NFC Application Ecosystems: Social Media, Payments, Ticketing and Transit Applications

- **Smart Card Alliance Mobile & NFC Council Webinar**
- **October 25, 2012**

Introductions

- Brent Bowen, INSIDE Secure
- Chair, Mobile & NFC Council

Mobile & NFC Council

- *Raise awareness and accelerate the adoption* of all applications using NFC
  - Access control, identity, loyalty, marketing, payments, peer-to-peer, promotion/coupons/offers, transit, …
- *Accelerate the practical application of NFC*, providing a bridge between technology development/specifications and the applications that can deliver business benefits to industry stakeholders.

Mobile/NFC Ecosystem Project

Objectives

- **To educate broadly on NFC – especially beyond payment**
- **Describe ecosystem as it relates to the different applications (marketing, payments, identity, access, transit, peer-to-peer, posters, gaming, product labels) and different end markets (e.g., consumer, medical, enterprise) – especially beyond payment**

Application Ecosystems

- **Peer-to-Peer**
- **Tags and Posters**
- **Product Labels**
- **Marketing**
- **Gaming**
- **Access**

- **Identity**
- **Social Networking**
- **Payments**
- **Ticketing**
- **Transit**

Today's Webinar Topics & Speakers

➢ **Social Media Applications:** Brent Bowen, INSIDE Secure & Chair, Smart Card Alliance Mobile & NFC Council

➢ **Payments Applications:** Josh Kessler, MasterCard Worldwide

➢ **Ticketing Applications:** Tom Zalewski, CorFire

➢ **Transit Applications:** David deKozan, Cubic

➢ **Q&A:** Randy Vanderhoof, Smart Card Alliance

Social Media Applications

- **Brent Bowen, INSIDE Secure**
- **Smart Card Alliance Mobile & NFC Council**

Social Networking Landscape

FredCavazza.net

Social Networking Applications

- **Social Networking Actions**
    - Checking In, Locations
    - Geo-tagging
    - Liking
    - Friending
    - Following/Subscribing
- **Gaming**
    - Connect Devices
    - Share Apps
- **Messaging**
    - Mobile to Mobile, Mobile to Device, Device to Device

Social Networking Ecosystem Players

Category	Examples	Role	Standards
Internet Messaging	Google, Yahoo, AIM, MSN, Trillian, Pidgin, Meebo	Internet Messaging Services. Provi	Proprietary
Social Networks	Facebook, Twitter, LinkedIn, Orkut, Google, Plaxo, Friendster	Social Networking, timelines, Check-In, Likes	Public
Instant Messaging	Apple, RIM, SMS, MMS, Whatsapp, Google	Provide mobile to mobile message delivery	Proprietary and cross-MNO
Other	Poken	Proprietary social Networking devices and services	Proprietary

Social Networking Considerations

- **Traditional Who, What, Where, When, Why**
- **Duration of Social Influence, Intimacy, Interest**
- **Opinions**
  - For/Against
  - Good/Bad
- **Blur of Internet and mobile messaging**

Payments Applications

- **Josh Kessler, MasterCard Worldwide**
- **Smart Card Alliance Mobile & NFC Council**

NFC Bank Card Payment Applications

NFC Bank Card Payment Applications

- **Payment application and payment account information are provisioned to the secure element in the consumer's mobile phone**
  - Payment application may be credit, debit, prepaid or closed loop
- **Consumers use their mobile phones as they would contactless payment cards at merchants who have contactless-enabled POS systems**
- **Payments are processed through merchant's acquirer/processor as contactless bank card transactions**

