EMV: The U.S. Roadmap and Guidebook

September 2013

Julie Conroy, Research Director

Agenda

- The issuer perspective

- The merchant perspective

- Lesson learned from other geographies
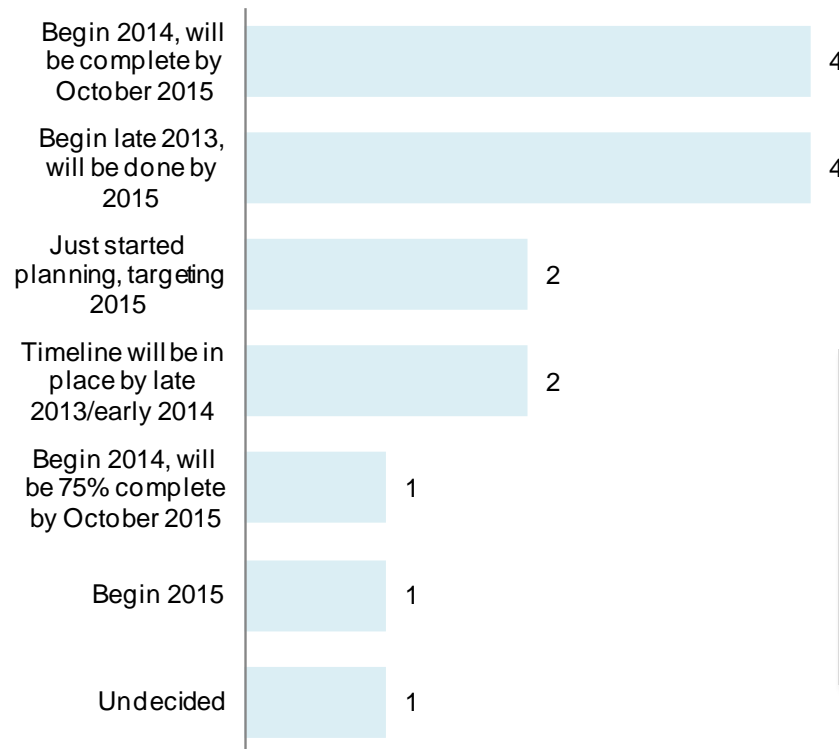
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Agenda

- The issuer perspective
- The merchant perspective
- Lesson learned from other geographies

EMV: Why now?

- Interoperability

- Mobile payments

- Increasing fraud

- Decreasing costs

"The U.S. is in the midst of the most expensive upgrade to its payment system in history"

U.S. Issuers' Planned Timeline for EMV General Issuance (N=15)

| Category	Value
Begin 2014, will be complete by October 2015	4
Begin late 2013, will be done by 2015	4
Just started planning, targeting 2015	2
Timeline will be in place by late 2013/early 2014	2
Begin 2014, will be 75% complete by October 2015	1
Begin 2015	1
Undecided	1

> Nine of the 15 issuers interviewed expect to have the majority of their portfolios upgraded by 2015

Source: Aite Group interviews with 15 large U.S. issuers, January to May 2013

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CVM strategies vary

Planned Cardholder Verification Method (n=14)
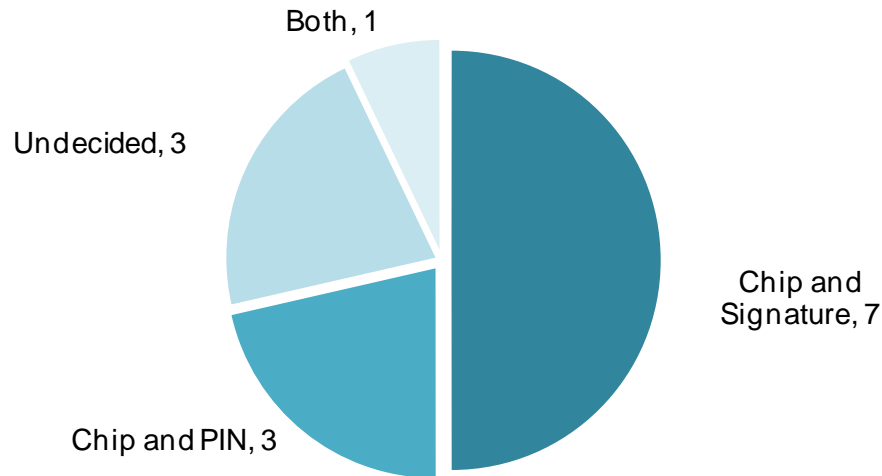
The diversity of CVMs will cause consumer confusion, while the widespread reliance on chip and signature will cause issues for international travelers

Source: Aite Group interviews with 15 large U.S. issuers, January to May 2013

Credit will come first

Portfolio Prioritization for EMV Migration (N=15)

| Category	Value
Credit first	7
Concurrent	4
No debit portfolio	2
Debit first	1
Undecided	1
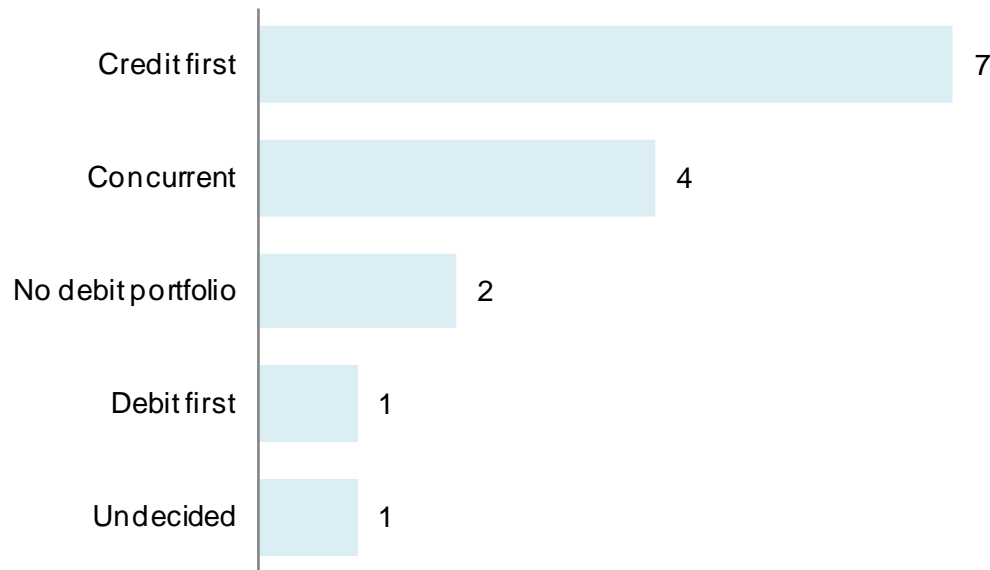
Credit cards are being prioritized due to greater exposure, as well as technical challenges presented by the Durbin Amendment dual routing requirement

