Let’s Build A Smarter Planet

The world is smaller and flatter.
We manufacture and distribute a great deal of plastic to facilitate payment and foster customer loyalty.

1 billion

25,000
Tons of payment and loyalty card mailers delivered via CO₂ producing transport to US consumers in 2008.

114
Number of perfectly packed 40 yard dumpsters needed to hold payment and loyalty cards discarded by US consumers in 2008.

The proliferation of payment and loyalty cards creates increasing opportunities for error and fraud.

11 million
Number of payment cards reported lost or stolen in 2008.

2.1 billion

13
Number of payment and loyalty cards carried in the wallet of the average US consumer in 2008.
What if losing your wallet wasn’t a cause for panic?

What if...

- your payment and loyalty cards were all protected by a passcode for purchases over $25?
- you could further protect it with biometric authentication for large purchases
- a single phone call rendered the contents of your wallet useless to would-be thieves?
- you could replace lost cards in minutes after getting a new wallet?
- you could safely keep the same account numbers on the replacement cards?

The personal information in your wallet should be protected and recoverable

What if your wallet actually enhanced your purchasing experience?

What if...

- you could pay for goods and services without swiping a card or handing it to a cashier?
- you could choose to pay with loyalty points at the store instead of going to a special web site?
- your wallet enabled you to pay with equal security at the store and on-line?
- security was assured by heavy cryptography that protects your payment information?

Purchasing in the store and on-line should be equally secure and convenient
What if your wallet enriched the full purchasing life cycle?

What if your wallet could..
- tell you where the best prices could be found near your location?
- receive valuable coupons at the time you are making a purchasing decision?
- provide comparative data on potential purchases?
- manage thousands of receipts for returns and warranty support?
- tell you where to recycle or safely discard of items purchased long ago?

Your wallet should help you purchase right product, right price, right support, right disposal

What if your wallet let you manage the relationships with the vendors you value most?

What if...
- your wallet was tied to an on-line profile that you managed as you saw fit?
- the on-line profile let you invite vendors to collaborate on your behalf?
- the result of collaboration was offers that were uniquely tailored to you?
- those tailored offers were delivered at the right time, whether on-line or in-store?
- on-line profiles were based on open standards?
- on-line profiles were transportable like mobile phone numbers?

You can mash up your web pages today and soon you will be able to mash up your world
A mandate for change is a mandate for smart.

Your wallet is about to get a whole lot smarter.
A smart wallet starts with a smart mobile device

- The smart mobile devices we use for phone, text, e-mail, organization, and entertainment
- Will be upgraded with a new technology called Near Field Communications (NFC)
- NFC has been integrated with mobile devices in several countries outside of the US
- IBM helped invent NFC, including the cryptography that keeps it secure

A smart mobile device becomes a smart wallet when industry stakeholders align around a Trusted Service Manager to enable it

- Issue secure “applets” in addition to (or in lieu of) traditional plastic cards
- Embed NFC technology in the majority of their smart mobile devices
- Provide trusted platform to manage identity, personal data, and wallet lifecycle
- Provide payment processing platforms that can integrate with NFC terminals
- Deploy and integrate NFC reader technology at the point of sale and on-line
- Promote NFC phones, enable applet downloads, send SMS purchase confirmations
A smart wallet gets smarter still when it becomes an **open mobile wallet** based on open standards and the premise of portability.

**Trusted Service Manager**

- TSM provisions secured wallet apps over the air on behalf of Wallet Manager per consumer preferences.
- Wallet Manager establishes trusted identity with TSM tied to the mobile device, downloads secure apps, and manages the device lifecycle.

**My Mobile Network Operator**

**My Payment Network**

**My Bank as Wallet Manager**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**Trusted Service Manager**

- Wallet Manager provides secure apps to TSM for provisioning.
- Wallet Manager provides non-secure apps, tools, and promotion data directly to mobile device.
- Consumer establishes trusted identity with Wallet Manager, builds and manages profile, and ties Wallet Manager to TSM for secure download of wallet applications.

