MOBILE PAYMENT TECHNOLOGY

CURRENT LANDSCAPE IN THE USA- AUGUST 2014

TABLE OF CONTENTS

- ✓Definition, Landscape, Mind Map
- ✓Technology Explanations
- ✓Mobile Payment Players Wordle
- ✓Technology Companies: Google, Paypal, Amazon, Loop Pay, Apple, Square
- ✓Telecommunications: ISIS (AT&T, Verizon, T-Mobile)

TABLE OF CONTENTS (CONTINUED)

- ✓Credit Card Companies: Visa, Mastercard, American Express
- ✓Starbucks Sensation
- ✓POS | Payment Processing Connectors: First Data, POS Companies in general
- ✓Government: FDIC, FTC, Patriot Act
- ✓Analysis of Mobile Payment Provider/Participant's Technology and User Features (Separate Large Spreadsheet)

DEFINITION – 'MOBILE PAYMENT'

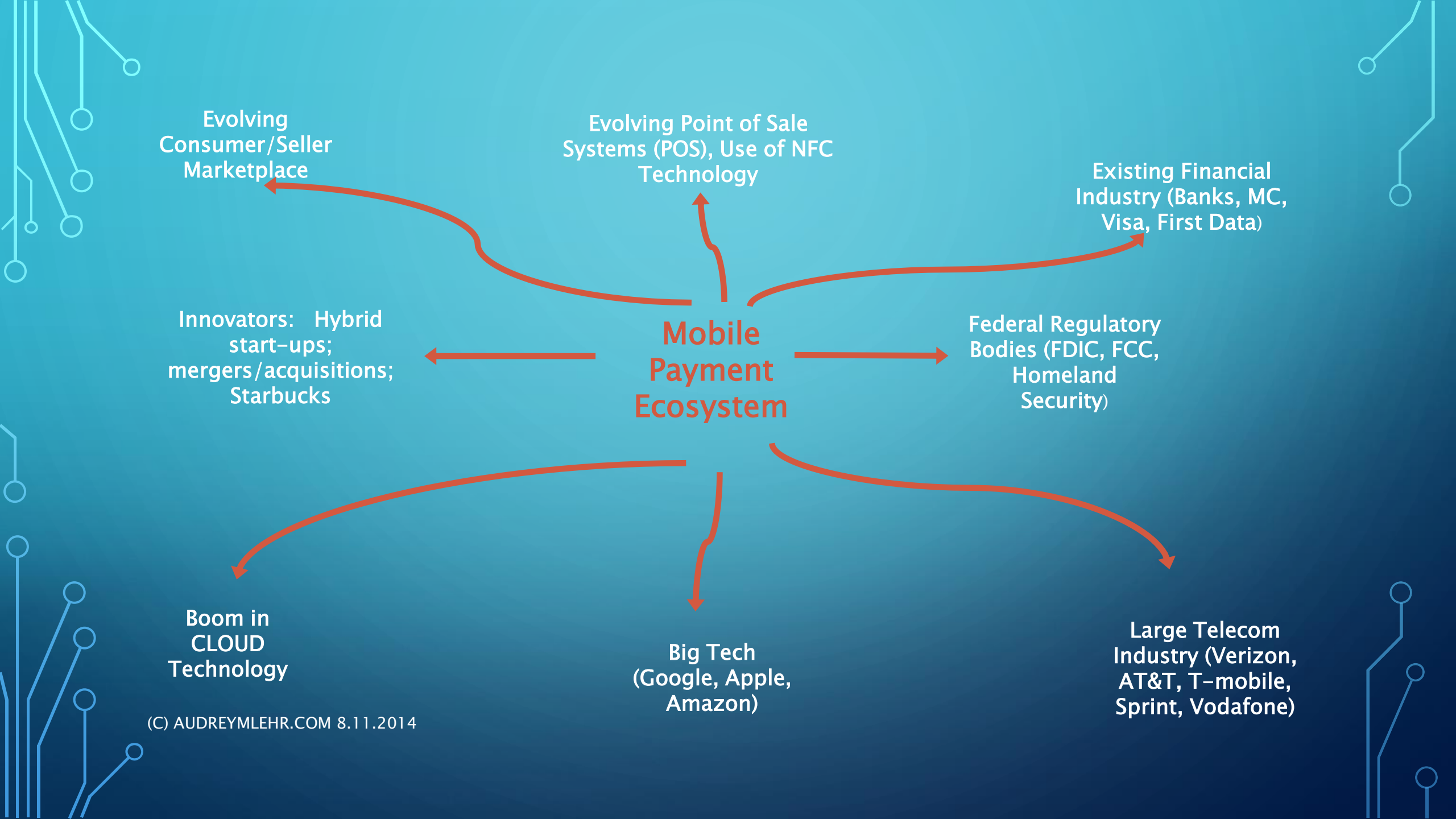
- The use of a mobile device, such as a smart phone or tablet computer, to initiate transfer of funds to people or businesses.
- Focus of this presentation is the person2business transfer of physical $ funds (not logical $ funds such as 'bit-coins')
- For instance….a consumer pays via their smart phone for a product or service.
- Note '**S**' will be from a seller vantage; '**C**' from a consumer vantage

LANDSCAPE (C)

- The market is young and wide and there is not yet one dominant player
- The intricacies of evolving and combining new payment concepts, technologies, interfaces, and participants are yielding a complex market place for the consumer:
  - Who do I trust? Will my money be safe?
  - Should I tiptoe or jump in?
  - Specifically which device, platform, or vendors will survive and are worth a trial?
  - Do I really want a separate account (with or without fees) with each vendor?
  - How does my bank fit in? My credit cards?
  - Which phone should I use?
  - Does this make my life easier and is it affordable?

MIND MAP: A WAY TO LOOK AT THE BIG PICTURE

THE MARKET HAS A LOT OF MOVING PARTS AND A LOT OF INNOVATION



TECHNOLOGY EXPLANATIONS

DEFINITIONS AND EXPLANATIONS NECESSARY TO TRULY UNDERSTAND THE MARKET

MOBILE PAYMENT TECHNOLOGY TYPES

- **Near Field Communication (NFC)** – A wireless Protocol that allows for encrypted exchange of payment credentials and other data at close range.
- **Cloud Based** – leverages mobile connection to the internet to obtain credentials not stored on the mobile device
- **Image Based** – coded images, QR codes, used to initiate payments. Credentials may be encrypted within image or stored in cloud.

WHAT IS EMV; WHY DOES IT MATTER

- EMV is the latest technology standard defining interactions at the physical, electrical, data, and application levels between credit/debit cards and point-of-sale (POS) terminals. This standard must be adopted by merchants by October 2015 to avoid liability for counterfeit card fraud. (S)
- EMV credit cards contain a chip and *when used in combination with an EMV compliant POS system*: there is increased security, and card transaction processing ease. (S, C)
- There is currently a shift regarding fraud liability; responsibility for fraud is *shifting away from the banks and credit card issuers towards merchants using POS systems that are not EMV capable*. (S)

WHAT IS NFC

- NFC stands for 'Near Field Communication'. It is a short-range wireless technology, enabling communication between devices over a distance of <10 cm. It is an ISO standard; IEC 18092.
- It has three main modes of communication:
  - Card emulation: It behaves like a contactless (EMV) credit card such as those issued by Visa, Mastercard, or AX.
  - Reader Mode: the NFC device is active and reads a passive RFID tag; for example, reading and storing web address or coupon from a poster for interactive advertising
  - Person2Person mode: two NFC devices communicate to exchange information

WHAT IS HCE

- HCE stands for 'host card emulation'. It acts as an extension to NFC technology, a 'virtualization' of the underlying secure NFC hardware.
- It's technical architecture evolved out of the issue of poor NFC adoption – both customer and seller needed physical NFC hardware to communicate.
  - To implement this in a free market with many stakeholders has proved difficult (telecommunications companies, big technology companies, point-of-sale companies, customers with different cell phones and credit cards, and merchants.)
- HCE enables the NFC information transfer between a (POS) terminal and an other device to exchange NFC radio information. It enables NFC to work at the logical operating system level instead of on a secure element chip, thereby enabling a device application *to emulate the functional response of a physical NFC card*.

