

# 2017 OSC eCommerce Conference

April 19, 2017

## Core and Emerging Payment Technologies

Where Will They Fit in the Corporate Payments Spectrum?

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Director , Complex Digital Payment Solutions



# Topics to be discussed:

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- Macro trends driving global payments innovation
- The regulatory forces shaping ‘faster payments’
- The rise of digital payments
- Exploring new models for global payments – blockchain



# Innovation is being driven by three global megatrends...

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## 1 DEMOGRAPHIC SHIFTS

The rise of millennials is shaping the future of financial services.



## 2 GLOBALIZATION

Global population growth will offer new business opportunities.



## 3 GLOBAL CROSS-BORDER COMMERCE

Ease between buyer and seller is driving cross-border growth.

# #1 Demographic Shifts

By 2025, millennials will account for 75% of the global workforce – driving expectations

## Millennials are the demographic cohort born post-1980

- Fast-paced, technology-enabled lifestyle and how they demand products instantaneously
- Excited by change and innovation

## Embracing 'New'

- 73% excited about a new offering in financial services from Amazon, Apple, etc
- The sharing economy fits with millennials' social values
- The US "sharing economy" is estimated at \$450 billion

## Always Connected

- Globally, millennials spend an average of 6 hours online every day
- Global increase in number of devices connected to the internet (estimated 50bn devices by 2020)
- Millennials are 2.5x more likely to be an early adopter of tech than older generations



## THE MILLENNIAL STATE OF MIND

THE LARGEST GENERATION on our planet

10,000 MILLIONNALS TURN 21 everyday in America Which means...

79 MILLION vs. 48 MILLION (born between 1965 and 1980) Generation Xers

# #2 Globalization:

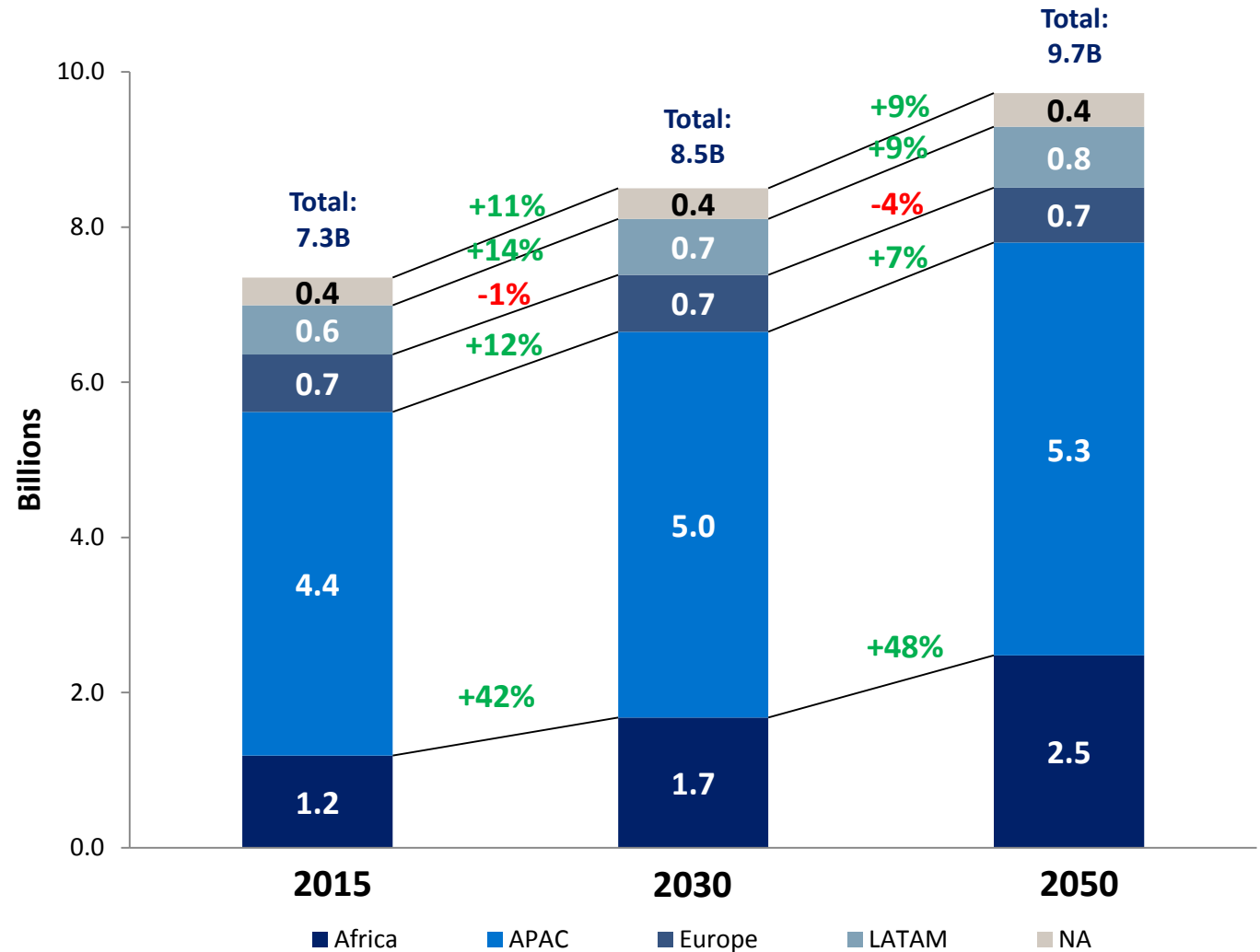
Population growth will drive business expansion into more local economies

