Michigan Credit Union League & Affiliates
Annual Convention and Exposition
Helping Credit Unions Serve, Grow and Remain Strong   *#mculace*

The Future of Payment Services
A Regulators Perspective

June 5, 2014 | 9:00 a.m. – 10:15 a.m.

Presented by: Jerald Garner

MCUL
MICHIGAN CREDIT UNION LEAGUE & AFFILIATES

Unite for **Good**

www.mcul.org   **www.uniteforgood.org**

Jerald L Garner, NFS

Future of Payment Services

2014 AC&E

June 5

Speaker Info

➢ Certified Information Systems Auditor (CISA)

➢ Certified Information Systems Security Professional (CISSP)

➢ Business Continuity Planner (BCP)

➢ International Standard Organization (ISO) 27001 Lead Auditor ISMS

➢ Certified in Risk and Information Systems Control (CRISC)

➢ 25 plus years Information Security/Technology background

3

➢ This presentation is for information sharing purposes only. All contents of this presentation are based on my independent research efforts and years of experience. Mention of trade names or commercial products does not constitute endorsement or recommendation of use by NCUA. The existence of hyperlinks does not constitute endorsement by NCUA or of these Web sites or documents or of the information contained therein. Interested parties should do their own research, and the list of references may provide a starting point. Additionally, participants of this presentation assume the risk of use or reliance on such information.

*Disclaimer

Overview

4

Overview

- Mobile Payments
  - ✓ The Market
    - ❖ Characteristics
    - ❖ Consumer Usage
  - ✓ Devices
    - ❖ Driving Forces and Trends
  - ✓ Payment Solutions
    - ❖ ISIS, MCX
    - ❖ Paydiant & Others

- Social Media
- EMV
- Digital Currency
- Managing Risk
- Concerns
- Recommendations

The Market   5

Mobile Payments

6

The Market

➤ **Characteristics**

✓ More than 87 percent of the U.S. population has a mobile phone.

✓ More than half of those mobile phones are smartphones.

<div align="right">Source: FDIC Supervisory Insights – Winter 2012: Mobile Payments An Evolving Landscape</div>

The Consumer   7

The Consumer

➤ **Usage**

✓ Consumers spent over $20 billion using a mobile browser or application during 2012.

✓ This number is likely to grow as smartphone ownership increases and mobile payments platforms become more widespread.

✓ At least six Near Field Communication (NFC) -equipped cell phones are for sale in the United States.

<div align="right">Source: FDIC Supervisory Insights – Winter 2012: Mobile Payments An Evolving Landscape</div>

✓ Starbucks - Mobile and gift card payments now represent more than 30 percent of total U.S. payments

❖ About 10 million customers - pay through the mobile app, with nearly 5 million mobile payments per week.

CEO Howard Schultz

Forces & Trends   8

Forces and Trends

- **Financial services**
  - ✓ Internet accessible
  - ✓ Mobile device capable
  - ✓ Requires data encryption in transit and storage
  - ✓ Demands continuity of operations procedures
- **Payment System and other compromises**
  - ✓ Target (Pro EMV), Michaels, & Nieman Marcus (Con EMV)
  - ✓ Nexus-Lexis

Conditioning   9

Conditioning

- **Wal-Mart, Best Buy, Target and Old Navy**
  - ✓ Already Implemented EMV terminals
  - ✓ VeriFone systems (POS)

Influencers   10

The Influencers

Systems	Smartphone	Tablets	Operating Systems (OS)	Cloud Services
Apple	iPhone	iPad	iOS	iCloud
Google	Android Razor, multiplatform	Android Tablets Multiplatform	Android	Google Cloud
Microsoft	Windows Phone	Flip Tablet	Windows 8	SkyDrive
Amazon	Amazon Wireless	Kindle Fire	Android	WebServices

