

PAYMENT OPTIONS:

Multiplying Like Rabbits

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Agenda

- Why the Proliferation of Payment Options?
- Consumer Purchasing Models
- Business/Government Payments
- Summary
- Questions



Why the Proliferation?

- Corporate entities and individuals are looking to make payments:
 - Faster/ Easier / More Secure / Lower Cost
 - Ubiquitous
- Financial institutions and technology companies are investing heavily in development:
 - To capture new customers and transaction volumes
 - To retain existing customers and market shares
 - As sticky hooks into other services/accounts
- Products and services are morphing to encompass multiple aspects of purchases and payments – Google Pay as an example

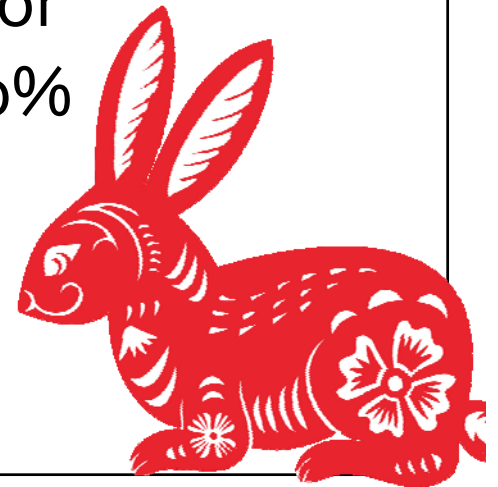
Consumer Purchasing Models

1. Contactless Cards
2. Digital and Mobile Wallets
3. Virtual Credit Cards
4. Person to Person Payments (P2P)

Consumer Purchasing:

1. Contactless Cards

- Physical cards are embedded with chips and near-field communication (NFC)
- Consumer taps card to terminal
- Card communicates with chip terminal through radio waves
- Card generates unique cryptogram for each transaction; transactions are 50% faster than inserting chip card
- Chase Bank, Capital One, and AmEx offer products



Consumer Purchasing:

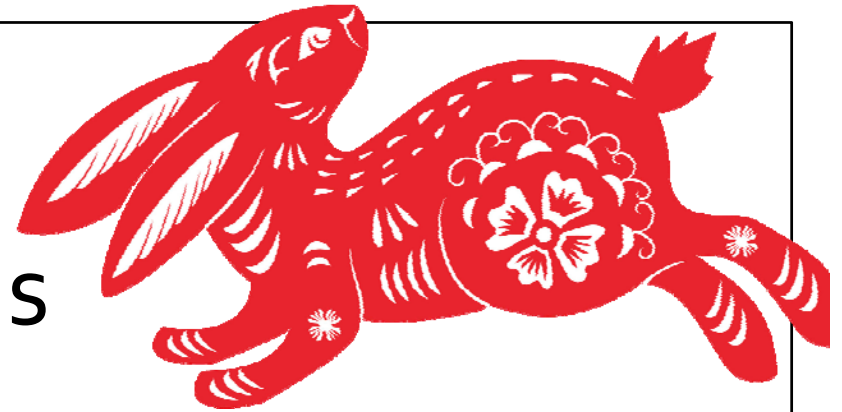
2. Digital Wallets & Mobile Wallets

- Apps that enable payments online or in person through a smartphone or other mobile device
- Apps use encryption and tokenization vs. card numbers
- Reduce personal risk of carrying physical cards
- Products may have usage or audience limits
 - Starbucks—Specific application
 - Apple Pay and Google Wallet—General application
 - Apple Pay, Samsung Pay, and Android Pay (now Google Pay)—
Device-specific
 - PayPal—Works across all brands of devices



Consumer Purchasing:

3. Virtual Credit Cards



- No physical card is issued, just a credit card number
- Only for online or over-the-phone use
 - Consumer uses app to generate a one-time token
 - Transactions show up on statements
 - May not work for repeat transactions like subscriptions (Netflix, Amazon, etc.)
- Separate token services available for regular credit cards
 - Service providers generate tokens for credit cards registered with them

Consumer Purchasing:

4. P2P or “Alias” Payment Models

- Apps that give individuals the ability to send money to family and friends quickly and easily—“person-to-person”
- Direct payments to US cellphone number or email address; no account info is required
- Eliminate buying and mailing gift cards or checks
- Transfer funds for emergencies or make contributions to ABLE accounts
- Divide restaurant tabs or collect contributions



Consumer Purchasing:

4. Comparing P2P Platforms

Comparison of P2P Product Offerings				
Examples of P2P Apps	Time to Receive Funds	Consumer Reach	Fees for Sending or Receiving Money	Security
Venmo	1–3 days. To cash out funds received in Venmo account, recipient must transfer funds from Venmo account to bank account or debit card.	Both sender and recipient must have Venmo accounts.	There are no fees for sending or receiving funds via bank transfer or debit card; there is a fee of 3% of the transaction amount for initiating payment from a credit card.	Venmo is owned by PayPal, with similar access and authentication methods in place.
Apple Pay Cash	1–3 days. Recipient must transfer funds received in Apple Pay Cash account to bank account.	Both sender and recipient must have the appropriate Apple mobile products with required updates.	There are no fees for sending or receiving funds via bank transfer or debit card; there is a fee of 3% of the transaction amount for initiating payment from a credit card.	Authentication via Face ID or Touch ID (depending on Apple model) for each transaction.
Zelle	Funds are posted directly to bank account and available in minutes.	Both sender and recipient must have bank accounts, but not necessarily at a financial institution participating in Zelle.	There are no fees to send, request or receive money.	Zelle application resides within each financial institution's consumer banking portal, so existing online access and authentication methods apply.
Square Cash	1–3 days or optional "instant deposit" for a fee.	Both sender and recipient must have Square Cash accounts. Square Cash can also be used for business transactions to accept payments for good or services.	There are no fees for sending or receiving funds via bank transfer or debit card; there is a fee of 3% of the transaction amount for initiating payment from a credit card. Using option for "instant deposit" will incur a fee of 1% of the transaction.	Authentication via fingerprint or passcode

These 4 P2P payment applications are presented solely to illustrate differences in the product features and timing required for availability of funds in recipient's bank account. For all products listed, recipients are identified by a US cell phone number or email address. No bank account information is required to send funds.

Business and Government Payments

Options under development; not currently available in the US

1. Real-Time Payments—A payment initiated anywhere in the US would be available to the recipient within minutes
2. Push to Card—Payments to individuals will be credited to a debit card for immediate posting

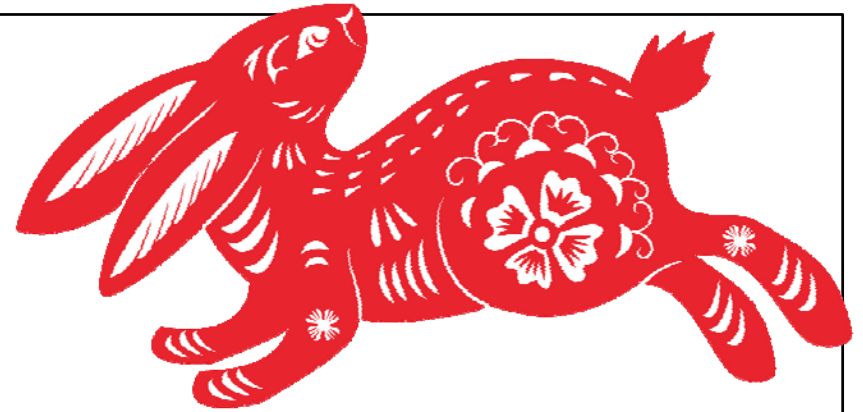
Business and Government:

1. Real-Time Payments

- Needed to expedite commerce, accommodate world trade, eliminate constraints of payments via Fed wire
- Other countries with a limited number of banks already have real-time payments
- Mastercard purchased VitaLink, which developed real-time switch for The Clearing House (owned by 25 banks)