## The Global Population in 2050:

Global population will grow by **33%**

Europe will lose nearly a **third** of its global population market share

Africa & APAC are responsible for nearly **91%** of the growth

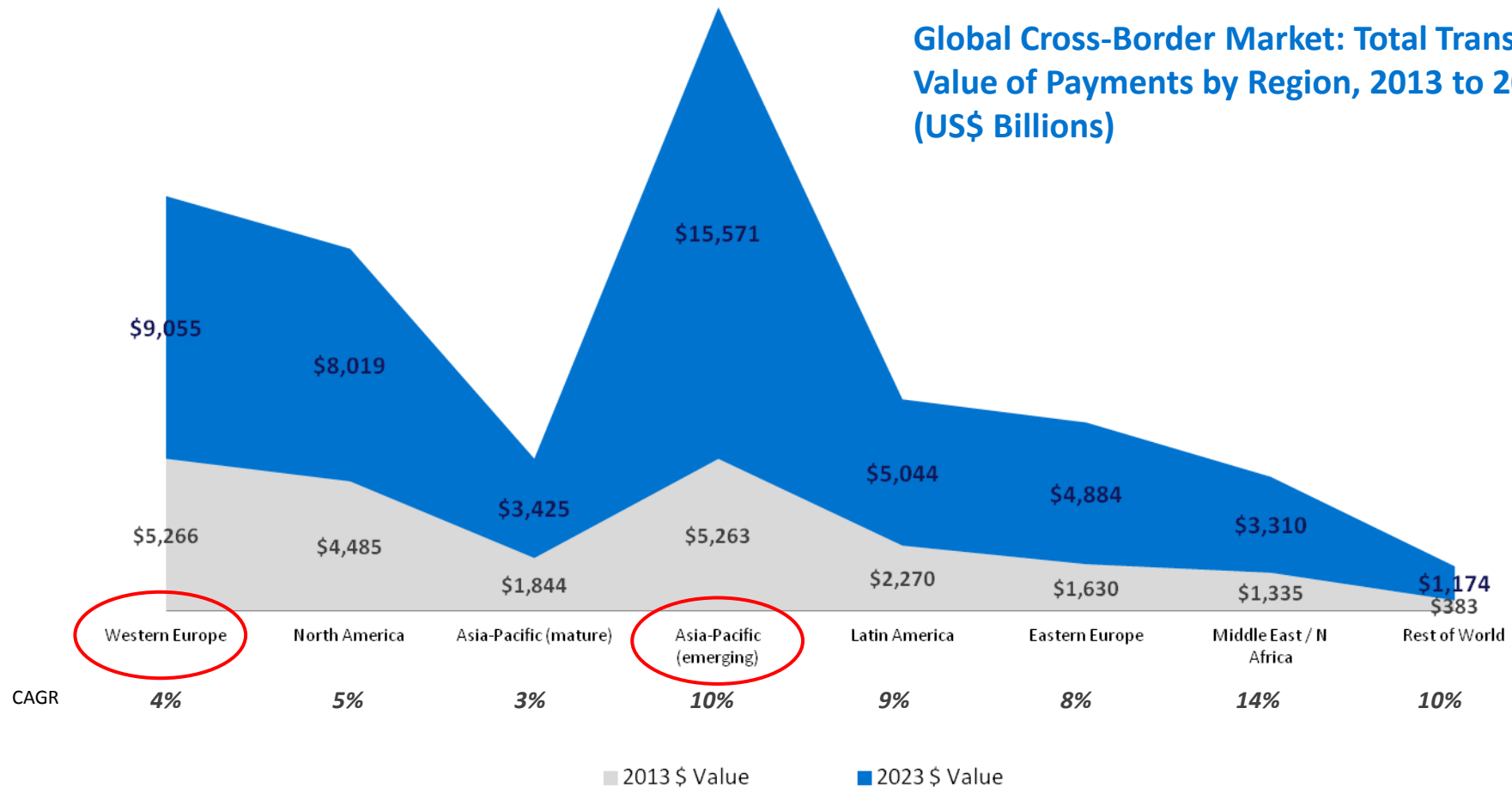


Source: World Population Prospects, UN; Goldman Sachs Equity Research; BCG

# #3 Global Cross-border Commerce:

Increasing **global currency flows** will exacerbate weaknesses in correspondent banking

Global Cross-Border Market: Total Transaction Value of Payments by Region, 2013 to 2023 (US\$ Billions)