- This technology was spear-headed by SimplyTapp and Google.

HCE (CONTINUED)

HCE Enables:

- Transactions between mobile devices and other credential-acquiring* devices such as:
  - Other mobile devices
  - Contactless point-of-sale terminals
  - Transit turnstiles
  - A variety of access control touch pads

HCE lets apps like Google Wallet retrieve stored credit card information from the cloud

Visa and Mastercard have already approved the use of their cards through the HCE architecture

* Part of a security protocol

BLE

- BLE stands for ‘BlueTooth Low Energy’ or BlueTooth LE
- It is a BlueTooth extension that allows devices to use much less power than standard Bluetooth connections; it is a wireless transmission protocol
- It is good for short-range, short bursts of data exchange
- In the mobile payment ecosystem, it is likely to be used for quick transmissions of data (eg text message) that don’t require the security offered by NFC/HCE. It could be used for in-store loyalty cards or coupons, for instance.

CLOUD TECHNOLOGY

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud Computing can include these delivery models:

1. Infrastructure as a Service
2. Platform as a Service
3. Software as a Service

MOBILE PAYMENT PLAYERS: LANDSCAPE 8/2014

TECHNOLOGY COMPANIES

THEIR CURRENT PRODUCTS AND WHAT THEY EACH ARE DOING NOW

GOOGLE WALLET

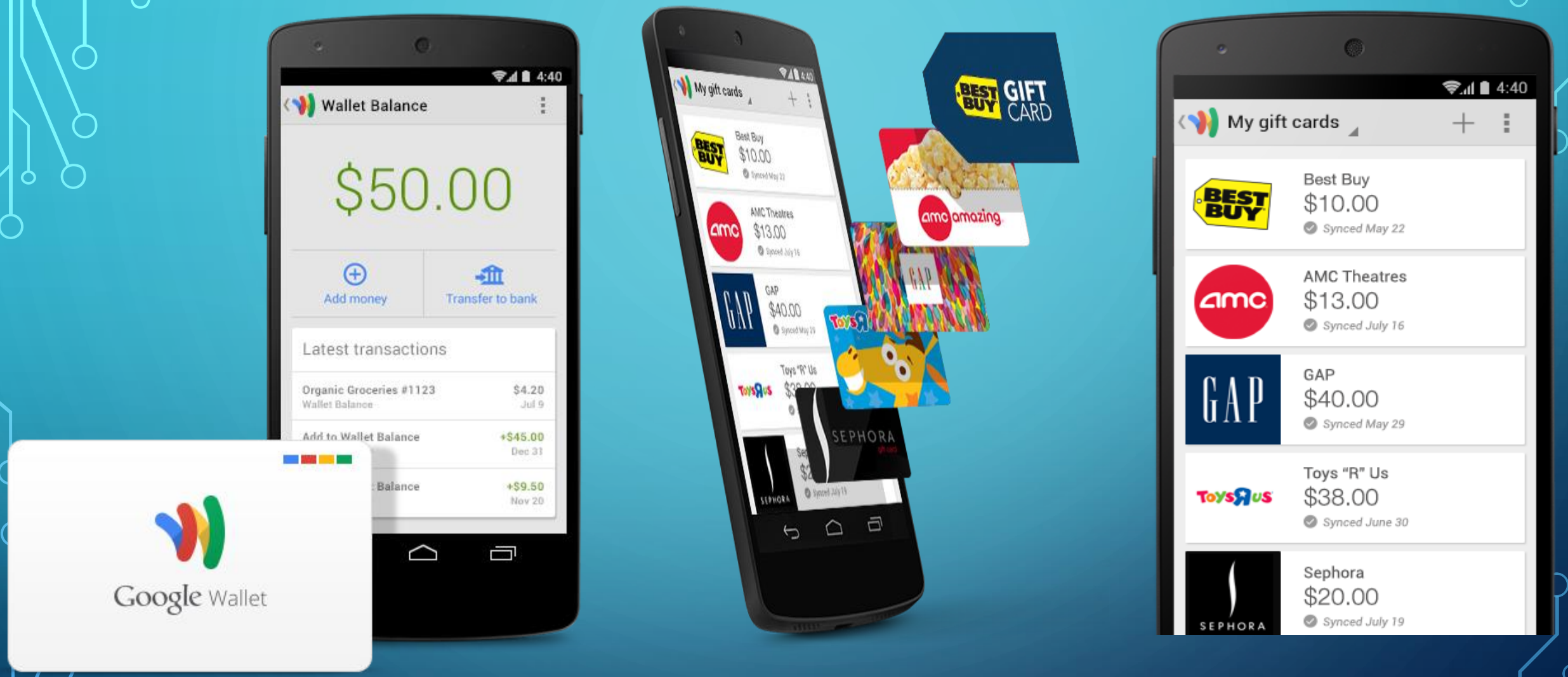
- By 2012, GoogleWallet was launched and there was a Youtube Video training video for merchant employees: https://www.youtube.com/watch?v=hLbmy4XQsMo
  - It shows a Google solution that enables payment through NFC (near field communication, a phone-2-POS-Terminal Payment Solution)
  - It proposes a 'wallet' payment solution for credit cards, gift cards, loyalty cards, coupons stored on their phone
  - It suggests that their pay-by-phone solution is safe, because it is processed 'just like a credit card'
- GoogleWallet at that time worked on the Samsung Galaxy Smartphone through the Verizon network

GOOGLE WALLET

- Within the past year, GoogleWallet added a Google-branded 'credit' card to their an NFC-phone-2-POS-terminal solution.
- They have issued plastic credit-cards, co-branded with MasterCard, so now you can pay with a plastic card (in lieu of your phone). This enables customers to pay merchants who who do not have an NFC terminal, or customers not having an NFC phone
- It looks like Google is using the branded cards to capture more of the consumer market until retailers and phones are established with NFC technology. It seems likely that their strategy will encourage use of the google payment interface.
- A list of merchants who accept GoogleWallet: American Eagle Outfitters, Bloomingdales, Foot Locker, Jamba Juice, Macy's, RadioShack, Subway, The Container Store, Toys "R" Us, Walgreens ,BP, CVS Pharmacy, Dairy Queen, McDonald's, Office Max, Petco, Sports Authority, Sunoco, The Home Depot, Tim Hortons, NJ Transit
- Also of note is a lawsuit filed in 2011 by Ebay/PayPal against 2 former employees/Google, for stealing its employees and trade secrets – alleged, over this very technology.