Source: Aite Group interviews with 15 large U.S. issuers, January to May 2013

Yet another change for the ATM

EMV Migration Strategy at the ATM (N=14)
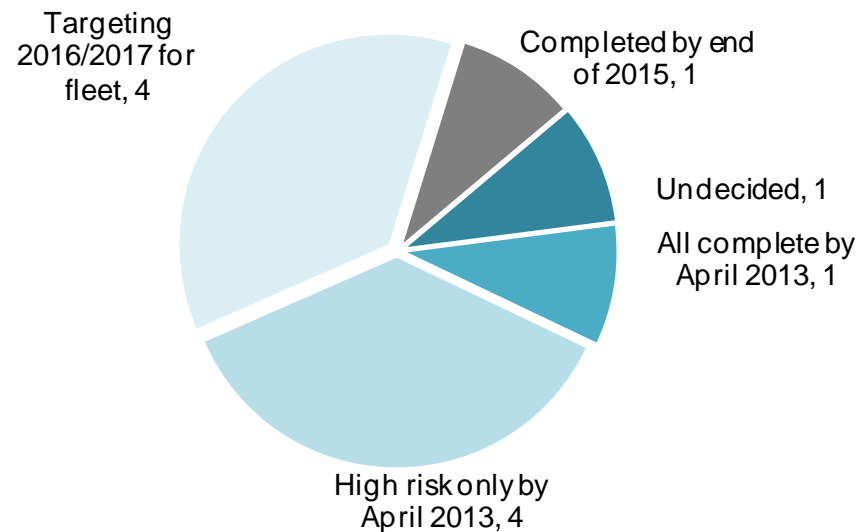
*Source: Aite Group interviews with 15 large U.S. issuers, January to May 2013*

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As in other countries, small merchants in the U.S. will lag in migrating to EMV

"The major credit card networks have announced a program to transition to EMV cards by October of 2015. These cards utilize a computer chip to transmit card information to the card terminal in place of the current magnetic stripe. They provide improved security but require new terminals."

Merchant Awareness of EMV Initiative (N=372)
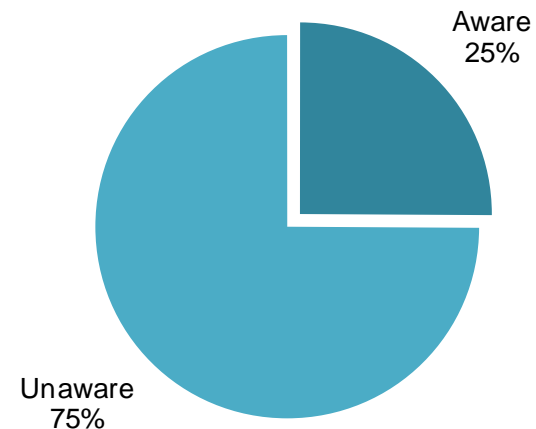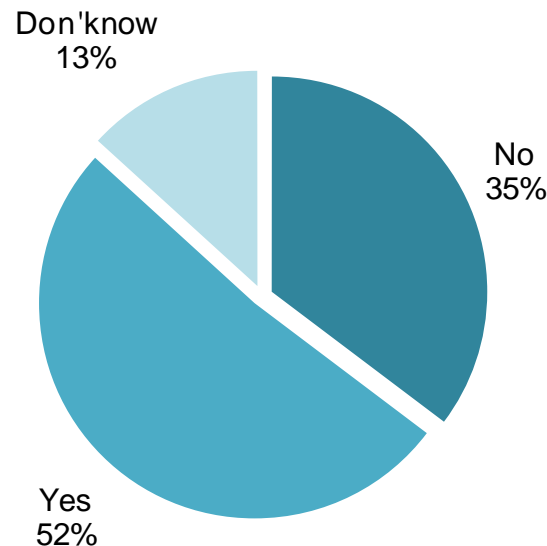
Aware
25%

Unaware
75%

Source: Aite Group survey of merchants, March to April 2013

No significant differences in awareness among the various sizes of merchants.

Of the merchants who are aware of EMV, half plan to upgrade by October 2015...