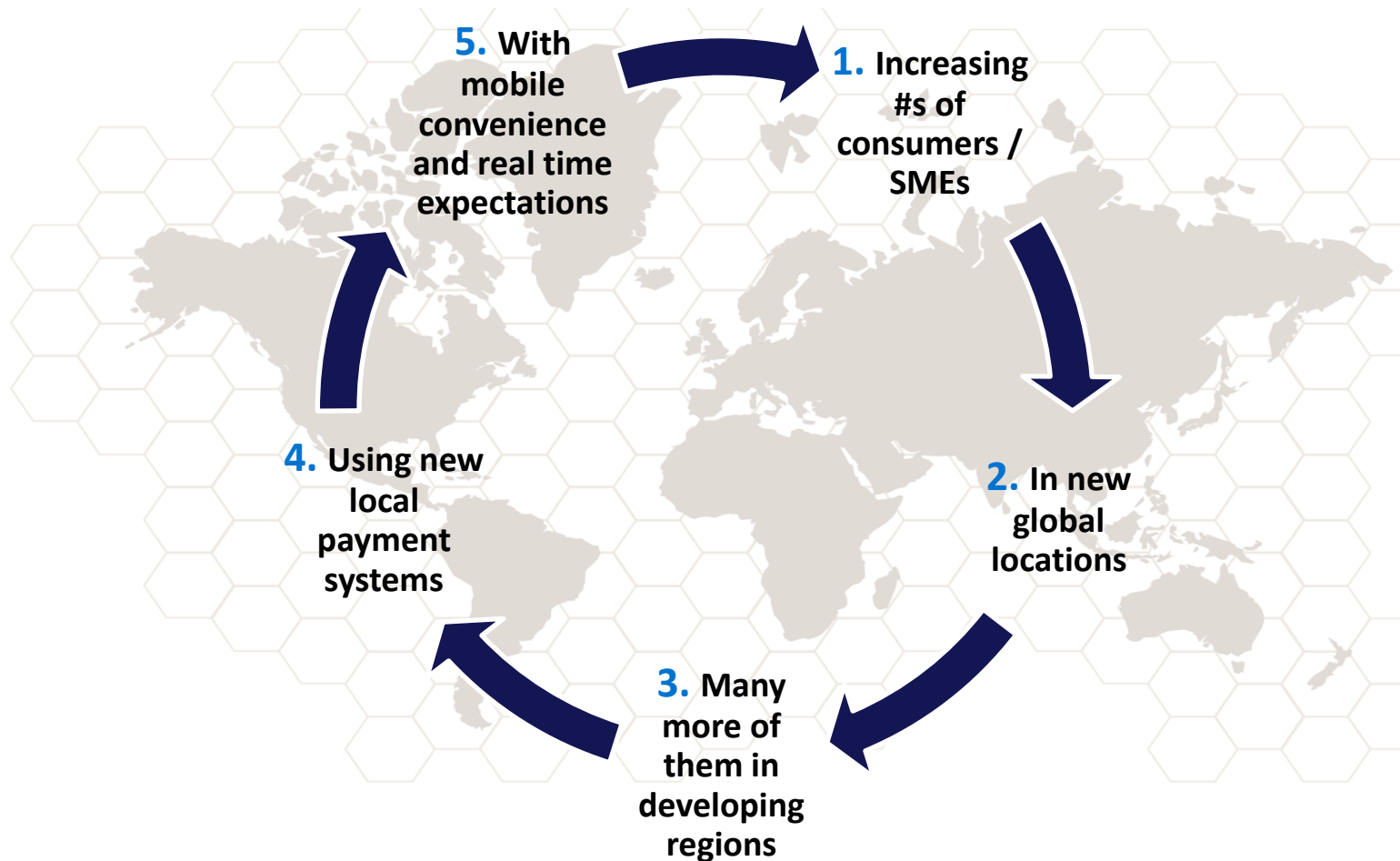


Source: BCG Global Payments 2014 Report

Western Europe and emerging APAC will lead global growth in cross-border payment volumes

# Business context driving change in payments...

Today we have...



Leading to rapidly increasing volumes of global low value payments. **Challenging this is the inadequacy of the correspondent banking system to support**

# How governments and fintechs are responding

Driving the expansion of newer, faster payments in real-time

no real-time payment system

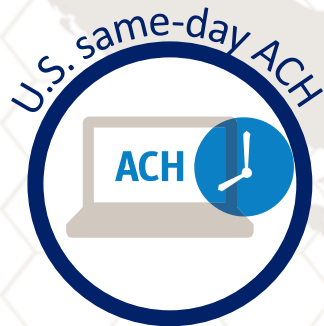
**Federal Reserve**

Jan. 2015



U.S.

Specific requirements defined....



**19**

**COUNTRIES**

Real-time payment systems

government mandate

**success**



Mexico  
Japan

## Status of payments infrastructure modernizing

XX%

Indicates percentage, global credit transfer flows covered

### Exploratory phase

2%

Canada  
Kazakhstan

Indonesia  
Thailand

### Design phase

42%

Netherlands  
Norway  
Colombia  
Spain

U.S.  
Finland  
EU

### Build phase

2%

Australia  
Saudi Arabia

### Live

45%

Bahrain  
Brazil  
Chile  
China  
Denmark

Iceland  
India  
Japan  
Mexico  
Nigeria

Poland  
Singapore  
South Africa  
South Korea  
Sweden

Switzerland  
Taiwan  
Turkey  
UK



# 'Faster' Payments in the US: A unique collection of competing entities racing to gain ubiquity...

## Leading FI Endorsed Solutions:



National bank-owned payments company that is a major competitor to The Fed in providing payments services: check and imaging-clearing, ACH processing and wire transfer processing

- The Clearing House real-time system will be designed to address unmet customer needs across a number of targeted use cases: B2P; P2P; P2B; B2B
- Requires a significant member investments to build a new real-time payment network



Early Warning provides risk management solutions to financial institutions, government entities and payment companies, enabling businesses and consumers to transact with security and convenience.

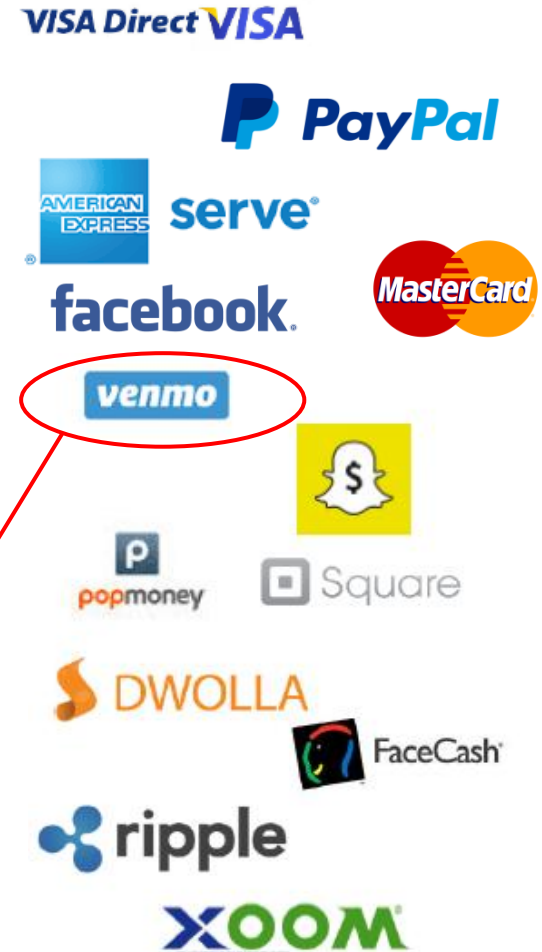
- Owned by Bank of America, BB&T, Capital One, JPMorgan Chase, U.S. Bank, and Wells Fargo
- October 26<sup>th</sup>, 2015 - Early Warning acquires ClearXChange
- Rebrands to **ZELLE**.



