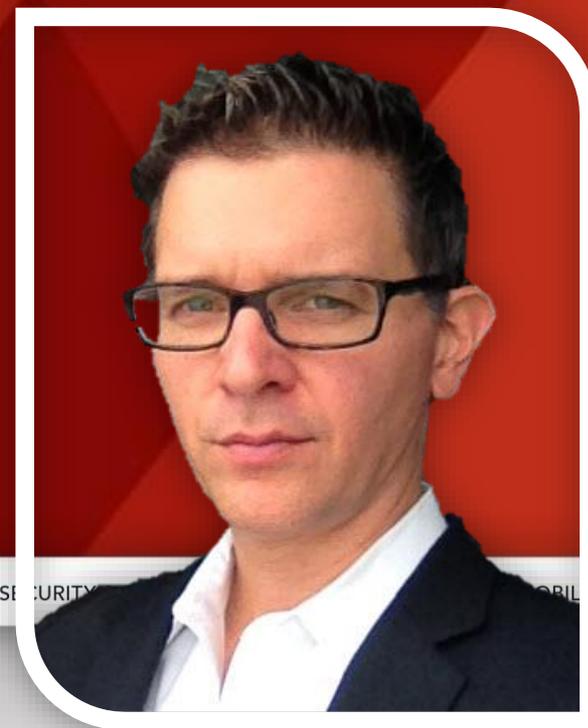




Future Freak

Techs & Trends Transforming Banking



■ FINANCIAL PERFORMANCE

■ RETAIL DELIVERY

■ IMAGING & PAYMENTS PROCESSING

■ INFORMATION SECURITY

■ COMPLIANCE

Lee Wetherington

Director of Strategic Insight
Jack Henry & Associates, Inc.®



@leewetherington



Lee Wetherington

Director of Strategic Insight



- Develops actionable insight and strategy for the financial services industry
- Delivers keynotes nationwide
- Technology Faculty Chair for several graduate schools of banking
- Authors articles for industry trades
- Degrees in Economics and English from Duke University
- Accredited ACH Professional (AAP)



 @leewetherington

Agenda

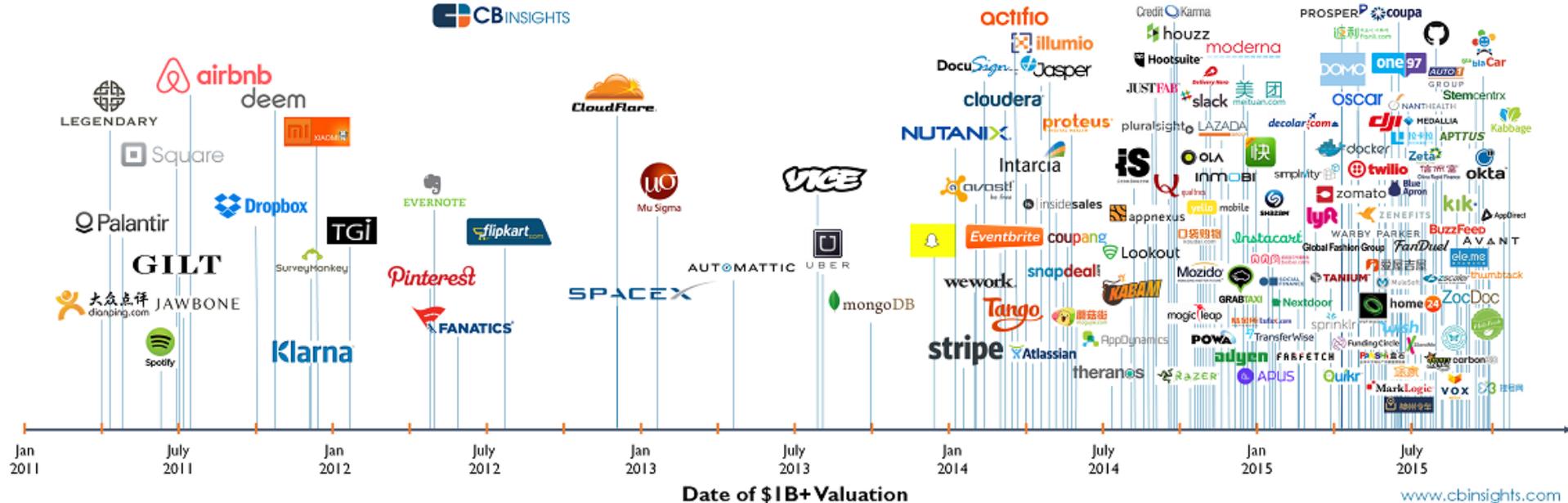
- The Unicorn Stampede
 - Fintech, startups and disruption?
 - “Fintechgration”
- The Future Freaks
 - Techs Transforming Lending & Payments
 - Techs Transforming Financial Services
- Emerging Risks
 - Mobile, Payments, Lending Risks
 - Strategic & Co-Innovation Risks

Unicorn Stampede

The Increasingly Crowded Unicorn Club

Private Unicorns since 2011

Created by:



www.cbinsights.com

Cost of founding a digital startup **dropped** from **\$5M** in 2000 to **\$5K** in 2013. --Celent

SOURCE: <https://www.cbinsights.com/blog/increasingly-crowded-unicorn-club/>

The great unbundling of banking?

PROSPER^P Upstart
PayPal Affirm
Vouch stripe
LendingClub Square
SoFi AVANT CREDIT

green dot
nerdwallet

DRIVERUP

LendingHome
SoFi

BOND STREET
Capify STREET SHARES
BlueVine LendingClub
Kabbage CAN CAPITAL
Dealstruck Funding Circle
OnDeck CREDIBLY

Chase Bank • Credit Card x
https://www.chase.com/it

Explore products ▾ CHASE ATM & branch Español

Credit cards Checking Savings Reloadable card Auto loans Mortgage Investing Business banking Commercial banking See all

Remember me
Sign In
Forgot user name/password? >
Not enrolled? Sign up now. >

Building for the future

Building for the future

Remember me

Sign in

Forgot user name/password? >

Not enrolled? Sign up now. >

Run your business

Save money

Bank with Chase

Find a credit card

Buy a home



Find the Right Credit Card

From cash back, to savings on interest, we



Prequalify for a new mortgage while rates



How fashion designer, Rebecca Minkoff,

Square

intuit



SIMPLE

CAPITAL

acorns
invest the Change

digit



SIMPLE

Moven
Speed, Save & Get Smarter



ZenBanx

nerdwallet

FINAL



lenda

Quicken Loans

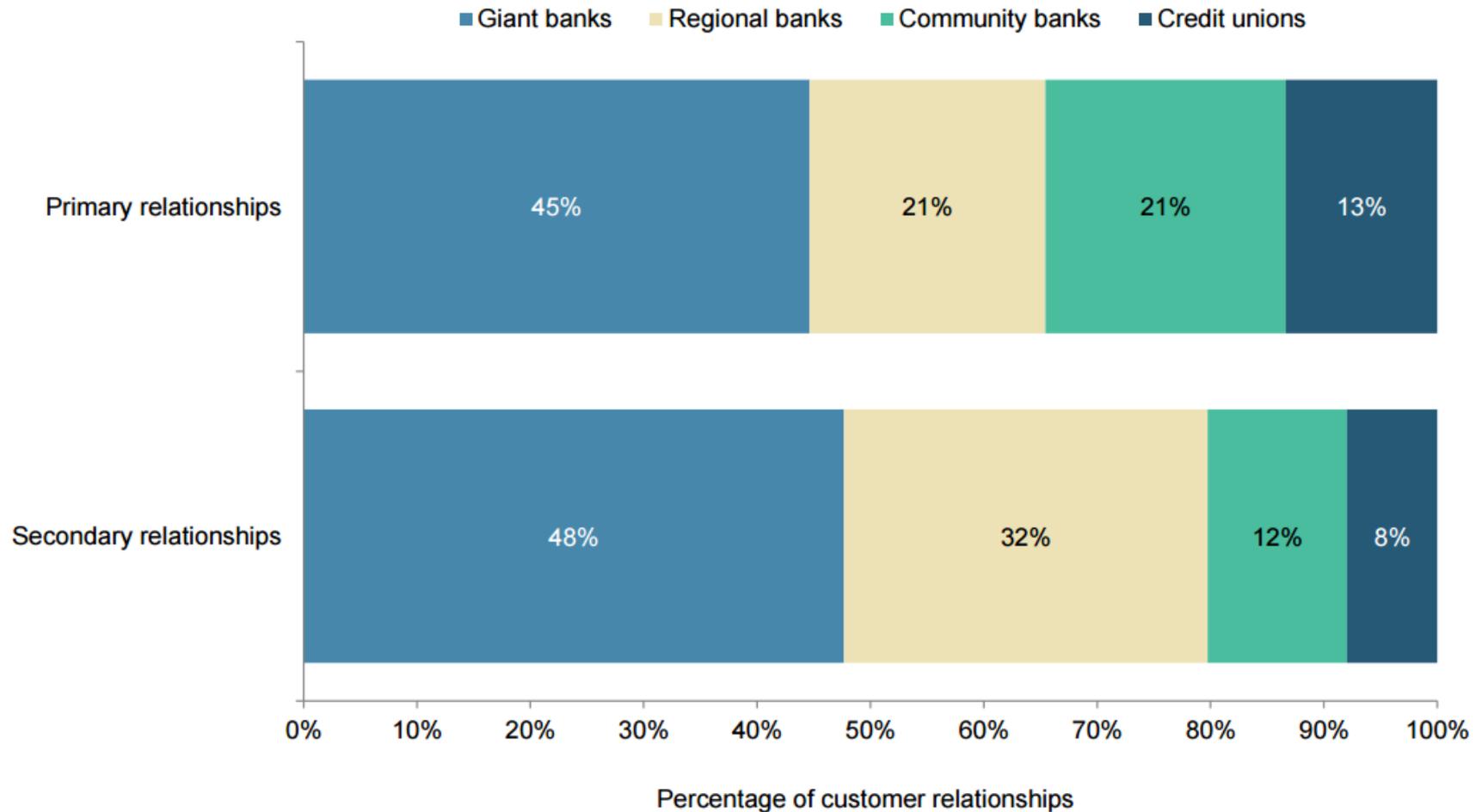
sindeo

Digital Creates **Silent Churn**

1. Generic **just-good-enough** digital banking **commoditizes** financial products and services
2. Customers begin shopping banks on **price only**
3. While community banks may hold the checking account, many **customers turn to secondary FIs** for profitable credit cards, mortgages, and other loans.
4. Community banks become **primary in name only**.

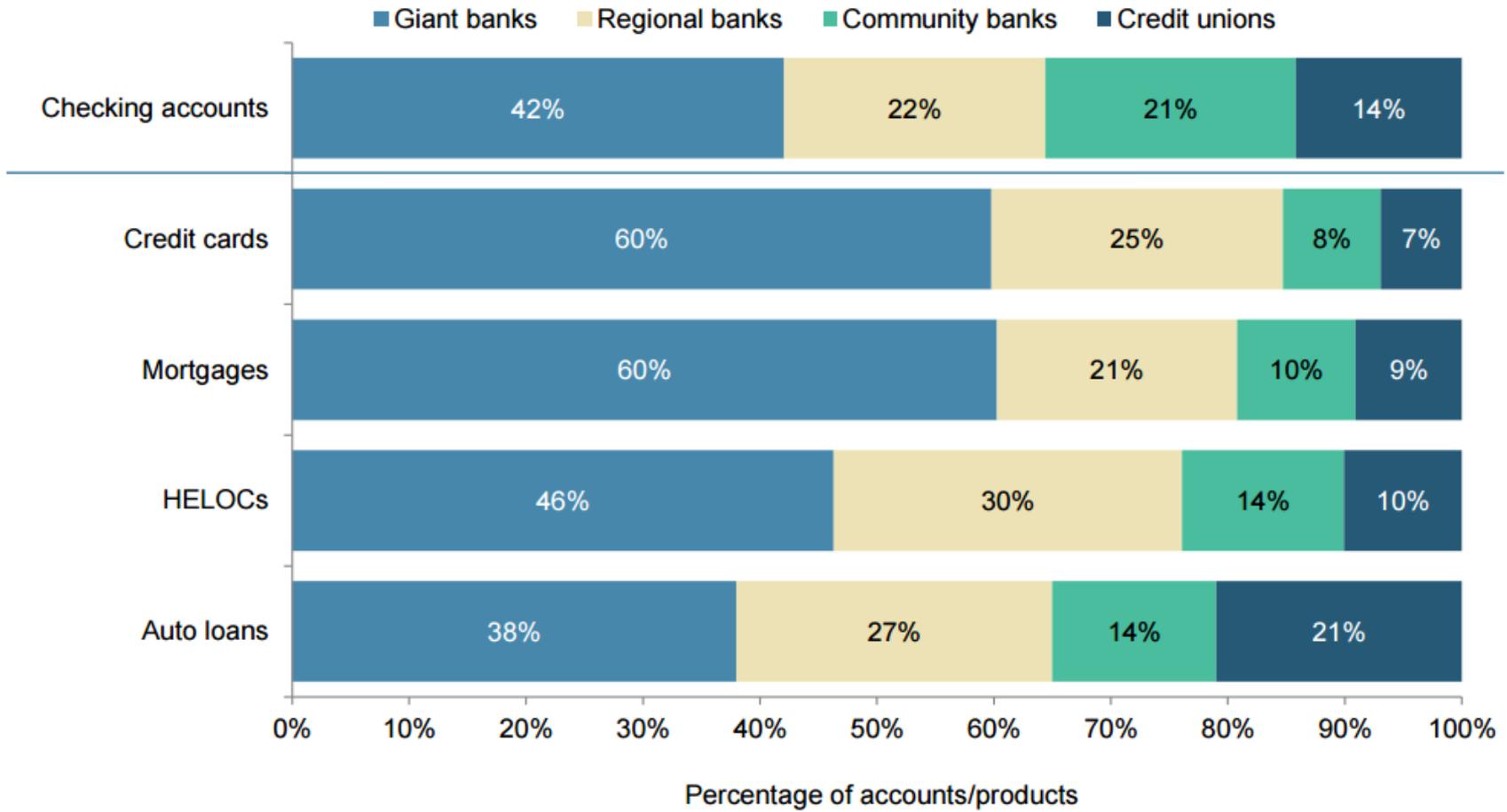
SOURCE: Javelin's "Bank Switching: Combating 'Silent Churn' to Maximize Primary FI Status"; November 2015

Primary vs. Secondary Relationships



SOURCE: Javelin's "Bank Switching: Combating 'Silent Churn' to Maximize Primary FI Status"; November 2015

Checking Accounts vs. Credit Products



SOURCE: Javelin's "Bank Switching: Combating 'Silent Churn' to Maximize Primary FI Status"; November 2015

What's the Big Deal? Threats to Banks

- Siphoning most strategic and profitable customer segments
 - Higher income (Moneyhawks)
 - Younger (Gen Y1 and Gen Y2)
 - Small Businesses
- Bank reduced to passive funding source
 - 3rd-party mobile wallets
- Complete disintermediation of the bank
 - Merchant wallets, mobile order/pay ahead, and BOLPUIS

The great **re-bundling** of banking?