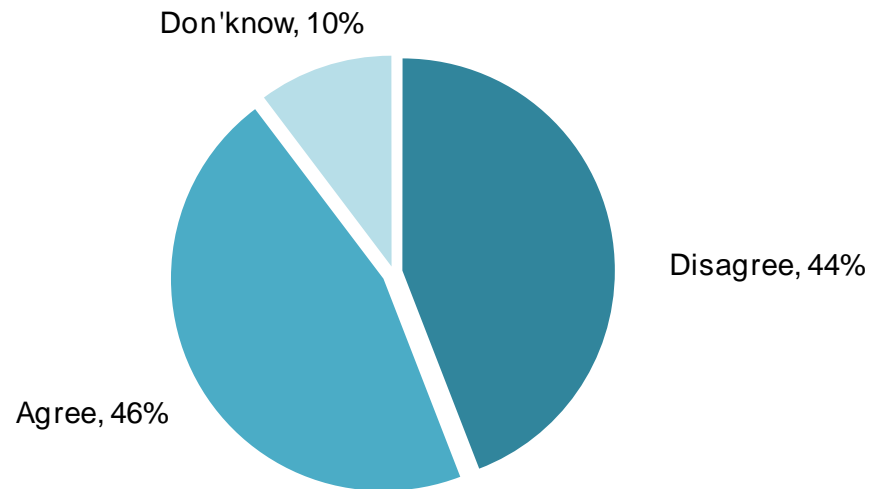**Merchants That Intend to Upgrade to Support EMV by October 2015**

Don'know
13%

No
35%

Yes
52%

Source: Aite Group survey of merchants, March to April 2013

67% of merchants will $1 million in revenues and above plan to upgrade

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…while half don't plan to upgrade at all

Merchants That Do Not Intend to Upgrade Equipment to Support EMV

Don'know, 10%

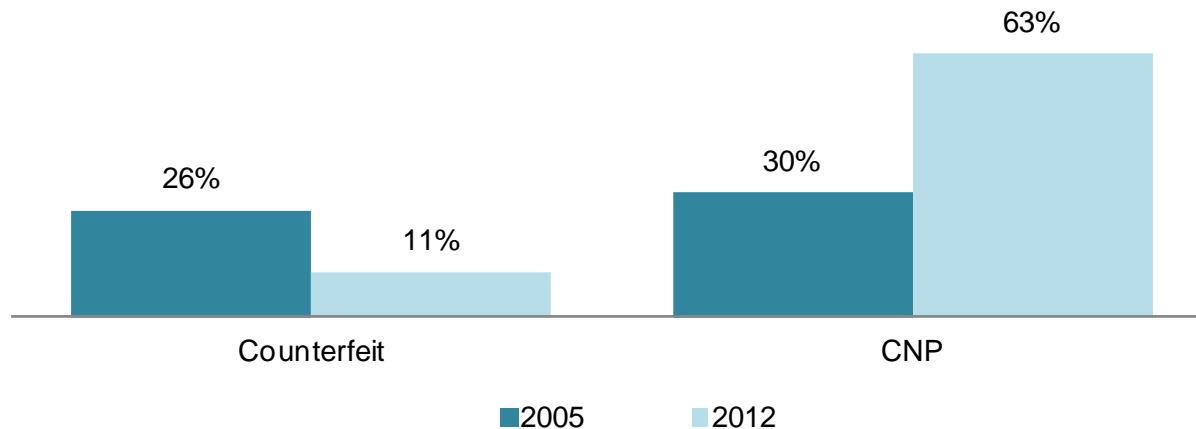Disagree, 44%

Agree, 46%

67% of merchants with $1 million in revenues do intend to upgrade

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Agenda

- The issuer perspective

- The merchant perspective

- **Lesson learned from other geographies**

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Prepare for the fraud shift

Change in U.K. Card Fraud Composition, 2005 to 2012

Source: Financial Fraud Action UK

Lessons learned from other geographies

- Education and coordination is key

- Make the PIN painless

- The devil is in the details

- Make use of the chip

- Adjust your fraud defenses

  - App fraud

  - CNP fraud

  - Cambridge exploit

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Key takeaways

- EMV is now a matter of "when" not "if"
- The U.S. migration promises to be painful, thanks to our fragmented market
- Engage your plastic provider in the planning process
- Fraudsters will capitalize on the ensuing chaos
- Education will be key—somebody needs to step up to make it happen!

Aite Group: Partner, Advisor, Catalyst

Aite Group (pronounced eye-tay) is an independent research and advisory firm focused on business, technology and regulatory issues and their impact on the financial services industry.

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Mobile Payments Standards Business Case Drivers

Steve Mott

BetterBuyDesign

Framing the Business Case for Collaboration and Standards in Mobile

- Mobile marketing efficiencies are worth 4-5 times payment fees ($500+ billion)

- Mobile marketing commissions can be 10-20 times the value of payment fees (and up to 4x the normal 50% gross margin incentive to buyers)

- Collaborative use of risk management data can reduce fraud and chargebacks to 1/20 of cards

- $2.4 bil. spent on mobile wallets to-date will grow 20-30x if no standards are put in-place soon

Collaboration Key to Mobile Largesse

Merchant

- Information on buyer at given merchant
- Account history with merchant payment type
- Buyer history with other bank payment types
- Risk management history
- Transaction session information

BANK

- Full information on buyer
- Full account history across multiple merchants
- Risk management history

Mobile Provider

Mobile device/network data
Mobile usage and session information
Mobile marketing experiences

New Players and Tie-ups

- Square (and others) extend merchant acceptance (at a price…) and harken to a new POS (but not really yet…)

- LevelUp throws over the interchange model for a new loyalty play, but questions abound

- PayPal/Discover could be very interesting, but will legacy participants let them play? (e.g., MC fees, FD block on BINs)

- PayPal/ADS brings mobile credit to the table?

- Bars and Restaurants are Ground-Zero for mobile transformation

NFC's Readiness for Primetime Suffers

1. Tethering to EMV complicates rather than simplifies adoption

   - Politics of payments has intervened….

2. Card-emulation mode makes life easier for issuers and acquirers, but murders the ROI for merchants—and puts the new payments system at risk

   - Why spend so much money on baby steps in security?

3. Ability to support two-way offers might be leap-frogged by cloud-based flexibility

   - Do marketing-based services need a Secure Element, when tokenization looms large?

EMV: A Giant Head-Fake to Get NFC?

