

# Fare Collection 102

## Overview of the Trend to Open Architecture and Open Payments in Public Transit Payment Systems

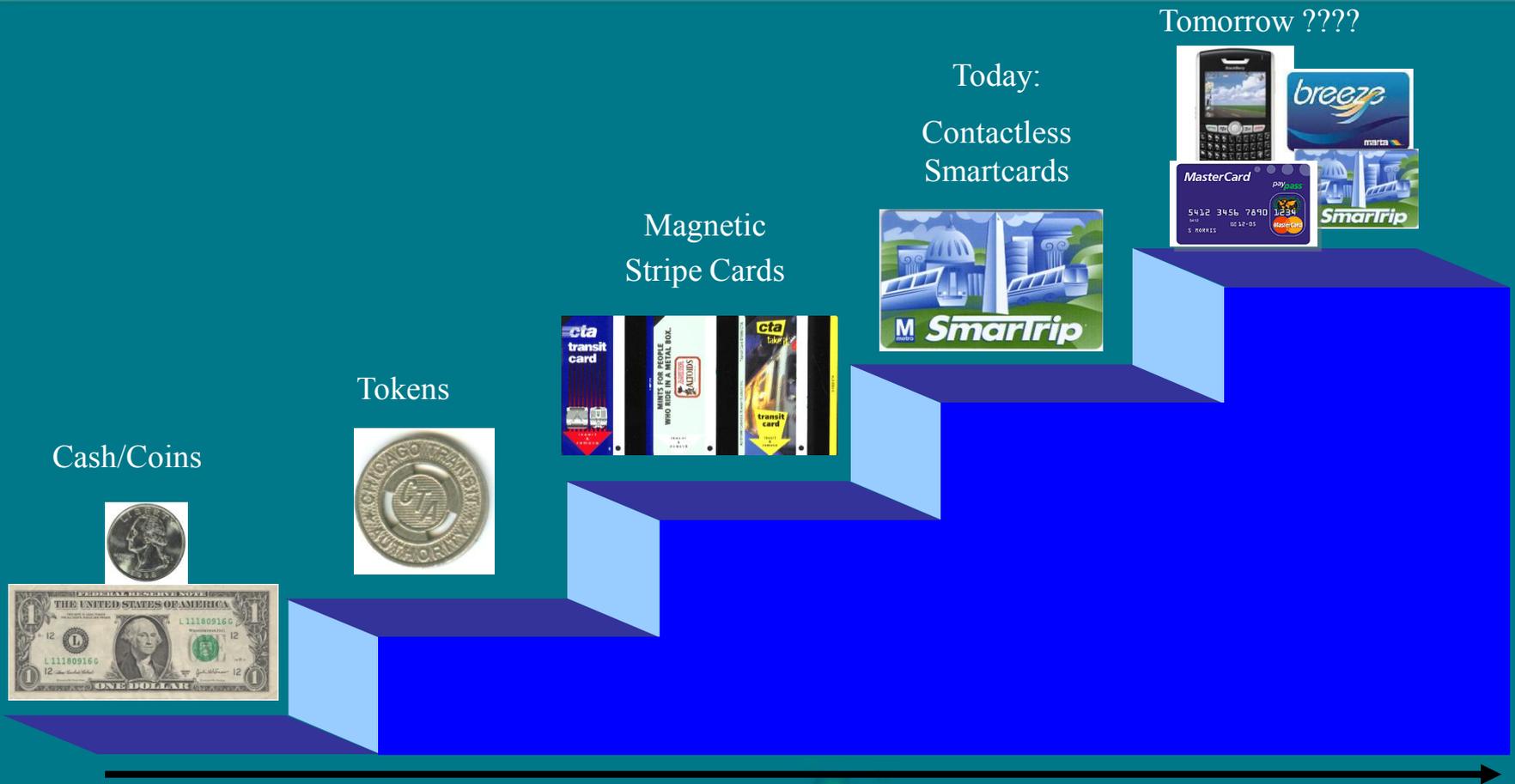
**Tim Weisenberger**

**US DOT John A. Volpe Center**



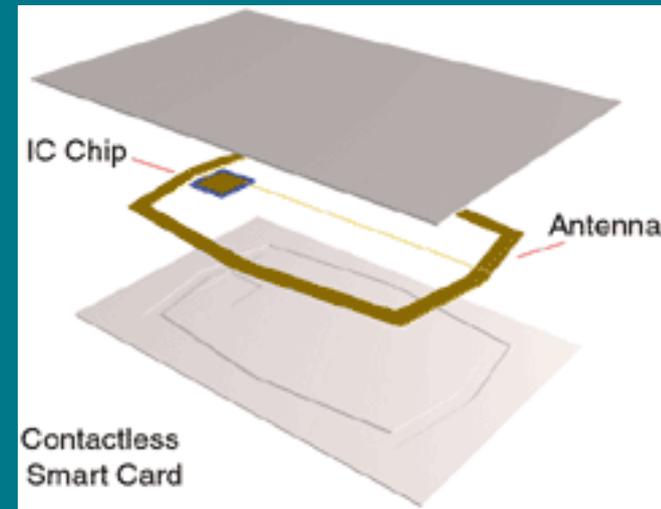
2011 Fare Collection Workshop

# Evolution of Transit Fare Payment



# Contactless Is the Key!

- Transit Use Case Required Contactless
  - High speed, high volume
  - Convenient and flexible for consumers
- Transit Agencies gained efficiencies
  - Shrinkage/fraud prevention
  - Data capture and analysis
  - Enhanced customer experience