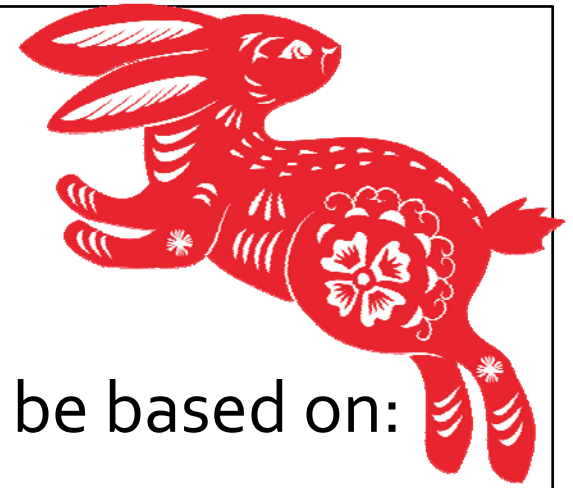


Business and Government: 2. Push to Card



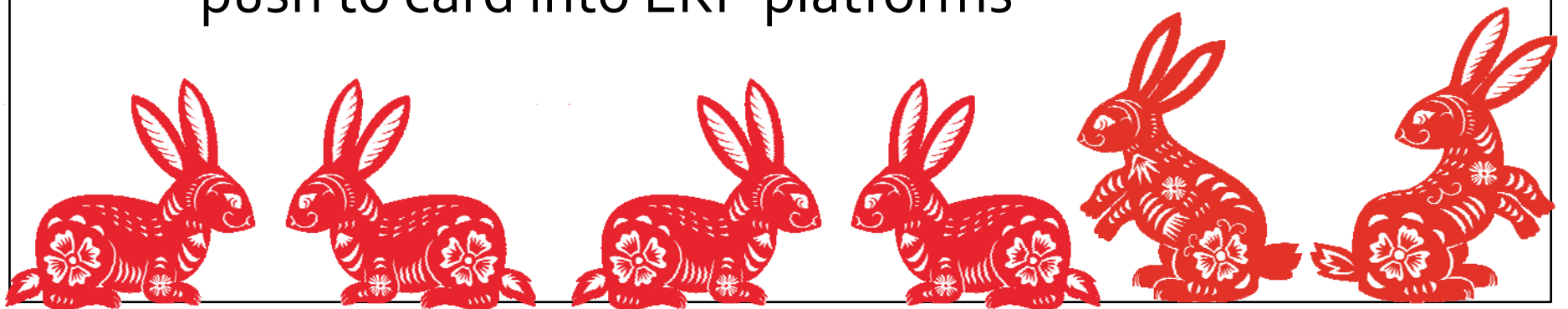
- Payments to debit cards will be near real-time, settling in seconds
- For receiver, bank account information remains secure
- Potential uses
 - Emergency relief, stipends, retirement benefits
 - Rebates, settlements, state tax income refunds
- Software developers are working on applications to support this option, similar to ACH software

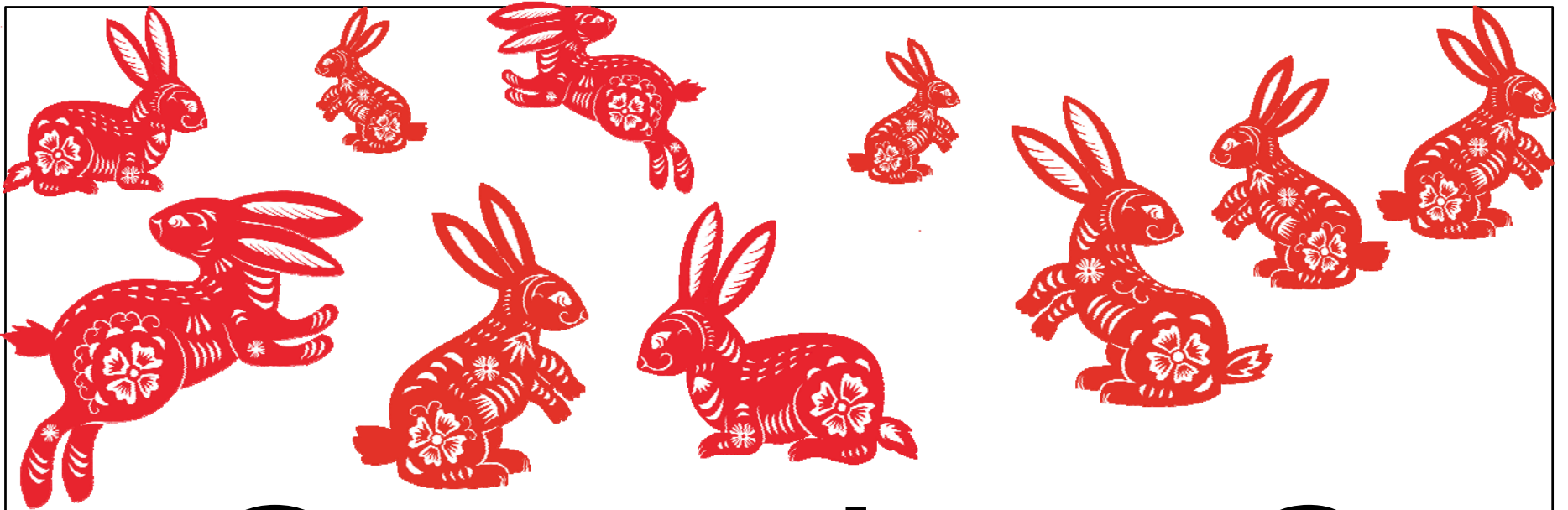
Summary



Adoption of payment alternatives will be based on:

- Ease of use
- Certainty of outcome
- Speed of transaction completion
- Ability for businesses and governments to incorporate real-time payments and/or push to card into ERP platforms





Questions?