WHAT GOOGLE WALLET DOES

- **Send and request money easily in the US**
- Digitize your **gift cards**. Sync gift card balance in real-time for participating merchants.
- Manage your **loyalty programs** and offers right on your phone
- Use the **Wallet Card** to spend your Wallet Balance anywhere **MasterCard, Visa, AX** is accepted in the US
- Tap and **pay with your phone wherever contactless payments are accepted** (NFC phones/POS only)
- **Track your online orders**, get notified when they're shipped, plus view your order history in one place

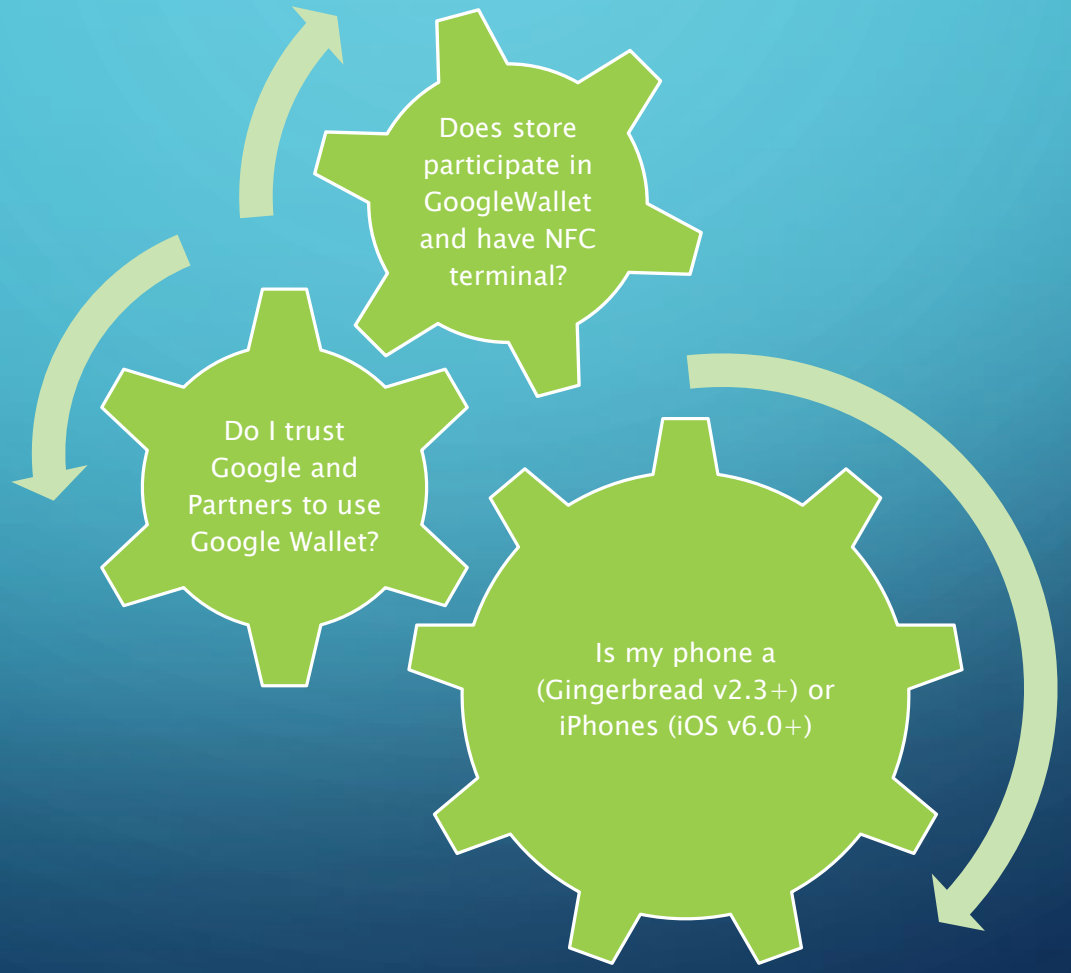


Google Wallet Transaction Interface and Card

Google Wallet Loyalty Card Interface

Google Wallet Gift Card Interface

CAN I USE GOOGLE WALLET TO PAY AT BRICK AND MORTAR STORES?



GOOGLE WALLET OVERVIEW

HOW IT HELPS ME

- Consolidation of credit cards, debit cards, loyalty cards into 1 account (C)
- 1 view of many accounts (C)
- Ability to pay with a specific phone only if a merchant has an NFC enabled POS terminal(C)
- Or …ability to pay with the Google Wallet credit card

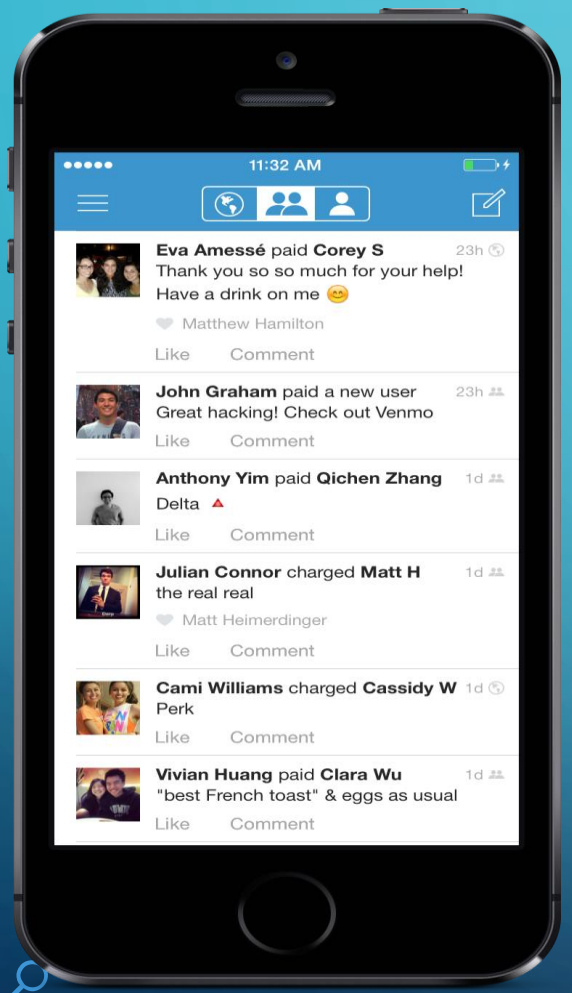
HOW IT MAY NOT HELP ME

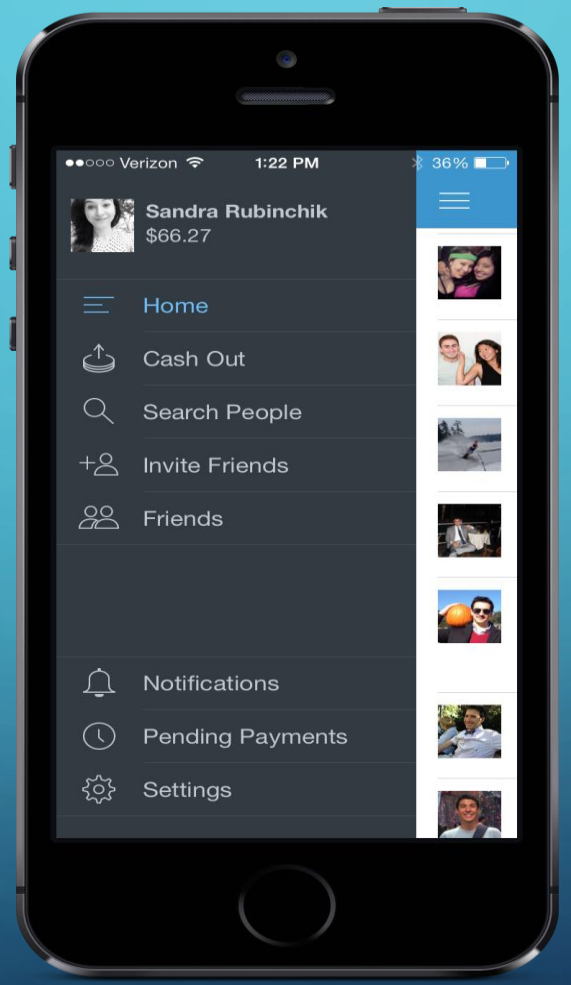
- Google and Partners will collect data on every browse and purchase- the customer must trust them with this information (S)
- If the regulatory environment is not yet set to protect customers, he/she may be at risk for $ or confidentiality loss (C
- Does the customer want to fund an account at Google, separate from their bank account, separate from their credit card accounts?

