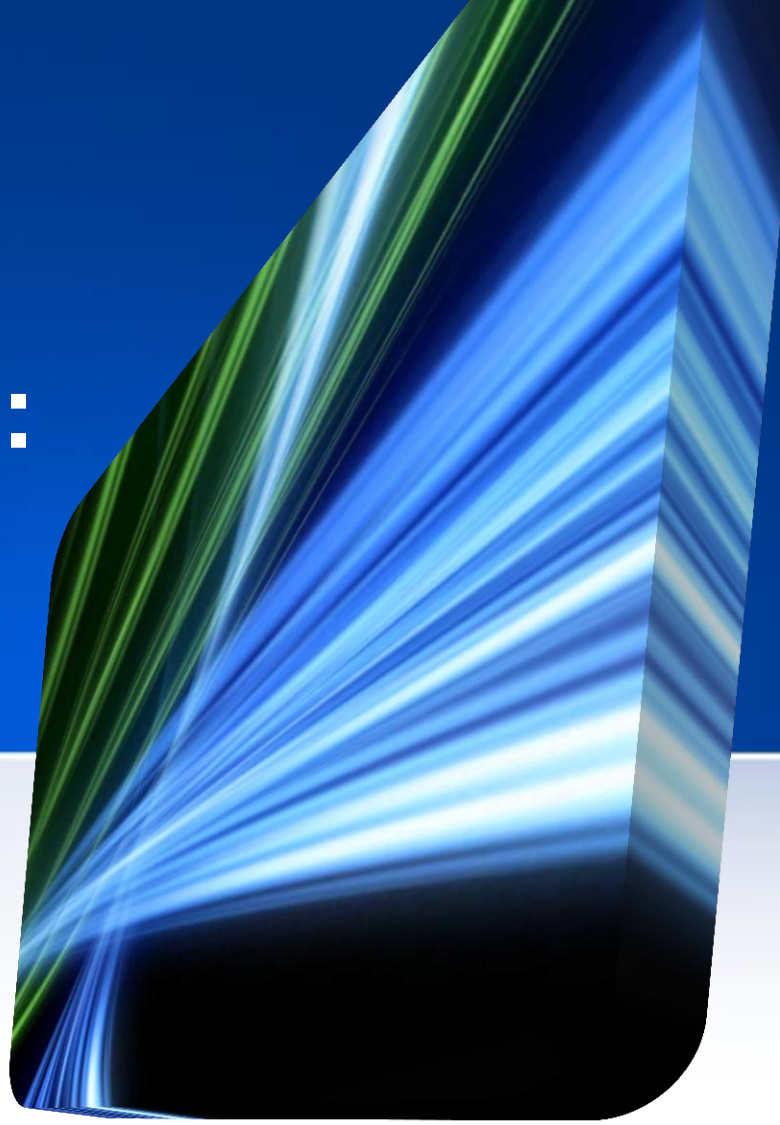
Evolving Mobile Payments Landscape: An MPIW Update



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NEACH Annual Winter Member Meeting
Burlington, MA
December 4, 2013
11 a.m. – 12 p.m.

Agenda

- Introduction
- Fed Boston Role in Mobile Payments
  - Applied Industry Research /Multi-faceted industry analysis
  - Mobile Payments Industry Workgroup
  - Mobile Payment Risk Analysis via Mobile Security Subgroup
  - International Standards Development
- MPIW and Mobile Payment Evolution/Trends
- Future Plans

Fed's Role in Payments

- System
  - To ensure integrity, accessibility and efficiency of the payment system
- Payment Strategies
  - Support development of safe, secure and open mobile/digital payment ecosystem
    - Industry analysis, research, standards development,
    - Outreach locally and nationally to banking/payments community
    - Reports and briefings related to mobile/digital payment trends

Mobile Payments Industry Workgroup (MPIW)