Media Outlet	FaceBook	Google+
Active Users	1.11 Billion	343 Million

Stats

11

Mobile Device OS's

Players

12

6

The Players

mPayment Solution	Status	FOCUS	Events/Comments
ISIS	Pilot - 2013 Go Live - 2014	Consumer Experience	Near-Field-Communications (NFC) Device holds credentials Secure Element
Paydiant	Production and Pilots	Transparent Solution Retailer and consumers	Designed for retailers, banks and processors Quick launch mobile payments solution
MCX	Development	Consumer Experience Quality	2D/QR Code and Credentials (Cloud based)
Digital Currency	BitCoin (BTC) - Open Source	Reduce Transaction Fee's Convenience	Worldwide Recognition/Acceptance Tracking/Monitoring (BSA/OFAC) Ownership/Structure
Social Media (SM)	Experimental	Maximize member base	Six in ten Americans have a SM profile 80% + of US Businesses utilize SM

Solutions   13

Many Solutions

➢ **Mobile Payment**

✓ eWallet (Digital)

❖ Digital

- o ISIS
- o MCX
- o Paydiant
- o PayPal
- o StarBucks
- o Apple Passbook
- o Lemon Wallet

✓ Digital Currency

❖ BitCoin

- o WalletBit
- o BitPay
- o BTC wallet (offline)

❖ Dwolla

❖ Ripple

Process Risk   14

Payment Solutions

➢ **ISIS mobile wallet**
- ✓ Carrier-backed
  - ❖ Verizon
  - ❖ AT&T
  - ❖ T-Mobile
- ✓ Partnering with Wells Fargo
- ✓ Technology
  - ❖ Near field communication (NFC) supported Phones
    - o Credit card loaded into the mobile wallet app
      - • Used by tapping to pay at NFC-enabled point-of-sale (POS) terminal

ISIS   15

MCX

➢ **Merchant Customer Exchange (MCX)**
- ✓ Cloud (Big Data) and barcode-based platform from Gemalto
- ✓ US-based FIS will provide payment processing, routing and settlement for mobile commerce transactions
- ✓ User enrolls and downloads/accepts App

Paydiant   16

Paydiant

➢ **Open, smartphone-based, contactless mobile payment platform that works with the existing infrastructure of mobile, point-of-sale, and cash access technology.**

✓ **FI can launch its own mobile payments app quickly.**

✓ **It is a software-as-a-service (SAAS)**

✓ **Brand and deploy as a new mobile wallet in an existing mobile banking app.**

✓ **The need for intermediaries is eliminated**

Point of Sale (POS)   17

Mobile Payment at the POS

Read-only NFC
Phone or sticker touch at POS to send customer payment information
One tag always transmits the same message

Read-write NFC
Phone or smart-card touch at POS to send customer information and receive merchant information/offers

QR-code
Customer generates or receives QR-code on phone and scans phone into QR reader
Code may contain different information each time

mPOS
Merchant's phone or tablet (with additional peripherals) swipes customer's card or reads through direct NFC or Bluetooth

Apps in terminal
Terminal software upgrade allows customer to pay at a terminal using a unique identifier (e.g., phone number + PIN)

In-person e-commerce
Merchant recognizes customer (with geo-locating), and merchant completes transaction "in the cloud" while authentication and inventory-check occur in person

SMS
Any two phones with SMS send value directly to each other

Self-checkout
Customer "scans" items themselves throughout location, and completes transaction on phone "in the cloud"