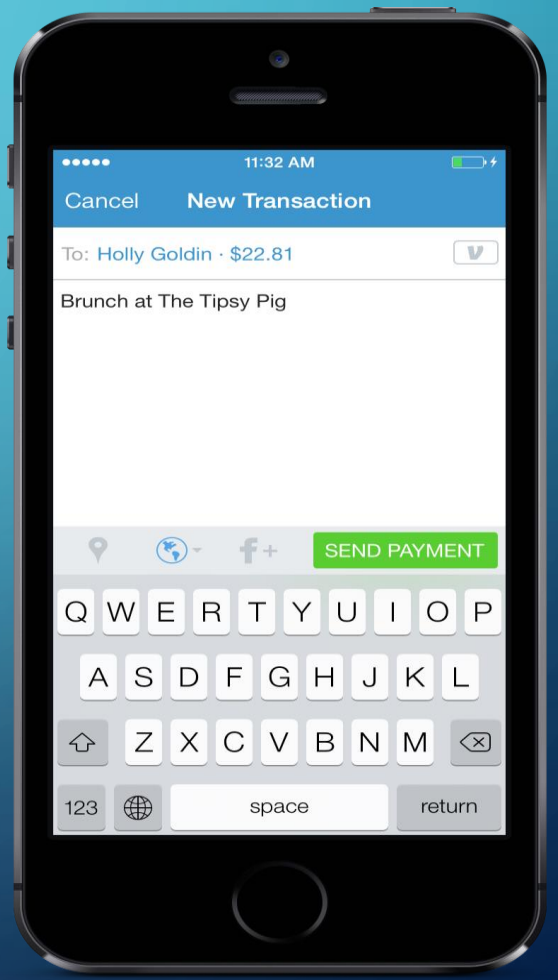
PAYPAL'S VENMO

- *Venmo* is a licensed money transmitter and authorized delegate of *PayPal*, Inc.
- Its app also launched in 2012, available for Iphone and Droid
- Its main feature is to 'Pay Your Friends'; Venmo appears to have a close relationship with Facebook to implement their technical solution
- It boasts that all transactions are secured and essentially guaranteed
- Due to its person2person design, its adoption is viral by design, similar to its partner Facebook. It is very popular on college campuses.
- Its sales volume in the past 2 years is equal to that of the Starbuck's payment app so it has some eye-catching velocity in its adoption rate.

PAYPAL'S VENMO INTERFACE







VENMO COMPARISON

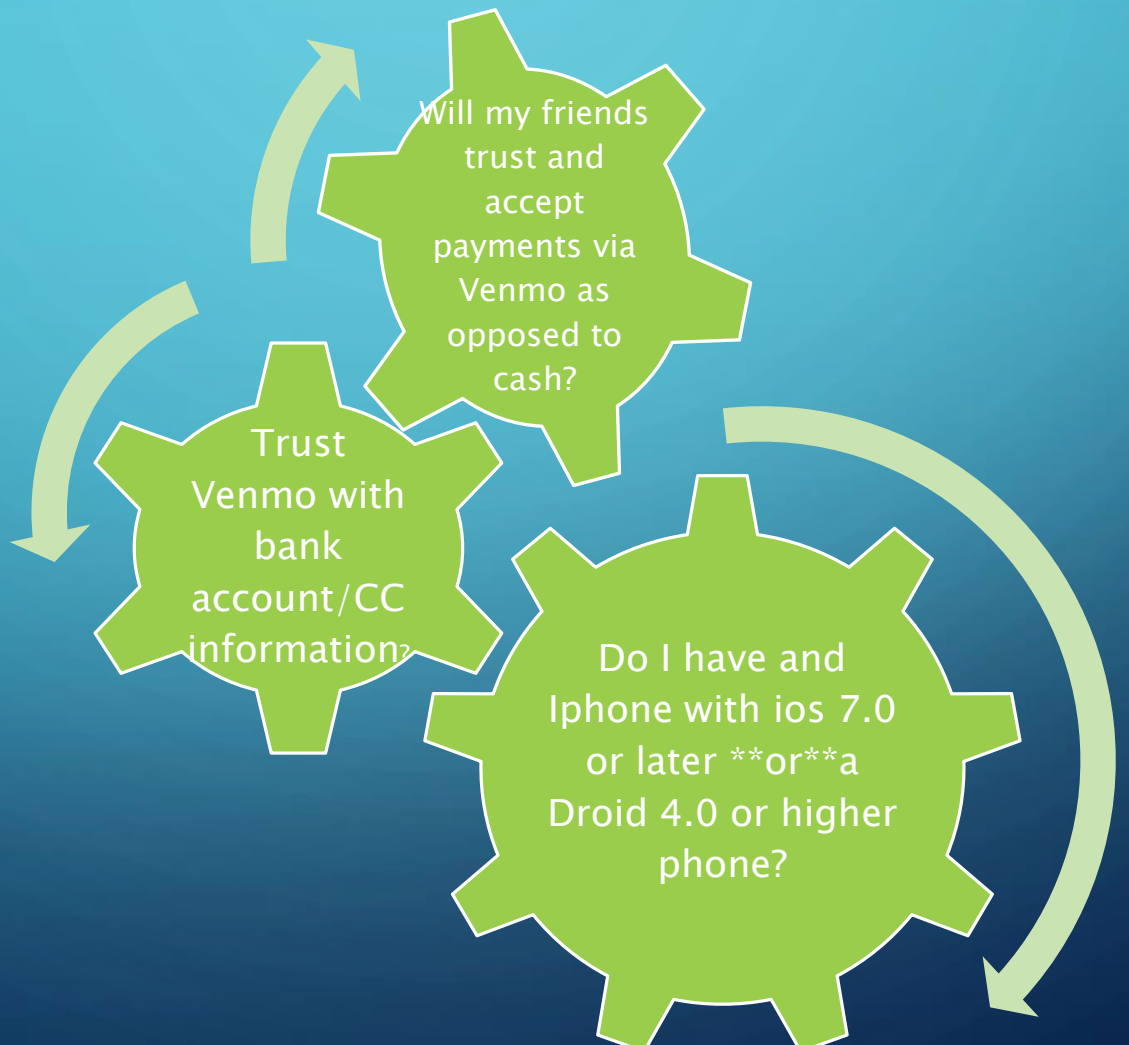
HOW IT HELPS ME

- It enables friends to electronically pay back their friends for meals out, tickets, etc.
- If a friend shares their bank account, or supported debit card with Venmo to create an account balance, paying back friends is completely free (S)
- It costs nothing to the friend that accepts the funds