NFC Bank Card Payment Application Players*

Category	Examples	Role
Bank	• Citi, Barclays, Bank of America, Wells Fargo, Chase	• Holds the funding account and works with other parties to provision the payment application to NFC-enabled mobile phones. • Supports mobile contactless transactions in bank card issuers' host systems
Personalization bureau	• First Data, Gemalto, G&D, Oberthur Technologies	• Personalizes microSD cards and UICCs for bank cards • Creates the personalization data, sets the application security keys and passes the data to a TSM to provision the data into a consumer's NFC-capable phone
Trusted Service Manager	• Bell ID, Cassis, First Data, Gemalto, G&D, Oberthur Technologies, SK C&C	• Provides over-the-air (OTA) provisioning and lifecycle management services to the NFC application issuer and the owner of the SE • Multiple TSMs may be involved – e.g., secure element issuer TSM and service provider TSM
Retailer	• Macy's,	• Accepts NFC payment transactions with NFC-enabled contactless POS terminals that are certified to process each payment brand's NFC payment application • Issues NFC payment application – e.g., closed-loop NFC payment applications (such as gift cards or a retailer-specific payment card) or other value-added applications (e.g., coupons, loyalty).

* In addition to general ecosystem players who provision the consumer's mobile phone with the secure element and wallet

NFC Bank Card Payment Application Players*

Category	Examples	Role
POS system supplier	• Castles, Hypercom, Ingenico VeriFone, ViVOtech	• Manufacturers POS terminals and systems.
Acquirers/Processors	• First Data, Heartland, TSYS	• Facilitates the placement of terminals at retail locations and the communication of payment transactions to the payment networks for authorization and settlement. To support NFC payment transactions, acquirer terminals at merchant customer locations must support NFC/contactless transactions
Payment networks	• ACH Network, American Express, Discover, MasterCard Worldwide, PayPal, STAR, Visa Inc.	• Facilitates authorization processing and the settlement of bank card transactions. To support NFC payment transactions, payment networks must support contactless messaging and authentication functions
Payment brands	• American Express, Discover, MasterCard Worldwide, Visa Inc.	• Defines specifications for mobile contactless payment applications and certifies applications and POS equipment

* In addition to general ecosystem players who provision the consumer's mobile phone with the secure element and wallet
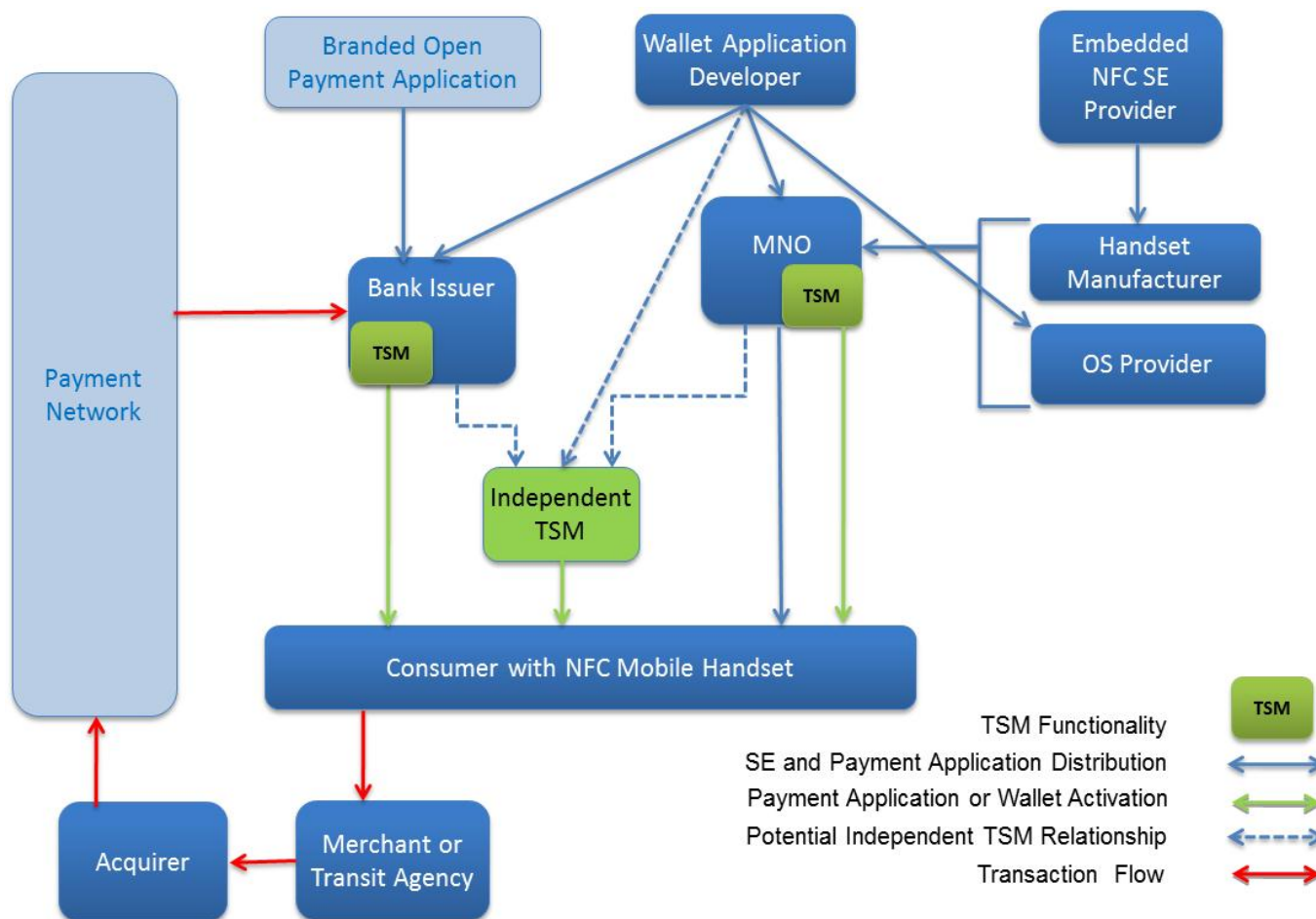
Note: Needs revisions to match terminology/flow of this presentation