(a.k.a. **API Banking**)

(a.k.a. **Fintechgration**)

The Great Re-Bundling of Banking?

- Fintech vendors creating middleware platforms that integrate spot solutions using APIs, expedite evolution of digital channels, enable mobile-first services, and improve user experience (UX)
 - Jack Henry & Symitar
 - Jxchange, SymXchange & Banno Platform
 - Fiserv
 - Enterprise Services Framework
 - BackBase, D3, etc.

Alternative Lending

Alternative Lending Providers

THE ALTERNATIVE FUNDING LANDSCAPE



Despite the hype, **P2P lending** makes us **less than 1%** of total credit card debt in the U.S.

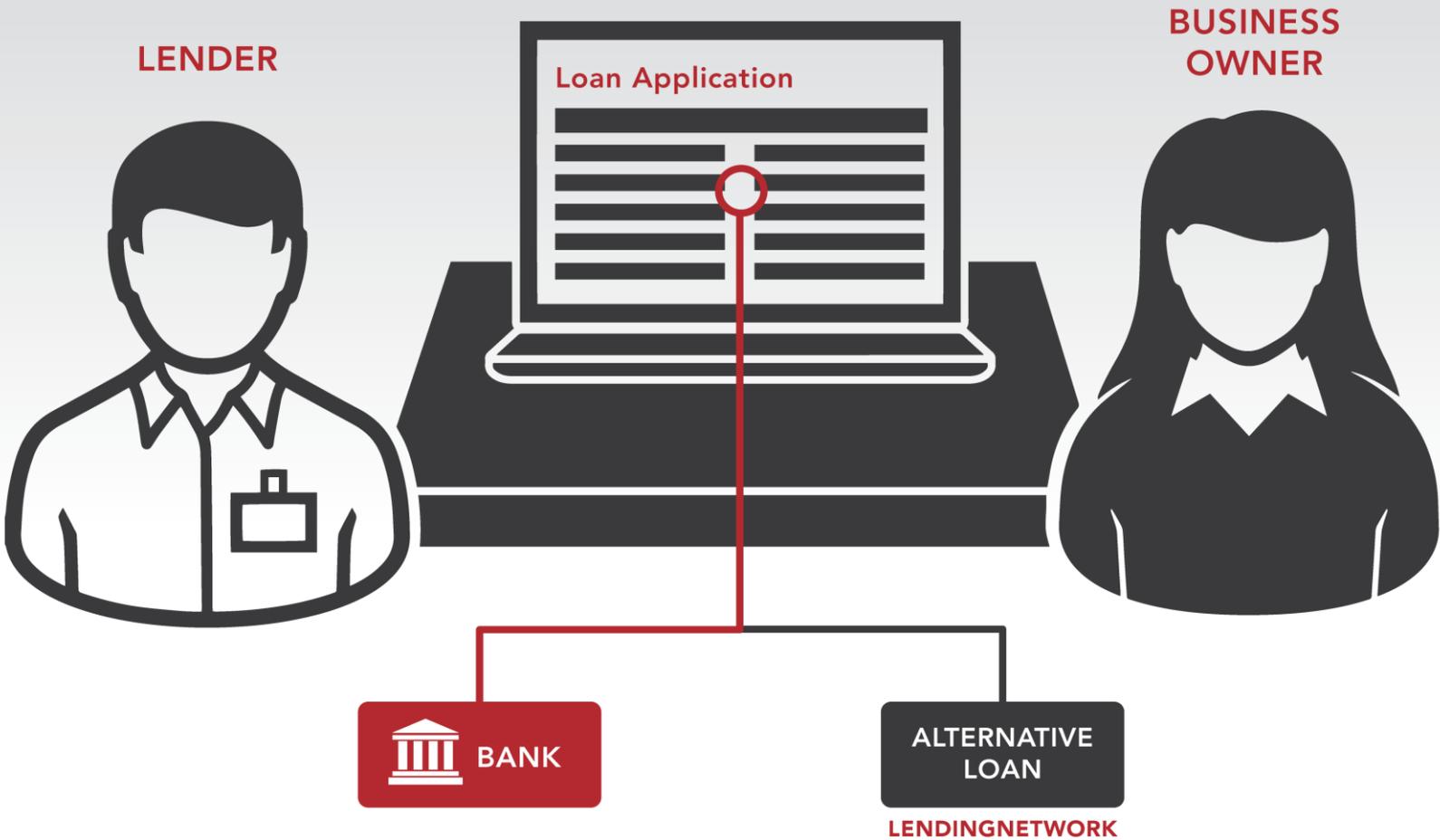


Lending Club's \$834M IPO



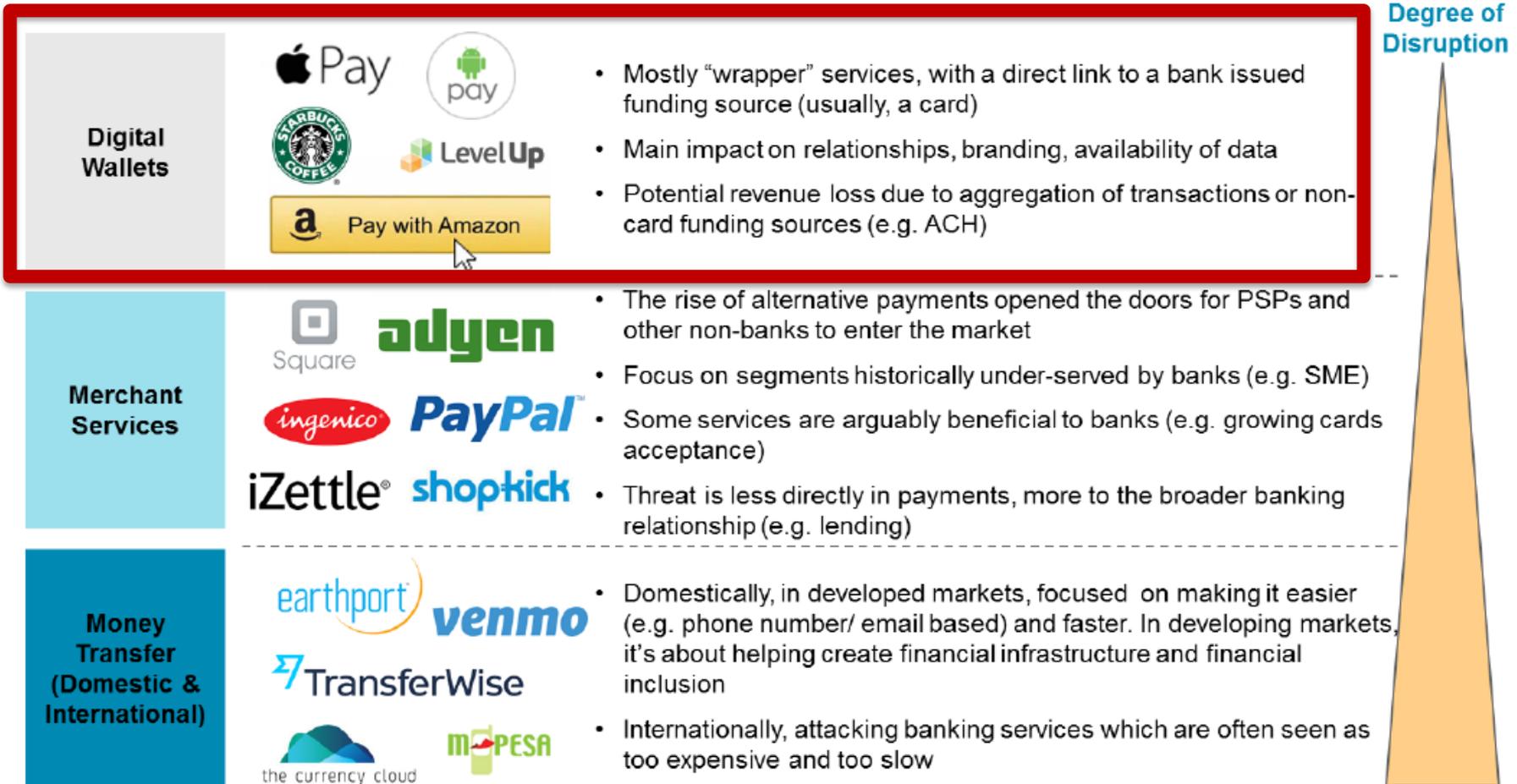
In 2016, regulatory scrutiny, investor sobriety, and stiff competition from FIs will slow alternative lending growth.

Harness the Alternative Lender Market?



Payments

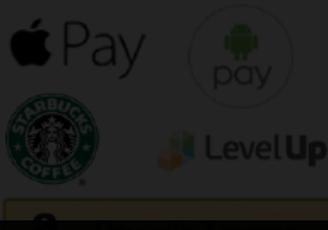
“Disruption” in Payments?



“Disruption” in Payments?

Degree of Disruption

Digital Wallets



- Mostly “wrapper” services, with a direct link to a bank issued funding source (usually, a card)
- Main impact on relationships, branding, availability of data
- Potential revenue loss due to aggregation of transactions or non-

So far, disruption in payments has been **overstated.**

iZettle® shopkick

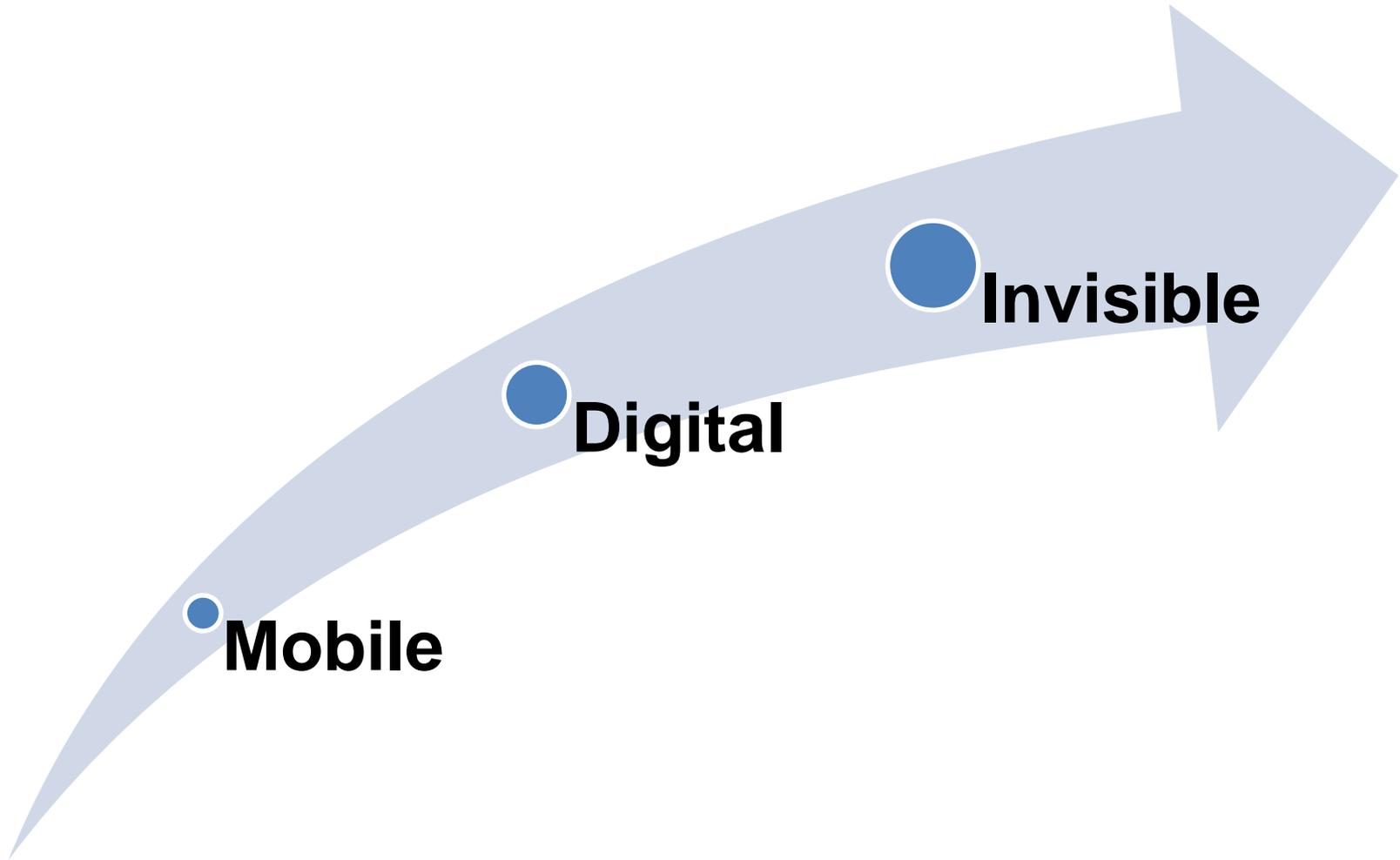
- Threat is less directly in payments, more to the broader banking relationship (e.g. lending)

