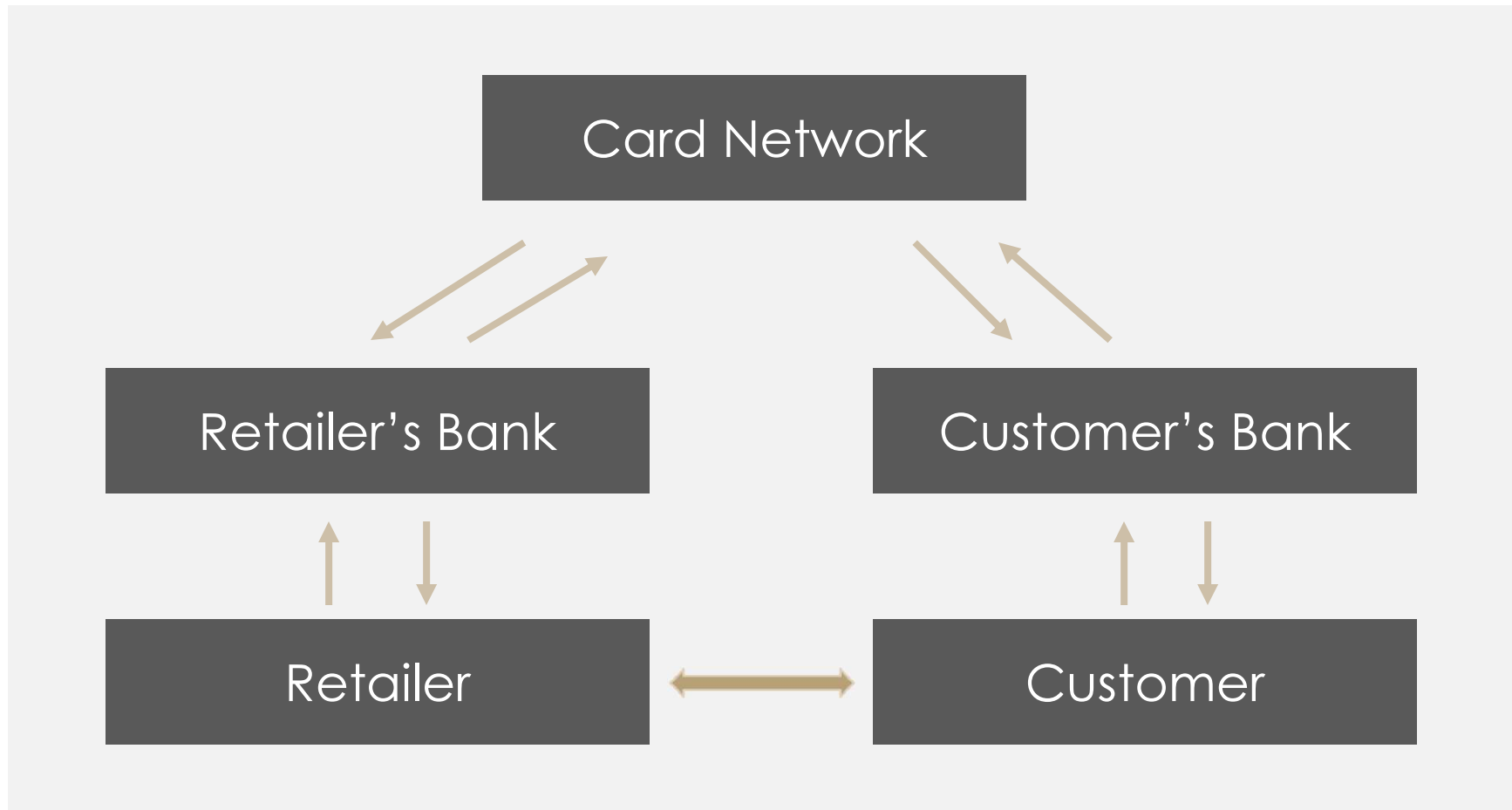


# Innovation and Transformation in Payments Technology

Assembly Banking and Finance Committee

March 16, 2015

# The Payment Ecosystem



# Role of Networks

- Provide processing technology and operational systems
- Set standards and rules of the road
- Build and manage global brand to promote usage
- Develop new marketplace opportunities and promote acceptance