NFC Cloud Wallet

Cashless Betalen – Virtual Wallet offered in the Netherlands

- **Cashless Betalen** = a closed loop cashless account management system offered by Dutch bank Rabobank together with Multicard (unit of Identive Group Inc.) www.cashlessbetalen.nl
    1. Get or purchase an NFC token
    2. To enable payments with your token, it must first be linked to your **MiniTix** wallet. If you already have a MiniTix wallet, it will be automatically linked with your token. If not, a new MiniTix wallet will be created.
    3. Activate with your mobile number www.mijncashless.nl
- Available for everyone, regardless of bank
- 3000 locations in the Netherlands: sports clubs, company restaurants, catering, vending, schools
- iOS and Android apps for viewing balances, transferring funds, monitoring spending
- Digital receipts (at school cafeterias)
- How it works: YouTube

- **MiniTix** = a free virtual wallet
- Loadable up to €300, max €2500/year from bank account
- Pay min €2.50, up to €150
- White label solution available
- Check balance and send money with SMS or app
- For online and in-app purchases login at Mijn Cashless. You are granted access by entering your mobile number
- www.minitix.nl

- **NFC** payments using an NFC sticker or back cover (on mobile), card, wristband or keychain
- Does not work with NFC enabled phone only, must use a sticker
- Cashpoint device: view balance and transactions
- Cashless Betalen currently works with payment terminals from Payter, Chess and Magna Carta see Terminal Options

Cashless Betalen – NFC Cloud Wallet Considerations

- **Wallet system (virtual wallet MiniTix)**
  - ➢ **Mobile number –** account linked to a mobile number, easy and understandable for customers
  - ➢ **Spending limit –** set by funding wallet either manually or automatically from a bank account, payments are deducted from the bank account (comparable to using a debit card as a funding source)