Money Transfer (Domestic & International)



- Domestically, in developed markets, focused on making it easier (e.g. phone number/ email based) and faster. In developing markets, it's about helping create financial infrastructure and financial inclusion
- Internationally, attacking banking services which are often seen as too expensive and too slow

Evolution of Payments



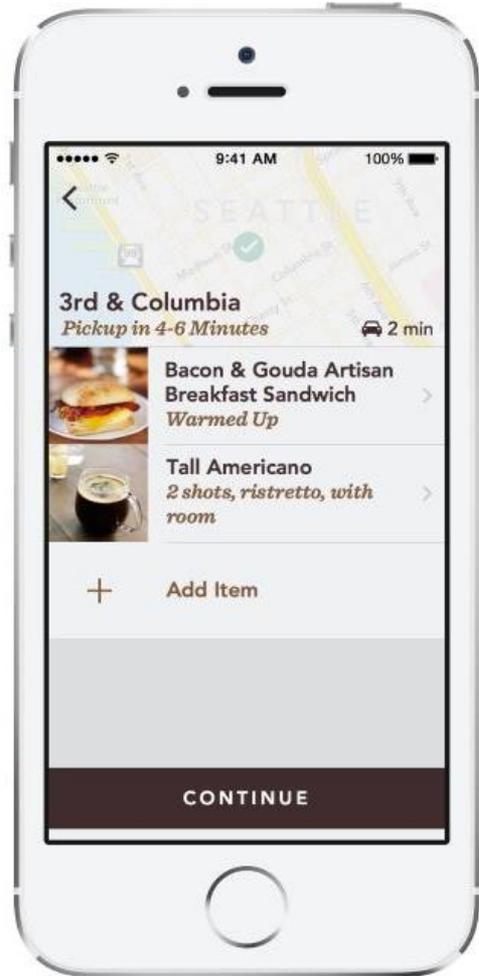
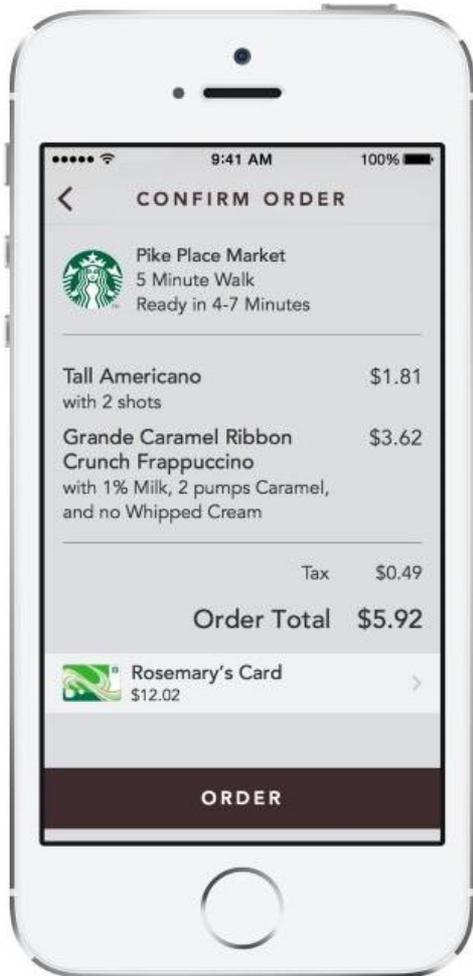
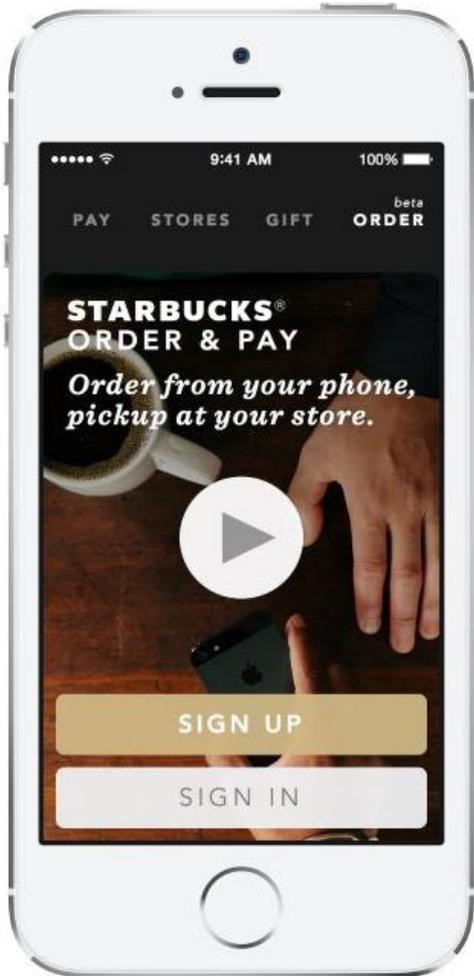
Q: What's the **biggest hassle** consumers face paying for things in a store?

A: **Standing in line** waiting to pay for things in a store.





Mobile Order & Pay Ahead



Why did Starbucks
create a mobile app?

Breakage

\$4B put on
Starbucks gift
cards last year

You don't have
enough on your card.



STARBUCKSCARD

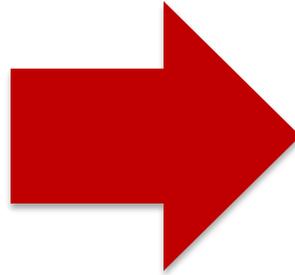
What the customer
hears and **feels**...

You're too poor to buy coffee here.

STARBUCKSCARD



UI



UX

us·er ex·pe·ri·ence

noun the totality of **emotions** evoked in a customer when he/she connects with the bank—and not just the interface.



Translations, word origin, and more definitions

e·mo·tion·al in·tel·li·gence

noun

skill in perceiving, understanding, and managing emotions and feelings.



Translations, word origin, and more definitions

UI



UX



engagement



trust

**Why will
Emotional IQ
only become
more important?**

**Wearables, sensors
and monitors will
ultimately gauge
consumer emotions
...literally.**



What if you could make user experiences better by knowing your customers' emotional reactions?



EMOTION AS A SERVICE

Emotion as a Service analyzes human expressions of emotion simply and cost-effectively. Send data collected with optical sensors or cameras, get powerful emotion data back. Highly accurate. No setup. No integration. On demand.

LEARN MORE >

**...back to
payments.**

BOLPUIIS

Buy Online Pick Up In Store

**The disappearance
of POS payments will
challenge issuers
and their wallets.**

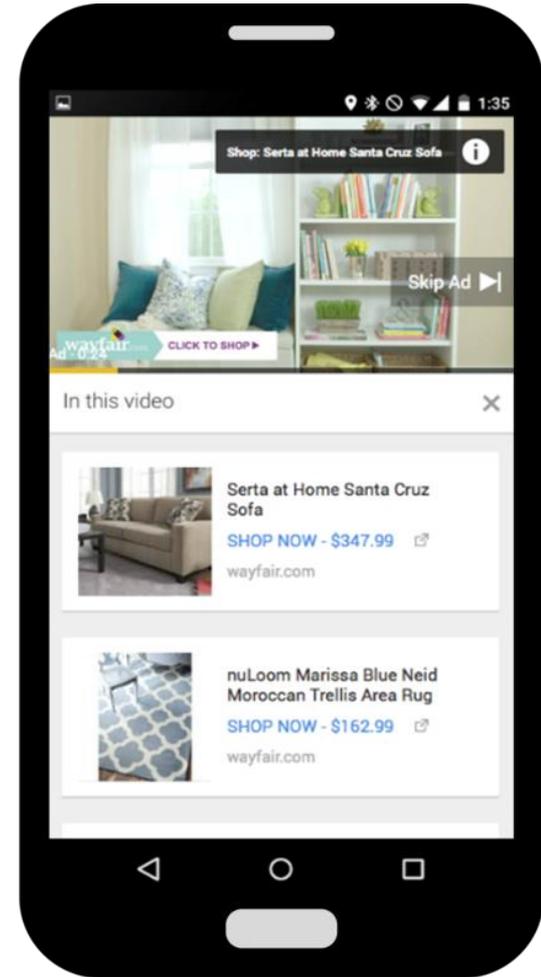
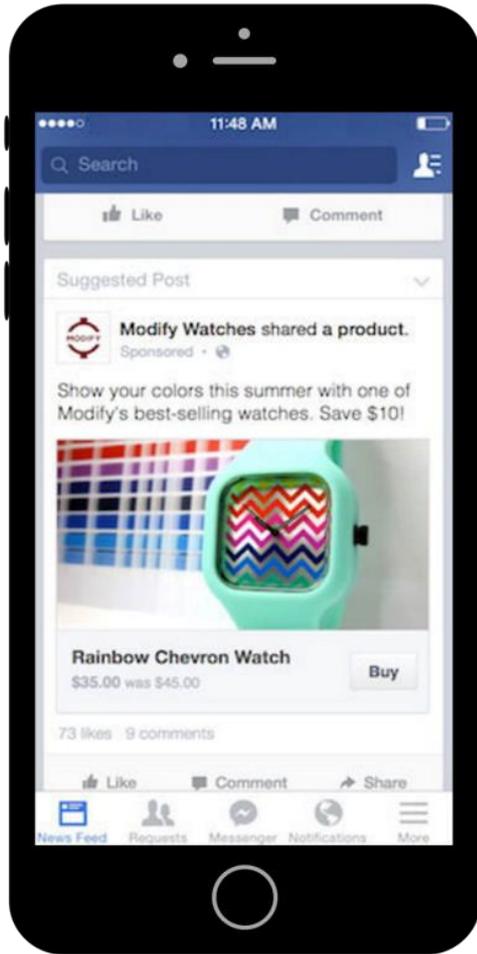
FACT: Consumers spend **5 hours 38 minutes** online each day. (Pew Research)

A close-up photograph of a white computer keyboard. The key in the foreground is labeled "online shopping" in a black, lowercase, sans-serif font. To the right of the key, a small, silver metal shopping cart is filled with various colorful social media icons, including Facebook, Twitter, and YouTube. The background shows other keys on the keyboard, slightly out of focus.

online shopping

Q: What **percentage** of that online time is spent **shopping**? **2%**

Social Media “Buy Buttons”



**Turns out you
need **interest**
and **intent.****

Contextual Commerce 2.0



amazon dash
BUTTON



Start
Stop

Tide

- Cottons
- Minimum iron
- Woolens
- Outerwear
- Proofing
- Express

Further program
Steam

Spin speed

INTRODUCING
amazon dash
BUTTON



Place it.

You can hang or stick Dash Button using a removable loop or reusable, washable adhesive on the back.



Press it.

When you are running low on your favorite products, simply press Dash Button and look for a green light.



Get it.

Once you see the green light, your order is placed automatically and delivered to your front door.