McKinsey Payments Practice

BLE vs NFC   18

Bluetooth Low Energy (BLE) VS NFC

BLE-enabled smartphones listen for signals from wireless transmitters (BLE Beacons) the size of large match boxes.
BLE Beacons continually transmit a discovery signal to be received by BLE-enabled smartphones.
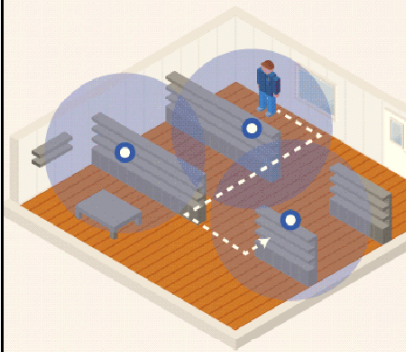
NFC-enabled smartphones communicate with wireless transmitters (NFC Tags) the size of postage stamps.
NFC Tags only communicate when close to an NFC-enabled smartphone.
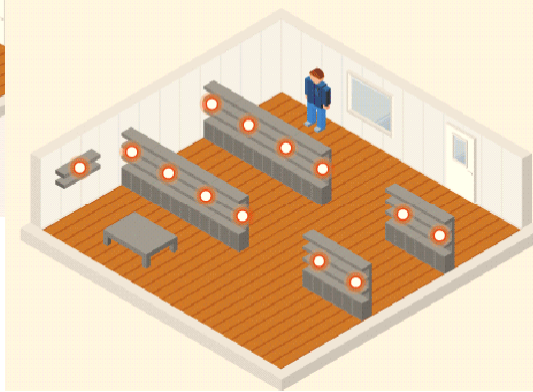
19

BLE vs NFC Continued

Wireless transmitter's (BLE Beacons) coverage radius varies according to signal strength. Measured in Feet.

Wireless transmitter's (NFC Tags) coverage radius is very small. Measured in centimeters.

BLE vs NFC

20

BLE and NFC Devices

Supported Smartphones: iOS, Android, Windows Phone 8 and Blackberry.

Supported Operating Systems: iOS7 (via iBeacon), Android 4.3 and greater.

BLE Beacons based on technology dating back to 2006.

Supported Smartphones: Android, Windows Phone 8 and Blackberry.

Supported Operating Systems: Android 4.0 and greater, Windows Phone 8 and Blackberry X.

Based upon RFID technology dating back to the 1940's

Process Risk 21

Process Risk

➤ **Which payment method**
  ✓ Enrollment focused
    ❖ Quick Response (QR) (2D) Bar Code and cloud
    ❖ Consumer data stored in cloud
    ❖ Device any smartphone
    ❖ Security in Cloud
    ❖ Counterfeit QR Code

Risks - mobile focused 22

Risk Continued

- ✓ Mobile Device focused
  - ❖ Smartphone center of process (NFC/Secure Element)
  - ❖ Consumer places credit card credentials in device
  - ❖ Device smartphone with NFC or Bluetooth capability
  - ❖ Mobile Device Security
    - o Theft
  - ❖ Credentials Theft

Social Media

23

Social Media

24

Social Media Driving Forces/Trends

➢ **User Activity**

  ✓ Personal Publishing

  ✓ Open Collaboration

  ✓ Future Payment channel

  ✓ Security

➢ **Active Users of Social Media**

  ✓ Six in ten Americans have a Social Media profile

  ✓ 55+ Demographic is the fastest growing on social media (Edison Research)

Risk   25

Social Media Risk

➢ **Defined**

  ✓ The likelihood that a negative social media event will happen (multiplied by) The impact that negative event will have if it does happen.

➢ **Risks**

                                                        Altimeter Group

  ✓ Damage to Brand

  ✓ Release of confidential information

  ✓ Legal, regulatory and compliance violations'

  ✓ Identify theft or hijacking

http://nx.gt/1eB4Wzq

EMV/Chip & Pin   26

EMV/Chip and Pin

Drivers   27

Drivers

- ➢ **Technology**
  - ✓ Chip technology
  - ✓ Two Factor Authentication
- ➢ **Worldwide Adoption**
  - ✓ Except US
- ➢ **Target Compromise**
  - ✓ EMV reduces 80% of fraud