- **Funding source**
  - ➢ **Bank Account** –works in countries where payments between banks (bank accounts) are established, possible challenges in areas where direct bank account payments are less established
  - ➢ **Not a traditional Prepaid account** – may allow a more cost effective system than using a Prepaid
  - ➢ **No alternative funding sources** – could be expected in some markets (e.g. credit card, PayPal)

- **Token used for payments**
  - ➢ **Token** – card or account number is not shared with merchant which could be viewed as a security measure

- **Acceptance locations**
  - ➢ **Contactless terminals** – requires specific NFC enabled terminals at POS
  - ➢ **'Group' locations** – concept makes use of specific groups to promote payment method for their users e.g. sports clubs, schools which may create peer validation and increase adoption
  - ➢ **Online** – allows payments on web sites using the MiniTix wallet, which extends acceptance

- **Quick sign-up**
  - ➢ **Leaflets –** with stickers for immediate use (after signing up)
  - ➢ **Online sign-up** and account management – as expected from an 'advanced' payment method

- **Other**
  - ➢ **Trust –** offered by a bank (research shows people are more likely to trust NFC option from their bank)
  - ➢ **Early adopters** –younger user groups (sports club, schools), possibly more willing to try new solutions
  - ➢ **Market** – openness/readiness for and NFC option, national market vs. other more segments
  - ➢ **Consumer training –** benefits clearly stated online, FAQ and other help available online

General NFC Cloud Wallet Considerations

- **Funding method**
  - ➢**Linked** to a funding source without moving money, ability to set limits (e.g. Cashless Betalen)
  - ➢**Prepaid** = funds allocated into a prepaid card/account
  - ➢**Credit/Debit card** = card charged when payment made (e.g. ISIS)

- **Token or card emulation**
  - ➢ **Token** = card number not shared with merchant (e.g. Cashless Betalen), or virtual card intermediary
  - ➢ **Card emulation** = card credentials passed just as when paying with a plastic card

- **Distribution**
  - ➢ **NFC** payment device (mobile, token) and **NFC POS** terminal and system
  - ➢ **Set up** steps required: NFC enabled mobile device, download wallet app, wallet signup process (KYC, privacy, speed)

- **Other**
  - ➢ **Accepting locations** – number and vicinity of acceptance locations, working terminals, trained staff
  - ➢ **Consumer training and education –** benefits of virtual wallets and rules (e.g. if different spending limits than for cash or existing cards)
  - ➢ **Ease of use** – delightful experience, how easy and desirable is it for the consumer to change their behavior
  - ➢ **Trust –** is the wallet provider trusted by the consumer to handle their money, trust in technology
  - ➢ **Early adopters** – willing to try new solutions, source of valuable feedback

NFC Cloud Wallet Sources

➤ **Cashless Betalen web site**

  ➤ http://translate.google.com/translate?hl=en&sl=nl&u=http://www.cashlessbetalen.nl/&prev=/search%3Fq%3D
    cashless%2Bbetalen%26hl%3Den%26safe%3Doff%26biw%3D1600%26bih%3D1068%26prmd%3Dimvns&s
    a=X&ei=bDbrT_bZBOSj6gHMp_nkBQ&ved=0CEQQ7gEwAA

➤ **Cashless Betalen video**

  ➤ http://www.youtube.com/watch?v=xa8nW2OJoOg

➤ **Rabobank MiniTix**

  ➤ http://www.rabobank.com/content/images/Minitix%20brochure%202011%20ENG_tcm43-36308.pdf

Ticketing Applications

- **Tom Zalewski, CorFire**
- **Smart Card Alliance Mobile & NFC Council**

Ticketing Applications

- ➢ Electronic ticketing offers many advantages to numerous verticals
  - Replaces passive paper ticket with active virtual ticketing
  - Can link basic ticketing functionality to other mobile capabilities allowing the possibility for a broader and richer user experience

- ➢ Electronic Ticketing also introduces new challenges
  - Consistent experience and simple operation, some examples include:
    - Multiple wallet and UI challenges
    - Effort to have one standard, i.e. for city arenas and stadiums
    - Replacing the paper ticket for cost reduction and increased revenue while succeeding in "building a better mousetrap"
    - Eliminating fraud while preventing rejection of valid tickets