- Poor security/efficiency makes $8.6 billion projected investment cost a non-starter for most

- EMV isn't Durbin-compliant, so debit is 'off-the-grid right now (opening door for pushing credit…)

- Merchants fear EMV is a 5-year diversion to get merchants to terminalize to NFC

- NFC enables proprietary plays on mobile marketing, and is easily enabled with EMV on new terminals

- Card-emulation mode looks like a bust, but its rejection is giving rise to tokenization solutions that mitigate PCI issues and might improve prospects for adoption of both EMV and NFC

Original Business Case for 2-way NFC

Relevant coupons: 1-to-1 targeting, real-time, refreshing, etc. can reduce billions of waste from $400 billion annual spend on paper and broadcast media (where only 8% of consumers collect and just 1% redeem)

Location-based services (e.g., queries on nearest brand store or restaurant, where promotional offers can be returned with info)

Customer recognition (supplying data and receiving offers and updating rewards programs) upon entering stores; data can be harvested for banking products and joint bank/merchant promotions

Products can be pitched *inside* the store, while shopping—including **competitive offers**

Shopping items can be automatically scanned/read while shopping, **facilitating self-checkout** (where payment options can be pitched)

Loyalty programs can be **integrated** and instantly updated for real-time redemptions

All this data can be used (with sufficient consumer opt-in) to better address offers, promotions, financial services needed, targeting of ads, etc.

Cloud-based Services Emerge as Mantra

What's right about them

- Flexible

- Bypass POS constraints

- Driven by merchandising proposition, not payment fees

- Designed for buyer convenience

- Lend easily to specific merchant preferences

- Can reduce risk and costs

- Leverage mobile connectivity

What's a concern

- Need proven, critical-mass providers to survive build-out headaches and risk

- Need bank/merchant support for security and privacy

- Cloud security at scale is yet unproved

- Ability to scale is in question (without some wholesale system integrators)... Amazon
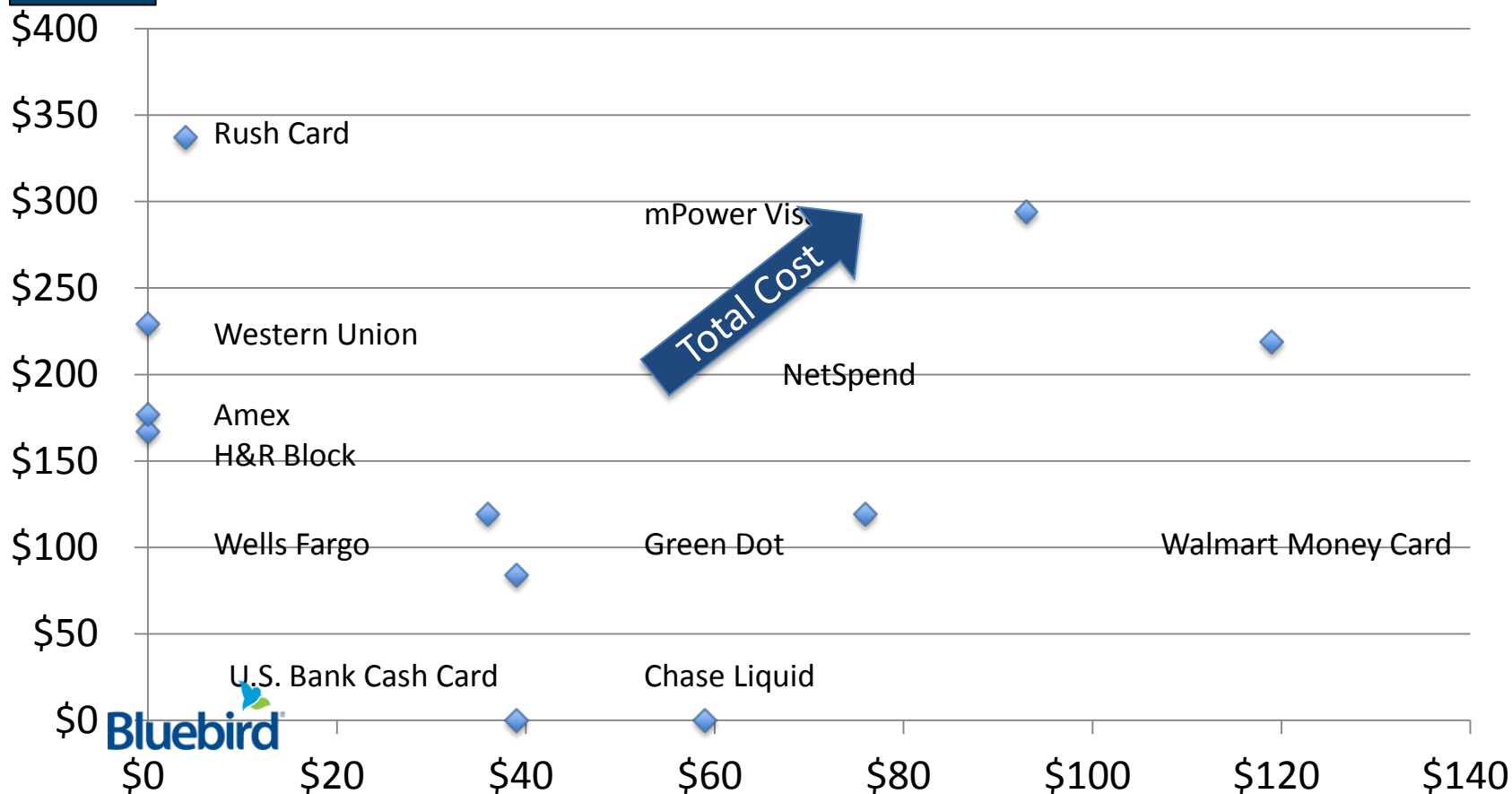
Digital Converges Payment Modes