Traditional Payment Organizations

- Financial institutions
- Merchants
- Card networks
- Clearing/settlement organizations
- Third party processors
- Online payment providers
- Payment trade associations
- U.S. Treasury

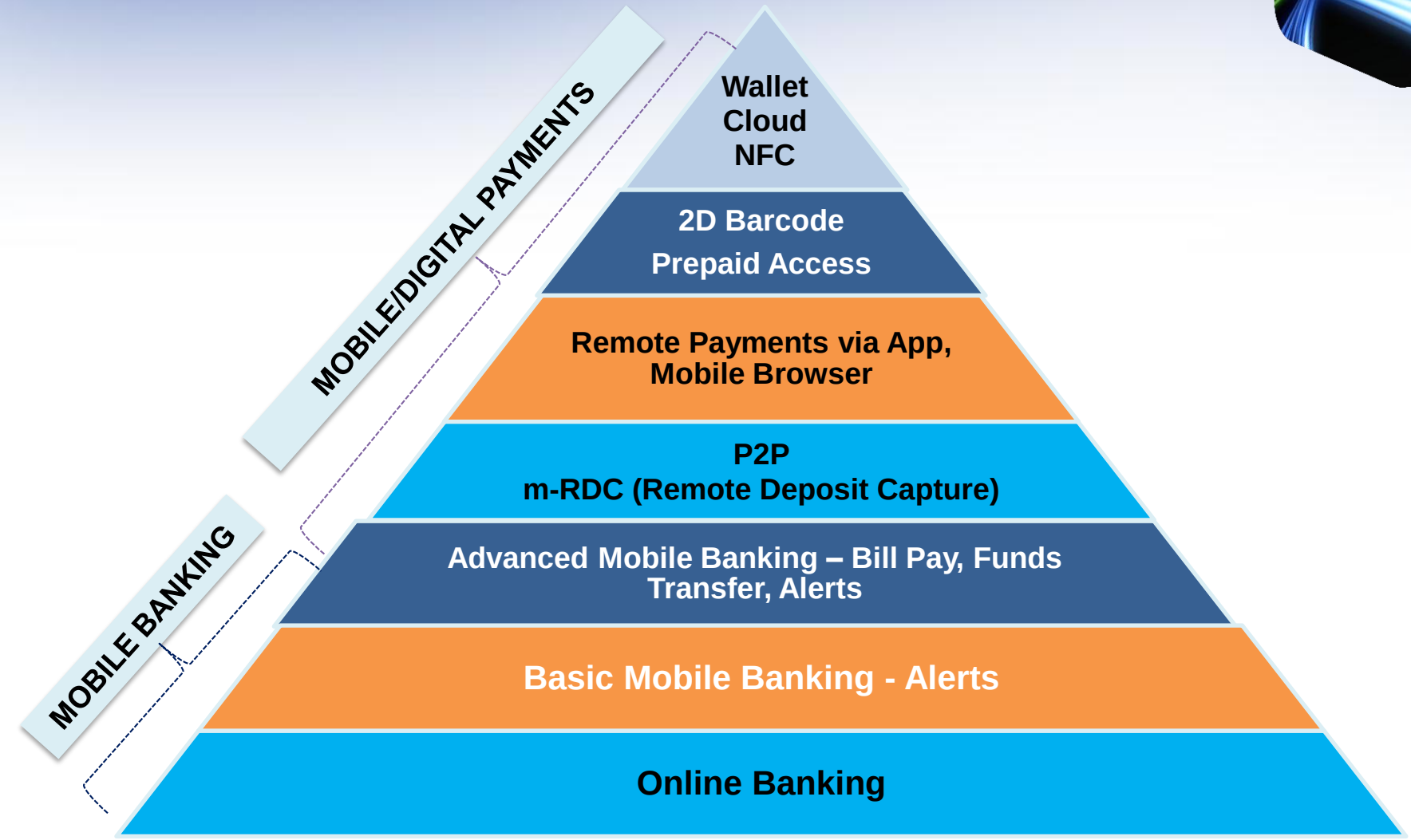
Mobile Technology Providers

- Mobile Network Operators (MNOs)
- Handset/OS manufacturers
- Chip-manufacturers
- Mobile solution providers
- Wireless trade association
- Smart Card Alliance

