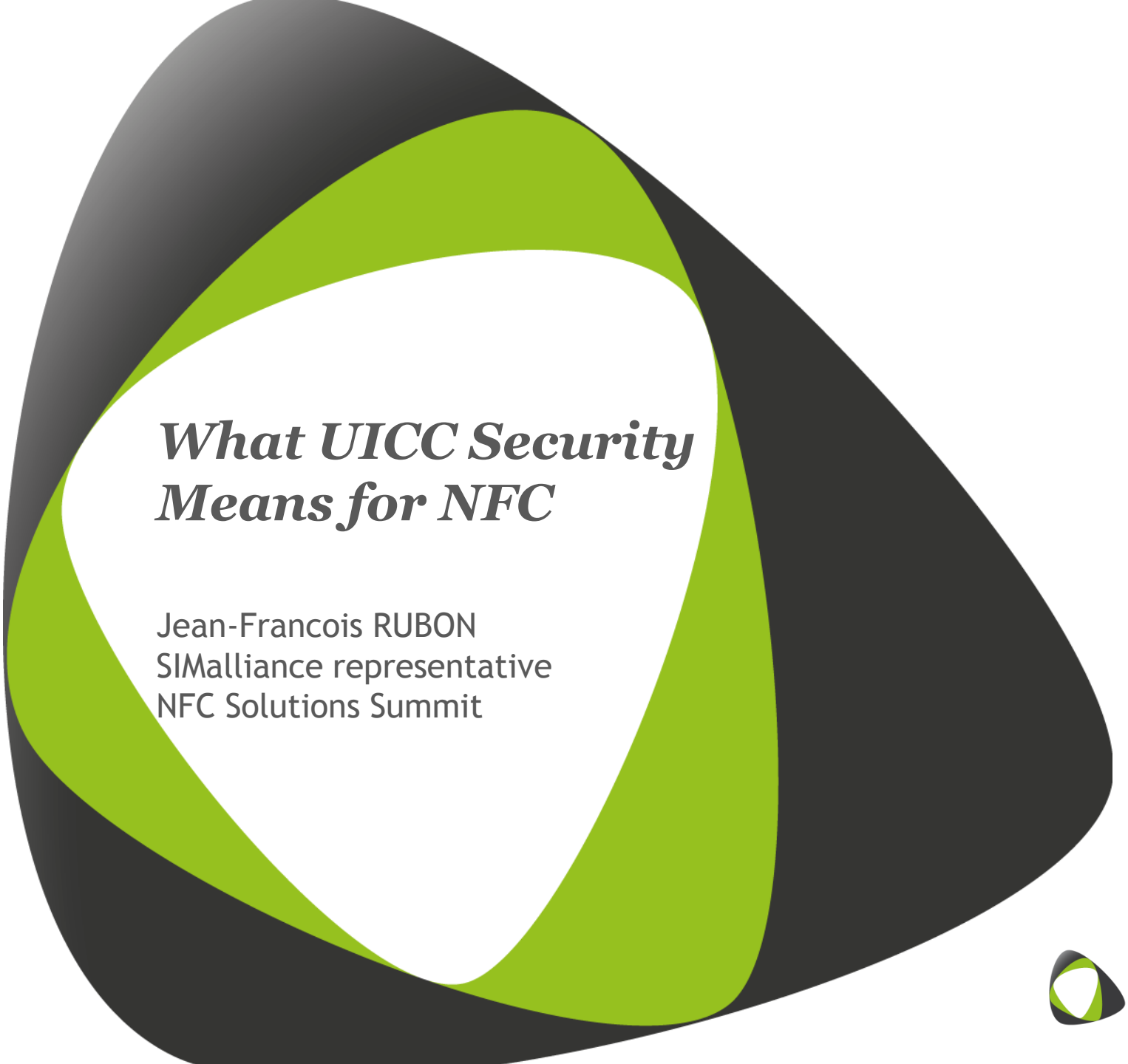

What UICC Security Means for NFC

Jean-Francois RUBON
SIMalliance representative
NFC Solutions Summit

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SIMalliance: Who we are

SIMalliance members represent **86%** of the global SIM market and deliver the most widely distributed secure application delivery platform in the world (UICC/SIM/USIM).

simalliance member

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simalliance strategic partner

COMPRION Test it. Prove it. Move it.