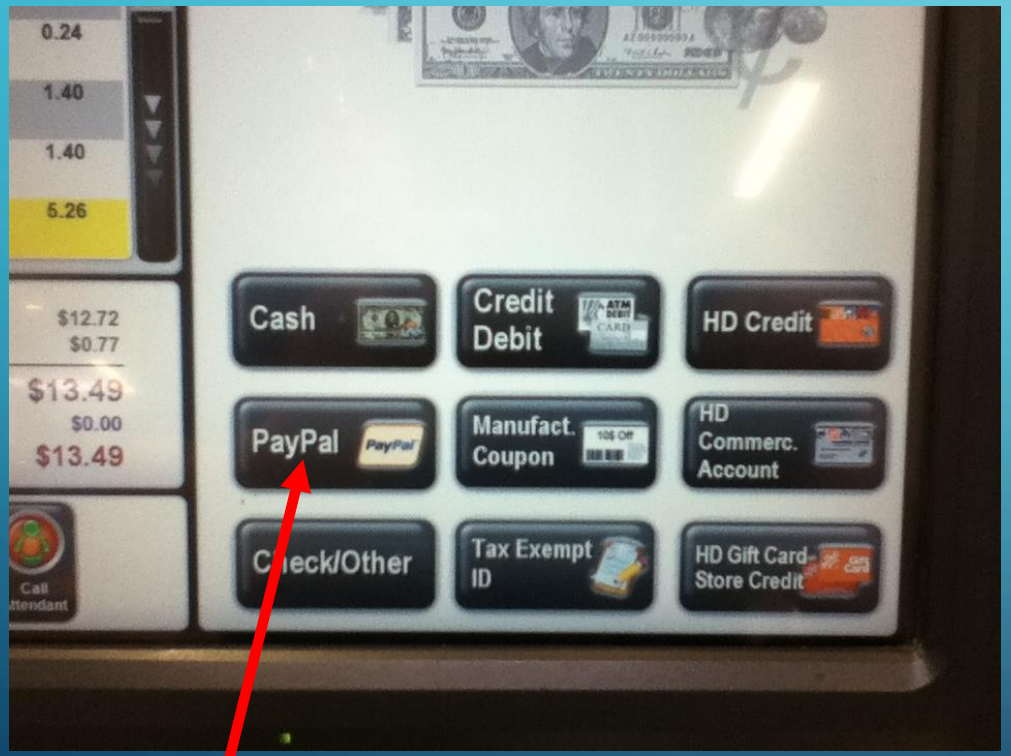
HOW IT MAY NOT HELP ME

- If a friend pays by credit card, the fee is 3%
- Non-millenials may not trust this app as readily, wondering, will my friends understand this process and trust it/me?
- Venmo and Partners (Facebook, Ebay?) likely will collect data on every browse, purchase, and customers will need to trust them with this information (S), (C)

CAN I USE PAYPAL'S VENMO IN A BRICK AND MORTAR STORE? NO…BUT I CAN PAY BACK MY FRIENDS….



PAYPAL IS ALSO ENABLING PAYMENT ON POINT-OF-SALE SYSTEMS….



PAYPAL AND HOME DEPOT

The POS systems at HOME DEPOT allow PayPal Payments. This means that you can pay for your Home Depot products with your PayPal account at the cash register. Might this ultimately be a part of Paypal's overall wireless payment roll-out strategy?

AMAZON: MOBILE PAYMENT PROGRESS

- In July 2012, Amazon launched an app that lets people store only gift cards and loyalty cards. Recently, Amazon has a new partnership with BlackHawk Networks, Inc.
- With a mobile phone, a customer can scan bar or QR codes at the cash register, on their gift and loyalty cards
- The app does not yet store credit or debit card information
- In June 2014, Amazon announced the sale of Amazon's first smartphone 'Fire', further setting the stage for a mobile platform – in partnership with AT&T, 4GE LTE network

LOOP PAY

- Offers a product based on newly patented 'Magnetic Secure Transmission' (MST). Loop Pay is a start-up company led by former Equinox Payments and an MIT graduate Will Wang Graylin.
- Product launched in February of 2014, so it is a new-comer to the mobile payments market.
- Company is building global relationships with payment companies, and of note is that Graylin has sold former payment start-ups to Verifone and ROAM data.
- Payment product is a unique one, introducing **both** a hardware device and associated software solution for mobile payments(C)
- Loop Pay may have relationships with Equinox Payments, Apple, and one of its key investors is VISA; the color choices of the keyfob have the 'feel' of Apple marketing…remember the color choices for Ipads? (AML)

LOOP PAY PRODUCTS

LOOP PAY WALLET & FOB

VARIETY FOB CASES

LOOP PAY CHARGECASE

LOOP PAY WALLET & FOB

HOW LOOP PAY WALLET & FOB WORK….

Software (C):

- Download Loop app from respective app store

Hardware (Buy) (C):

- Have Iphone =5 or 5s, or Droid with OS >= 4.2
- Enable BlueTooth on your phone
- Install ChargeCase around your phone; insert fob into phone
- Press button on charge case to enable its wireless discoverability
- Swipe credit cards, loyalty cards, and to load and enable them on your phone. *Assume that they have mag strip to use upload fob* (AML)
- (S) Merchant point-of-sale terminal *(implicitly implied in the process).*

Software meets hardware (full process):

- Put phone against POS to pay, select card from your wallet. Tap Loop Wallet to approve (C).

LOOP PAY FEATURES

1. Ability to buy a sleek wireless payment device to wrap your phone. This is only charge for new technology, currently $39 for Loop Fob, $99 for Loop ChargeCase.
2. Ability to 'upload' and store all of the credit cards and your ID in your wallet via the Loop Fob.
3. Ability to pay wirelessly at a Point-of-Sale (POS) terminal with either your Loop ChargeCase-enwrapped mobile phone or with a Loop fob.
4. No transaction fee for (C) – Just buy fob and/or Charge Case
5. With ChargeCase charger, you can extend phone battery life 60%.
6. Transactions are secure
7. It will work with most current POS systems, no hardware upgrade by merchants is necessary

LOOP PAY COMPARISON

HOW IT HELPS ME

- Customer can swipe all credit cards, debit cards, loyalty cards on to a mobile phone (C)
- Customers can pay wirelessly and securely if they have the correct phone and it is (wrapped with Loop ChargeCase), or has a loop fob. It will work on most merchants' POS systems (C).
- Sellers probably don't need a new POS system to please my 'early adopter' customer base (S)
- Loop Pay business model now does not seem tied to advertising revenue as are Google, Amazon, and perhaps PayPal to some degree(S)

HOW IT MAY NOT HELP ME

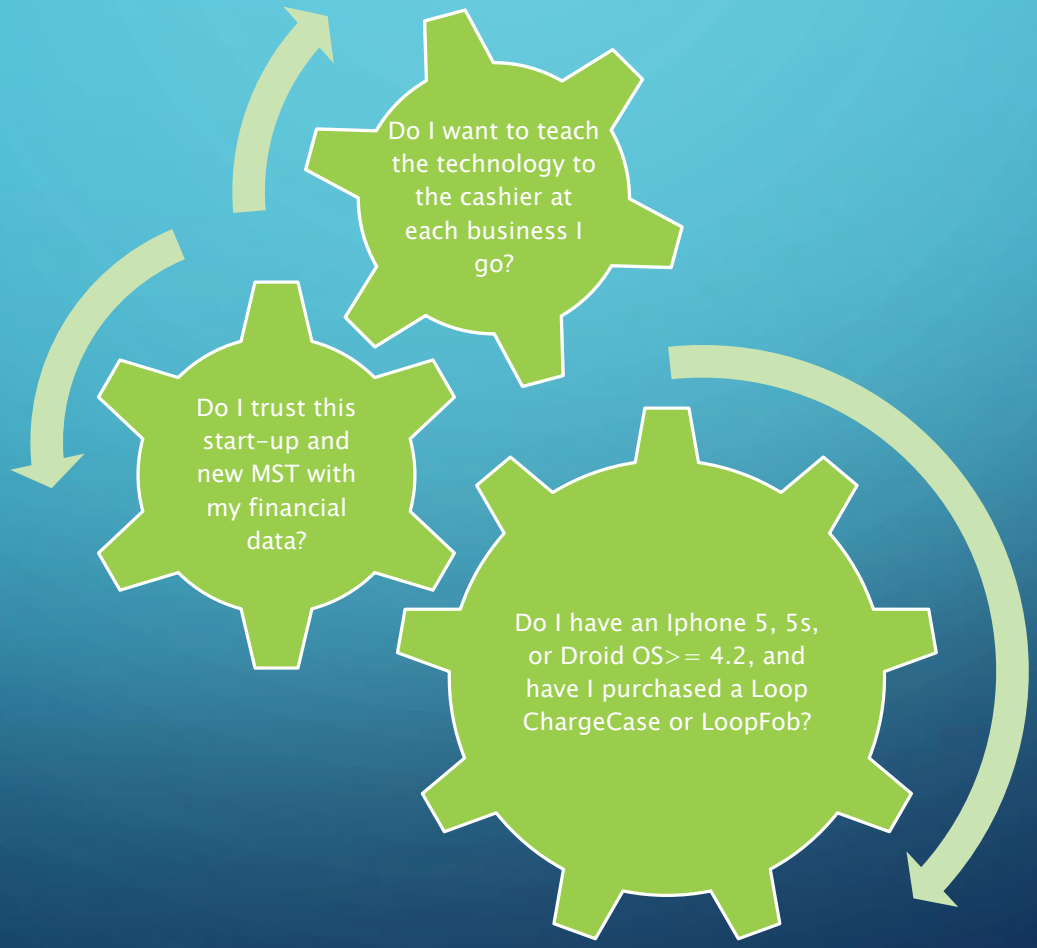
- If the regulatory environment is not yet set to protect me, I may be at risk for $ or confidentiality loss