MPIW Chronology 2010-2013

Date	Activity
January 2010	First meeting of the MPIW in Atlanta
March 2011	Developed initial framework for successful U.S. retail mobile payment ecosystem Published *Mobile Payments in the U.S.*
April 2012	Met with federal/state regulators. Analyzed potential mobile risks to payments system and regulatory oversight gaps Published *U.S. Regulatory Landscape for Mobile Payments* (July 2012)
September 2012	Met with retailers and start-ups to understand their perspective on mobile payment opportunities and challenges. Published *Summary of Mobile Payments Industry Workgroup (MPIW) Meeting with Merchants and Mobile Payment Start-ups*
January 2013	Met with mobile security experts to learn their perspectives on key mobile payment risks and formed security sub-workgroup to analyze vulnerabilities, threats, authentication, and mitigations across use cases Published updated version of *Mobile Payments in the U.S.* Published meeting summary *The Future of Mobile Security: Understanding the Risk Environment for Mobile Payments* (October 2013)
June 2013	Met to discuss security and technical considerations with device and POS terminal providers. Published meeting summary *Technology and Security Considerations for Mobile Contactless Payments at the Point-of-Sale in the U.S.* (November 2013)
November 2013	Meet to discuss challenges to consumer adoption and strategies for achieving scale *Meeting summary available soon*

Evolution from Mobile Banking to Mobile Payments



Mobile Payments Evolution

2006-08

Remote Payments
SMS "Text to Buy" & Mobile Browser

clairmail MOBILE SOLUTIONS

mocapay PayPal

Mobile App Stores

Contactless Cards

Visa payWave

MasterCard paypass

2009-10

Mobile Browser

Proliferation of Mobile App Payments

PROPAY

First Mobile Card Acceptance

2011

QR Codes

NFC Mobile Wallet

Google wallet

Prepaid

serve

2012

Mobile Card Acceptance

Prepaid /Mobile Bank

NFC Mobile Wallet

ISIS

Cloud-based Digital Wallet

PayPal

V.me by Visa

2013

Merchant Apps

MCX MERCHANT CUSTOMER EXCHANGE

Google "Moonshots"

Gmail by Google

Handset Innovations

MPIW Identified Many Challenges

Slow consumer adoption	Multiple stakeholders	Security and privacy concerns
Limited venues for mobile payment use	Uncertain business models	Lack of interoperability and standards
Fragmentation with diverse nonbank businesses	Ownership of customer data	Lack of regulatory direction

Barriers to Adoption of Mobile Payments in the U.S.

- Strong U.S. banking & payments infrastructure
- Complex regulatory structure
- Unclear value-added services
- Perception that mobile is less secure

Dynamic, Rapidly Evolving Mobile Payments Landscape

- Fragmented U.S. mobile payments market
- Competing technologies: NFC, Cloud, QR
- Large, diverse geography & consumer demographics

The Landscape has Changed for the MPIW…

2010

- Focus was on NFC
- Focus on individual channels
- Limited non-bank involvement
- No wallet discussion really
- Early discussion of value-added services
- Not enough NFC phones/terminals
- Little active merchant involvement
- Some focus on security, but little on privacy

2013

- Now NFC, Cloud, QR Code
- Channel convergence
- Increasing role of non-banks
- Wallet developments
- Data monetization role increased (coupons, loyalty, etc.)
- Increased smartphone adoption/mobile apps explode
- Merchant involvement
- Increased focus on security and privacy
- More regulatory interest
- Impact of EMV migration