BLUTH'S
Original **FROZEN BANANA**

Hanes





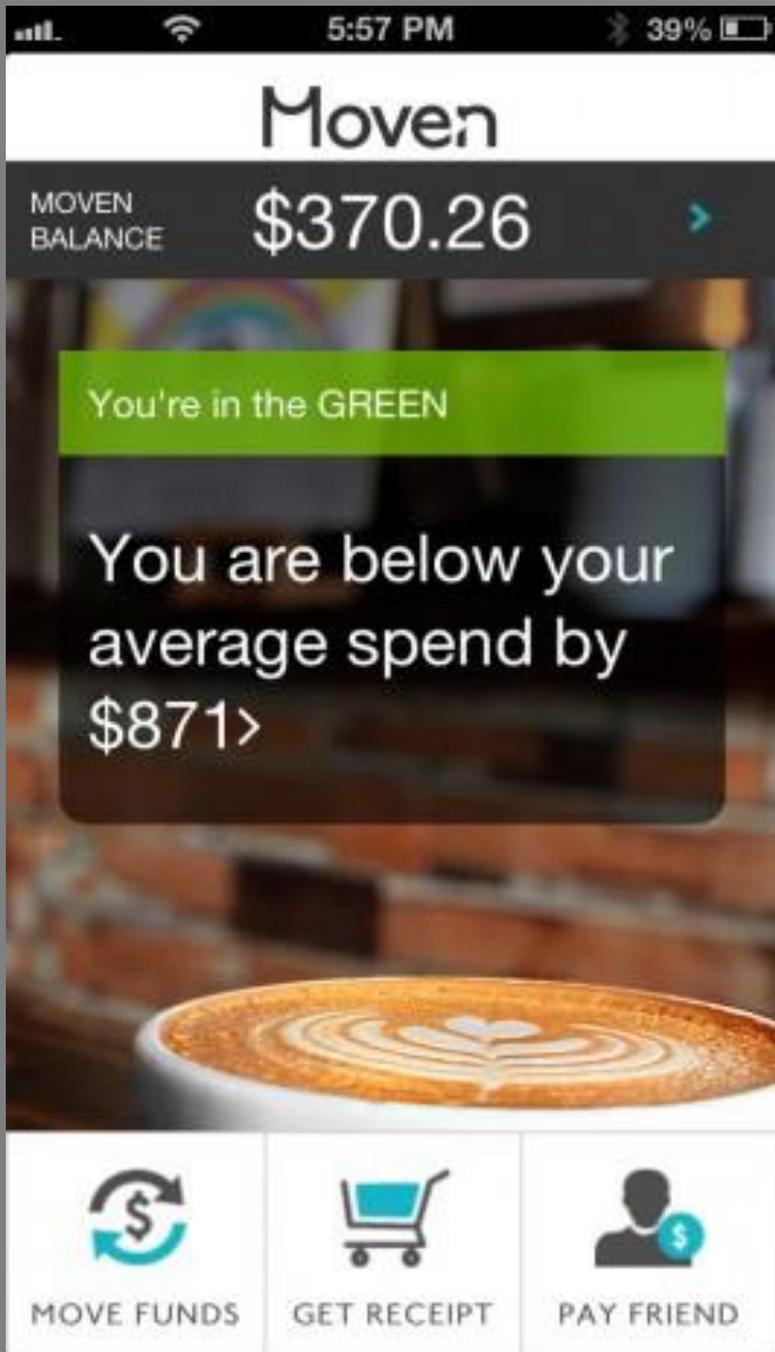
Voice Order & Pay

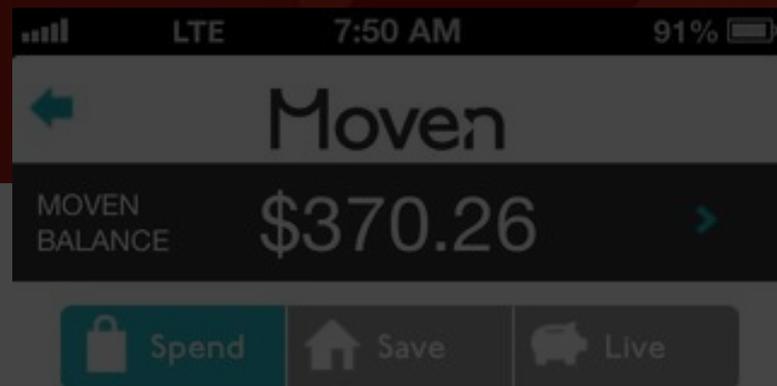
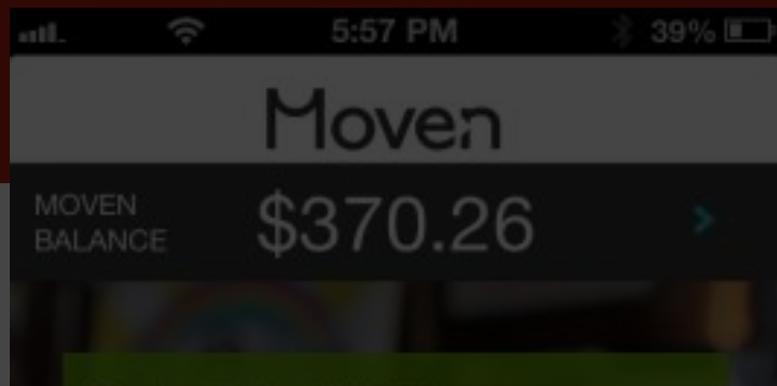
INTRODUCING
amazon echo

Always ready, connected,
and fast. **Just ask.**

Contextual Commerce 3.0

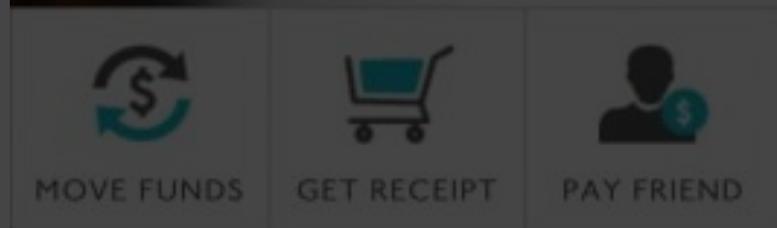
**...interest,
intent, and
ability to buy!**





Mobile banking and shopping converge:

- **63%** of mobile banking users have **checked their account balances on their phones before making a large purchase**
- **53% decided not to purchase** an item as a result of their account balance or credit limit



All Accounts

You've spent as of Tue May 28 **\$3,681**

Your average to date is \$3,971

You are below your typical **\$3,000**

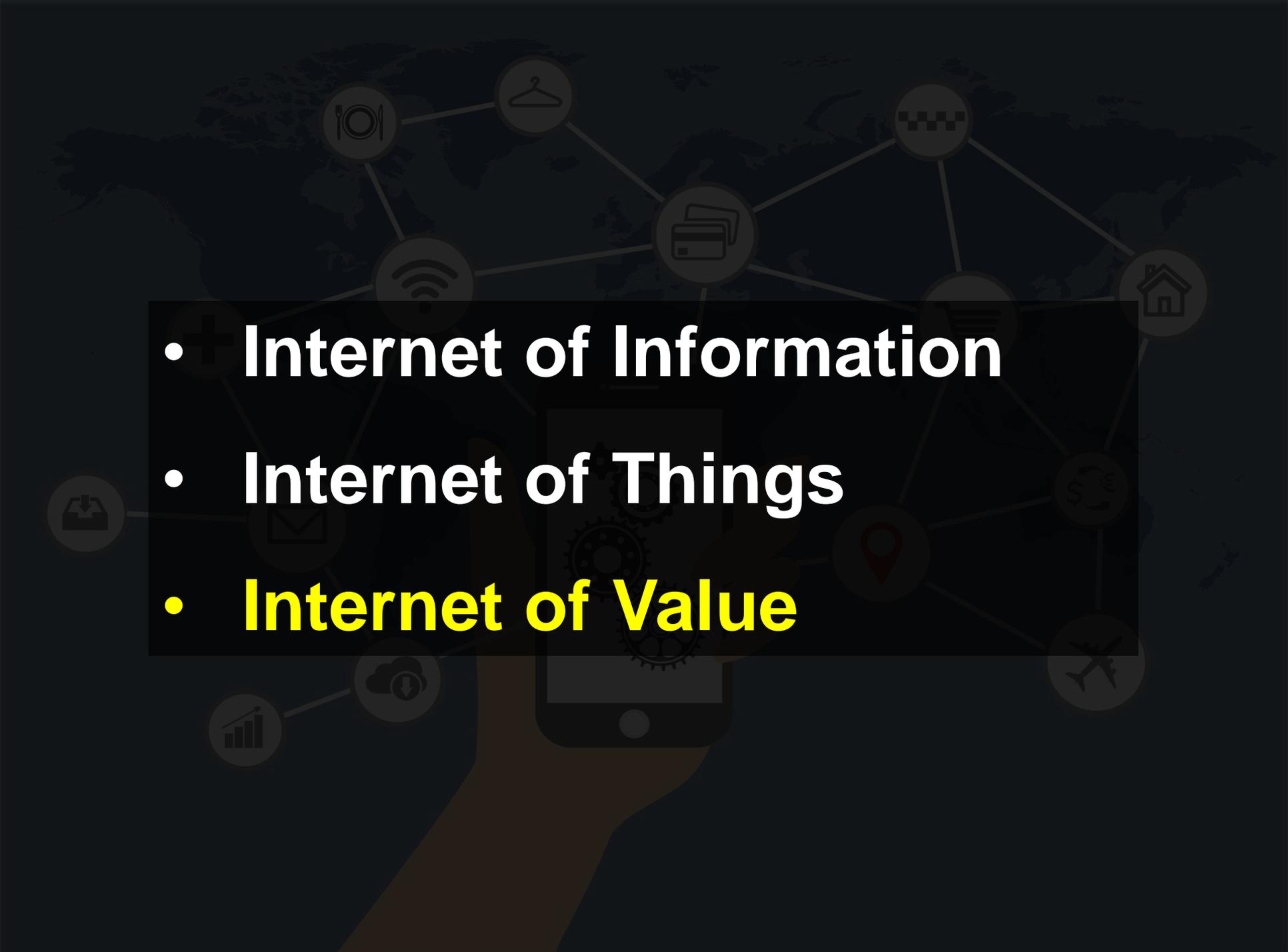


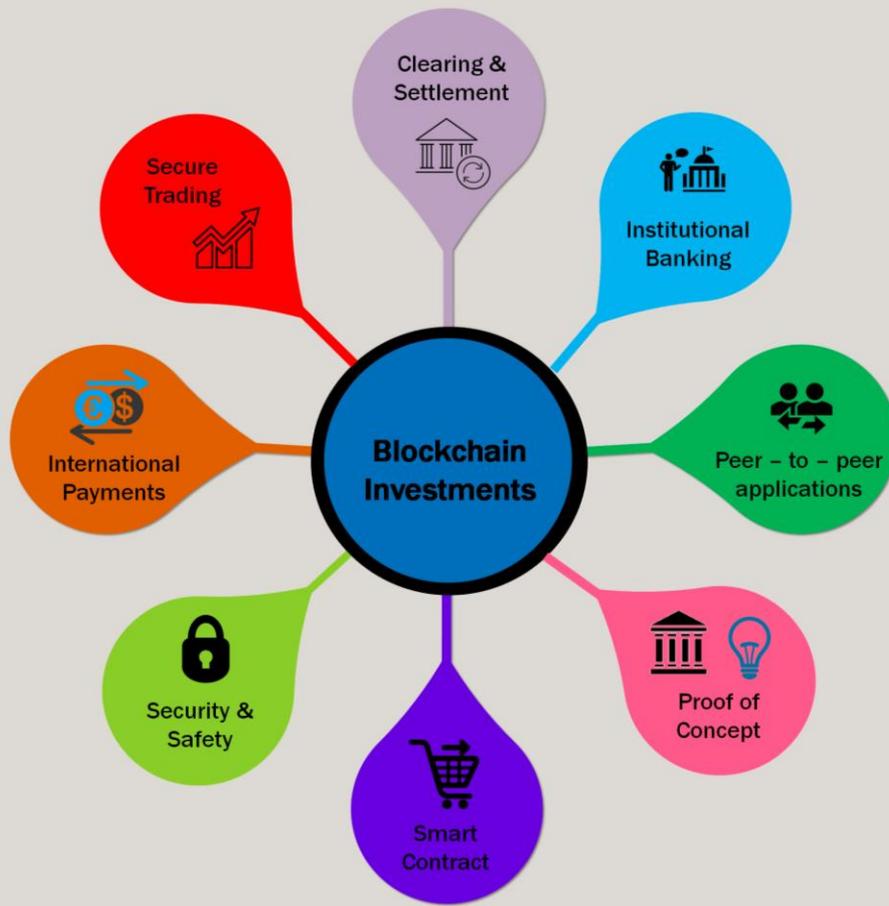
**What about
faster payments?**

**What is the
fastest, free way
to send money in
the U.S. today?**

Faster Payments?

- **Fragmented approaches will eventually converge**
 - Fed joins NACHA Same-Day ACH bandwagon rolling out September 2016
 - Early Warning acquires clearXchange
 - FIS PayNet partners with The Clearing House
- These approaches **aren't ubiquitous...yet**
 - NACHA's ACH Same-Day Settlement; The Clearing House's Real-Time Payments Initiative; MasterCard Send
- **Immediate notification** more important than immediate settlement.
- What about **virtual currencies?**
 - Bitcoin, RippleLabs, etc.