Non-profit association that oversees the ACH network with a primary role in rule-making. It is not involved in the processing of payments. It tests new product enhancements but does not develop them like card networks

- Through a 3-phased approach, NACHA seeks to move the ACH Network from today's single, next-day settlement to multiple, same-day and next-day settlement options for ACH transactions


## Non-Bank Solutions:













- "VENMO ME" money
- \$54 MM/day vs \$175MM/day
- 17% of the total P2P volume
- avg non-bank pymt: \$135
- most common emoji: pizza and beer

# RTP Development in the US: The Clearing House

- The Clearing House (TCH) is implementing the first **new payments rail** in the United States in 40 years, with the goal of making payments not only faster but safer as well
- RTP will be available to all US financial institutions; the goal is to make it ubiquitous
- TCH aims to have the new rail ready for operation by the end of 1Q17
- The system aligns with the CFPB's consumer protection principles and the criteria set forth by the Federal Reserve's Faster Payments Task Force



### RTP System Characteristics and Requirements\*

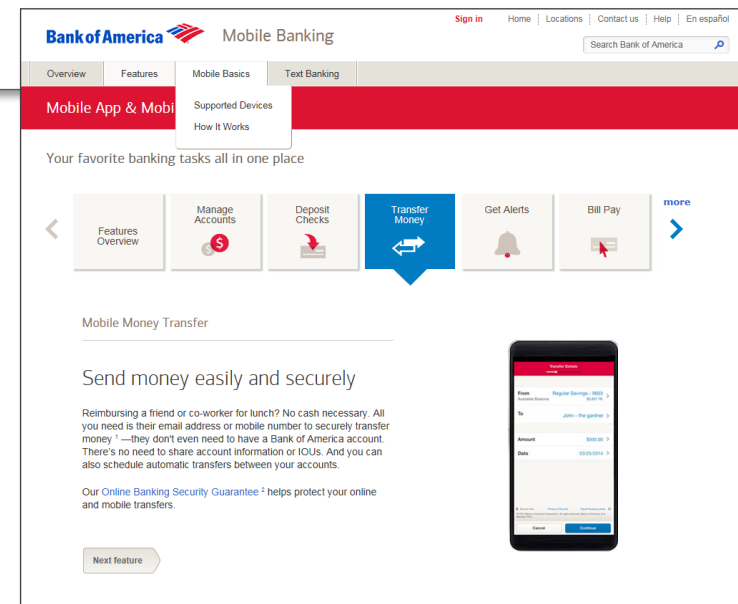
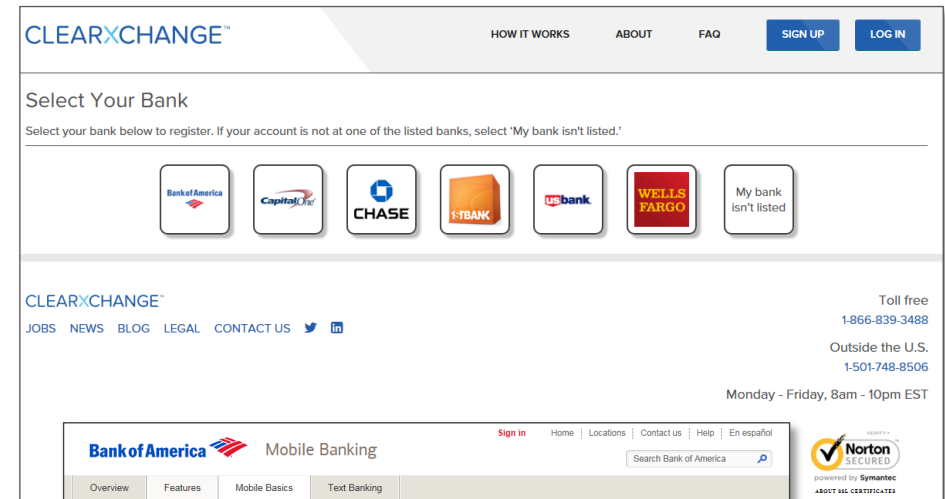
 <p><b>Immediate Availability</b> – Payment will be received within seconds of the Sender initiating the transaction, with immediate funds availability (subject to applicable Regulations and risk management processes.)</p>	 <p><b>Payment Certainty</b> – Senders will not have the Capability of revoking or recalling a payment once it has been submitted to the RTP system.</p>
 <p><b>24/7/365</b> – No down time and users will have the capability of sending or receiving payments at any time.</p>	 <p><b>Convenience</b> – Users will have access to directory services which allow senders to locate alias or routing and account information of their receiver. (TCH delivery TBD)</p>
 <p><b>Extensibility</b> – Functionality beyond the basic payments to support value-added products through rich, flexible messaging.</p>	 <p><b>Account Data Privacy</b> – The system will use static tokens to encrypt recipient account information. (TCH's delivery TBD)</p>
 <p><b>Adaptability</b> – Flexible architecture to adapt to changing market needs.</p>	 <p><b>Cash Flow Control</b> – The ability to send and receive payments immediately will give customers more control over cash flows.</p>
 <p><b>Reach</b> – Accessible by all financial institutions and will reach the vast majority of U.S. account holders.</p>	 <p><b>Global Standards</b> – Consistency with international global standards and formats.</p>

\*See Appendix for details on the TCH RTP Operating Rules

# EarlyWarning and clearXchange (Zelle)

## Supporting P2P transfers since 2011 Now used for B2C payments

- The first U.S. P2P payment network created by financial institutions for financial institutions
- clearXchange members reach over 60% of all U.S. online and mobile banking customers
- Now includes 5 of the largest banks in the United States, serving over 130 million customers
- Early Warning purchased clearXchange in January 2016
- Transactions settling with certain participating clearXchange member banks are now real time
- Rebrand to Zelle in summer of 2017



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## What's new?