2013 Mobile Landscape Findings

- Fragmentation
- Convergence
- New Non-Bank Entrants/Multiple Stakeholders
- New Relationships/Partnerships
- Unresolved Security & Privacy Concerns
- Data Monetization
- Need for Regulatory Clarity

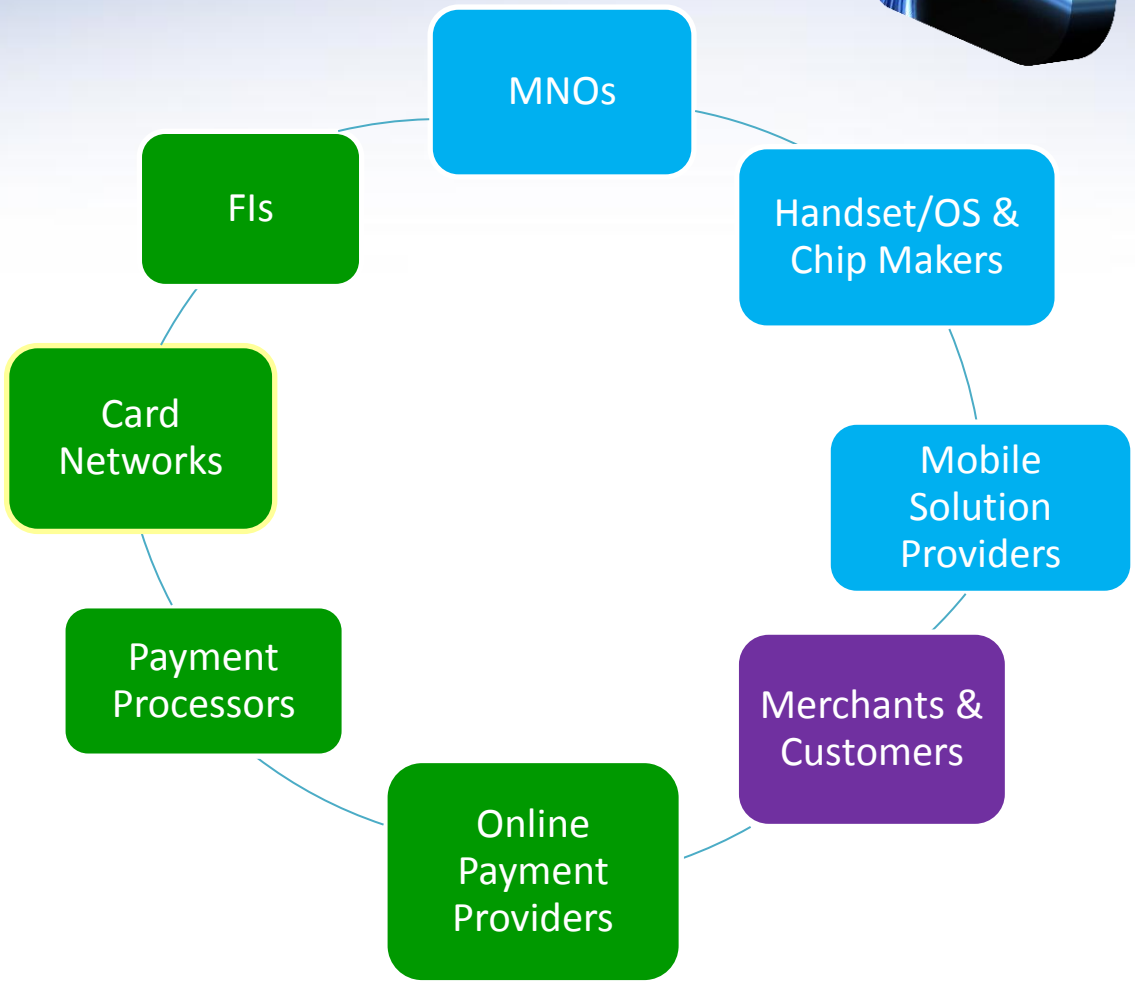
Fragmented Mobile Landscape

ISIS
PayPal
Google wallet
MasterCard
American Express
VISA
MCX Merchant Customer Exchange
Discover Network
T-Mobile
Sprint
amazonpayments
MasterCard MoneySend
Google
ROAMpay
at&t
Square
boku Pay by Mobile
netSpend
green dot
serve
LevelUp
intuit
obopay
ZONG
Acculynk
DWOLLA
clearXchange
Billeo
mazooma
Windows phone
facebook
PAYware Mobile
Accept card payments anywhere.
Bluebird
Western Union Money Transfer
Secure Vault Payments
SAFETYPAY
The Safe Internet Payment Solution
popmoney
twitpay
verizon
PayNearMe
Paydiant

Channel Convergence (The OmniChannel)

New Non-Bank Entrants/ Multiple Stakeholders

- Mobile payment vendors and other providers come from diverse backgrounds, ranging from financial services to telecom and IT solutions
- Success requires traditional payment system and mobile industry/non-bank cooperation and collaboration for standards, security requirements, customer service and support, use of consumer data, etc.