- 
- **Internet of Information**
 - **Internet of Things**
 - **Internet of Value**



Banks Investing in Blockchain Technology

WELLS FARGO, Bank of America, J.P.Morgan, citibank, Goldman Sachs, Santander, ING, Nordea, usbank, COMMERZBANK, UBS, BARCLAYS, CommonwealthBank, Westpac, BBVA, SMBC SUMITOMO MITSUI BANKING CORPORATION, CREDIT SUISSE, Deutsche Bank, HSBC, Morgan Stanley, RBS The Royal Bank of Scotland, MACQUARIE, NOMURA, BNP PARIBAS, MIZUHO, SOCIETE GENERALE, TD Bank, MUFG, National Australia Bank, BNY MELLON, NATIXIS GLOBAL ASSET MANAGEMENT, CIBC, BMO Financial Group, Danske Bank, STATE STREET, Scotiabank, Northern Trust, We're here to help, INTESA SANPAOLO, UniCredit Group, OP Suur-Savo

**Distributed ledgers
could/might maybe
change everything.**

“...transfers facilitated by central authorities such as FIs and clearinghouses has not changed in the last 150 years. **Distributed ledger technology can eliminate the need for that trusted middleman.**”

SOURCE: World Economic Forum
via www.forbes.com

Blockchain is a distributed ledger

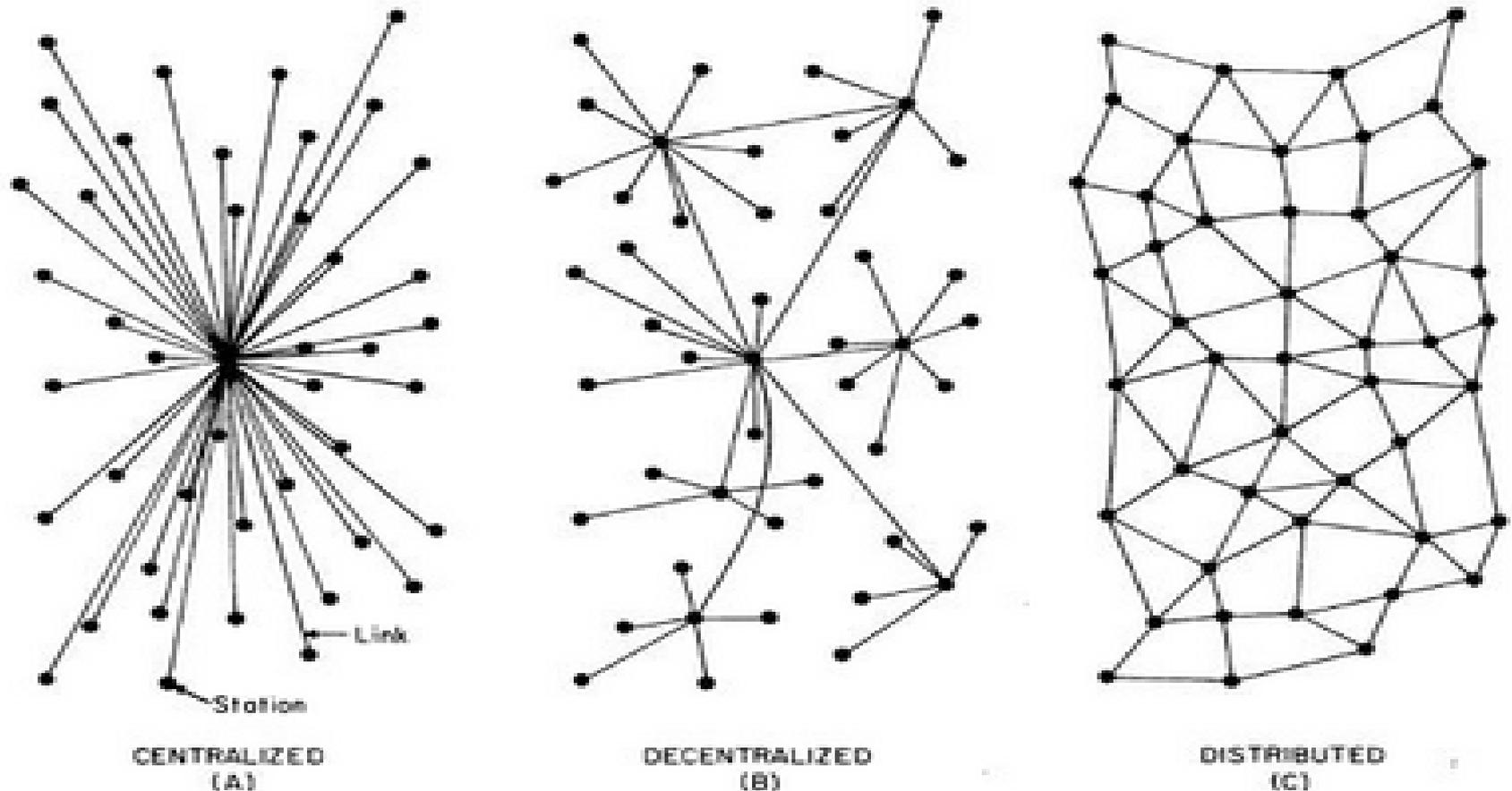
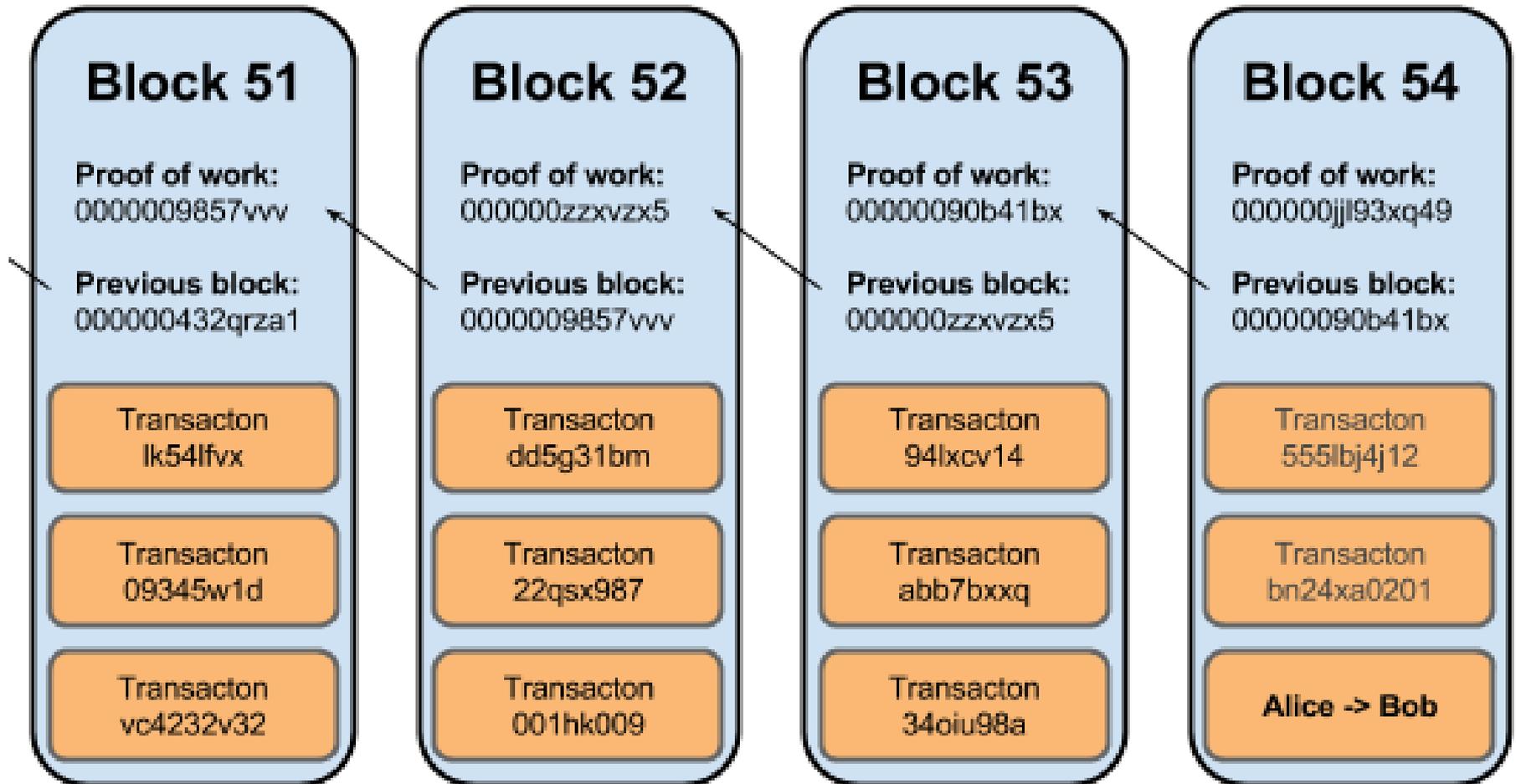


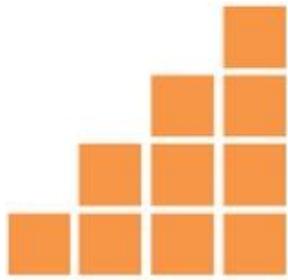
Figure 1 Centralized, Decentralized and Distributed Systems (Paul Baran, 1964)

Blockchain is a protocol...

Protocol	Application
TCP/IP & SMTP	Email
TCP/IP & HTTP	Web browser
TCP/IP & VoIP	Skype & FaceTime
Distributed Ledgers (Blockchains)	Bitcoin, NASDAQ Pre-IPO private stock exchange, etc.

Blockchain





Blockstack.io

SIMPLIFIED BLOCKCHAIN INFRASTRUCTURE



PRIVATE BLOCKCHAIN

High transaction volume and low latency



ASSET MANAGEMENT

Real assets: commodities, currencies, and equities



SECURITY

Secure transaction management and authorization



INTEGRATION

Developer tools and APIs

Blockchain as a Service

Private / hosted | Digital assets | Shared ledgers



Bankchain

powered by **itBit**

The first consensus-based ledger system exclusively for financial institutions.

Shorter Settlement Times

Decreases counterparty risks taken on by financial institutions

Immutable Record Keeping

Reduces time spent on lengthy audit processes

Streamlined Back-Office Operations

Automation eliminates many manual tasks required for post-trade clearing and settlement

Highest Level of Security

Built from the ground up using established cryptographic standards and best practices

Significant Cost-Savings

Unlocks fresh capital typically tied up in expensive clearing and settlement systems

Blockchain: Will It Matter for Banks?

- “...**faster, cheaper and more secure/transparent** way to manipulate money electronically...”
- “...financial services face the most **immediate threat.**”
 - But layers of infrastructure must be built first, and **consumers and regulators must be persuaded to trust blockchain**—two prerequisites that give incumbents an early edge.
- “...**shortened settlement** time also reduces the risk of fraud. Shared ledger technology could even **curb** the current epidemic of **identity theft.**”
 - Applications: payments; title insurance; buying/selling a house; buying/selling stocks; corporate syndicated loans and trades; private stock and repurchase agreements