### A new rule:

Banks must make same day ACH transactions available by the times stated in the Rule

### A new opportunity:

Offer optional same day ACH origination service with same day settlement for on-us and off-us

### A new option:

Clients choose same day or future dated settlement

## NACHA Same Day ACH Rule

Phase 1	<b>9/23/2016</b>	Credits
Phase 2	9/15/2017	Credits and Debits
Phase 3	3/16/2018	Memo Post Availability by 5pm local

\* Ineligible: International transactions (IATs) and transactions greater than \$25k

# US Payments Comparison...

*Future Capabilities*

Payment Feature		US ACH (NACHA / EPN)	US Wire (CHIPS & FedWire)	Card Payments	US Same Day ACH (NACHA)	US RTP (TCH)
Core Capabilities	Payment Initiation	Credit Push & Debit Pull	Credit Push & Debit Pull	Credit Push & Debit Pull	Credit Push & Debit Pull	Credit Push & Request for Payment
	Bene Funds Availability	Next day	Minutes	Within 30 min	5pm (EOD)	Seconds
	Payment Value	Primarily Low value	Primarily High Value	\$10K (Max)	\$25K (max)	\$25K (max)
	Irrevocability	No	Yes	No	No	Yes
	Domestic / International	US	US/International	US	US	US initially / International capability*
Operating Model	Economic Sanctions Screening	Exempt	Required	Exempt	Exempt	Potentially Required by Clearing
	Messaging Protocol	NACHA	CHIPS / FedWire	Visa/MasterCard	NACHA	ISO 20022 XML
	Clearing Timeframe	EOD cutoff	Mandate - EOD Client Experience- Minutes	Visa – Daily batch at 12:30 EST MasterCard – 4x daily	Intraday Cutoff	< 30 seconds
	Clearing Availability	Business days Cutoff - 1:30 ET	Business days Cutoff – 18:30 Local Time	24x7x365 (incl. Holidays & Weekends)	Business days Cutoff – 1:30 ET	24x7x365 (incl. Holidays & Weekends)
	End- User Notification	Optional	Optional	Optional	Optional	Required
Settlement Details	Settlement Frequency	Next Day	Real Time	Daily at 6 AM EST	Multiple times a day	Multiple times a day
	Settlement Mechanism	Multilateral Deferred Net	Gross/Net	Net	Multilateral Deferred Net	Prefunded, Multilateral Deferred Net, Debit Cap
	Settlement Risk (Credit / Liquidity Risk)	High (Low Value)	Low	Low	Medium (Low Value)	Low

# Everyone is connected – digital ubiquity...



Mobile phones are the world's first truly ubiquitous technology

## Global Mobile Phone Users

1995 | 80M – 1% Population Penetration

2014 | 5.2B – 73% Population Penetration



The internet provides a interconnected method of communication

## Global Internet Users

1995 | 35M – 0.6% Population Penetration

2014 | 2.8B – 39% Population Penetration



Digital technology has created instant communication, driving real-time expectations

# Alias-based platforms enable global payments

Alias-based payment systems allow the transfer of funds using just an email or phone number

Alias-based Payments



The growth of these alias-based payment networks has brought millions into the formal economy



PayPal users have more than doubled from 84.1MM in Q1 2010 to **184MM** Q1 2016<sup>1</sup>



More than half of China's internet users (688MM<sup>1</sup>) are Alipay users (400MM<sup>2</sup>)



In 2013, a staggering 43% of Kenya's GDP flowed through M-Pesa, with over 237 MM person-to-person transactions<sup>3</sup>

Alias-based payments are being used for:

**P2P**



- Paying the babysitter
- Reimbursing for your share of the dinner check

**C2B**



- eBay checkout with PayPal
- Use the Starbucks® tap & pay app (Mobile Order & Pay) for your morning latte

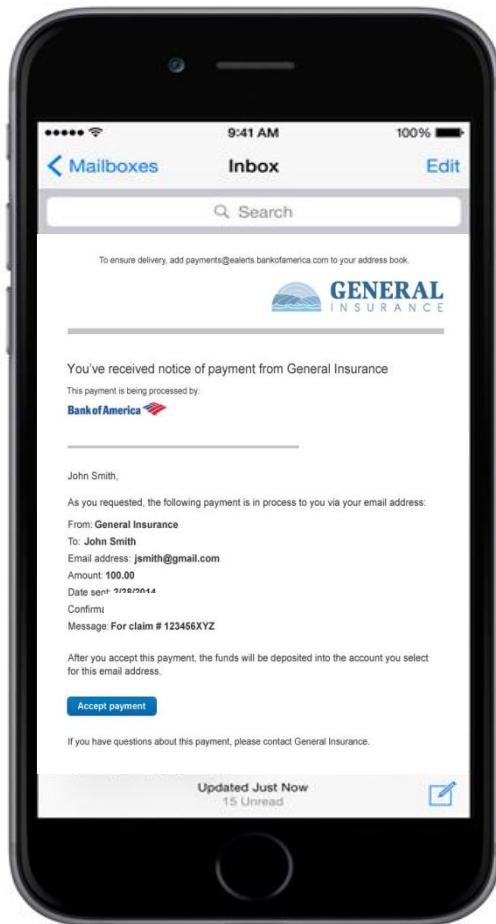
**B2C**



- Refunds or claim payments
- Employee or recruitment reimbursements

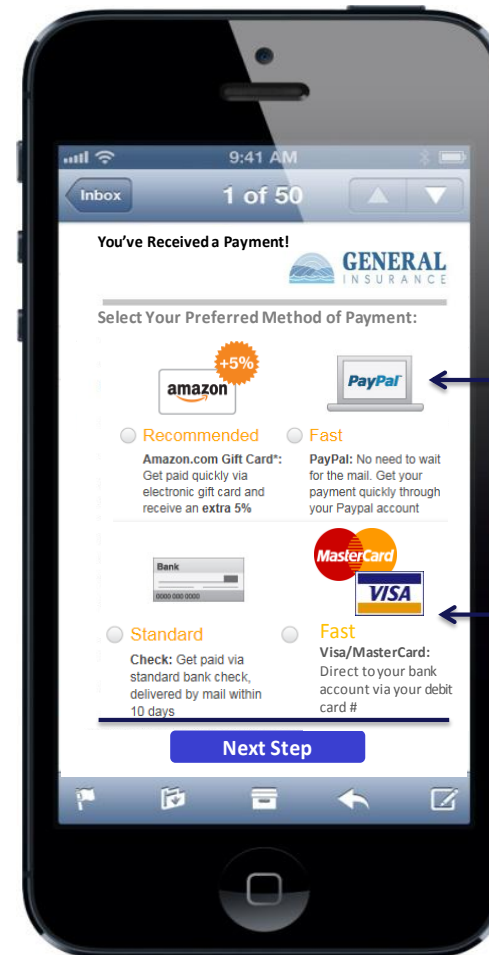
# Alias-Based Payments Solution – Real/Conceptual

## Digital Disbursements v 1.0



- Replace checks
- To anyone with a US bank account
- Using email address or cell phone number
- Don't need to store personal account information

## Near Future Payments v 2.0



Alias Network would change by region

Additional payment types, ClearXChange, ACH, etc.