LINXENS

Movenda mobile solutions company

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What we do...

SIMalliance is the global, non-profit industry association which simplifies secure element (SE) implementation to drive the creation, deployment and management of secure mobile services.

SIMalliance:

- Promotes the **essential role of the SE** in delivering secure mobile applications and services across all devices that can access wireless networks
- Identifies and addresses SE-related technical issues, and **clarifies** and recommends existing technical standards relevant to the SE implementation
- Promotes an **open SE ecosystem** to facilitate and accelerate delivery of secure mobile applications globally
- Monitors the **market** and produces market data reports

SIMalliance Latest Deliverables

- Secure Element Deployment & Host Card Emulation v1.0
  - Introduction to Android's Host Card Emulation (HCE) and explores its value to the NFC ecosystem relative to the SE
- UICC LTE Profile
  - A collection of requirements for optimal support of LTE/EPS networks by UICC.
  - Widely utilized by North American MNOs.
- UICC Device Implementation Guidelines
  - Outline fundamental and optional UICC features device vendors need to support to optimize UICC interoperability in future devices.
- Stepping Stones Documents
  - Best practices for development of interoperable applications (USIM, NFC, SE).
- General SIM Security Guidelines
  - Ensure that a SIM's security levels are optimally maintained.

SIMalliance: Creating Opportunities for Market Growth

> Open Mobile API

- Standardized way to connect mobile apps with all SEs on a device (SE form factor neutral) including a service layer to provide a more intuitive interface and increasingly powerful functionality.
- Enables delivery of highly secure business and consumer mobile applications across all SE form factors.
- Referenced by GSMA (NFC Handset & APIs Requirements and Test Book) as a mandatory feature.
- Open Source implementation available (Seek-for-Android).
- Implemented in more than 150 models of Android NFC smartphones

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An SE for Each Business Model

- An SE is a tamper resistant component which is used in a device to provide the security, confidentiality, and multiple application environments required to support various business models
- An SE resides in extremely secure chips and may exist in a variety of form factors
- The SE should provide separate memory for each application without interactions between them
- SIMalliance considers true SEs to be a combination between software and dedicated hardware

UICC (SIM)

- Includes the application that authenticates the user in the network
- **Controlled by the mobile network operator (MNO)**

Embedded SE (eSE)

- SE embedded in the mobile at the time of manufacturing
- **Controlled by the device maker (OEM)**

Secure MicroSD

- SE embedded in µSD form factor and featuring large memory
- **Controlled by the service provider (SP)**

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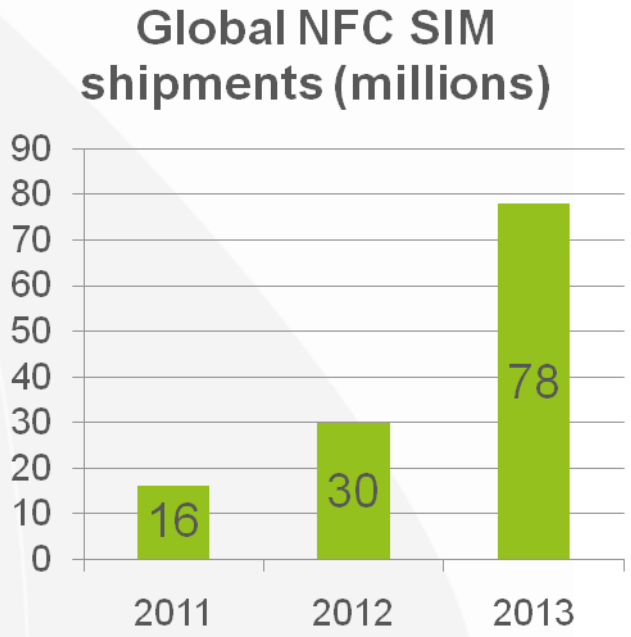
Strong NFC Foundation in Place for Use by Service Providers

In 2013 : 78m NFC SIM shipped (SIMalliance): +159%

Japan/Korea: 37m

North America: 24m

Europe: 14m



124m NFC SIM shipments in 3 years

2014: 416m NFC phones to be shipped*

2017: 53% of NFC-ready PoS globally*

**Forecast*

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What About HCE?