**Mobile wallet
ecosystem is
fragmenting
in 2016...**

Mobile Wallet Fragmentation

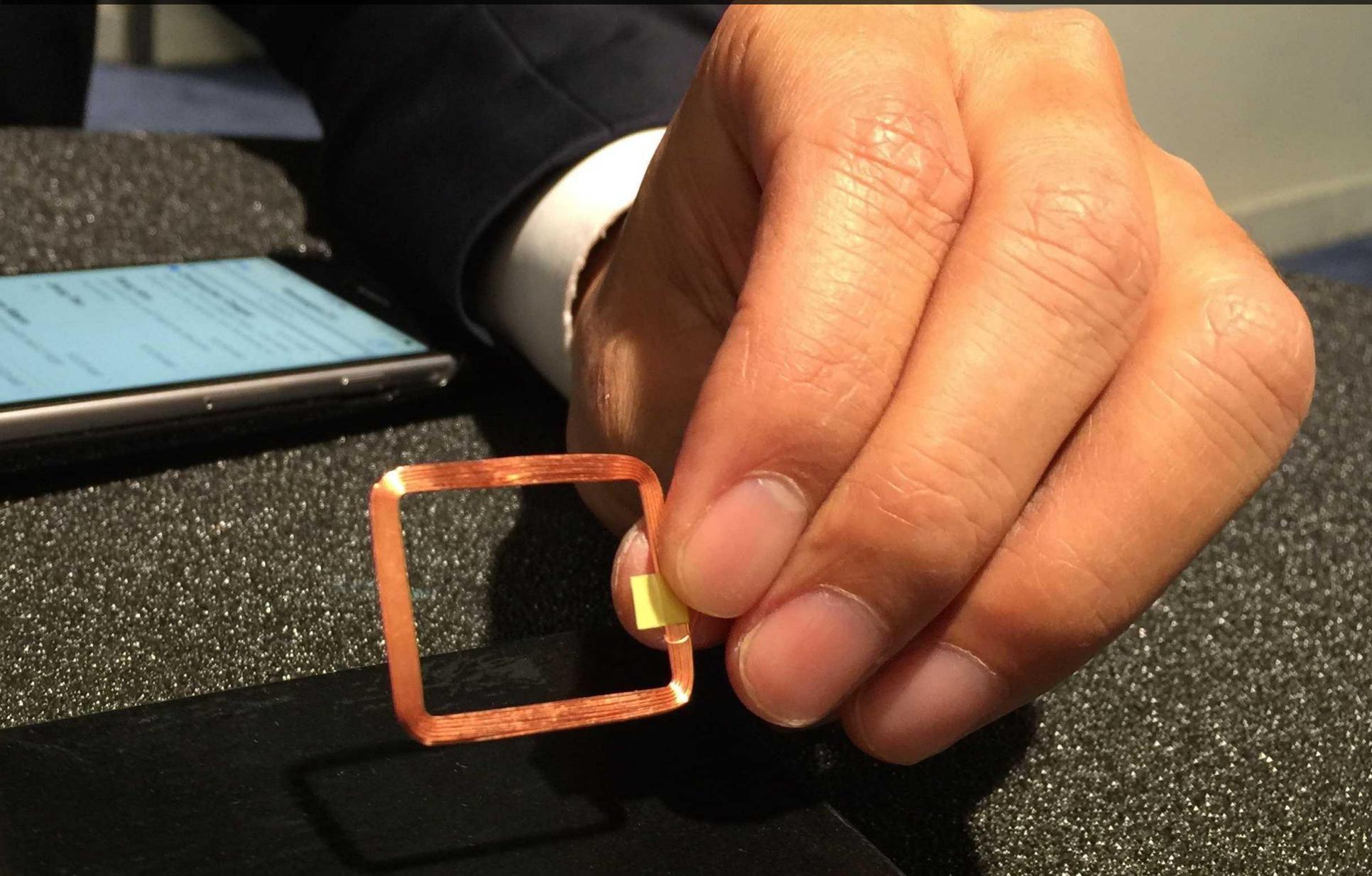
							
Launch	▪ September 2014	▪ September 2015	▪ September 2015		▪ Summer 2016	▪ 2016	▪ October 2015
Channels	▪ In-app ▪ In-store	▪ In-app ▪ In-store	▪ In-app ▪ In-store	▪ In-app ▪ In-store ▪ Online	▪ In-app ▪ In-store ▪ Online	▪ In-store	▪ In-store
In-store Technology	▪ NFC ▪ Secure element	▪ NFC ▪ HCE	▪ NFC, Secure element ▪ Loop Pay	▪ Beacon ▪ QR code	▪ QR code ▪ Scan receipt ▪ Over-the-air	▪ QR code	▪ NFC
Encryption	▪ Tokenized	▪ Tokenized	▪ Tokenized	▪ Proprietary	▪ Tokenized	▪ Proprietary	▪ Tokenized
Acceptance	▪ NFC merchants (~200k) ▪ In-app	▪ NFC merchants (~200k) ▪ In-app soon	▪ ~80% of physical merchants ▪ In-app soon	▪ Millions of merchants online ▪ Some stores	▪ MCX merchants (~100k)	▪ MCX merchants (~100k)	▪ NFC merchants (~200k)
Payment Method	▪ Cards + loyalty	▪ Cards ▪ Smart Tap loyalty	▪ Cards	▪ Cards ▪ ACH	▪ Cards + loyalty	▪ ACH ▪ Loyalty	▪ Cards
Platform	▪ iOS	▪ Android	▪ Android	▪ All	▪ All	▪ All	▪ Android (Payment capability)
POS Payment Experience	▪ Tap+ touch ID from locked phone	▪ Unlock phone and tap	▪ Unlock phone and tap	▪ Unlock phone, start pp and scan	▪ Unlock phone, start app and scan	▪ Unlock phone, start pp and scan	▪ Unlock phone, start app and scan
Online Payment Experience	▪ Click + touch ID	▪ Click + touch ID or password	▪ Click + touch ID or password	▪ Click, type email and password	▪ Click		▪ Click + touch ID or password

 Pay



SAMSUNG
pay

Magnetic Secure Transmission (MST)





“[Issuers] can’t add tap-to-pay features to their iPhone apps because Apple doesn’t let third parties use the NFC tech in its phones.”

Jason Del Rey
Senior Editor
Re/code

“If you store card numbers on the phone, they are **vulnerable even if they are tokenized.**”

Richard Crone
Crone Consulting



**...Android Pay will
allow issuers to
integrate mobile
payments into their
mobile banking apps.**

PENDING

Whole Foods San Antonio, TX (\$100.00)
Pending

MAY 16

Walgreens 1604 San Antoni... (\$75.00)
Healthcare/Medical

MAY 14

Corner Store #44789 (\$6.72)
Gasoline/Fuel



Add this card to Android Pay.

NO, THANKS

ADD CARD



USAA

USAA Wallet



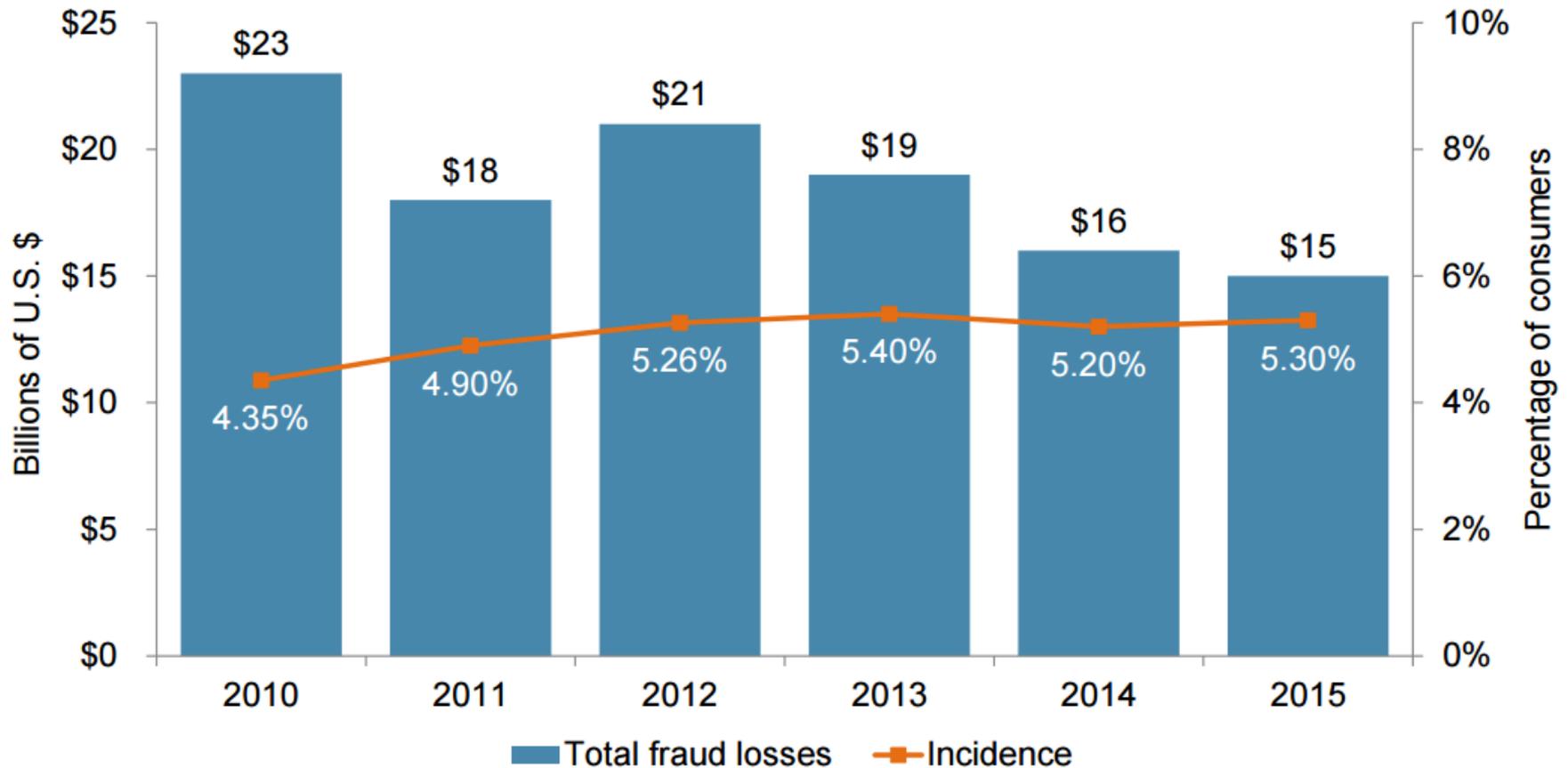
Your card has been saved to Android Pay.

	Apple Pay	Android Pay	Samsung Pay	Issuer HCE App
Issuer Cost				
Security				
Cardholder Usability				
Issuer Control				
Ability to Integrate into Issuer App				
POS Acceptance				
Data Ownership				

Authentication Freaks

Fraud Stabilizes, Losses Decline

Overall Fraud Incidence and Losses, 2010-2015



SOURCE: Javelin Strategy & Research; 2016 Identity Fraud: Fraud Hits An Inflection Point; February 2016

Fraud Stabilizes, Losses Decline

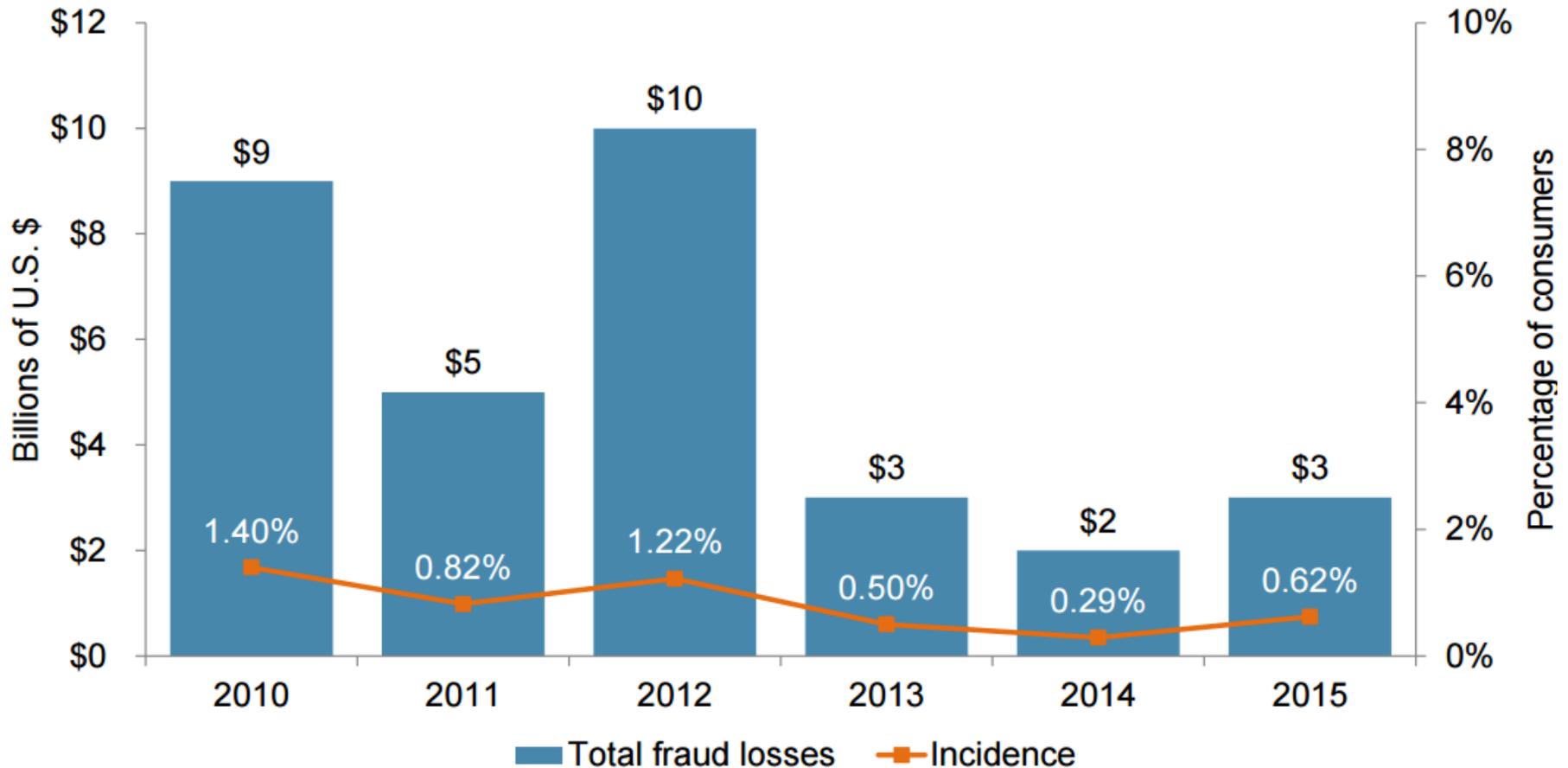
Overall Fraud Incidence and Losses, 2010-2015



...but this **stability masks a shift in the types of payments fraud** evolving.

New-Account Fraud **Doubles** in 2015!