P2P

Mobile

Digital Payments

Prepaid

Real-time Debit
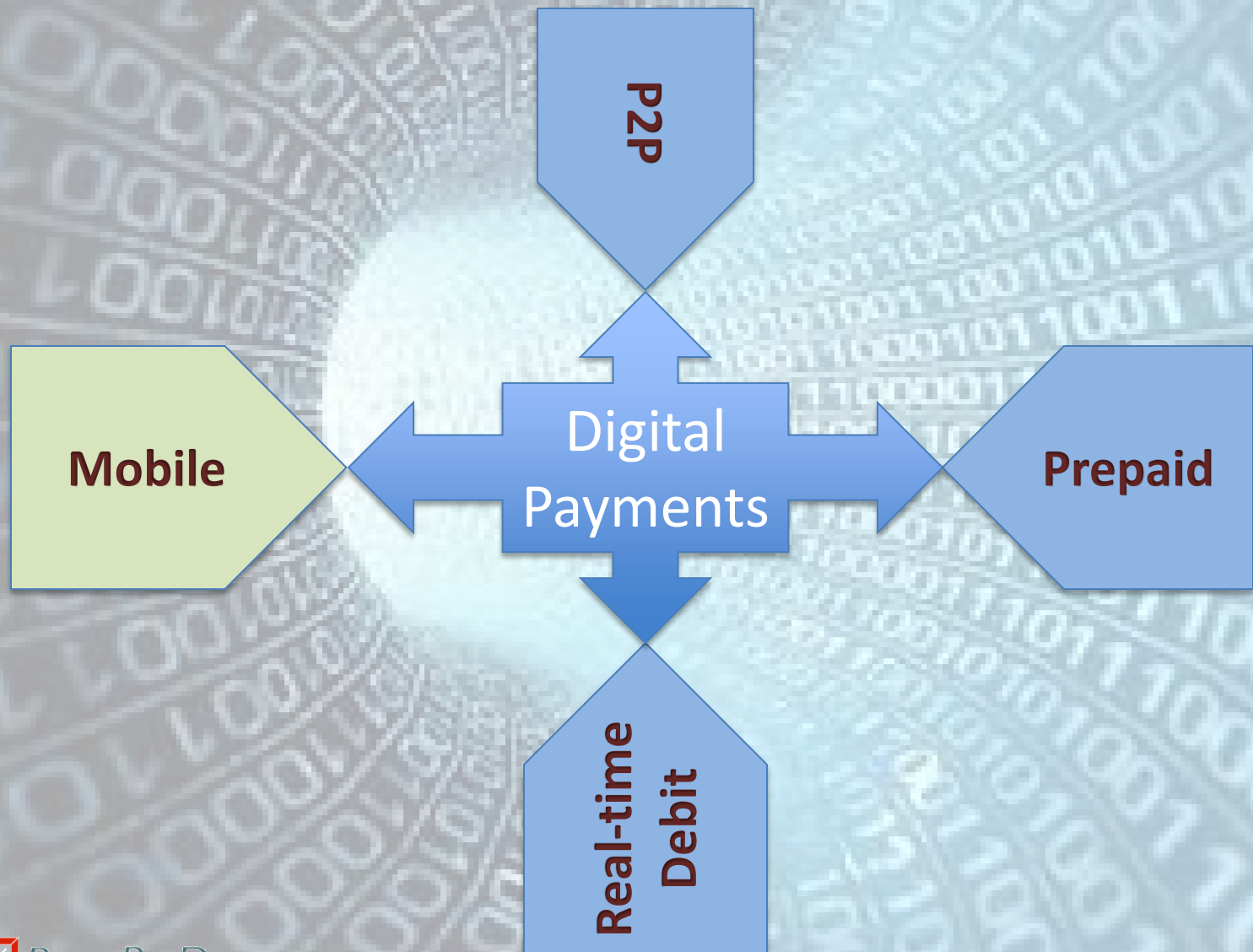
Amex Bluebird: Game Changer

Usage/ Reload Fees

Popular Prepaid Cards-Account Fees vs. Reload/Usage

Scatter plot showing Total Cost for popular prepaid cards, with y-axis "Usage/Reload Fees" ranging from $0 to $400 and x-axis "Account Fees" ranging from $0 to $140.

Data points labeled:
- Rush Card (~$4, $335)
- mPower Visa (~$95, $293)
- Western Union ($0, $230)
- NetSpend (~$118, $220)
- Amex ($0, $178)
- H&R Block ($0, $165)
- Wells Fargo (~$37, $119)
- Green Dot (~$76, $119)
- Walmart Money Card
- ($37, $83)
- U.S. Bank Cash Card (~$40, $0)
- Chase Liquid (~$60, $0)

Account Fees

Bluebird

10

Business Case: Optimize Marketing Costs

Estimated Annual Costs to Merchants for Payments and Marketing ($B)

Potential Reduction/ Reallocation of costs: $100-$200 B

Payments

Marketing

Legend:
- Acquiring Revenue
- Issuing Revenue
- Commerce Platforms
- Data/Loyalty
- Advertising
- Marketing/Promos