LOOP PAY TECHNOLOGY

- **MST – Magnetic Secure Transmission – a newly patented technology**. MST is not the NFC transmission communication protocol that other market players' (eg Google) initial platforms are based on. If it is functional and truly secure, it could be a market shifter.
- The Loop Fob does **not** use Bluetooth. The Loop Fob uses the 3.5 mm audio jack to communicate with the LoopWallet app on your smartphone. The Loop device uses MST to communicate with the POS terminal.
- Loop also enables security with dynamic tokenized data. This interface currently co-exists with EMV and helps issuers leverage mobile without investing in new terminals.
- Loop Pay discussion boards claims that Loop works on roughly 92 percent of all POS systems in the country. There are two types of systems that Loop won't work on: the dip-style card slots that you find at gas stations and ATMs, and a special two-sided mag-stripe reader that is found in a small number of older machines.

.

CAN I PAY WITH LOOP PAY AT A BRICK AND MORTAR STORE



APPLE

- To date, Apple has not launched a mobile payment solution
- Rumored
  - That there will be a solution with the Iphone 6;
  - that the figure print sensor ('TouchID') released with Iphone 5s may be a future part of their mobile payment strategy
  - that security would involve the 'Secure Enclave Coprocessor', that relies on a random number generator and encrypted memory to safely store information
  - that a new partnership may help bypass third-party payment processors to lower costs
- Passbook, one of their existing apps has a high adoption rate and it features virtual tickets for concerts and sports events
- Apple is in talks with several mobile payment stakeholders including **Visa**
- Possible and even likely is that they have had time to learn from the mistakes of their competitors and launch a smoother platform as a result

Square

- Square is a product that allows the user (S) to accept credit card payments via mobile devices, such as the IPhone, Ipad, and Android.
- As of July 2014, the ‘square’ hardware device is now ‘accepting’/(reading) EMV Chip-Enabled Credit Cards.
- They have also announced they will be releasing a process chip-and-signature in addition to mag stripe transactions.

EMV stands for Europay, MasterCard, Visa

HOW DOES SQUARE WORK?

1. Request and Receive your SQUARE reader (S)
2. Download the SQUARE 'register.' The register is a Point-of-Sale application. (S)
3. Link to square register to your bank account (S)
4. Plug the SQUARE reader into your device headphone jack (S)
5. Swipe credit card (C)
6. Approve transaction by finger-swiping signature (C)
7. Receive SQUARE deposit next day in your bank account, for each transaction, less 2.75% per swipe (S)

SQUARE COMPARISON

HOW IT HELPS ME

- As a buyer (C), it allows more merchants to accept my credit card so I don't have to carry cash
- As a Seller (S), I can wirelessly accept payment from customers in many more places and they don't need to pay me cash

HOW IT MAY NOT HELP ME

- Currently as a buyer and a seller, a credit card 'interchange fee' is ~ 1.79% (S, C)
- Square transaction fee is 2.75%. Is the technology convenience worth the cost to my business (S)?
- As a Seller, does the Square "orders' inferface (cash register) help my business? (S)

TELECOMMUNICATIONS

COMPANIES INVOLVED IN MOBILE PAYMENT TECHNOLOGY

ISIS

- A mobile wallet payment system that is a joint venture of AT&T, Verizon, & T-mobile
- It uses NFC technology
- American Express is offering incentives to use its card via the ISIS wallet
- ISIS has 20,000 wallet activations per day
- The ISIS security platform
  - Purposely does NOT "store the data people want (to steal)." They make the consumer data on their platform a "fairly uninteresting" target and unique and dynamic data is generated on every transaction.
  - Includes a PIN protecting every wallet
  - Sets 30 minutes maximum the wallet can be set to be open
  - Has a robust shut down program if a phone is lost or stolen
- ToysRUs accepts the ISIS mobile wallet and is happy with it

ISIS

ISIS WALLET COMPARISON

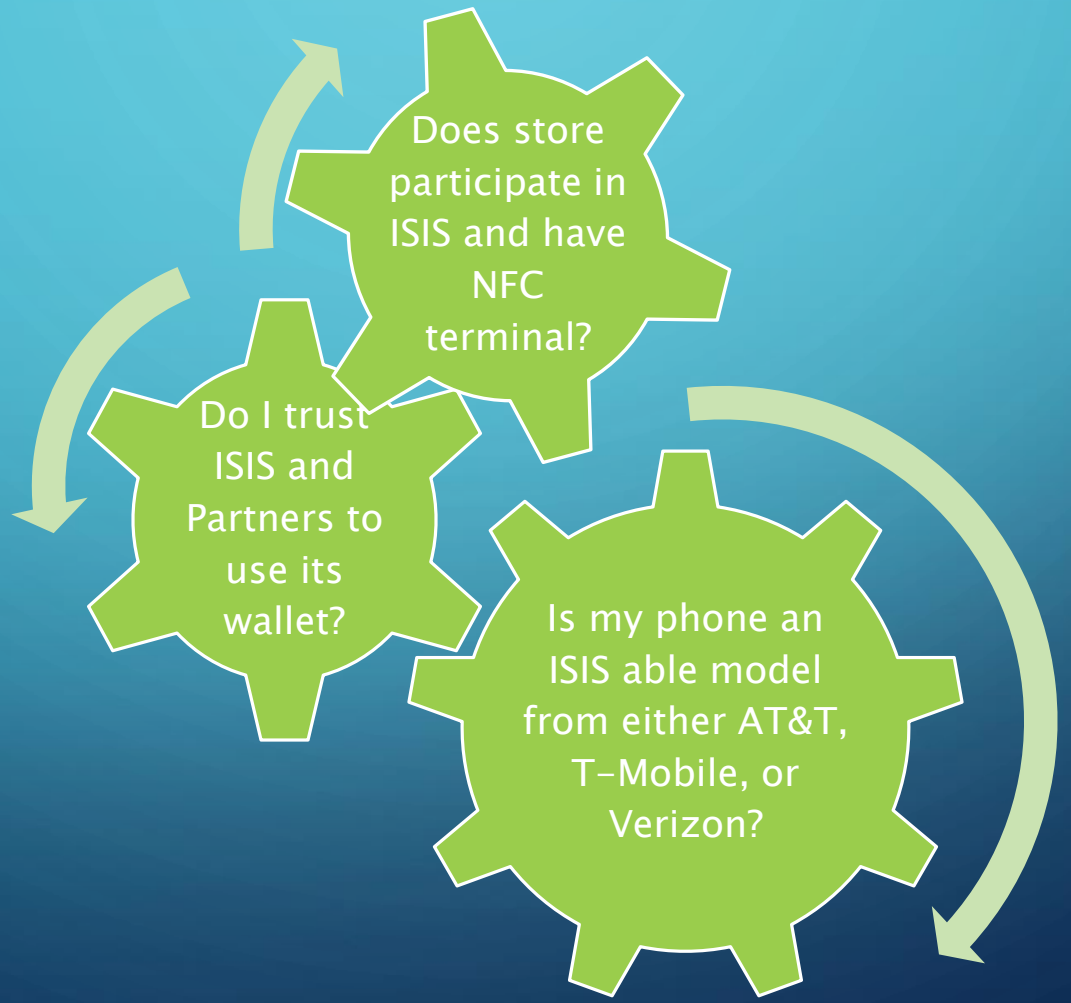
HOW IT HELPS ME

- Customer can consolidate all credit cards, debit cards, loyalty cards into 1 account (C)
- Has 1 view of many accounts (C)
- Customer can pay by phone if they have the right phone..and if…the brick/mortar merchant has NFC POS (C)
- ISIS has transparent security policies about not storing personal data (C)
- At this point in time the customer is not charged from any party for a wireless transaction (C)