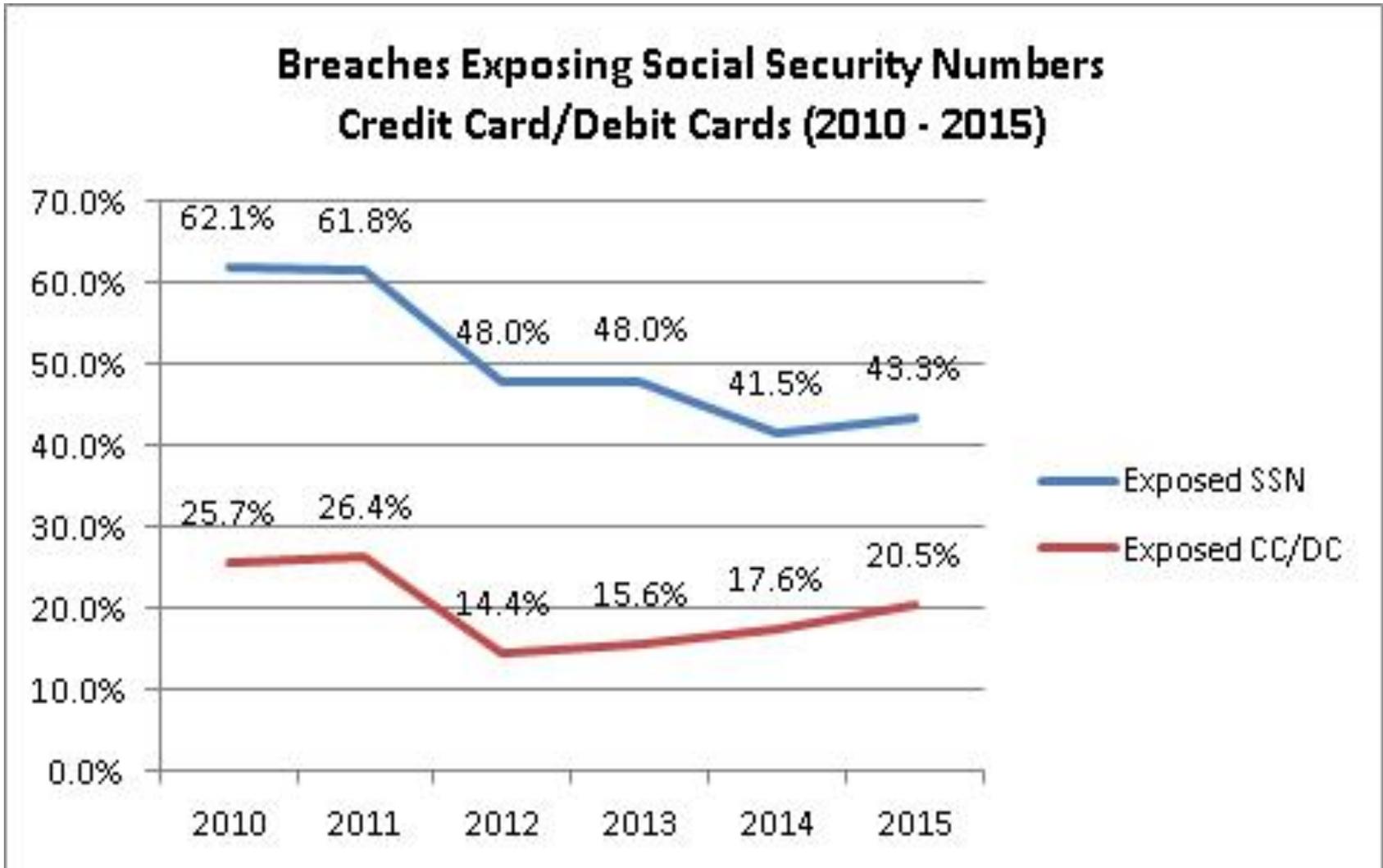
New-Account Fraud Total Losses and Incidence, 2010-2015



Why is NAF fastest growing fraud?

- EMV has made counterfeit card fraud more difficult.
- Counterfeit-card-fraud crime rings are now using SSN info to open new card accounts (in others' names).
- Can use local knowledge of non-EMV-enabled merchants to target NAF card fraud.
 - Can control contact information of new card.
 - Authorize transactions when issuer calls/questions.
 - Max out credit limit before abandoning card.

Breaches: SSNs vs Cards



SOURCE: Identity Theft Resource Center; "2015 Data Breaches"; www.idtheftcenter.org; 1/25/16

Breaches: SSNs vs Cards

Breaches Exposing Social Security Numbers
Credit Card/Debit Cards (2010 - 2015)

70.0%
62.1% 61.8%

2014 was the year of the **credit card breach**.

50.0%
40.0%
41.5% 43.3%

2015 was the year of the **SSN breach**.

20.0%
10.0%
0.0%
14.4% 15.6% 17.6% 20.3%

2010 2011 2012 2013 2014 2015

SOURCE: Identity Theft Resource Center, "2015 Data Breaches"; www.idtheftcenter.org; 1/25/16

Compromised SSNs Explode in 2015

		2014	2015
Cards	# of breaches	138	160
	# of records	64M 	.8M
SSNs	# of breaches	325	338
	# of records	16M 	164M

SOURCE: ITRC Data Breach Reports 2014 and 2015; www.idtheftcenter.org;

What to do...

- **Empower consumers in the fight** with mobile card controls, alert, & no-friction balance access.
- **Prepare for resurgence of Account Take-Over (ATO) fraud**, and fight with non-text two-factor authentication such as biometrics and device rep.
- **Don't delay EMV** as fraud is concentrating among the last-to-enable.
- **Use data outside of what is provided by new account applicants to confirm their identities**, e.g., voter registration, property records, social media footprint (avoid SSN-only authentication).

SOURCE: Javelin Strategy & Research; 2016 Identity Fraud: Fraud Hits An Inflection Point; February 2016

Social Biometrics™

Realtime identity verification using online and social data

LEARN MORE ▾





HELLOSODA



PROFILE

ASSISTED DATA SCORING

BY SODALABS

Profile HOW IT WORKS GET HELP CONTACT US

John Davies
 john.davies@gmail.com

Score
5.6 /10 **GOOD**

SUPPORTIVE
MILD CONCERN
SERIOUS CONCERN

Spending

135 No. of Follow
712 No. of Friend
 No evidence of other money

Proximity

London	500 yds
West London	400 yds
East London	400 yds
North London	300 yds
South London	200 yds
West Midlands	100 yds
East Midlands	100 yds
North Midlands	100 yds
South Midlands	100 yds
Yorkshire	100 yds
Wales	100 yds
Scotland	100 yds
England	100 yds

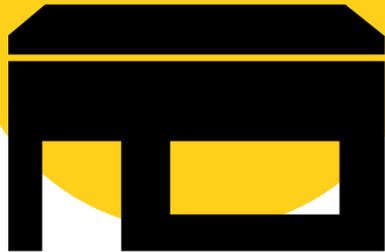
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EMV: Transitional Fraud Targets

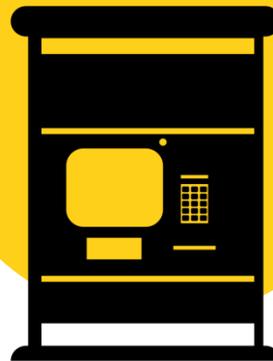
SMALL MERCHANTS AND UNATTENDED TERMINALS WILL REMAIN VULNERABLE

WHILE BIG MERCHANTS ARE WELL ON THEIR WAY,
FRAUDSTERS WILL STILL HAVE **TARGETS**.

SMALL
MERCHANTS



ATMS



GAS PUMPS



SOURCE: Javelin Strategy & Research; "Fixing CNP Fraud: Solutions for a Pre- and Post-EMV U.S. Market; October 2014



SMALL
ISSUERS



**During the EMV transition,
the probability of fraud
will concentrate among
the last to migrate.**

Counterfeit Card Fraud Probability

odds: 1/3



1

odds: 1/3



2

odds: 1/3



3

Counterfeit Card Fraud Probability

odds: 0



1

odds: 1/2



2

odds: 1/2



3

Counterfeit Card Fraud Probability

odds: 0



1

odds: 0



2

odds: 100%



3

EMV Challenges

- Transitional concentrations of fraud on weakest links and last to the party
 - Debit Cards
 - Smaller Merchants
- Tokenization plays
- Signatures are meaningless...and we're transitioning to, you guessed it, Chip & Signature EMV
- The learning curve for consumers
 - Dip and leave vs. dip and yank (gas pump)

CNP Fraud Forecast: 2018

CNP FRAUD WILL HAVE A CONSISTENT YET DRAMATIC GROWTH

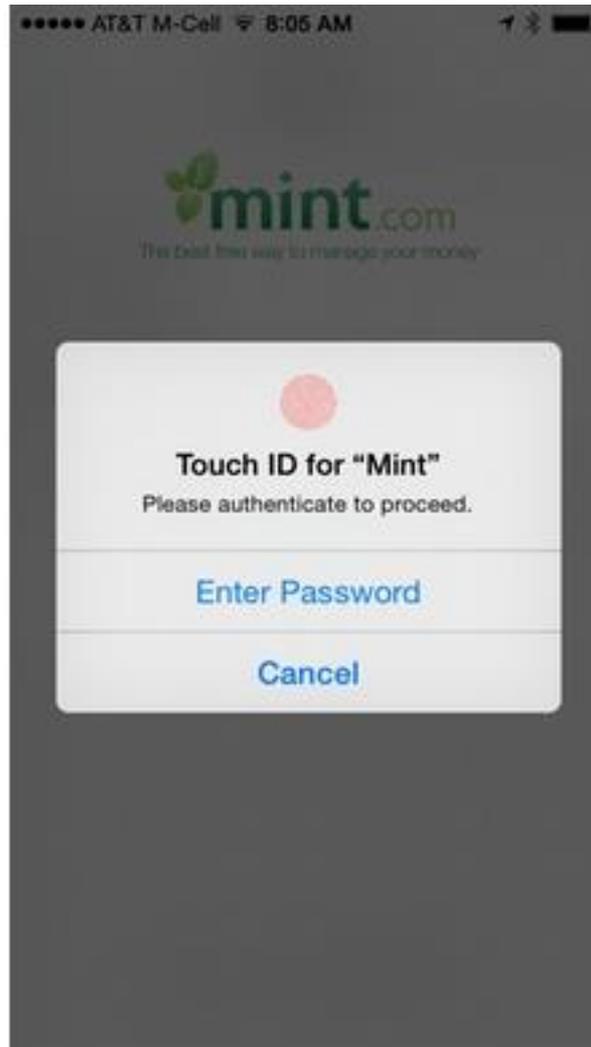
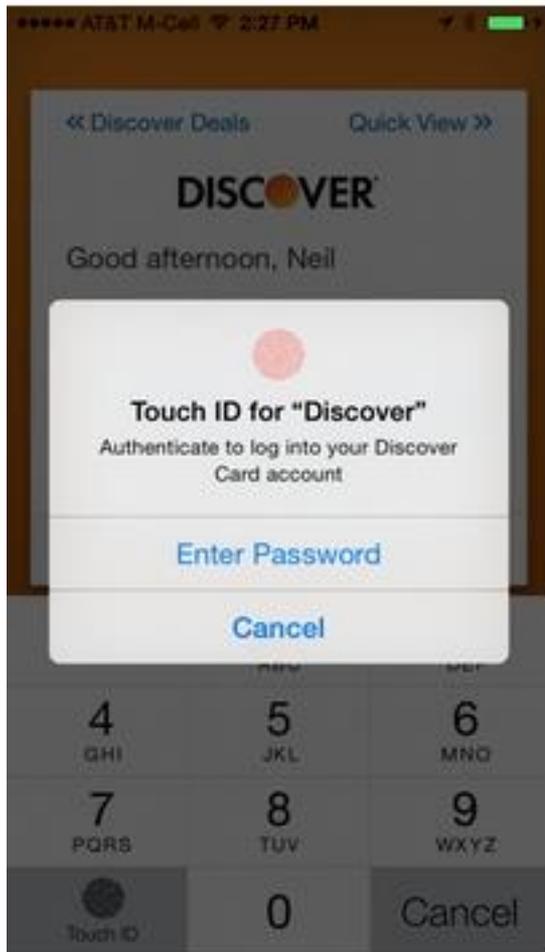
CNP FRAUD WILL BE