Total Purchase Revenue
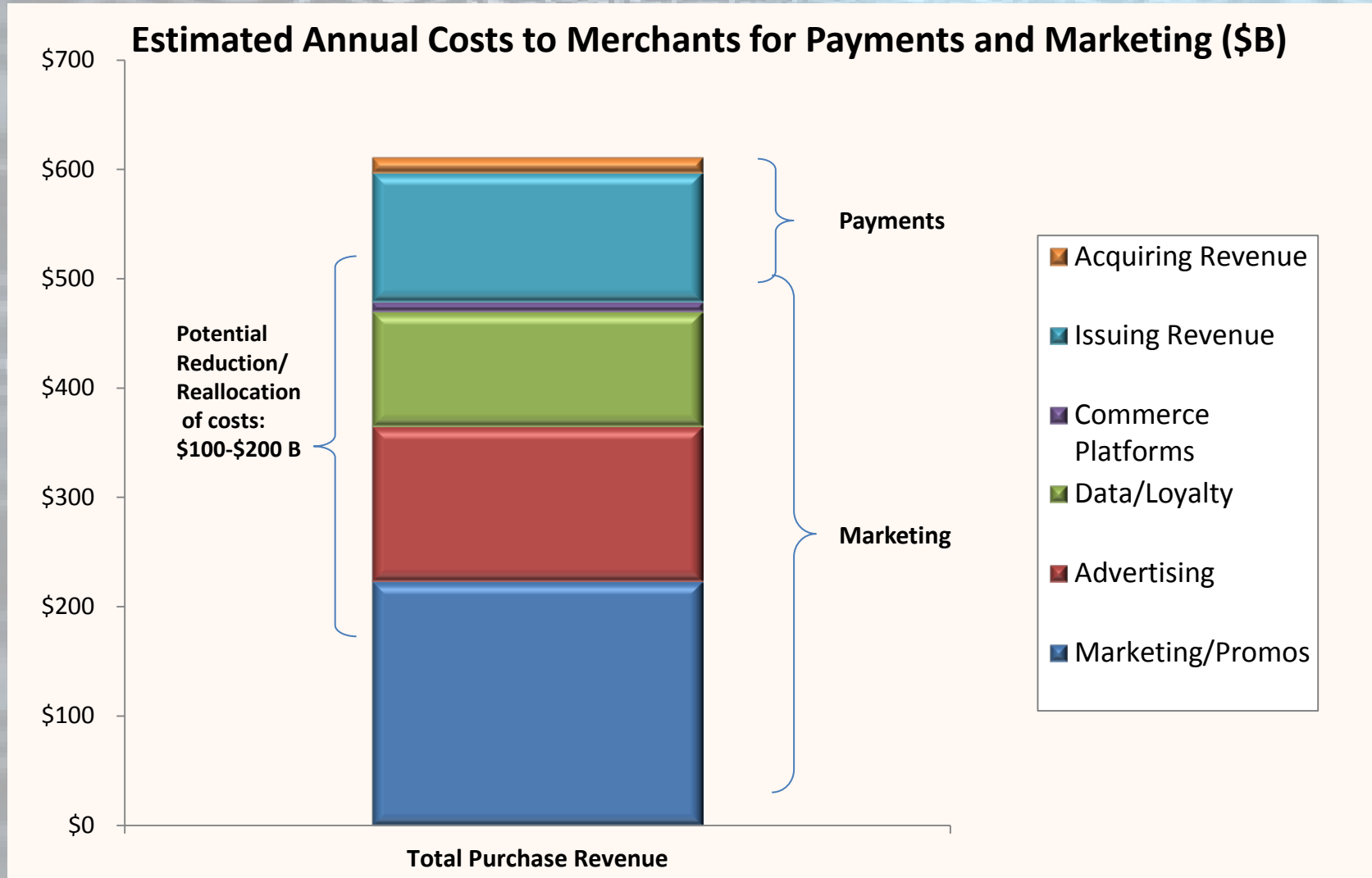
Consumer Opt-in for Sharing SKUs a Must for Mobile/Digital Marketing to Take Hold for Merchants

LOCATION/AFFILIATION MARKETING

Handset provision of consumer data for promotions based on geodata/LBS; wallet composition— payment + loyalty + convenience; affinity re-selling

REFERRAL MARKETING

Product references and referrals via social media (with bounties and referral commissions); brand and experience testimonials

Real-time product promotions

Location-aware interactions

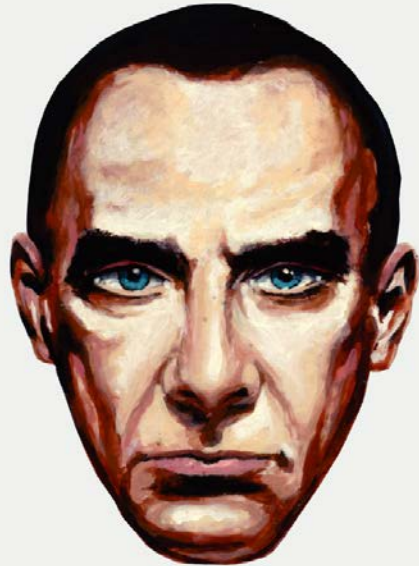3rd party, 1-to-1 placement

Dynamic pricing

COUPON AND DISCOUNT OFFERS

Product and service coupons and discount offers (e.g., pre-, during, post-shop) competitive product promotions;