HOW IT MAY NOT HELP ME

- If the regulatory environment is not set to protect me, the customer may be at risk for $ or confidentiality loss (C) (S)
- Customer may get used to the mobile pay convenience and eventually be charged a/increased transaction fees (C) (S)

CAN I USE ISIS WALLET TO PAY AT BRICK AND MORTAR STORES?



SIDELINE PLAYERS?: VODAFONE & SPRINT

- Vodafone is a world wide telecommunications company
  - In 2013, Vodafone divested itself of a large stake in Verizon in the US
  - In 2014, they are in a ramp up hiring mode in NYC – several hundred personnel
  - To date, they don't appear to have a large stake in the mobile payments industry, but with the uptick in US presence makes one wonder if and what part they will play
- Sprint just tried and backed out of acquiring T-Mobile

CREDIT CARD COMPANIES

WHAT THEY ARE DOING RELATIVE TO MOBILE PAYMENTS

VISA VISION STATEMENTS

- There is a 40% increase the value of payments people will make using their mobile devices around the globe this year.
- “As mobile commerce continues to grow, Visa will keep playing a vital role in making seamless commerce experiences secure, reliable and scalable. We are working on several fronts to build an ecosystem that simplifies digital commerce, including developing new standards and capabilities and supporting new stakeholders. Our goal is to duplicate the ease of the card swipe in digital channels, and make click or wave to pay as simple and secure as traditional card.”

VISA

- As a financial services provider, Visa Digital Solutions are positioning themselves relative to the mobile payments space in several ways:
- They have created Visa checkout for online transactions, and it may ultimately also be used at merchant checkout POSs. They currently have these merchant partners – PizzaHut, Staples, United Airlines, and Neiman Marcus.
- They have also positioned themselves as a technical leader and integrator, creating VISA industry standards including product specifications, APIs, SDKs, and implementation guidelines for the industry.
- To address security, they have created a systems of security tokens that can be stored directly in mobile devices, cloud mobile applications, and online e-commerce applications.

MASTERCARD

- In 2012, Mastercard released Paypass, a contactless credit card that could be used at POS checkout. They also launched mobile application that enabled a customer to pay via their phones by reading QR codes for bills and products in other countries.
- They say now that they provide a set of technical standards for setting up a mobile payment application, user interface, and provisioning of payment accounts on mobile phones.
- Other than providing contactless credit card and supporting mobile devices to use their card, information regarding mobile payment stake and product development in the USA is scarce.

STARBUCKS – MOBILE COFFEE

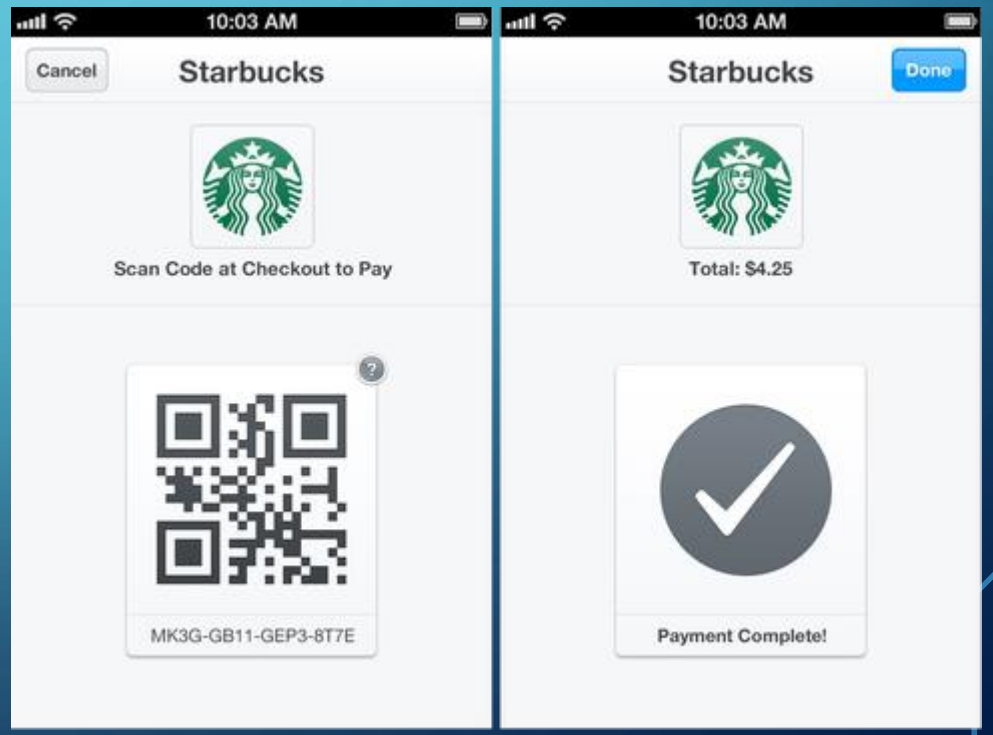
THE CURRENT BIG SENSATION SMELLS GOOD

STARBUCKS

- Starbucks was THE mobile payment disrupter in 2013, reporting 1B in mobile payment revenues, and that its mobile payment/loyalty app is used by 10 million customers
- Starbucks developed its own mobile payment app and associated processed in-house, and its innovation provided in a unique market solution
- The solution uses fairly 'old' technology, an image based solution.
- Most of the thinking by mobile payment technologist was to have the user scan the QR code during the transaction. Starbucks flipped this scenario to have the register (POS) scan the QR code. They accomplished this within the software technology stack related to the POS.
- Their mobile payment solution also includes an interconnected loyalty program.

STARBUCKS

- The success of the Starbucks wallet is attributed “not to entrepreneurial guesswork, but from empirical, practical and pragmatic research.” **
- Success factors include:
  - “Existing successful loyalty program
  - Existing successful gift card program
  - Simple 2D barcode on consumer device
  - Sophisticated barcode scanner on POS
  - Perfect cloud merchant integration
  - Simple to use consumer app”**



**Forbes 6/13/2014

STARBUCKS

Features of the Starbucks app include:

- Pay, check you balance, and reload your (loyalty) card
- Get instant access to your barcode with Shake to Pay
- Track Stars and redeem rewards
- Leave digital tip for your barista
- Find and redeem your personalized offers
- Get our free Pick of the Week
- Find stores, get directions and access store-specific hours and amenities

POS PROVIDERS/PAYMENT PROCESSING CONNECTORS

A TASTE OF WHAT IS HAPPENING IN THIS MARKET SEGMENT

POS MANUFACTURERS AND RESELLERS

- Recall that EMV compliance in the US is due October 2015
- The two top terminal makers in the world are
  - Verifone who used to be the market leader in the US until its share dropped 17 percent to its competitor Ingenico
  - Ingenico, who has expertise with EMV technology
- These retailers are likely to shift their business to a more operations-based one. Payment-as-a-Service, a spinoff of software-as-a-service cloud technology, integrates POS hardware platforms with end2end bundled customer service solutions.
- Existing top POS software providers include: PacificAmber, LightSpeed, NCR, touchbistro, comcash, instore, ivend retail, Vivonet, ConsignPro, SimpleConsign
- It is highly possible we may see a lot of merger/acquisition activity in the upcoming months as industry requirements for mPOS move beyond basic EMV implementation, towards evolving mobile payment marketplace requirements