- ➢ Ensuring new costs introduced do not eliminate expected costs savings and potential new revenue generated
  - Additional parties required to introduce and maintain virtual ticketing
  - Operating and maintaining both the existing physical infrastructure and new virtual infrastructure
  - Possible security and certification requirements costs

Ticketing Application / Stakeholders

Category	Applications	Examples / Stakeholders
Hospitality	• Clubs / special events	• MNOs for mobile virtual ticketing solutions • Banks/Issuers for ticket purchases • Event sponsors and venue management
Travel- Airlines	• Boarding passes	• Airlines • MNOs • Fis
Travel- Parking	• Parking garage / lot • Remote parking facilities	• Corporate property management • Airports, offsite parking facilities • Vehicle charging station lots
Entertainment- Live events	• Sports • Concerts • Shows / Plays	• Stadium and venue management • Ticket operations / distributors • MNOs
Entertainment- Movies / shows	• One-time tickets	• MNOs • Theater management, concessions operations • Advertisers / consumer goods providers
Entertainment- Theme Parks	• Day / multi-day passes	• Park operators • MNOs • Associated hospitality businesses

Ticketing Considerations - Overall

- While the ticketing infrastructure can be simplified, leading to reduced overall costs, more players are injected into the equation
  - MNO will expect monthly rental or surcharge fees
    - Covers application and ticket downloads plus life cycle management
  - TSM or other OTA management entities introduce new costs

- Business needs will vary for each specific segment and use case
  - Needs include everything that creates efficiencies and added value
    - These will also vary for each stakeholder in the ecosystem
  - These "needs" cannot overshadow value to or complicate services for the consumer
    - Moving targets include the types of mobile devices, "new capability/feature" learning curve for end user, consistent & reliable accessibility to the service, etc.

- Transition period from physical to virtual tickets may require additional effort and cost
  - Maintaining two systems
  - Interaction between the systems
  - Staff training and consumer education

Ticketing Considerations – Overall cont.

- Active mobile device replaces the "dumb" passive paper ticket or card
  - Passive ticket requires that the back-end must be the active system
    - Some intelligence can be shifted to the mobile device
      - Allows for both greater flexibility and possible infrastructure cost reduction
  - Linking to a centralized payment and ticketing system is simplified

- Using the mobile network, passengers have several options
  - Provides greater selection of services and choices, for example;
    - Pay now and download ticket immediately
    - Reserve or hold venue seat for later purchase and download
  - Virtual tickets can be transferred to another mobile device
    - Ticket can be purchased by one person in a remote location and immediately used by another person at the transit location
    - Virtual tickets can be topped-up anytime, anywhere