- Customizable payment options
- Ability to integrate regional specific solutions
- A single platform to enable multi-party connectivity to BofAML



# Business to Consumer payments

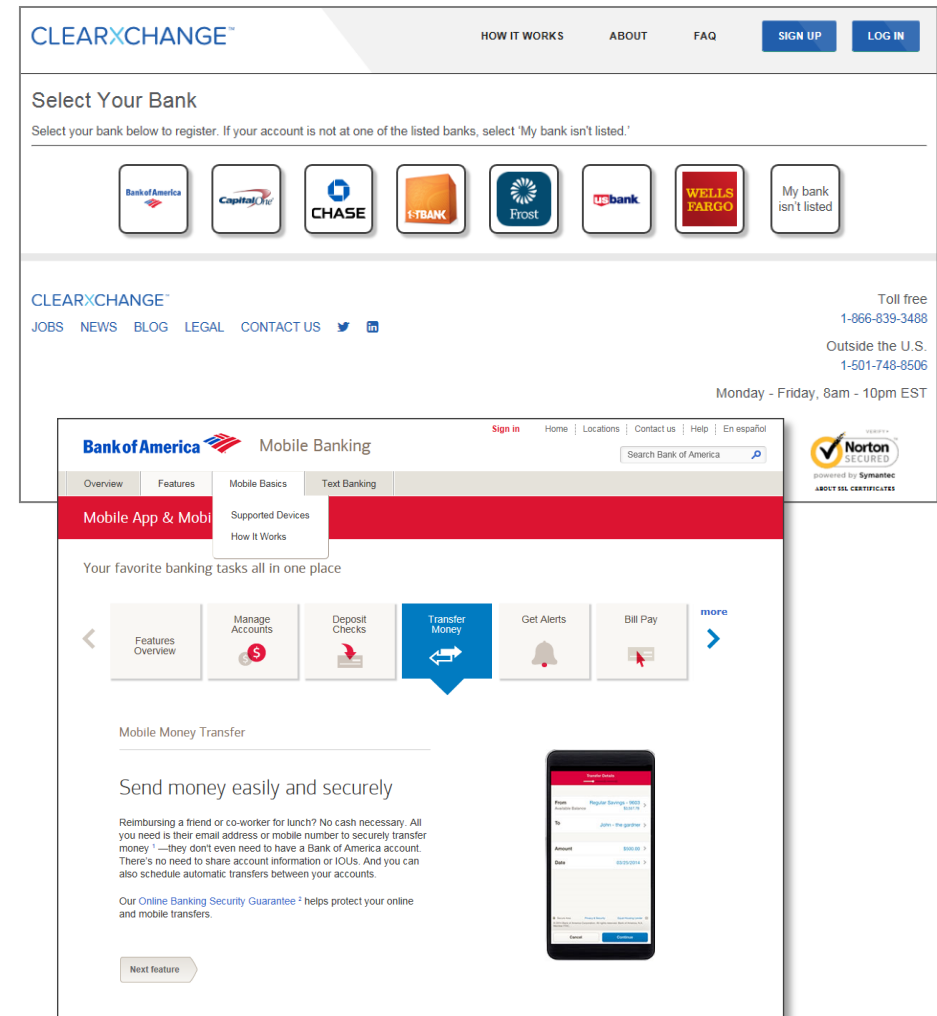
Alias-based payment



# Bank of America and clearXchange (ZELLE)

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# It's time to rethink your payment process