FIRST DATA

- First Data links merchants and issuers, at scale, around the world
- It has a partnership with STAR debit network, a product that enables PIN secured realtime transactions for customers, and complementary products and services that help retailers, financial institutions, processors, and billers
- They have secured a $3.5 billion influx of capital
- They have shifted focus to provide products for small businesses with more robust POS solutions such as ‘Clover Stations’; Perka, a provider of a smart loyalty program; and, Isightics, a payments analytics tool

GOVERNMENT

BIG BROTHER AND CONSUMER PROTECTION CONCERNS

FDIC

- There are several concerns held by the FDIC relative to mobile payments:
  - Mobile payments present the same types of risks as those financial institutions are well equipped to address, such as Bank Secrecy Act (BSA), Anti-Money Laundering compliance, fraud (C,S), credit/liquidity (S, C), operations/IT, reputation, and vendor management.
  - "The current mobile payments ecosystem, unlike existing banking products that control much of the payment interaction, mobile payments require the coordinated and secure exchange of information among several unrelated entities. Adding in entrepreneurial companies that are not familiar with the existing checks and balances that apply to banks, coupled with emerging technologies, the pot could be rich for exploitation."

EXISTING LAWS THAT MOBILE PAYMENTS NEED COMPLY WITH:

- EFTA – Electronic Fund Transfer Act (C)
- TILA – Truth in Lending Act/Regulations Z13 (S)
- Truth-In-Billing (S)
- UDAP – Unfair, Deceptive, or Abusive Acts or Practices (under FTC) (C,S)
- UDAAP – Unfair, Deceptive or Abusive Acts or Practices (Consumer Financial Protection Act of 2010) (C,S)
- GLBA – Gramm-Leach-Bliley Act – Privacy and Data Security Provisions (S)
- Federal Deposit Insurance or NCUA Share Insurance (C)

FDIC FORWARD COMMENTARY

- ‘Financial institutions should not assume their place in the new mobile payments marketplace is assured because they are an integral part of the existing payments infrastructure.’
- Nonbank mobile payments providers are devising ways to streamline the current payments system and reduce transaction costs by limiting the role banks play in mobile payment or eliminating them from segments of the payments process altogether.
- ‘Banks could find themselves displaced by non-banks in the mobile payments marketplace.’

FTC : 'MOBILE CRAMMING'

- Consumers have been finding unauthorized charges on their telecommunications carrier bills. (C)
- Mobile phone bills are not to include unauthorized charges. FTC reinforces that consumers (C) have the right to block all 3rd party charges on their phones.
- After getting consumer consent to bill 3rd parties, such charges should be very prominent view on the bill. (C, S)
- FTC suggests that carriers (S) should put in effective dispute resolution practices that do not make it difficult for consumers to get a refund. (C)

PATRIOT ACT

It is important to note that all mobile payment systems and related data are subject to provisions of the Patriot Act.

COMPARISON OF TECHNOLOGY AND FEATURES

THERE ARE A LOT OF MOVING PARTS AND DIFFERENT SOLUTIONS TO BRING MOBILE PAYMENTS TO MARKET

SEE SEPARATE EXCEL SPREADSHEET:

ANALYSIS OF MOBILE PAYMENT PROVIDER/PARTICIPANT TECHNOLOGY AND FEATURES

REFERENCES

- "Easier Ways to Make Payments with Smartphones," New York Times, July 31, 2014, Molly Wood.
- "Phone Carriers Face New Mobile Wallet Challenge," Investor's Business Daily, April 2, 2014, Reinhardt Krause.
- "U.S. NFC Mobile Technology Adoption to be Spurred by the 'Big Three': HCE, BLE and EMV," GlobeNewsWire, June 10, 2014.
- "Host Card Emulation Will Drive NFC for Mobile," The Credit Union Journal, July 28, 2014, Ray Birch.
- "Square Announces a Signature-Based Chip Reader, with Availability Early 2015," Digital Transactions, Trends in the Electronic Exchange of Value, July 30, 2014.
- "Apple to set cash in on mobile payments: report," Tech News, July 29, 2014.
- "Apple could launch own mobile wallet this fall," @Phildzikiy, Thursday July 24, 2014.
- "AmEx, PBZ partner to launch payments pilot in Croatia," Payment Technology, August 5, 2014.

REFERENCES

- "First Data Launches the PayLucky Solutions", First Data Website, beyond the transaction, July 8, 2014.
- "First Data launches its mobile payment solution," www.thehindubusinessline.com/features/smartbuy/tech-news/, Priyanka Pani, July 17, 2014.
- "Visa invests in mobile-payment startup: IS the sleeping giant awakening?," www.bizjournals.com/sanfrancisco/blog/2014/07/visa-mobile-payments-innovation-san-francisco-apps.html?page=all , Spencer A Brown, July 24, 2014.
- "Visa introduces new Visa Digital Solutions," Datamonitor CardsandPaymentsWire, July 29, 2014.
- "Six Best Practices Every Entity Needs to Know to Assure PCI Compliance," Market Wire, July 29th, 2014.
- "Utimaco Hardware Security Modules Deployed to Secure Millions of Connected Devices and Sensitive Customer, Corporate, and Citizen Data," Business Wire, July 29, 2014.
- "Starbucks hits $1B in mobile payment revenues in 2013, analysis says," ComputerWorld, Mat Hamblen, February 5, 2014.
- "Why is The Starbucks Mobile Payments App So Successful?," www.Forbes.com/sites/quora/2014, June 13, 2014.
- "Showdown at the POS: Ingenico versus Verifone," www.payments.com, August 5, 2014.
- "FTC's carrier billing report impacts burgeoning mobile payments methods," Chantal Tode, July 29th, 2014.

REFERENCES

- "US mobile payment firm LoopPay wins Visa funding," www.telecoms.com/274632.
- "Phone Carriers Face New Mobile Wallet Challenge," Investors Business Daily, Reinhardt Krause, April 2, 2014.
- "FTC Staff Report on Mobile Shopping Apps Found Disclosures to Consumers Are Lacking," PR NewsWire US, August 1, 2014.
- "FDIC Highlights Mobile Payment Technologies and Related Risks," Financial Institutions, Financial Privacy, United States, January 18th, 2013.
- "Mobile Payments: An Evolving Landscape," Supervisory Insights (FDIC), Devoted to Advancing the Practice of Bank Supervision, Vol. 9, Issue 2, Winter 2012.
- www.gemalto.com/techno/inspired/nfc/definition.html
- en.wikipedia.org/wiki/Host_card_emulation
- "PayByPhone App Available for New Amazon Fire Phone," Business Wire, July 30, 2014.
- "Ingenico: Strong increase in business performance and results in the first half of 2014," GlobeNewsWire, July 30, 2014.
- "Loop Mobile Wallet Debuts with Expectation of Near Ubiquitous Acceptance," Kevin Woodward, February 20, 2014.

REFERENCES

- www.venmo.com
- www.paywithisis.com
- www.firstdata.com
- www.looppay.com
- www.visa.com
- http://online.wsj.com/news/articles/SB10001424052748704336504576259192449111266
- www.americanexpress.com
- https://masterpass.com/learnmore/?cmp=psc.mpass.learn.google
- www.amazon.com
- https://payments.amazon.com/home
- http://www.google.com/wallet/
- https://squareup.com/
- http://www.digitaltransactions.net/news/story/4533
- www.apple.com