Digital Currency   28

Digital Currency

Digital Currency

- ➢ **BitCoin**
  - ✓ Source
    - ❖ Internet – online
    - ❖ Peer-to-Peer network
    - ❖ Database - http://blockchain.info/
  - ✓ Exchanges
    - ❖ Two Major
    - ❖ Many sellers - http://bitcoincharts.com/

Managing Risks, Areas of Concern and Recommendations

31

Risk Management

➢ **Conduct comprehensive risk assessments**
  - ✓ Determine Vulnerabilities and Threats
  - ✓ Develop Management Strategy
  - ✓ Identify and implement controls

➢ **Conduct vendor due diligence**
  - ✓ Ensure sound service-level-agreements (SLA) are in place

Areas of Concern

32

Areas of Concern

➢ **Rapid growth**
- ✓ These technologies will continually change
- ✓ Expectation among security and mobile experts is the mobile channel will soon become consumers' primary financial-services platform

➢ **Need for new security controls**
- ✓ Mobile threat landscape is growing
- ✓ Targeted attacks on mobile phones are increasing
- ✓ Financial institutions must be diligent in their efforts to keep up with emerging mobile threats

Areas of Concern   33

Areas of Concern (cont'd)

➢ More players, more risks
- ✓ Device manufacturers
- ✓ Operating system / application developers
- ✓ Network operators

➢ Privacy Issues
- ✓ Emerging mobile privacy issues – GeoLocation
- ✓ Balance customer and member convenience with security and fraud prevention.

Recommendations   34

Recommendations

➢ **Ensure Organization has effective and enforceable Policy's**

✓ Ensure procedures align with policies

➢ **Suggested Policies/Procedures**

✓ Vendor Management

✓ Mobile Application Develop

✓ Social media Acceptable Use

✓ Incident Response and Data Compromise

Recommendations   35

Recommendations continued

✓ An organization should

❖ Define the organization's strategy by answering the following questions;

o Does management have policies and procedures that address emerging technologies; mobile payments, social media use, etc? (If so what adjustments are needed.)

o Does the organization have educational programs for employees and customers?

o Who is authorized to speak for the organization? (Social media)

o What processes are in place for addressing incidents and customer privacy issues. (create as required)

o What monitoring capabilities are available for chosen social outlets?

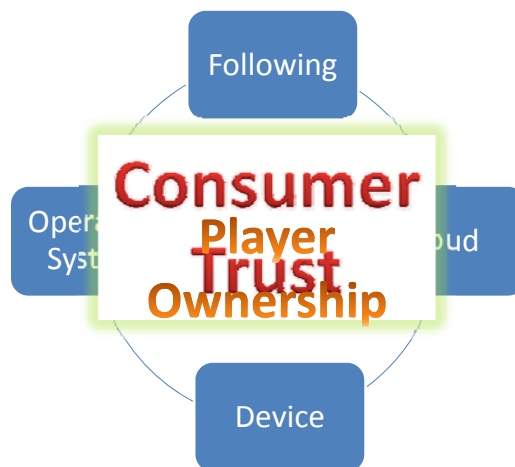Challenges   36

Challenges

- **Point-of –Sale (POS)**
  - ✓ Merchant adoption
- **Consumers Driving the environment**
  - ✓ Mobile
  - ✓ Social Media
- **Consumer Acceptance**
- **Many variables influencing the payment landscape**

Who determines?   37

Who Determines?

Following

Consumer
Player
Trust
Ownership

Oper... Syst...   ...ud

Device

Future   38

The Future

➢ Mobile payments are poised to become an important part of the payments landscape

➢ It is unclear when they will achieve popular acceptance and what forms they will take

➢ The fundamentals of payments risk management should remain constant

➢ Oversight of third-party relationships will become increasingly important as mobile payments evolve

Summary & Questions

39

Summary & Questions

Additional Questions

???

40

Office Contact Page

Feel free to contact our office with questions or comments.

Primary Staff:	**Jerald L Garner, NFS**
	jgarner@ncua.gov
Office Phone:	**703-609-5953**

41