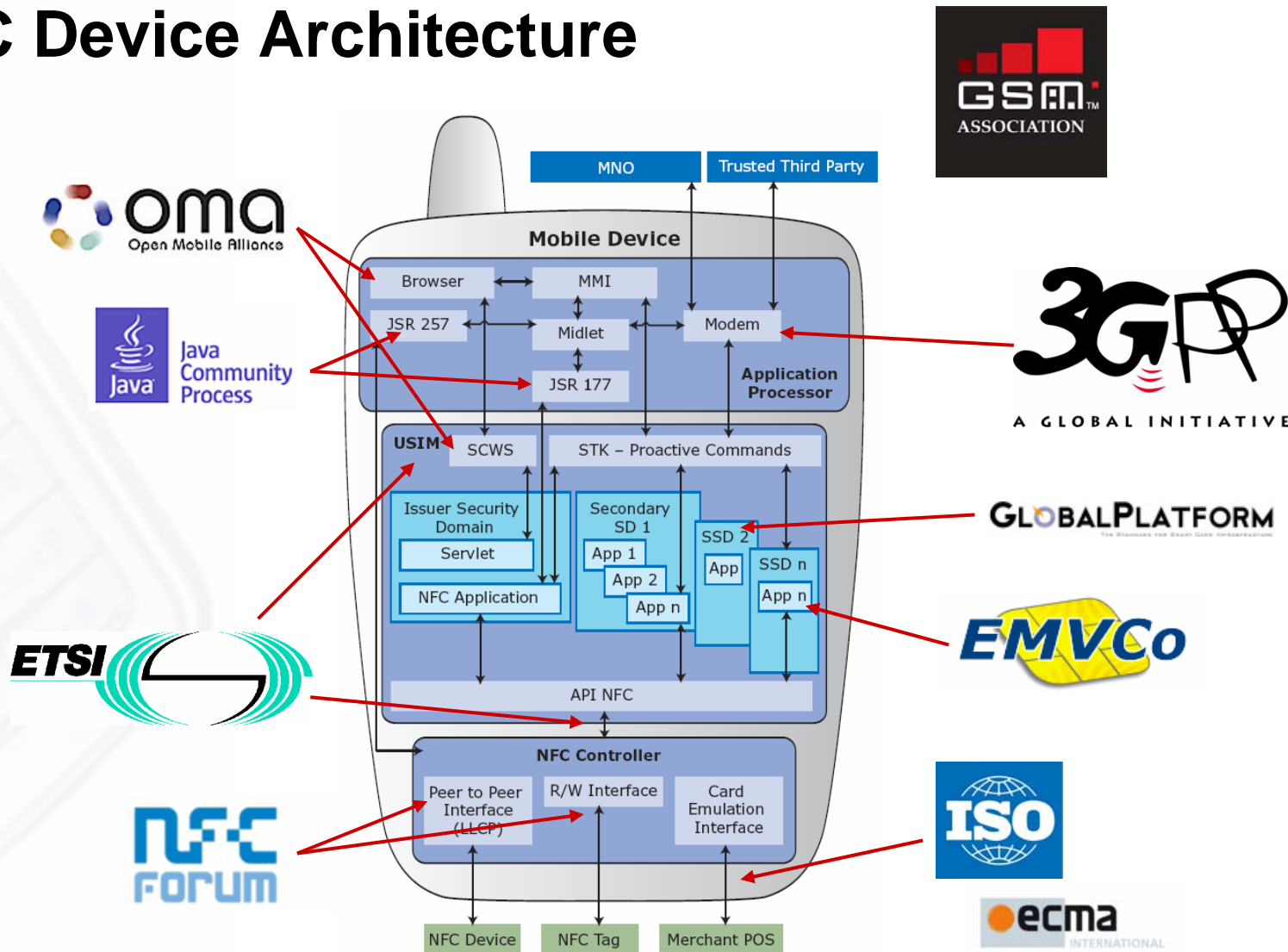
Bridging the Gap - IOT for Consumers



NFC Ecosystem



NFC Device Architecture



NFC Forum



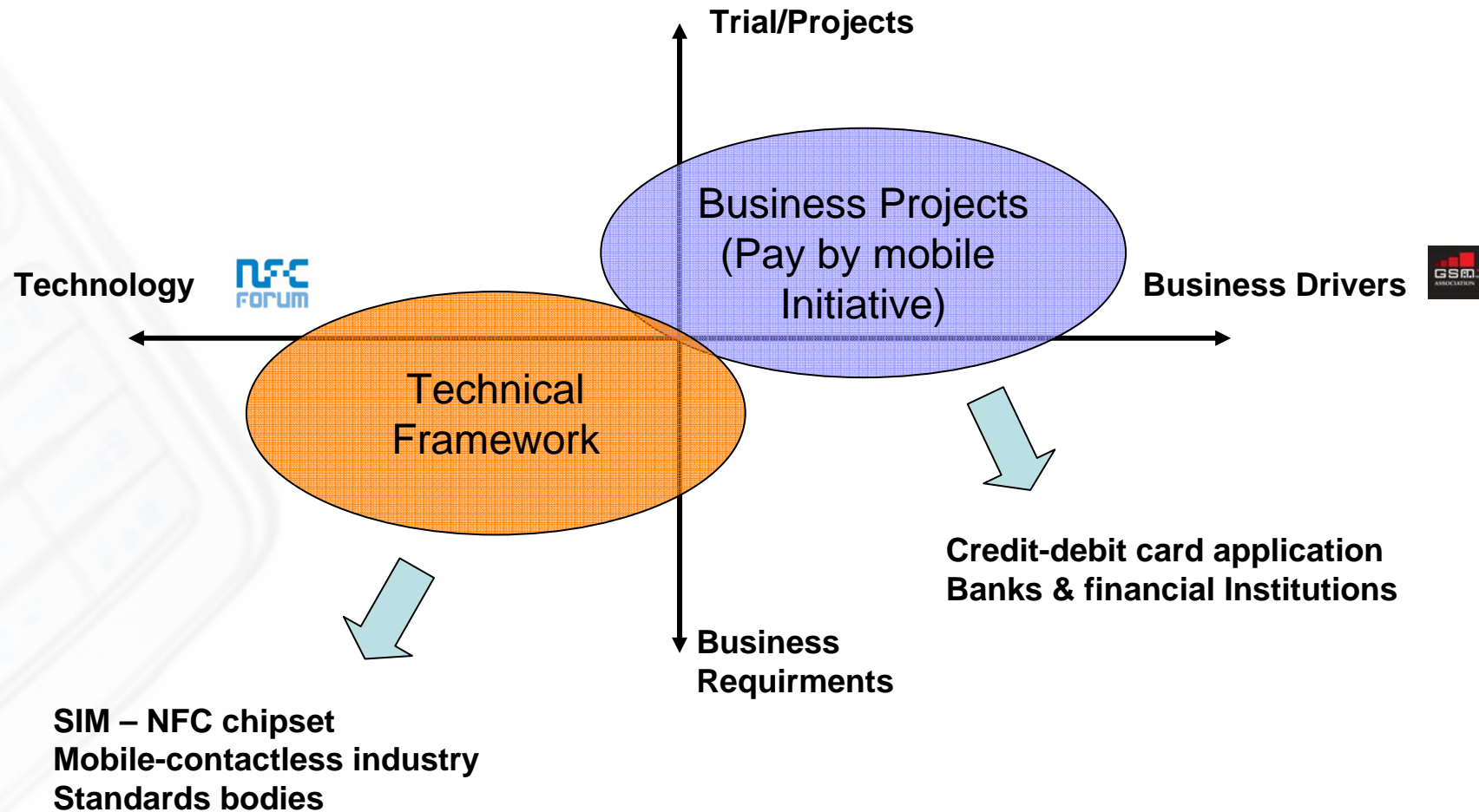
- Founded in 2004 by Sony, Nokia & NXP
- NFC Forum Device:
 - ISO18092 & ISO14443 compliant
 - Focus on contactless Technology (“What?”)
- Goals
 - Bridge Gap between Mifare and Felica
 - Integration in mobile phones => technology driven!
- Work completed so far
 - NFC Data Exchange Format (NDEF)
 - Record Type Definition (RTD)
 - Tag Types

GSMA – NFC Working Group







- Global Trade Association of 700 MNOs and 200 Manufacturers
- Primary Goal: Ensure Interoperability
- Focus on
 - Device Integration/Handset Technology (“How?”)
 - Business Case of MNO (“Why?”)
- 09/2006: GSMA launches NFC Working Group
- Major driver in ETSI Standardization of SWP, HCI and MHI

GSMA – NFC Working Group



Further Consortia:

-  Interface: J2ME & Contactless/SIM ✓
-  Applications in Secure Element (SIM) ✓
-  OTA Management
-  Trusted 3rd Parties

Status today:

- ETSI
 - High Speed Interface (USB) ✓
 - Single Wire Protocol (SWP) ✓
 - Host Controller Interface (HCI) ✓
 - Multi Host Interface (MHI)
 - Smart Card Web Server
- ISO
 - ISO 18092 ✓
 - ISO 14443 ✓
- NFC-Forum
 - NFC-Forum Tag Types ✓
 - Peer to Peer Protocol (LLCP)
 - NFC-Forum HCI
- Smart Card
 - EMVCo ✓
 - Global Platform

To Sum up

- 2 years ago
 - No clear roadmap for NFC enabled mobile phones
 - A lack of coordination among MNOs, industry and service providers
 - Different technical solutions with a risk of market fragmentation
- Today
 - GSMA/NFC Forum coordinate work
 - Standards under completion
 - Common agreement on a GLOBAL approach for NFC in handsets
- Standards do require a clear “WHAT” but also a clear “WHY”

Happy to answer any questions

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