Non-Banks - Merchants Role

- Over 7M merchants in U.S.
- 1.1M retail; 750,000 food, lodging and entertainment

- 7 of top 14 US merchants; 19 of top 100 MCX MERCHANT CUSTOMER EXCHANGE
- 40+ U.S. merchants
- Barcode, cloud-based mobile app to pay at participating retail/grocery stores, restaurants, gas stations
- ACH network?
- Merchant deals, loyalty programs

7-ELEVEN · Michaels · CVS/pharmacy · Shell · SUNOCO · BEST BUY · LOWE'S · GAP · ALON · Publix · SOUTHWEST AIRLINES · sears · DUNKIN' DONUTS · Target · Walmart

New Relationships/Partnerships

- Mobile Device = Dynamic Marketplace
- American Express is pushing "one-tweet shopping" through a recent partnership with Twitter
- Level Up + NCR + Heartland Payments
- Square + Starbucks / Square + Intuit
- ARM + Gemalto + G&D = Trustonic
- Boku + U.S. Cellular
- Xoom + Vesta
- Google + Verifone

Partnerships Provide The “Muscle” In The Mobile Payments War

Unresolved Security & Privacy Issues

- Mobile ecosystem progress hinges on trust and transparency
- Payments data is exposed in new and complex ways creating new opportunities for compromise
- Data monetization heightens privacy risks
- Use of Location-Based Services
- Malicious Mobile Apps