## Payment System Benefits

### **Retailer Benefits**

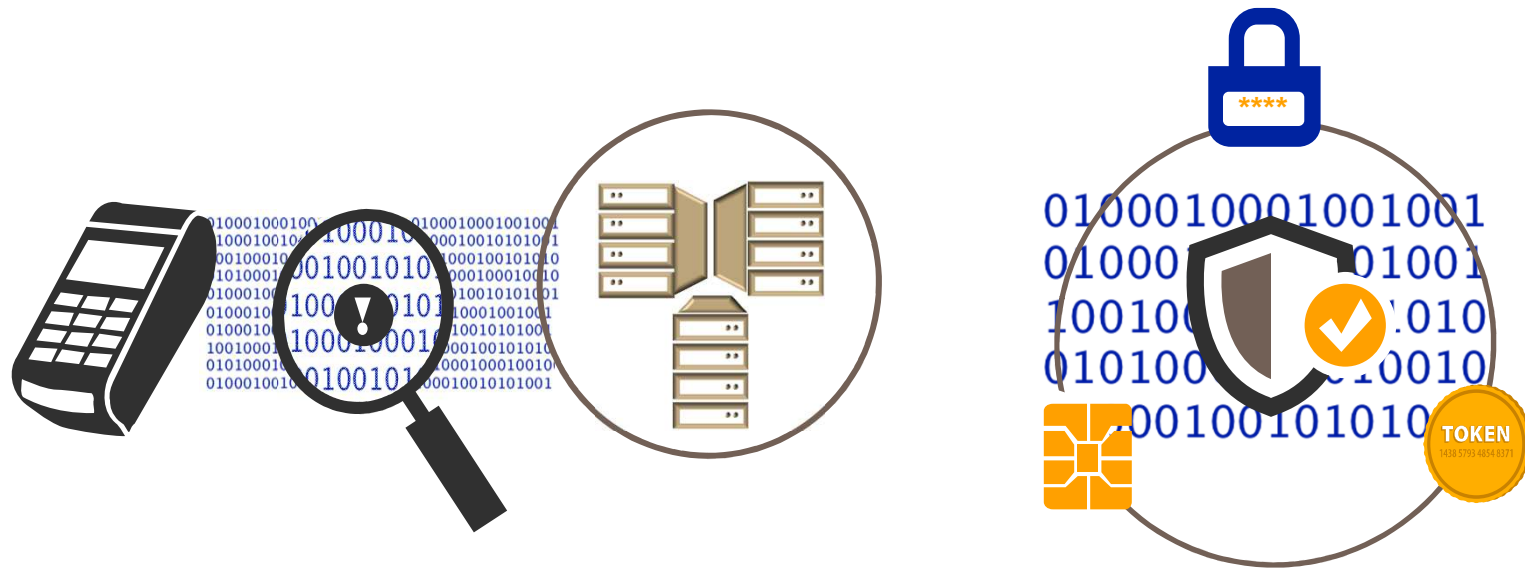
- Reliability
- Security
- Efficiency
- Guaranteed Payment
- Increased Sale Potential
- More Business Channels
- Access to More Customers

### **Customer Benefits**

- Convenience
  - Security
  - Fraud Protection
  - Global Acceptance
  - Reliability
  - Budgeting
-

# US Payment Card Fraud

Data theft causes over 80% of payment card fraud in the US



**80+%** of fraud in US

EMV, Tokenization, and Encryption are technologies designed to reduce risk from payment data being stolen and devalue the data if stolen

# What is EMV Chip Card Technology?

- EMV chip or “smart” cards are payment cards that have an embedded microchip
- Microchip generates a dynamic one-time use code (a cryptogram)
- Microchip contains the same data as a magnetic stripe, with the addition of the dynamic one-time use code
- Prevents the data being re-used to create counterfeit cards



# How does EMV chip technology work?

Because the cryptogram changes with every transaction, even if the card data is stolen, the information can't be used to create counterfeit cards because the cryptogram would have already "expired"



4 0 0 0 1 2 3 4 5 6 7 ^ J O H N D O E ^ 0 1 2 0 1 2 ^ 1 0 1 ^ 2 1 7 ^ ...