PARTNERSHIP MARKETING

Response to mobile marketing and advertising among product partners; selected channel placements and promotions
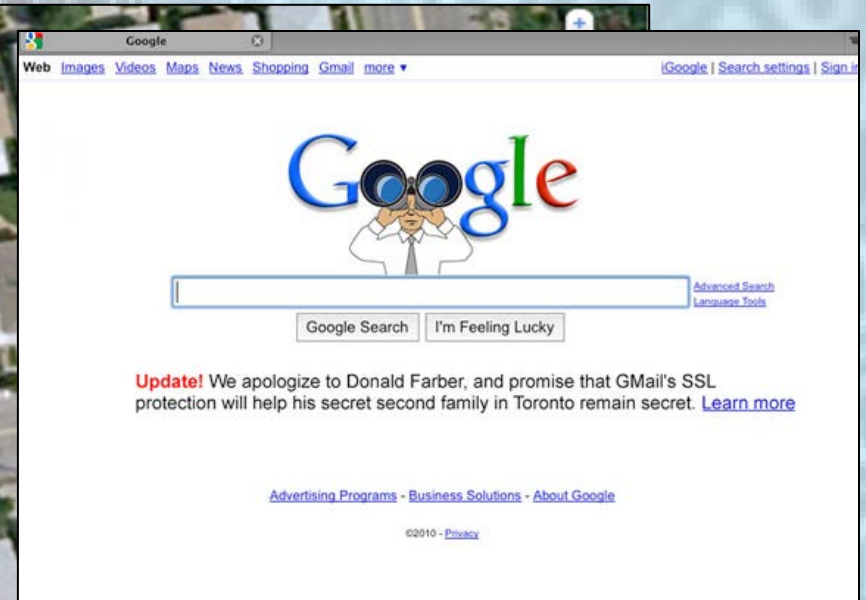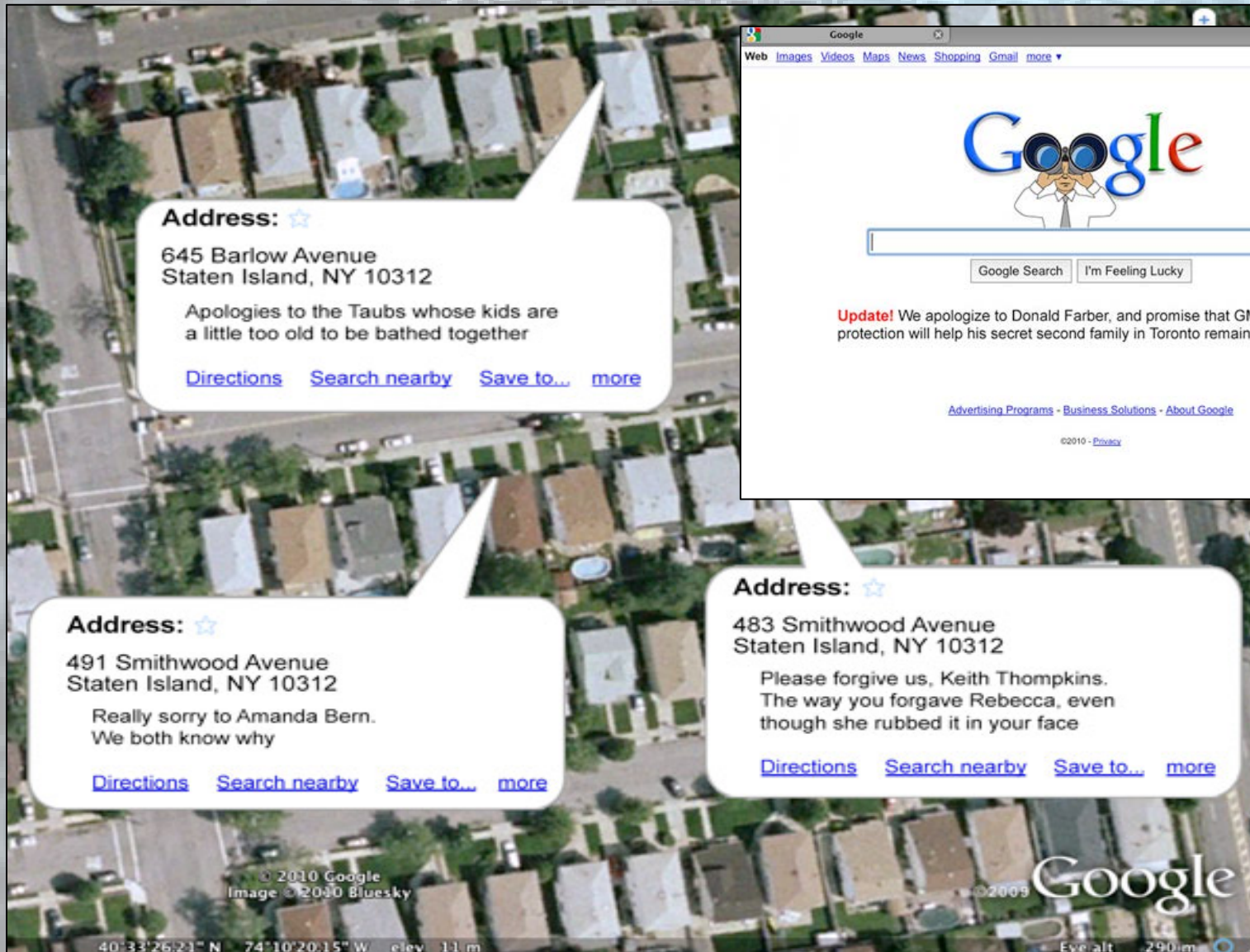
Ownership and Use of Big Data/Privacy Protection Drive the Agenda Now

Privacy: An Opportunity or Trap?

Steve Mott's Contact Coordinates
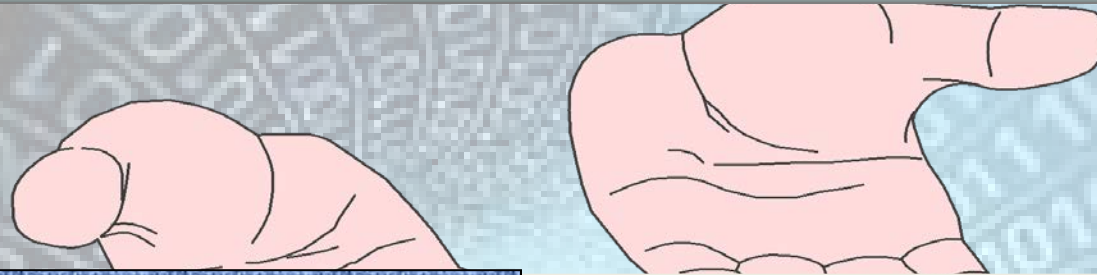
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Fostering Standards: Business Case Drivers & Alternative Paths

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Chicago Payments Symposium
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Disclaimer

The opinions expressed are those of the individual presenter & not those of the Federal Reserve System or any Federal Reserve Bank