Data Monetization

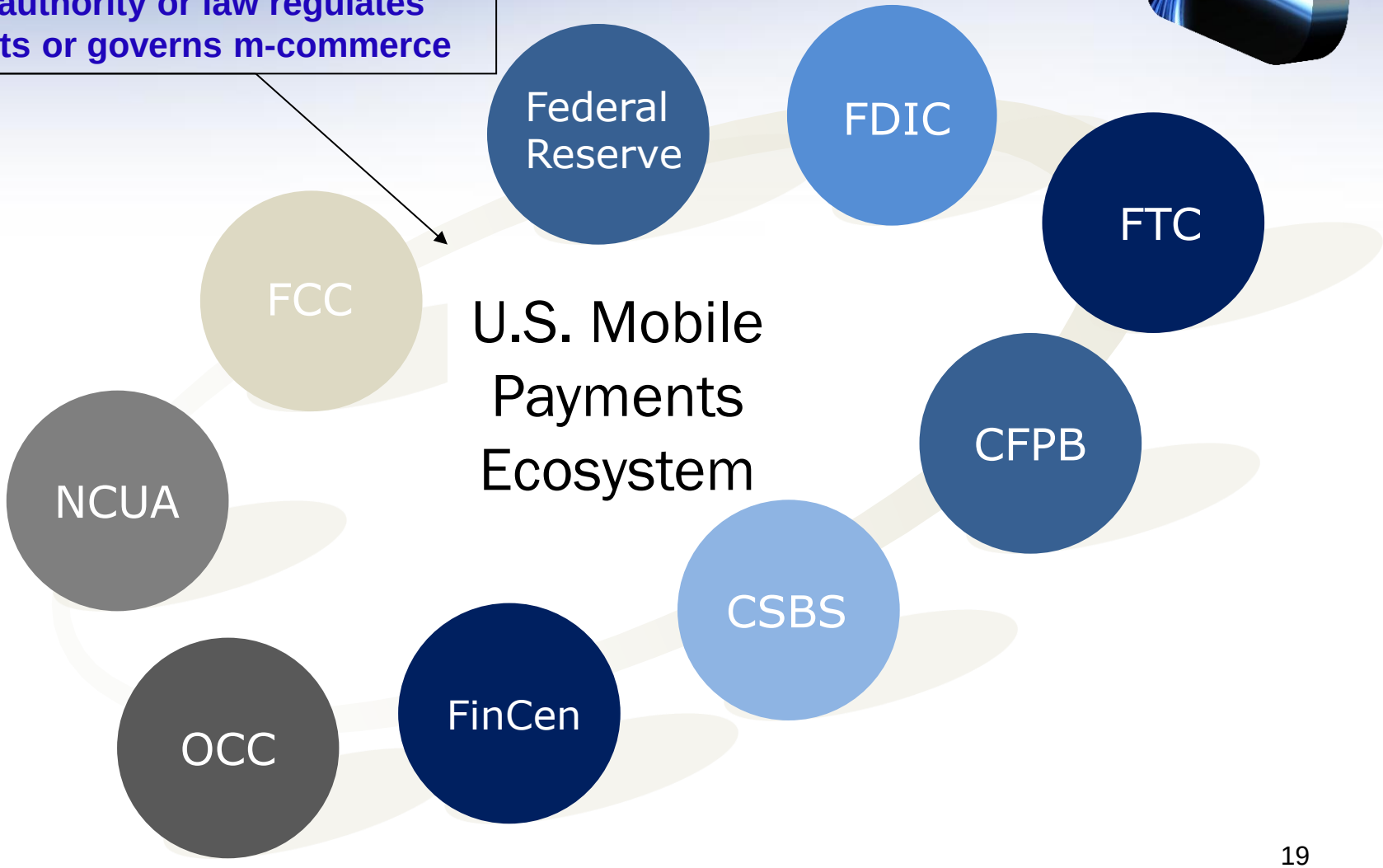
- Who owns the customer…better yet, who owns the customer's data?
- As more people use their mobile phones to make payments, transaction programs will become a central part of big data collection.
- Merchants can track bill payment habits, credit records, transaction history and more by allowing customers to use apps to complete transactions.

It's not about the payment…

IT'S ALL ABOUT THE DATA!

Complex U.S. Regulatory System

No one authority or law regulates payments or governs m-commerce



Updated Principles for Successful Mobile Payments Implementation

- Fundamentally the original principles established by MPIW still hold true
- New principles address significant changes to mobile payments industry in last 3 years and reflect current mobile ecosystem
  - New participants, technologies, and services
  - Learning what works and what does not
  - Influence of merchants on cost structure of mobile payments
  - Gaining better understanding of consumer demands, security requirements, and risks associated with nonbanks
  - Recognition that transparent value-added services help motivate consumer adoption of mobile payments

Updated Strategic Principles

- Technology platform expanded to support convergence across multiple platforms including NFC and cloud-based mobile payments.
- Open mobile wallet concept expanded to include both mobile and digital wallets.
- Establish a ubiquitous platform for mobile payments that uses existing clearing and settlement channel and rails but allow for new rails.
- Mobile Security – Dynamic data authentication (DDA) to secure NFC-enabled card-based mobile transactions; and security such as tokenization for cloud-based mobile payments.