Card number                      Name                      Expiry                      Service code                      CVV (STATIC)



4 0 0 0 1 2 3 4 5 6 7 ^ J O H N D O E ^ 0 1 2 0 1 2 ^ 2 0 1 ^ 3 8 6 ^ 5 8 3 6 8 1 2 7 ^ ...

Card number                      Name                      Expiry                      Service code                      iCVV                      Cryptogram (DYNAMIC)



4 0 0 0 1 2 3 4 5 6 7 ^ J O H N D O E ^ 0 1 2 0 1 2 ^ 2 0 1 ^ 3 8 6 ^ 7 3 2 5 6 0 0 3 ^ ...

Card number                      Name                      Expiry                      Service code                      iCVV                      Cryptogram (DYNAMIC)

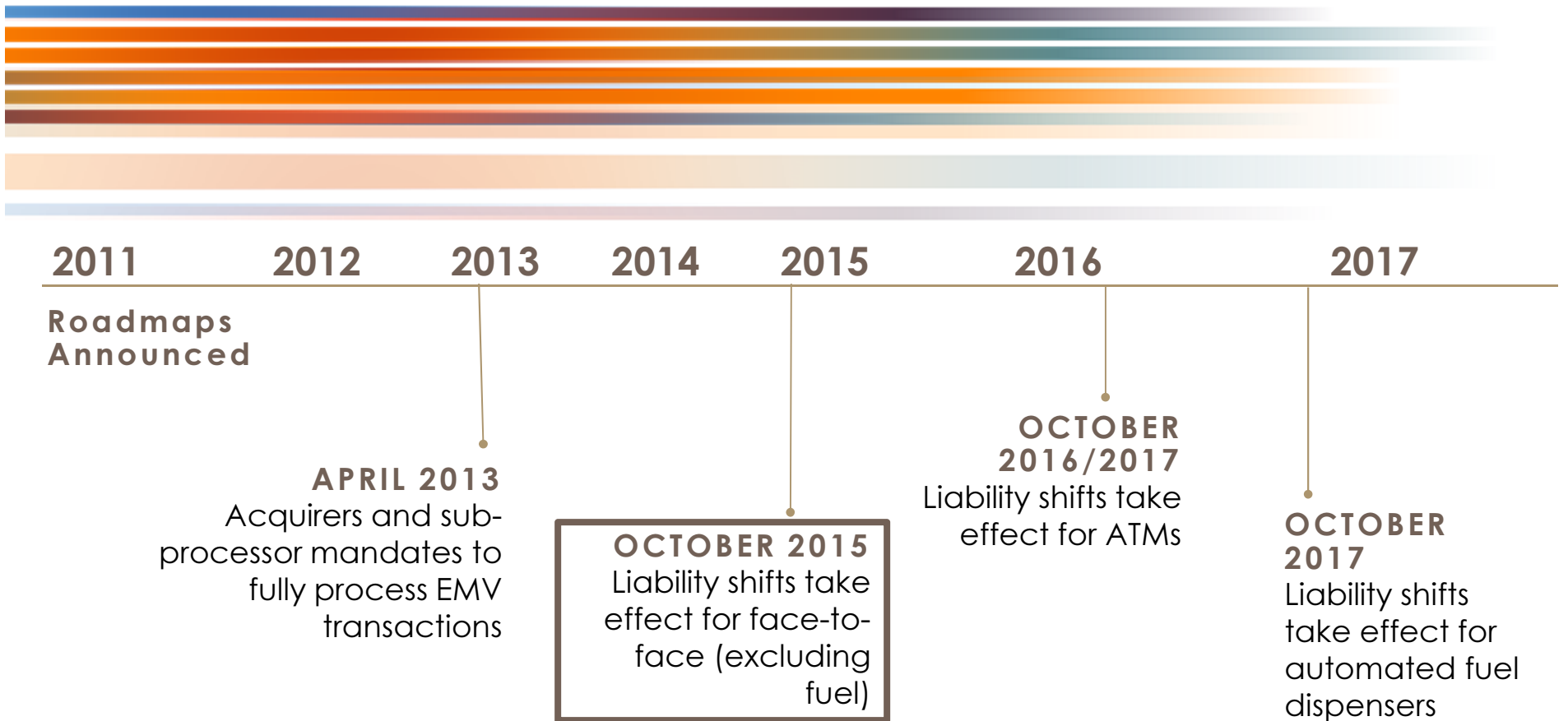