Distribute funds  
without paper

Recipients receive payments  
more quickly

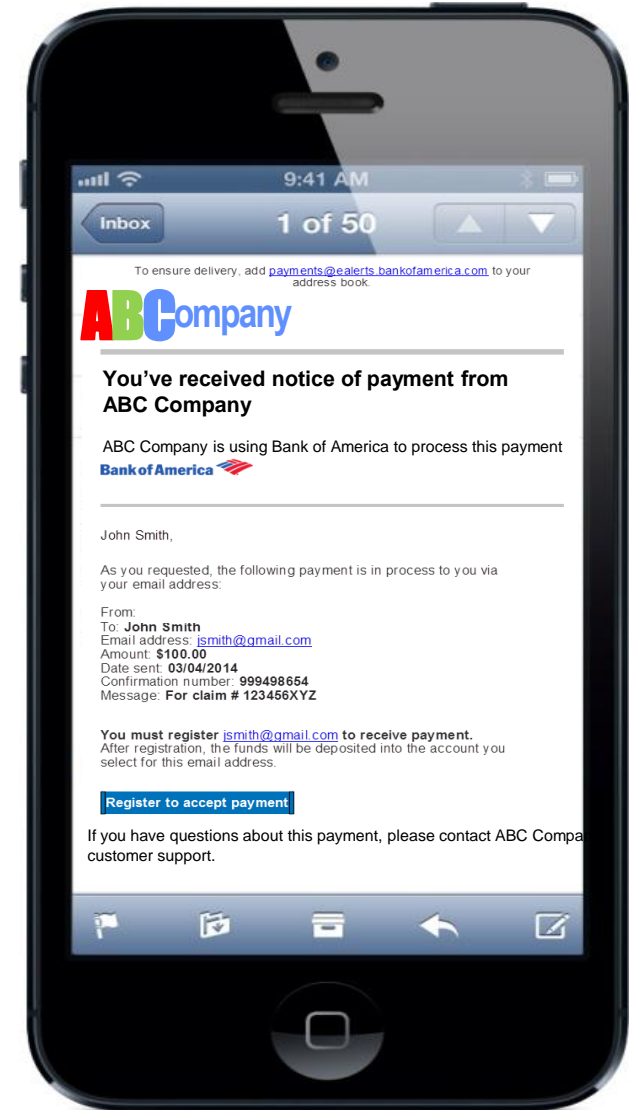
To anyone with a  
U.S. bank account

Higher customer satisfaction

Using mobile phone  
number or email  
address

Potentially reduce payment  
expenses

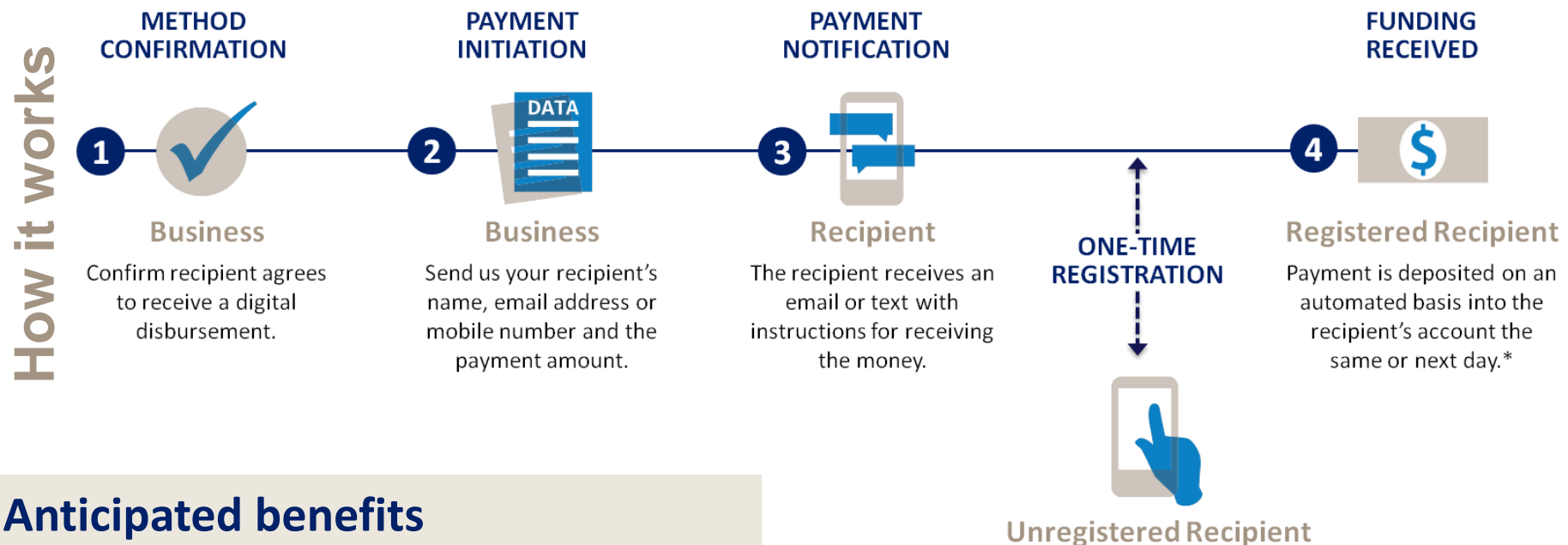
No need to obtain sensitive  
bank account information



# New B2C payment solution: Digital Disbursements

## Delight your customers by providing:

- Faster payment—funds are deposited directly into their account
- Convenience—mobile technology is easy to use and available almost anywhere
- Privacy—no need to share sensitive bank account information



## Anticipated benefits

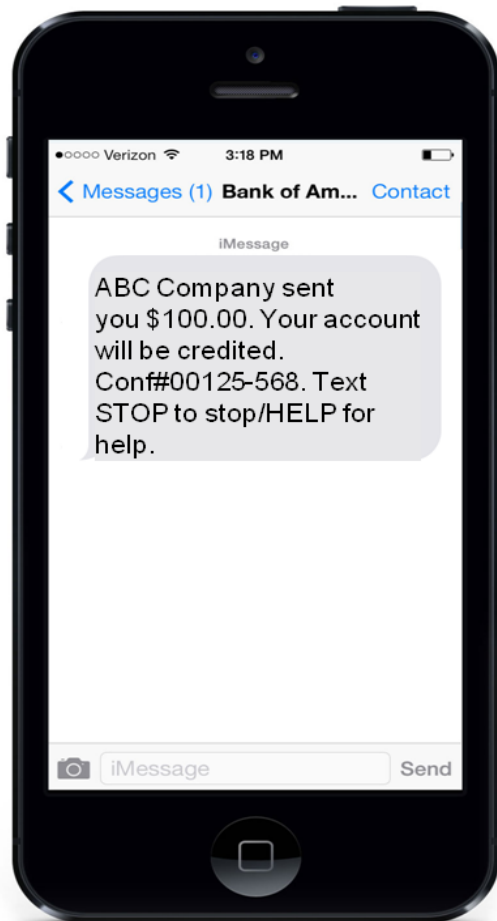
- Replaces high cost check payments
- Reduces risk—eliminates the need to store and maintain your consumers' bank account information
- Reduces fraud and escheatment issues related to check payments (**reminders and 14 days to register**)
- Promotes your brand as being customer-centric and innovative

\* Please note: Refers to period of time during which payments are generally available. Depending on the receiving bank and time of day, payments could be received same day or next business day. Actual times may vary.

