Single Wire Protocol - SWP

Overview of the SIM Centric Model for Contactless Mobile Payment
Agenda

- Oberthur and NFC
- Mobile Contactless Options
- SIM Centric Approach
- Single Wire Protocol (SWP) Overview
- Advantages of the SIM Centric Model
- SWP in Today’s Market
Oberthur Technologies: Card Systems Division
- Payment Product Line: #1 contactless card provider in the US
- Mobile Product Line: #2 card provider worldwide
- Convergence Product Line: Leading Convergence Initiatives

Oberthur Contactless Offering
- Mobile: SIM Platforms for mobile, payment and transit, application and services
- Payment: contactless card and sticker, personalization services
- Convergence: Trusted Service Manager platform

Oberthur Contactless Initiatives
- Standardization efforts
- Global and regional pilots
- “NFC in the box” package

Remote Service Solutions
Mobile Contactless Options

- **Sticker**
  - A sticker containing the chip and the antenna with no link to the SIM or application processor

- **Device Centric**
  - The contactless application runs on an SE chip. This chip is embedded in the phone

- **SIM Centric**
  - The contactless application runs on the SIM which acts as the Secure Element of the NFC Front end
The Secure Element is the SIM

The SIM stores the secure applications (such as the payment applications)

The contactless front-end is embedded on the handset (compliant with the ISO 14443 standard)

The contactless front-end is connected to the device

The SIM is connected to the contactless front-end

**SIM Centric Approach**
Single Wire Protocol

SIM Centric endorsed by the industry: GSMA NFC white paper says

“Mobile NFC applications need to be performed in a secure environment (SE). The UICC provides both logical security (i.e. command encryption) and physical security (i.e. tamper proof and copy protection).”

Two options for the SIM centric approach
- SWP – Single Wire Protocol
- NFC-WI – Wired Interface

Only 1 made it at the standard (Oct 2008)
- ETSI: SWP and HCI release 7
- Global Platform: GP2.2 amendment C
- Mifare: Mifare for mobilev1
SIM Centric Advantages

- **Universal:** The SIM is widely deployed (more than 2 billion users worldwide). Using the existing SIM platform as the SE is cost effective.

- **Portable:** Easy transfer of applications and rights from one NFC enabled mobile device to another.

- **Dynamic Remote Management:** Already existing secure remote SIM management systems and processes can be leveraged to manage mobile NFC services during the card life cycle.

- **Service continuity:** Being battery independent, the SIM-Centric solution allows NFC services to work when the battery is off.

- **Standardized:** SIM Security is based on global, well-established standards (ETSI-SCP, 3GPP, Global Platform)

- **Business synergies:** Smart Card manufacturers that already supply contactless cards (for payment and transit) will leverage their expertise and operational excellence.
First SIM-centric handsets (available since mid 2007) and CLFs were based on a SWP/HCI specification issued before ETSI’s standard
- Sagem My700x
- Motorola L7
- LG L600V
- Nokia 6131 SWP (proto)

Handset manufacturers have been waiting for the final release of SWP and HCI standards (October 2008)

Thus, 2008 has been dedicated to many experimentations all over the world but no commercial roll out
2009: Endorsement by Technology Providers

- Major standards for marketable solutions are now available:
  - Two last steps
    - GP2.2 amendment C (March 09)
    - NFC APIs (June 09)
  - New NFC capable chips on their way
    - Infineon (Mifare compliant)
    - Samsung
    - ST
    - Atmel
  - Several contactless front-ends available:
    - Inside Contactless MR3.0
    - NXP PN544
    - ST ST21
  - Handset manufacturers announced (SIM-centric) products
    - Nokia Samsung
    - LG / ST
    - SonyEricsson
    - …
Thank you for your attention

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Appendices – Standardization Roadmap
ETSIs NFC standards

**Single Wire Protocol**
TS SWP 102 613
Purpose: SIM / CLF physical interface

**Host Controller Interface**
TS HCI 102 622
Purpose: SIM / CLF / Handset logical interfaces

**NFC APIs**
TS NFC APIs 102 xxx
Purpose: Possibility for an applet to access in a standard way to HCI events (for MMI for example)

**Specialist Task Force**
TS STF 102 xxx
Purpose: A test suite to ensure SIM / CLF / Handset interoperability at SWP & HCI levels

- **Release 7 available (October 2008)**
- **Release 7 available (October 2008)**
- **Requirements phase (release expected in Q4 2009)**
- **Release expected in Q2 2009**
Global Platform’s standards

**GP2.2**
Purpose: compared to GP2.1.1, brings more flexibility (hierarchy / privileges of SDs, PKI, new Secure Channel Protocols)

Available (March 2006)

**Amendment A**
Purpose: Confidential Card Content Management

Available (September 2007)

**Amendment B**
Purpose: Remote File Management & Remote Applet Management (RFM / RAM)

Available (November 2008)

**Amendment C**
Purpose: More mechanisms particularly for NFC: NFC registry, quotas mechanisms

Release expected in Q2 2009

**UICC Config**
Purpose: Implementation guidelines of GP standard in a SIM

Available (October 2008)