- Linking the mobile device to virtual ticket services leverages device capabilities that can introduce new revenue streams
  - Location-based offers and services
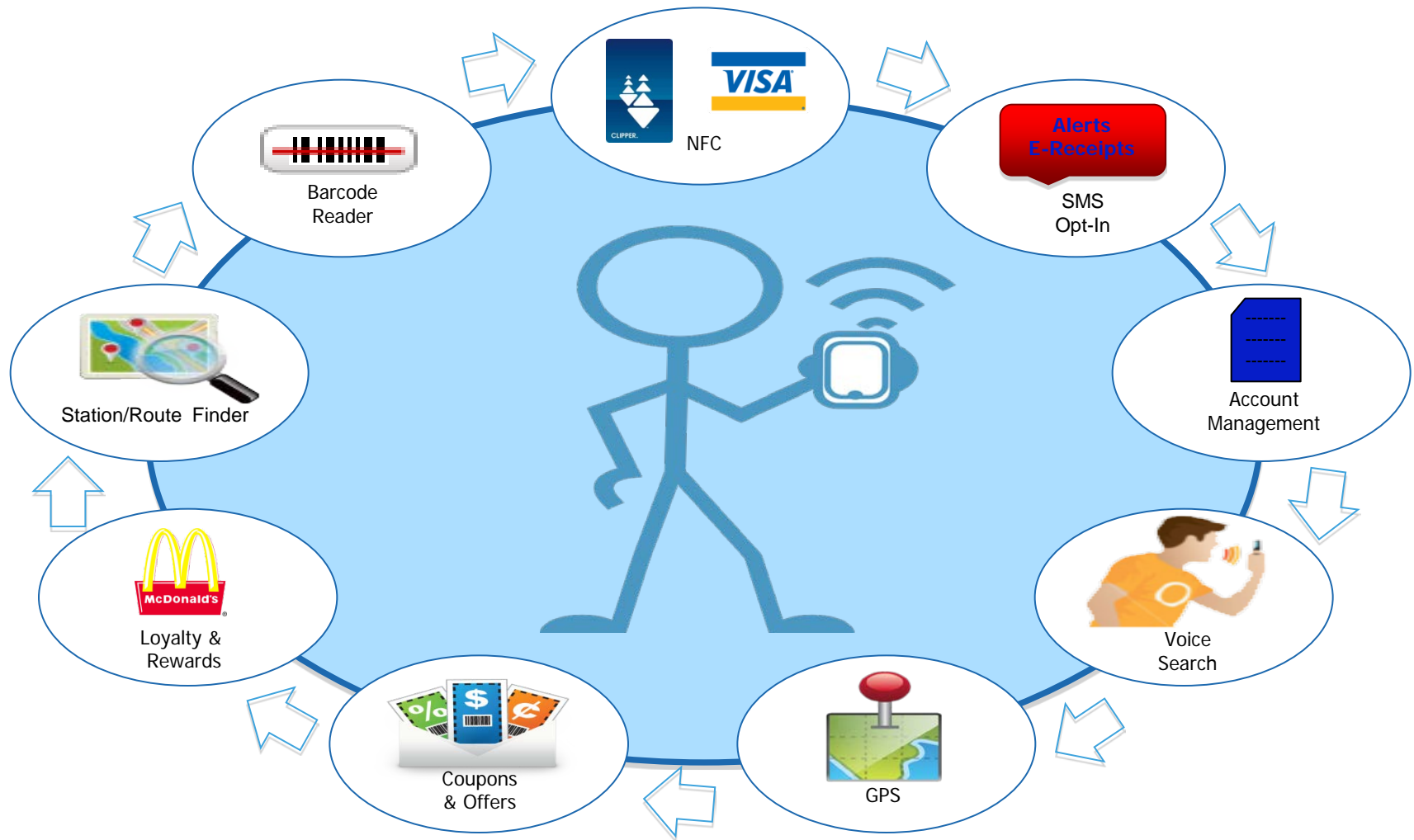 - Retailer coalition and bundled offerings

Transit Applications

- **David deKozan, Cubic**
- **Mobile & NFC Council**

Mobile Service, Ticketing, Payment, Marketing

Mobile Service, Ticketing, Payment, Marketing

Mobile Service

➢ The phone as a self service kiosk

➢ The phone as an information delivery platform- SMS, push notification, email

Mobile Ticketing

➢ The phone as a transit card (NFC) or bar code ticket

Mobile Payment

➢ The phone carrying an open payment product (bankcard)

➢ Wallet based card used as funding source for fare purchase

➢ Direct acceptance of wallet based card at point of access

- Requires AFC system to be open payments "ready"
  - Type certified readers
  - Account based fare processing and risk management engine