4X

POS CARD FRAUD BY
2018

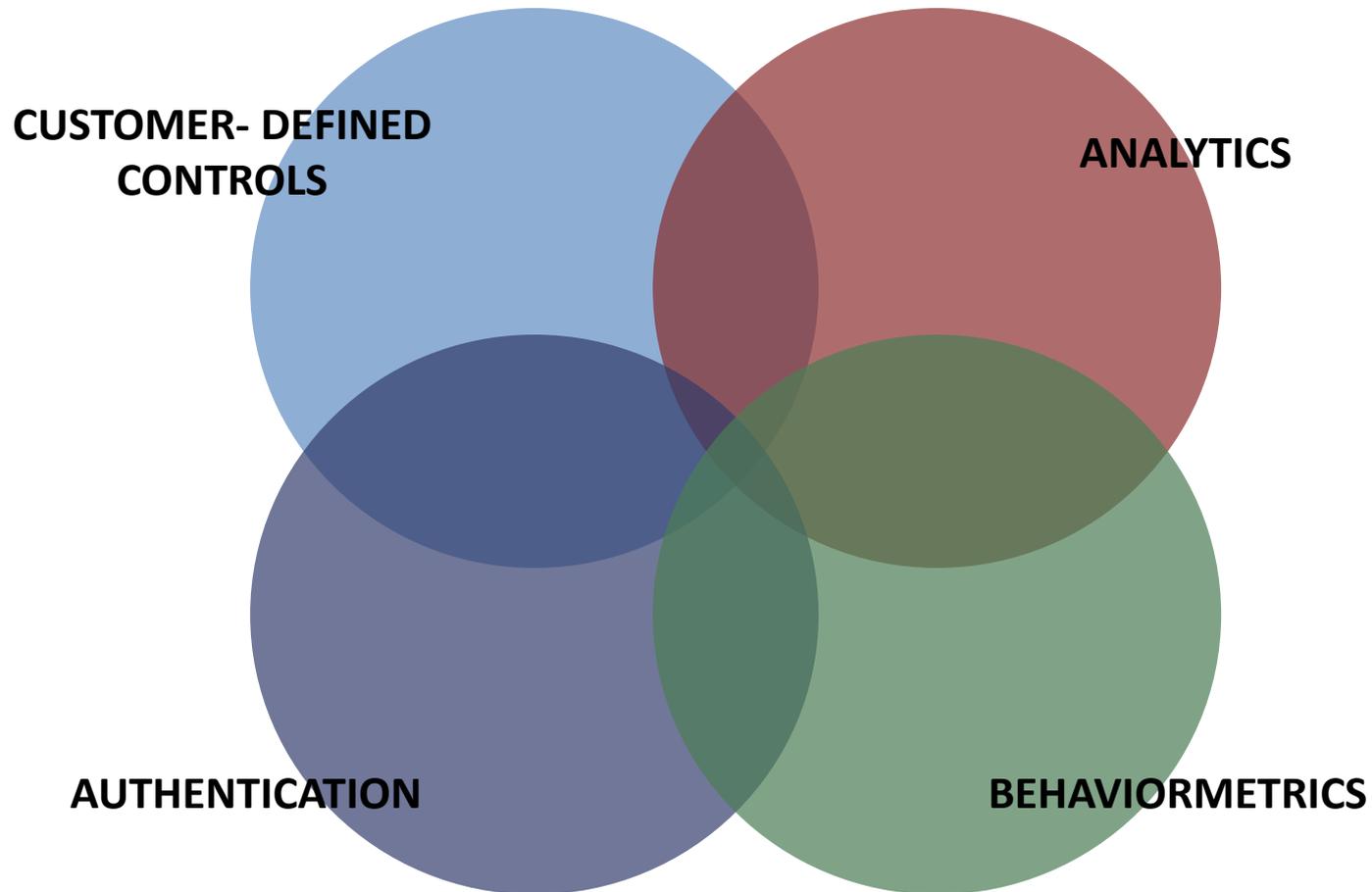
SOURCE: Javelin Strategy & Research; "Fixing CNP Fraud: Solutions for a Pre- and Post-EMV U.S. Market; October 2014

Match Friction to Risk



A Holistic Approach: Fighting CNP Fraud

DRIVING DOWN CNP FRAUD WILL REQUIRE A COMPREHENSIVE STRATEGY



Secure Personal Data Doesn't Exist

- FIs must presume most personally identifiable customer data has already been compromised when choosing anti-fraud countermeasures:
 - Tokenize at every turn
 - **Authenticate behavior (not just data) using advanced analytics**
 - Board-level oversight
 - SSNs are dead (as authenticators)

What about **Gen Y**?

“Adults under 35 had a savings rate of negative 2% in 2014.”

SOURCE: Moody Analytics





50-60% of Generation Y
confess they have
impulse purchase
problems... and huge
holes in their ears.

**So what's the
answer to the
impulse problem?**

**Real-time
feedback
loops?**



**...but there are
limitations
to real-time
feedback.**



A third of US consumers who have owned an activity tracker **stopped** using it within six months.

Endeavour Partners, July 2014

WHY NOW

The Quantified Self has failed to measure up.

Yes, self-tracking has given people millions of data points about their lives. But for many, it's not enough.

**So how to help
those immune to
feedback loops?**
(because their brains aren't fully mature yet)

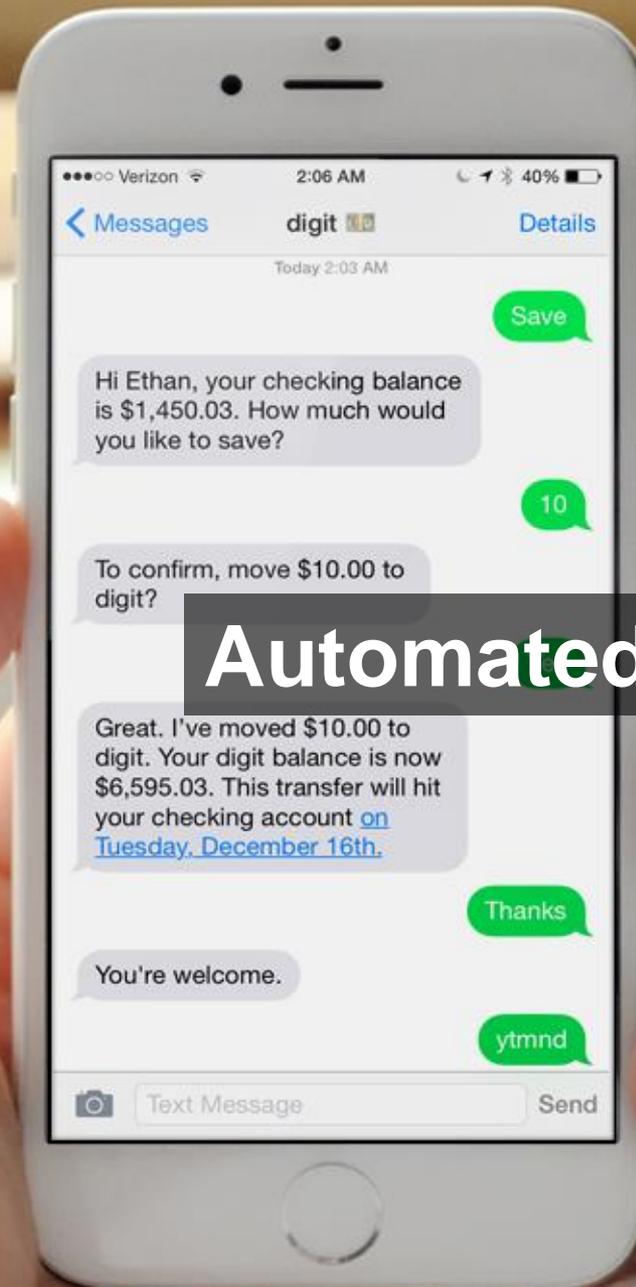
RETIREMENT 401K



Opt-outs and automation.

MAX

digit 



Automated savings?

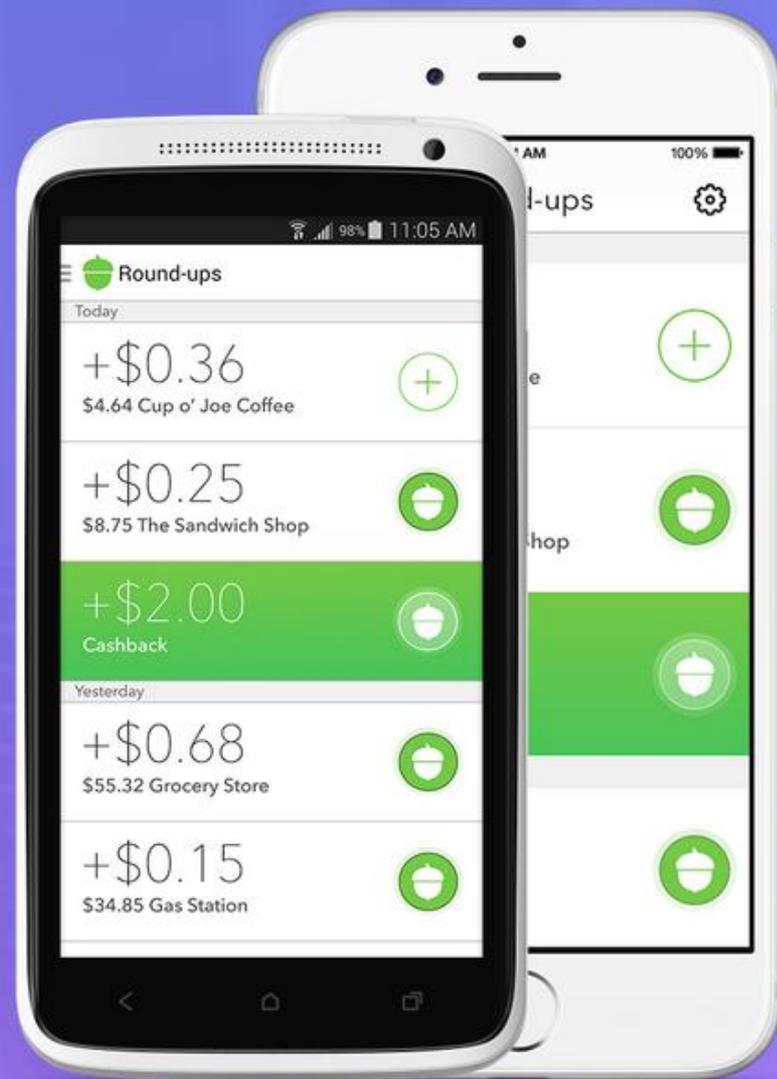


acorns
Invest the Change

Save Your Round-ups

Invest from everyday purchases by rounding up each amount to the next dollar automatically or on-demand.

Get the App

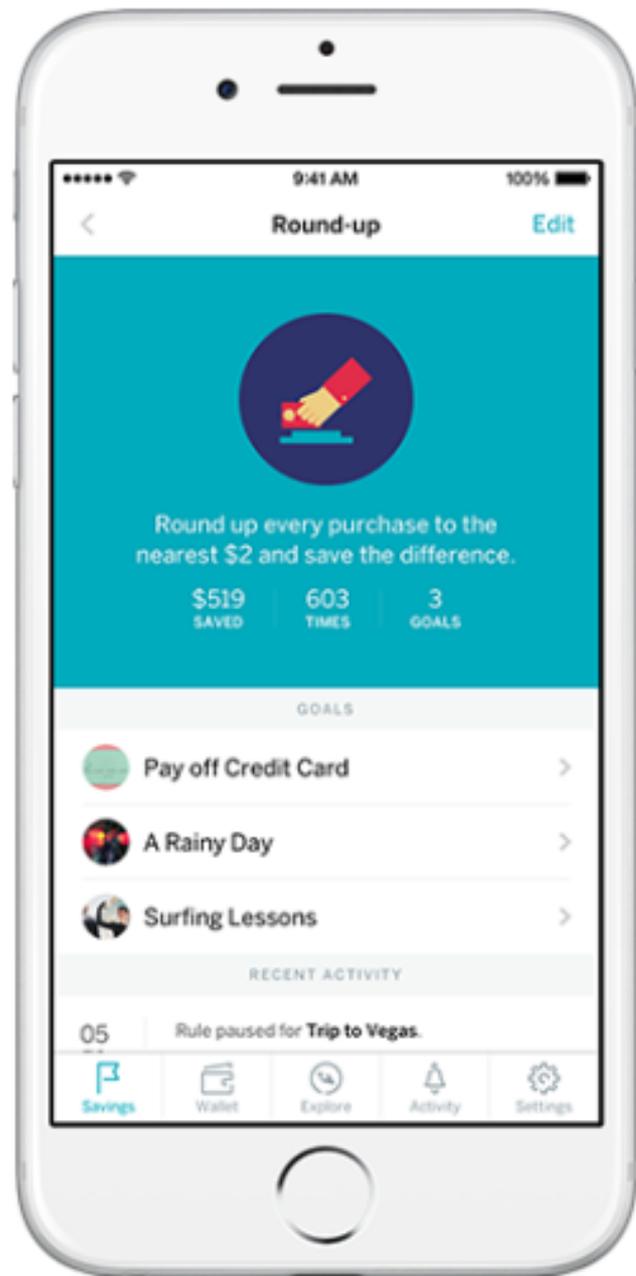




AUTOMATED SAVINGS

Reach your goals one save at a time

Save automatically without feeling short on cash. Decide what triggers a deposit, then improve your daily habits and build your savings with a lot less effort.



Impulse Savings



Make Digital Banking **Personal**

1. Mobile-first
2. Individual, actionable insights and advice
3. Contextual interaction
 - Where are they? What are they doing?
How can you help?
4. Speed and real-time transactions
5. Omni-channel experience

SOURCE: Javelin's "Bank Switching: Combating 'Silent Churn' to Maximize Primary FI Status"; November 2015

Emerging Risks

- Existential Risks
 - The “Silent Churn” of customers’ secondary FIs/fintechs
 - Combat with personalized (contextual) digital banking
- Payments Risks
 - EMV transition concentrates fraud at late comers
 - Pre-staged tokens in HCE mobile payments
 - Faster payments will require more formal/closely considered credit-risk limits and automated enforcement
- Lending Risks
 - T&C’s of pass-thru loan arrangements between banks & alternative lenders
 - KYC on serving borrowers via alternative marketplaces

Emerging Risks, cont'd

- **Strategic Risks**
 - **Branch transformation strategy**, execution & timing
 - Divest-to-invest optimization vs. all-things-to-all-customers
 - **Digital channel strategy**, execution & timing
 - Mobile banking evolves to converge with mobile commerce, mobile personal financial management (PFM), and mobile payments
 - Migration from passive transaction/data service to active advisory service brings new risk/liability
 - **Co-innovation risk**: complex third-party ecosystems lowers probabilities of success with new innovation, but tech makes innovation (failure) cheaper & less risky than ever before

Lee Wetherington, AAP
lwetherington@profitstars.com
<http://discover.profitstars.com/leewetherington>



@leewetherington



/in/leewetherington