# Payment Notification

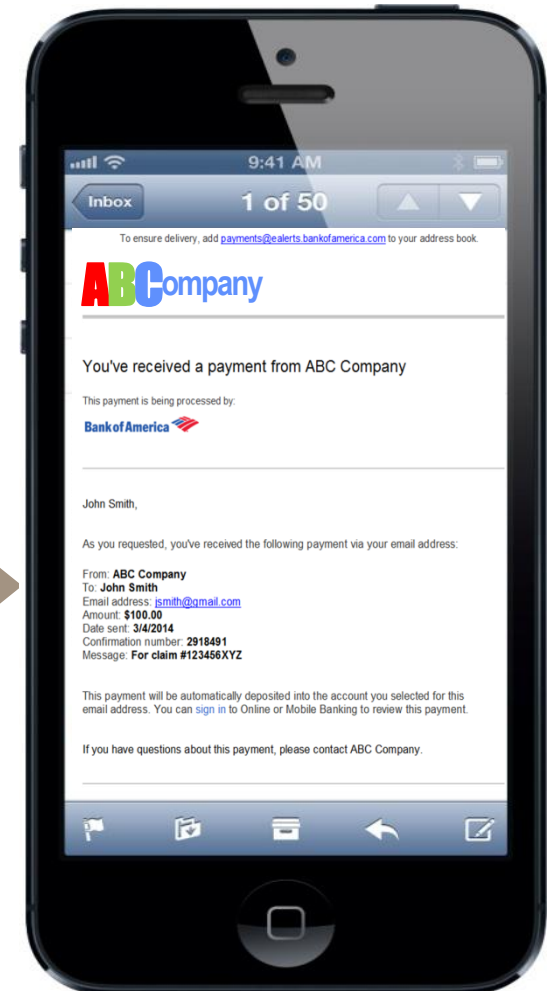
## Registered recipient

Registered recipients receive notification from their bank or clearXchange and the funds are deposited same or next business day.\*



By text if  
using mobile  
number

By email  
message if  
using email



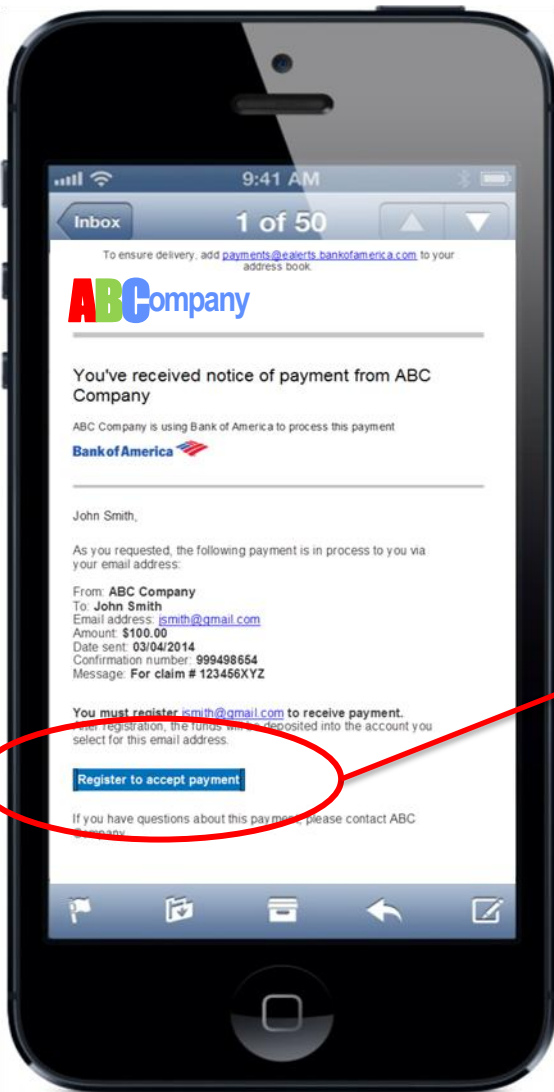
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# Payment Notification

## Unregistered email recipient

1

Unregistered recipients receive notification of funds with a call-to-action to enroll to accept the funds.



2

After choosing their bank to enroll in the service, they are able to accept funds.

The image shows a desktop browser window displaying the registration page for ABC Company. The page title is "Register to accept payment from ABC Company". The page content includes: "Select your bank and follow the instructions to receive your money", a list of bank logos (Bank of America, Capital One, CHASE, FirstBank, usbank, WELLS FARGO), and a section for "CLEARXCHANGE". The CLEARXCHANGE section includes the text: "Don't see your bank? Select clearXchange", "clearXchange is a payment network that allows customers with US bank accounts to send and receive money with just their email address or mobile number. It allows banks to 'talk to each other' to make it simple, safe and secure to send the money electronically, directly to the recipient's bank account.", and a "CLEARXCHANGE" button. The footer of the page includes "Secure Area", "Privacy & Security", "Bank of America, N.A. Member FDIC. Equal Housing Lender", and "© 2016 Bank of America Corporation. All rights reserved."

# New Models for Global Payments- Blockchain



# Blockchain – a simple definition

A blockchain is a cryptographic, or encoded, ledger comprising a digital log of transactions shared across a public or private network\*



## How does Blockchain work?

Five basic principles:

- Distributed database
- Peer-to-Peer transmission
- Transparency with Pseudonymity
- Irreversibility of Records
- Computational Logic



## Roadblocks?

- ✓ Regulation
- ✓ Foundational technology that will take years to develop (80% of banks are exploring)
- ✓ Novelty vs complexity

## Applications?

- ✓ Smart contracts
- ✓ Track items through complex supply chains



## Industry Progression



## GTS Focus Areas

### Participation...

#### Consortium Membership



**Sounding board and industry consortium for 42 banks to discuss critical topics**

#### Strategy

- Participate in working groups
  - SteerCo
  - Technology and Architecture
  - Legal and Regulatory
- Join PoC if appropriate use cases form
  - Trade Finance
  - Cross Currency Payments

### Investigation...

#### NextGen Cross Currency Payments



**Cross-border transactions of fiat currencies using blockchain technology**



#### Client Benefits

- Reduced uncertainty over timing and amount of delivery and increased transaction visibility
- Reduced costs



#### Bank Benefits

- Improved information and efficiency
- Reduced Costs
- Increased FX revenue

### Experimentation....

#### Digital Trade Finance

**Letter of Credit issuance/advising on blockchain**



#### Client Benefits

- Standardization of forms and data fields
- Reduced costs in handling paper LC applications
- Increased productivity from STP
- LC status between banks and importer



#### Bank Benefits

- Reduction in cost to handle volumes of paper LC applications for issuing banks and improved STP

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