Mobile Marketing

➢ Using the transit engagement model to support mobile marketing programs

Transit Mobile / NFC Ecosystem Players

Category	Examples	Role
Transit Agency/Issuer	• New York City Transit • Chicago Transit Authority • San Francisco MTC	• Owner of fare system and brand • Contracting entity • Establishment of policy and fare rules • May self operate system and support
Transit Fare Program Servicer	• Cubic Transportation Systems, Inc. • Xerox ACS • Accenture	• Manages fare program and customer support on behalf of agency • Hosts and operates systems IT infrastructure
Transit Issuer Aggregator	• TBD • Likely candidates are those offering fare services	• Maintains connectivity to mobile eco-system participants on behalf of multiple transit agency/issuers • Provides mobile support services in keeping with the needs of consumers and stakeholders
Secure Element Issuer	• MNO's- VZW, AT&T, T-Mobile • Wallet providers- Google • Handset makers- Apple, OHSA members	• Owner of the SE • Manages or contracts for the management of SE resources
Trusted Service Manager	• Gemalto • First Data Corporation • Giesecke and Devrient	• Manages SE resources on behalf of the SE issuer • Maintains systems and security environments necessary for provisioning and life cycle management
Service Provider TSM (Optional)	• Gemalto • Giesecke and Devrient	• Maintains connectivity to SE TSM on behalf of issuer or service provider

Transit Mobile / NFC Ecosystem Players

Category	Examples	Role
Handset OEM	• Apple • Samsung • Motorola	• Manufacture mobile devices and distribute either directly or through MNO
UICC Provider	• Gemalto • Giesecke and Devrient • Oberthur	• Manufacture secure SIM cards on behalf of MNO's • Can configure SIM to support transit requirements (e.g. Mifare4Mobile)
NFC Peripheral Provider	• Giesecke and Devrient • Device Fidelity • Wireless Dynamics • OTI America	• Manufacture and supply NFC peripherals such as Micro SD cards and mobile sleeves
Wallet Provider	• Google • ISIS • C-SAM • SK C&C	• Provide mobile app that enables management of credentials on the SE
Messaging Aggregator	• Open Market • Syniverse • mBlox	• Provides single point of connectivity to multiple MNO's for the delivery of SMS and MMS messages
Mobile Ad Network Partner	• Adfonic • Millennial Media • Mobile Theory	• Secure ad inventory to be published in the mobile app is support of mobile marketing campaigns

Agency Value Proposition

Mobile services will provide greater patron convenience and reduce operating costs

Efficiencies are generated across:

- ➢ Card procurement and distribution
- ➢ Call center operations
- ➢ Retail network operations
- ➢ Consumer funding choices

New revenue opportunities are created

- ➢ Collaborative marketing and advertising campaigns
- ➢ Cross channel ticketing initiatives

Consumer Value Proposition

The mobile phone will offer an "all in one" fare experience:

- Phone as a customer service portal
  - Web-tix in my hand (product purchases)
  - Proactive real time alerts- I know my balance and if my service is on time
  - Real time access to fares, ticketing, and account information
  - Real time account management tools
  - Priority customer support
- Phone as a POS
  - Fare purchases via my phone to my phone
  - Real time product delivery- pay and tap
- Phone as a ticket
  - No need for a separate card….I just tap my phone
- Phone as a general purpose payment device
  - I tap my phone at the store to purchase goods and services

Mobile Engagement Leading to NFC

Enabling the Ecosystem

Transit Issuer Aggregator

Platform required to establish links between agency systems and NFC eco-system

Key issues

- Security management- interface with TSM's
- Data base integrity and audit/content control
- System messaging and application data formats unique to agencies
- Integration with disparate customer support systems
- Integration with disparate merchant processing systems
- Integration with disparate regional settlement systems
- Consistency of user experience while preserving brand autonomy and region specific fare policy
- Transition from closed to open loop, card based to account based architecture

On the Handset – Two Key Components

The Credential

- A virtual transit card
- A transit token
- A bankcard
- A 3rd party ID/token

The Fare Management App

- Controls interaction between the transit back office and the credential
- Interacts with the mobile wallet and/or SE applet to issue requests and commands
- Provides the user experience and the available features/products associated with transit usage and account management
- May or may not require an SP TSM