Convergence of Mobile Payment Platforms

	NFC	QR Codes	Cloud
Issuance	• Secure Element to store payment credentials • TSM to manage provisioning	• Cloud-based mobile app	• Cloud-based mobile app • Payment credentials stored or accessed (tokenization) in cloud
Consumer Device Capabilities	• 9 of top 10 OEMs support NFC • 2-way wireless communication	• Only requires data connection • Not device dependent	• Only requires data connection • Not device dependent
Acceptance	• Standards based • Acceptance growing in developed countries • EMV may lead to further adoption	• Fragmented; many solutions • No standards • Security concerns • Requires fast wireless connection	• Fragmented • No standards • New customer experience • Security concerns • Requires fast wireless connection

Updated Strategic Principles

- Understand the roles and associated risks of nonbanks in the mobile payments ecosystem.

- Neutral Trusted Service Managers (TSMs) should oversee the provision of shared security elements in an NFC mobile phone solution.

- Develop and adopt globally interoperable U.S. standards for efficient and secure use of mobile device and mobile payment transaction; and a certification process for mobile payment methods and applications. Standards should be platform-agnostic and leverage existing standards where possible.

- Continued regulatory clarity that also addresses non-banks and data privacy.

Open Mobile/Digital Wallet

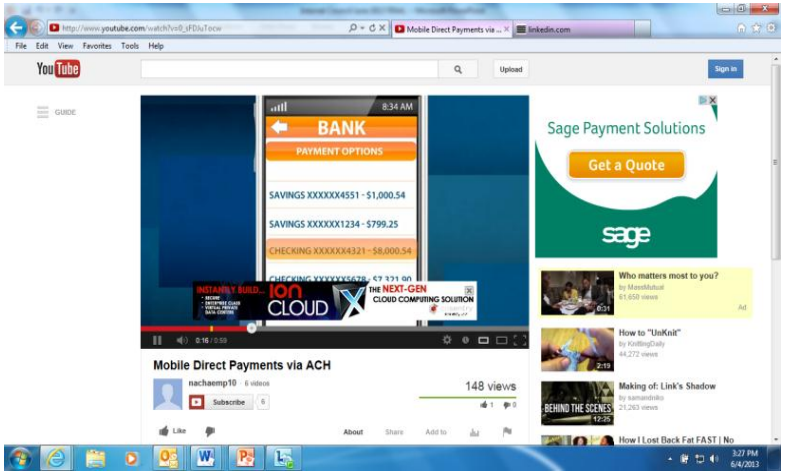
- Wallets should be open and ubiquitous, work on most mobile phones, operating systems and payment networks, be accepted at most merchants across multiple platforms, and allow funding by traditional payment methods
  - Early mobile wallet implementations and adoption disappointing
  - Too many technology choices confusing consumers
  - Most mobile wallets incentivizing consumers with merchant deals and loyalty programs
  - Banks slow to embrace wallet partnerships, fearing loss of customer ownership and competition with merchants and other nonbanks

Opportunities for ACH?

- P2P Considerations
- Merchants looking for low-cost solutions
- Other?

SecureVault™ PAYMENTS

DWOLLA



ACH Is Next Frontier for Mobile Phones
by Daniel Wolfe, *American Banker*
APR 8, 2010

Global Interoperable Standards Platform

- U.S. standards and industry certification need to ensure global interoperability, security, and efficiency of mobile device, payment process, and technology
- NFC and secure element follow established guidelines endorsed by ISO and NFC industry groups (e.g., Smart Card Alliance, NFC Forum, GSMA, and Mobey Forum)
- U.S. mobile contactless payments employing chip security and NFC technology are based on ISO 14443
- ANSI X9 Mirror Group working with ISO to develop broader mobile payment technical standard (ISO 12812)
- No standards for cloud and QR code mobile payments
- Current efforts are fragmented and need coordination to identify gaps and potential changes