Why Payment Standards Matter

- Technical standards help promote:
  - —Efficiency
  - —Accessibility
  - —Interoperability among providers & countries
  - —Lower total costs
  - —Reduced risk
  - —Level playing field

Payment Standards Development Organizations (SDOs)

- Proprietary, closed SDOs

- Open, consensus SDOs

4

Relationship of International & U.S. Open, Consensus Standards

ISO — International Organization for Standardization ——————— ANSI (ANSI Accredited Standards Developer)

Technical Committee 68 - TC68 ——————— X9

Subcommittee 2 – SC2 Security ——————— **X9F – Data & Information Security**

Subcommittee 4 – SC4 Securities ——————— **X9D - Securities**

Subcommittee 7 – SC7 Core Banking

ISO 20022 ——————— **X9AB - Payments**

Technical Committee 154 ——————— ASC X12 (The Accredited Standards Committee)

X12F – Finance

X9's Technical Subcommittees

X9AB: Payments

- CHECKS
- CARDS
- MOBILE
- EBT
- LEI
- RETAIL

X9C: Corporate Payments

- BTRS
- REMITTANCE GLOSSARY
- REMITTANCE STANDARDS INVENTORY
- SIMPLIFIED DEDUCTION CODES

X9D: Securities

- CODES
- MESSAGES
- CUSIP
- AUTOMATED TRADING

X9F: Data & Information Security

- CRYPTOGRAPHY
- CLOUD SECURITY
- CARDHOLDER AUTHENTICATION
- INTEGRATED CHIPS
- SECURE INTERNET AUTHENTICATION

Payment Standards Initiatives

1) Complete development of ISO standard for mobile banking & payments (ISO 12812)
2) Advance implementation of EMV chip cards in U.S.
3) Agree on U.S. approach to adopting ISO 20022 payment message standards
4) Develop new ISO 20022 message standards to support U.S. industry needs, e.g., standalone remittance advice
5) Develop new security standards consistent with technology advances, e.g., biometric, cloud
6) Promote B2B standards that foster straight-through processing

How Standards Solve Problems

THE PROCESS

1) Identify gap or need
2) Create new work item
3) Engage stakeholders
4) Collaborate to develop technical specifications
5) Obtain approval
6) Encourage adoption

- Potential areas in which standards can play enabling roles in the future:
  - Improve B2B straight-through processing
  - Strengthen payment system security
  - Promote ubiquity of mobile payments
  - Improve interoperability of payments globally

APPENDIX

Key Differences in Standards

Categories of Standards	Examples
Mandatory: Usually tied to a law or regulation; sometimes a proprietary standard. Nonconformance may lead to financial or other penalties. Often used to address important societal issues.	Processes required to support Regs CC, E, II; PCI Council standards
Consensus, Voluntary: Typically developed by organizations "certified" by quasi-government body; voluntary in theory but widely adopted in practice for benefits gained, e.g., efficiency, interchangeability, ease of production, & security.	Standards developed by X9, X12 & ISO
Proprietary vs. Open: Proprietary standards are developed by a limited number of participants with direct interest in outcome; open standards are developed in a public forum.	Proprietary: EMVco's EMV standards Open: X9
Consortia: Standards developed & available for use among member organizations to solve a specific need of the group.	RosettaNet
De facto: Developed outside official standards bodies but achieving market dominance; typically proprietary.	Fed check formats; NACHA file format

Characteristics of ANSI Standards

Voluntary	Any interested party may participate, but there may be a fee Broad base of stakeholder groups representing all interested parties
Consensus based	All comments & objections are addressed Appeal process is defined Majority vote is required but not unanimity
Open	Process is transparent; venue is neutral Standards are available to all, but there may be a fee

- New standards & periodic updates of legacy standards follow same process

- Standards cover a wide range, e.g., formats, specifications, processes, calculations, physical layouts, etc.

- Technical reports offer information, best practices, etc.

ISO 12812

- ## ISO 12812 mobile financial services standards development
  - Part 1: General Framework
  - Part 2: Security & Data Protection for Mobile Financial Services
  - Part 3: Financial Application Management
  - Part 4: Mobile Person-to-Person
  - Part 5: Person to Business Payments
  - Part 6: General Mobile Banking Operations

Fostering Standards:
Business Case Drivers and Alternative Paths

Chicago Payments Symposium

September 24, 2013

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SRPc
Secure Remote Payment Council

The remarks expressed by Mr. Tomasofsky are exclusively his own and not those of the Secure Remote Payment Council nor any of its members or non-member working group participants. These opinions are subject to change.

The Secure Remote Payment Council

- Cross-industry trade association dedicated to the growth, development and market adoption of debit based internet eCommerce and mobile channel payment methods that meet or exceed the security standards for pinned based card-present payments. It will accomplish this by encouraging and supporting those activities that accelerate the implementation, adoption and promotion of these payments.

SRPc
Secure Remote Payment Council

Agenda

- Standards only succeed when participants work at it

- Standards must be participant "Owned"

- Sometimes the participants need outside help

Standards Must be Wanted

- The majority of participants and especially the major market share participants must want the standard to succeed.

- Customers and users must be active participants and must subrogate their own interests at times.

- Participants that don't want to cooperate should be subject to consequences.

Standards Must be "Owned" by the Participants

- Intellectual property issues need resolution.
- It isn't a "standard" if only a handful of industry participants make decisions.
- "Standards" should not be competitive weapons to control markets but innovation catalysts that foster competition.
- Not everyone has an equal voice but no single participant has the only voice.
- Customers must be active participants.

Sometimes Outside Help is Needed

- If the industry participants cannot foster a true standards model then perhaps an outside participant must help out.

- Engagement and the bully pulpit are good first steps tools.

- If first steps aren't productive then other actions may be warranted.

Questions

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