Provisioning Flow Options
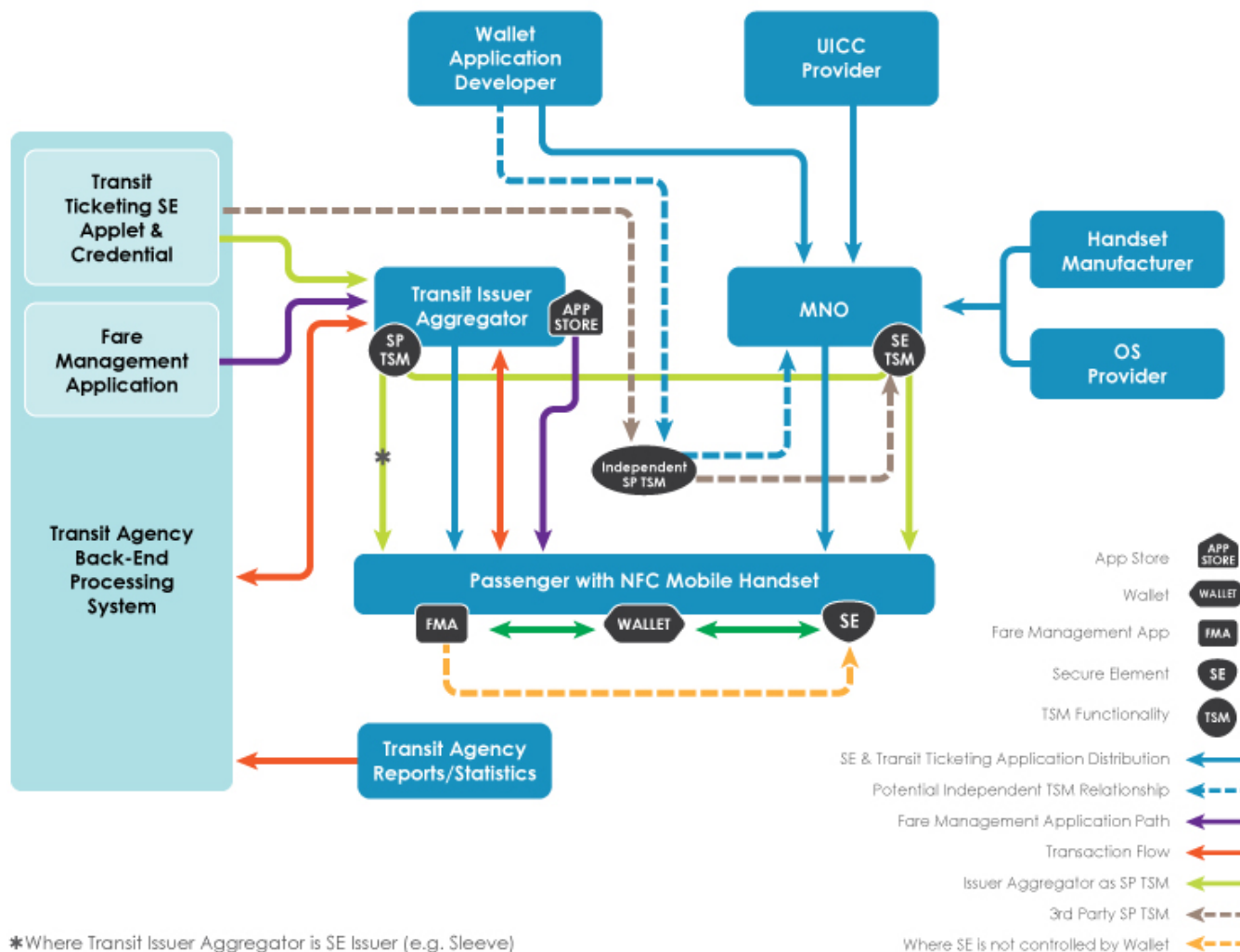
Questions & Answers

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