- Ultimately, SIMalliance thinks HCE will be good for the NFC ecosystem as a whole. It will:
  - Increase the breadth and number of NFC services available to end users
  - Drive wider adoption and utilization of NFC
  - Increase end-user familiarity with what NFC is, together with how it is used
  - Stimulate market innovation by encouraging new developers into the market
- BUT the technology remains immature, un-standardized and, relative to SE-based deployments, vulnerable to malicious attack. It is:
  - Yet to be standardized. As a result it is not yet interoperable
  - Exposed to a variety of potentially significant security vulnerabilities
  - Dependent on numerous variables for its operational continuity

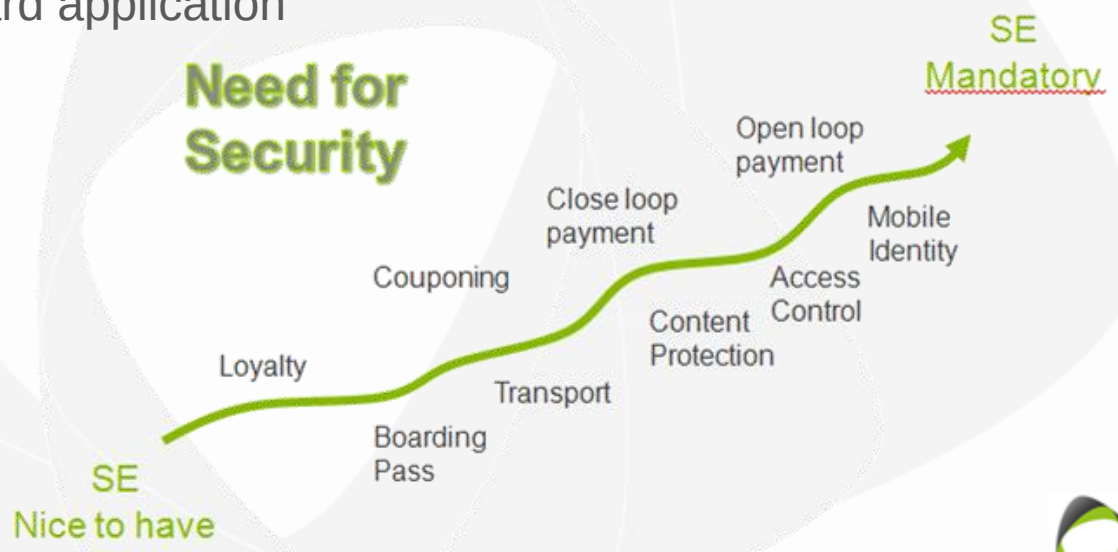
Appropriate Utilization

In its current form, HCE is best suited to:

> QR-code replacement services

> Use cases where the user's stored credentials are of low value and guaranteed security is not mandatory

> Use cases where the emulated NFC application is not based on a current and pre-existing card application



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SIMalliance Assessment

- In order to distribute and manage valuable and/or sensitive credentials (payment, transport, identity, access), a secure component is necessary in the device as well as a secure solution for the provisioning and management of this component
- This component and its corresponding management solution should be interoperable and agnostic to mobile operating system platforms
- It is necessary to have the secure component and management system certified, following extensive security testing procedures conducted by several recognized third-party laboratories. This ensures the secure NFC ecosystem is audited using the latest generation of known attack path techniques

At the moment, these pre-requisites are not met by HCE

Take Away

> **MNOs:**

- Request OEMs to implement OMAPI and default NFC routing to the SE
- Accelerate the deployments of SE-NFC infrastructure
- Maximize the efforts to defragment the market
  - Be more cooperative and open with each other (uniform wallet approaches) and with NFC service providers to enable easier access to the SE and encourage more partnership applications

> **NFC service providers:**

- SE-NFC is worth the effort
  - It remains the sensible business choice:
    - SE-NFC is bulletproof, ready to go, certified, ubiquitous
    - MNO supporting infrastructure is huge
    - UICC alternatives, supporting non MNO-centric business models already exist

'Secure Element Deployment and Host Card Emulation v1.0' white paper is freely available to download from the SIMalliance website

Thanks!

Visit www.simalliance.org for more information

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