# Impact of EMV on Counterfeit Fraud

Domestic Counterfeit Fraud-- % Change from Q3 2008 to Q3 2013

|             | Brazil | Mexico | Hong Kong | Canada |
|-------------|--------|--------|-----------|--------|
| Counterfeit | ↓ -87% | ↓ -77% | ↓ -69%    | ↓ -83% |

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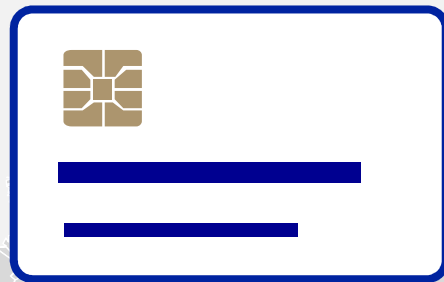
# US Roadmaps to EMV Chip Technology





# EMV Global Migration Progress

## Current State



**2.4B**  
cards



**37M**  
terminals

Global EMV Adoption Rates

# Progress on U.S. EMV Chip Migration

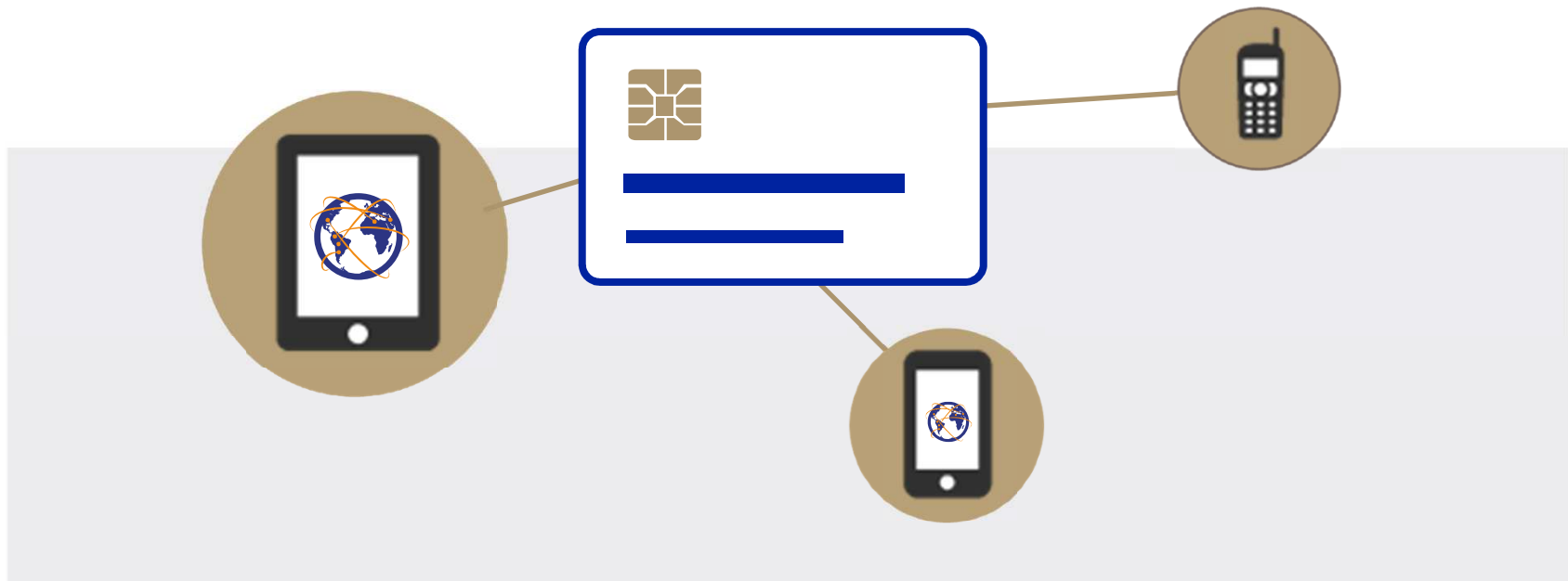
Payment Security Taskforce projections for U.S. EMV chip migration