**Open Mobile Wallets** will be based on XML standards making them portable; consumers can switch Wallet Managers by downloading XML representation of their profile and uploading it to a new provider.

**Wallet Managers** will deliver information and offers on behalf of merchants and CPGs based on consumer preference and networked relationships.

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

**My Mobile Network Operator**

**My Payment Network**

**My Bank**

With a TSM and Smart Wallet, CRM migrates to CMR (Consumer Managed Relationships) where consumers actively engage multiple stakeholders to provide the experience and value drivers most important to them.

© 2009 IBM Corporation
Shinhan Card SCMS since 2005

- Shinhan had issued 100+ card products to 70+ phones via CoreSCMS and they are continuously adding new card products without having to make any changes to CoreSCMS

Credit Agricole testing all configurations

- Part of Pegasus project
  - Inter-Banking and Inter-Telco NFC scheme
- Campus pilot in Nice
  - Recharge your account via SMS
  - Mobile payment from pre-paid account
  - Online person to person payment
  - Pay at merchant with an NFC phone as eFTPOS equipment
  - E-keys for access points in Nice
- Monice expense in Besançon
**Why a smart open mobile wallet is a better wallet.**

<table>
<thead>
<tr>
<th>Process</th>
<th>Legacy Wallet</th>
<th>Smart Wallet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issuance</td>
<td>Receive new card via US mail in 2 – 5 business days</td>
<td>Immediately download new “applet” and authenticate</td>
</tr>
<tr>
<td>Payment</td>
<td>Select card and swipe (retail) or enter account and security code (on-line)</td>
<td>Tap wallet on NFC reader and select payment applet(s), enter passcode for purchases over $25, receive a confirming SMS</td>
</tr>
<tr>
<td>Retail Returns</td>
<td>Retrieve printed receipt – assumes you saved it and are able to find it – and present to cashier for scanning</td>
<td>Search for and select eReceipt and tap wallet on NFC reader</td>
</tr>
<tr>
<td>Lost/Stolen Card</td>
<td>Call or go on-line to report incident</td>
<td>No cards to lose</td>
</tr>
<tr>
<td>Lost/Stolen Wallet</td>
<td>Call or go on-line to report incident for each and every card in your wallet assuming you remember all of them</td>
<td>Make a single phone call to your mobile carrier to disable all applets and procure a new mobile device</td>
</tr>
<tr>
<td>Coupons</td>
<td>Clip them, save them, carry them with you, match them to items, make sure they aren’t expired present to cashier for individual scanning</td>
<td>Scan UPC or RFID and receive up-sells, cross-sells, and competitive offers; coupons and promotions automatically downloaded when you tap to pay</td>
</tr>
<tr>
<td>Authentication</td>
<td>Surrender drivers license or other sensitive documentation under some circumstances; enter pin for debit</td>
<td>Enter passcode on your mobile device for purchases above preset thresholds</td>
</tr>
<tr>
<td>Fraud Detection</td>
<td>Disrupt purchase and contact call center if issuer triggers a fraud alert; answer challenge questions; resume purchase</td>
<td>Answer challenge questions in-line with purchase; receive SMS confirmation with each purchase</td>
</tr>
</tbody>
</table>

---

**IBM provides an industry leading Platform for Trusted Identity and Payment to enable Trusted Service Management.**

- IBM CoreSCMS (Smart Card Management System) originally developed in 2002
- CoreSCMS has been deployed globally in multiple payment and identity applications
- CoreSCMS supports 18M users accessing 100+ applets across 81 variations of NFC phones and Smart Cards in Korea
- Conforms to Global Platform 2.x (and forthcoming 3.0) standards
- Utilizes IBM’s industry leading key management system
- Built on top of the best-of-breed IBM Blue Stack
- Highly extensible and scalable
- Available as an “asset” or as a service delivered through IBM’s on-demand managed hosting
IBM provides an industry leading Device-Independent Application Development Platform WebSphere Everyplace Mobile Portal

Rich and capable device e.g. HTML based Browser PC

Limited capability devices e.g. XHTML, HTML, WML & iMode-based Mobile Devices

Integration "at the glass"

Extend to "Mobile Devices"

Write Once, Render Many?