Need for Regulatory Clarity & Coordination

- Multiple agencies govern mobile commerce/payments
  - FRS, FDIC, OCC, NCUA and CFPB
  - FCC oversees mobile carrier standards and competition
  - FTC looks at consumer protection & identity fraud more broadly
- Regulations and laws applicable to underlying payment methods (credit, debit, prepaid, ACH) govern mobile payments
- Mobile carriers and alternative payment providers are less familiar with banking laws for consumer protection and privacy, KYC, BSA/data security, money transmission, risk compliance
- U.S. regulations are fragmented with different consumer protections, disclosure requirements, and error resolution provisions

Industry Perspective on Mobile Regulation

- MPIW met with bank regulators, FTC & FCC in April 2012 (and we plan to meet again in 2014)
- Key concerns – consumer protection, privacy, and data security
- Consumer ‘awareness before engagement’
- Important for nonbanks offering mobile services to understand how to protect consumers, but for now banks still liable
- General consensus – still too soon to regulate
- Focus on education and communication between industry and agencies
- Industry stakeholders want to be involved when need for mobile regulation arises

Focus on Mobile Security via Mobile Security Subgroup

- **Objectives**
  - Document and evaluate security options in the end-to-end mobile payments ecosystem
- **Use Case Development**
  - For proximity and/or remote mobile payments
  - NFC, Cloud, QR Code, Hybrid Models
- **Deliverables**
  - Documentation of use cases, with evaluation of risks and recommended actions
  - Actions may include mitigating actions by those in the ecosystem, awareness, risk acceptance, or referral to appropriate bodies to take action

Standards – X9/ISO 12812
Core Banking - Mobile Financial Services

ISO Structure - Technical Committee (TC) 68 - Financial Services

- Covers standards for banking, securities & other financial services
- Subcommittee SC7 Core Banking: WG10 and ANSI X9AB Mirror Group

ISO 12812 Goals:

- Build international vision based on common terminology and basic principles for the design and operation of MFS
- Define components and interfaces, and roles necessary to operate MFS for identified use cases
- Identify existing standards on which MFS should be based, and possible gaps

MFS standardization would enable:

- Interoperability between different components
- Consumer choice among devices or services and ability for multiple FIs on same device
- Consumer portability between devices
- Secure environment

ISO 12812 Standard

Part 1: General Framework

Part 2: Security and Data Protection for Mobile Financial Services

Part 3: Financial Application Management

Part 4: Mobile Person-to-Person

Part 5: Person to Business Payments

ISO 12812 - Current Status

- Editors are developing revised drafts now under review by the Mirror Group between now and January
- WG is recommending to SC7 that all parts be submitted to a CD ballot regardless of the success/failure of the previous CD ballot
- All five parts will be balloted simultaneously (Part 6 will be dropped, relevant content will be re-directed/incorporated to other parts)
- Assumption that all parts will be produced as International Standards as originally planned

12812 Next Steps

- Conference calls will be held between the delivery of the committee drafts and the preparation of CD ballot to discuss any comments that may arise within the WG
- Potential in-person meeting in January to conduct final review before the parts are subjected to a CD ballot
- Provide CD drafts for balloting on or before February 15, 2014
- CD ballots completed by May 15, 2014
- DIS drafts completed by September 15, 2014

Next Steps for Payment Strategies & MPIW

- **Identify Future Goals of MPIW**
  - Long-term vision and 3-year plan
    - Re-assess mobile direction, business models, risks, and expectations for consumer adoption
    - Continue to Educate, Build Awareness and Monitor Trends
    - Continued Analysis
    - Industry Guidelines/Recommendations
- **MPIW Security Workgroup**
  - Ongoing work to define security issues across various use cases – NFC, cloud, QR code – identify threats, vulnerabilities, mitigations
  - Develop guidelines and recommendations to secure mobile payments and educate users
- **Standards Development (via X9/ISO)**
- **Research on the Un/Underbanked**

Questions

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