Nine of the country's largest payment card issuers estimate that they will have issued **more than 575 million chip-enabled payment cards** by the end of 2015<sup>1</sup>

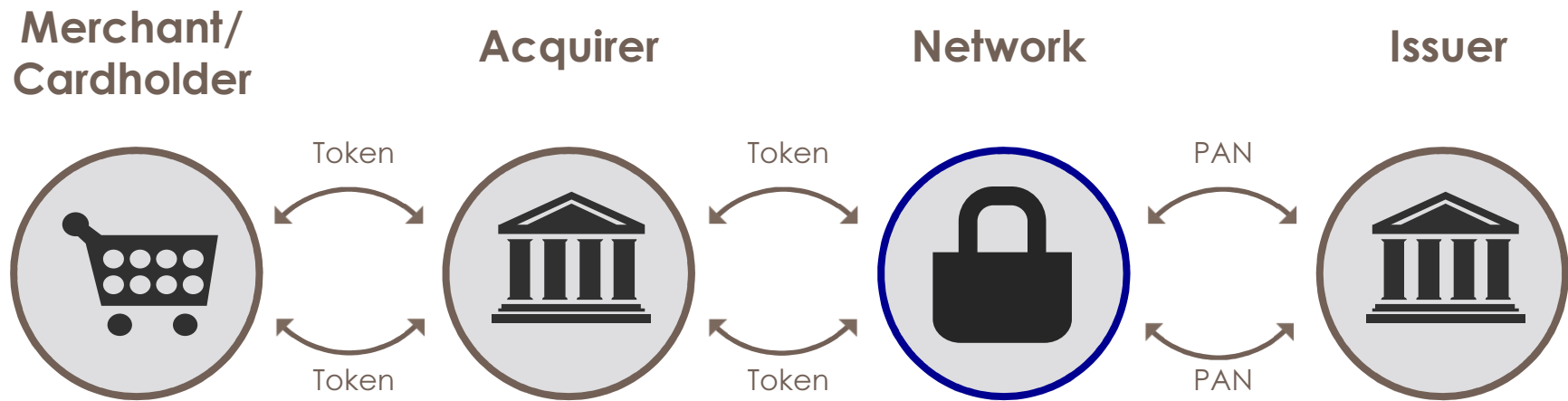
Forecast of participating acquirers estimated that at least **47 percent of U.S. merchant terminals will be enabled** for EMV chip technology by the end of 2015<sup>2</sup>

# How Tokenization Works

Tokenization minimizes data risks by digitizing a single card number into tokens on each separate device. **The process of digitization is what makes transactions secure.**



# How Tokenization Works



# Multi-Layered Protection

“**Chip cards and tokenization** are among the most promising tools for protecting retailers and consumers from the theft and abuse of payment card data.” Attorney General Kamala Harris, California Data Breach Report, October 2014.