IBM Research is piloting a technology platform that enables Micro-Location Based Services through an Electronic Wallet paradigm

Diverse Devices

Many Spaces

Plentitude of Services

Mobile Devices

Celadon Zones with Facility Devices

Celadon Services

Ubiquitous Collaboration Infrastructure
Building a smarter wallet for a smarter planet

TSM Driven Pervasive Symbiotic Advertising

Building a smarter wallet for a smarter planet

Symbiotic Advertising

Receive a free Angus

SMS

Large Display or

Weekly SMS Push Campaign

In Store Experience

Product Selection

Display Reader

Coupon Retrieval

Device Recognition
IBM provides an industry leading platform for Master Data Management that enables the single view of customer, whether online or in-store

- The first multi-domain, multi-function MDM product in the market
- Packaged to address all types of MDM implementations
  - From small entry-level projects through to strategic transaction hub deployments
  - Allows clients to grow as required by implementing existing functionality
  - Significantly lowers client risk and time/cost to implement
- SOA Library - 800 pre-packaged business services
  - Significant out of the box product functionality
  - Reduces total cost of ownership
- Performance & scalability

The inevitable adoption of the open mobile wallet will be a transformational opportunity for industry stakeholders.

<table>
<thead>
<tr>
<th>Merchants</th>
<th>CPGs</th>
<th>MNOs</th>
<th>Handset Mfrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase revenue and profitability via up-sell, cross-sell, and competitive offers at the point of decision</td>
<td>Replace expensive paper coupons with electronic versions</td>
<td>Incremental revenue from delivering loyalty offers</td>
<td>The next “killer application” to revive handset sales</td>
</tr>
<tr>
<td>Provide seamless loyalty programs that increase stickiness</td>
<td>Deliver cross-sell, up-sell, and competitive offers at point of decision</td>
<td>Potentially huge revenue stream from serving affiliates and coupons to shoppers in retail setting</td>
<td>Increase sales of lucrative high-end devices as consumers adopt mobile platforms as primary tool for managing life activities—replace the PC</td>
</tr>
<tr>
<td>Merge on-line and retail experience and improve single view of customer</td>
<td>Eliminate costly back-end coupon processing with electronic redemption</td>
<td>Revenue from loyalty program services</td>
<td>Host open mobile wallet for additional customer loyalty and insight</td>
</tr>
<tr>
<td>Improve check-out efficiency</td>
<td>Build direct consumer relationships</td>
<td>Increased differentiation of offerings</td>
<td>Participate in customer-managed relationships that provide tailored experiences for more effective promotion, bigger share of wallet, and better margins</td>
</tr>
<tr>
<td>Improve returns workflow</td>
<td>POS redemption of loyalty points and electronic coupons increase the volume of funds processed through network</td>
<td>POS redemption of loyalty points and electronic coupons increase the volume of funds processed through network</td>
<td></td>
</tr>
</tbody>
</table>
Building a smarter wallet for a smarter planet.

We’ve only just begun to uncover what is possible on a smarter planet.

The world will continue to become smaller, flatter and smarter. We are moving into the age of the globally integrated and intelligent economy, society and planet.

There’s no better time to start building smarter payment and trusted identity infrastructure. And there’s no better time to invest in creating the kind of society we all desire.

Let’s work together to drive real progress in our world.

For more information, please contact:

**Greg Sarafin**  
Partner, AIS Banking Lead  
+1.609.658.2777  
greg.sarafin@us.ibm.com

**Ranjit Balaram**  
Practice Executive, Wireless & Emerging Technology  
+1.978.930.1485  
rbalaram@us.ibm.com

**Thomas Hissam (Tom)**  
SME – Mobile Banking, Payments and m-commerce  
+1.910.343.4185 or +1.910.386.8469  
thissam@us.ibm.com