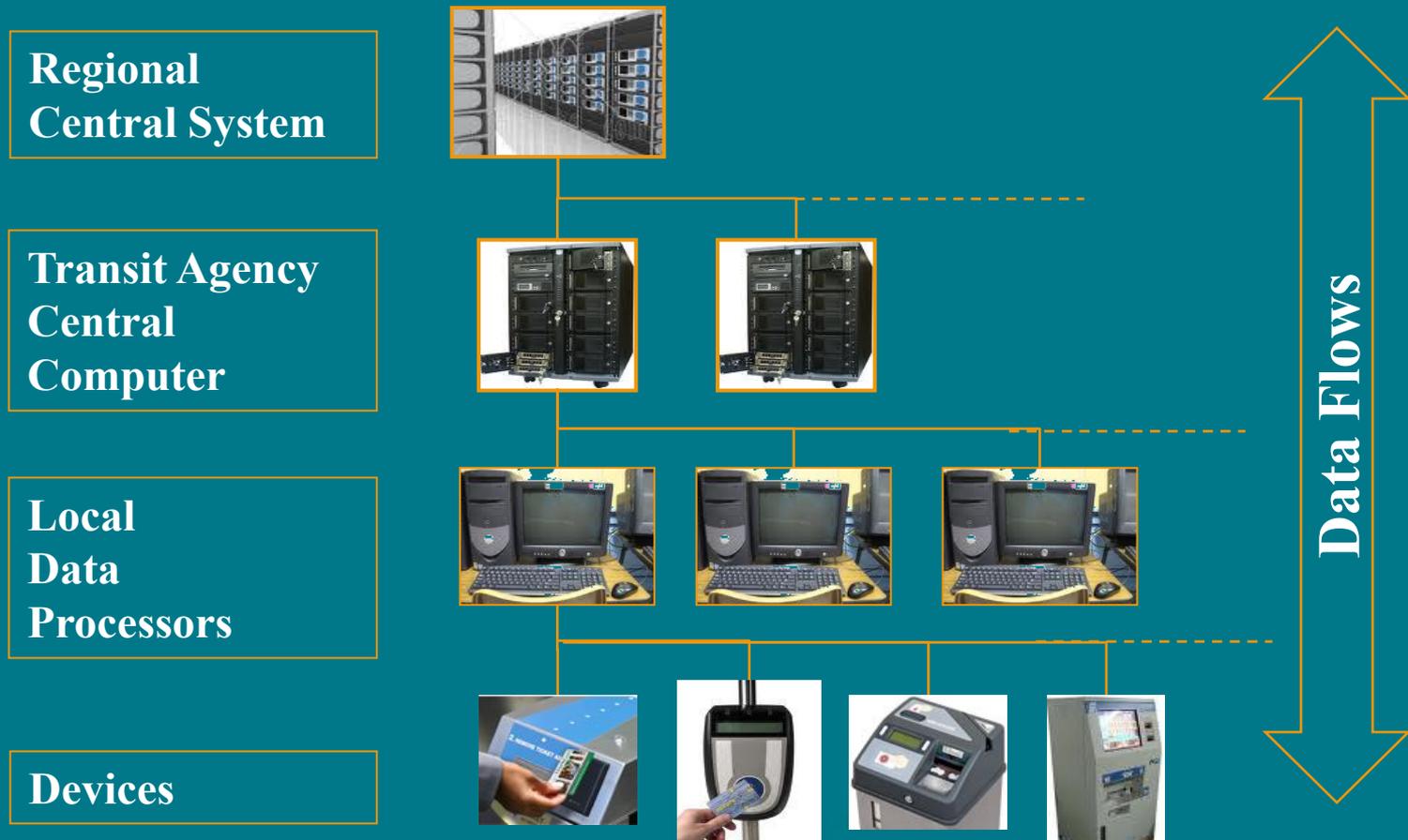


# The Traditional Smart Card Fare Collection System

- Cards issued and managed by transit agency (i.e. closed system)
- Used for *transit service* only (and certain concessions)
- Customers pre-pay for transit products
- Electronic purse on card
- Early deployments were *AFC enhancements*
- This was the only approach at the outset of smart card-based systems
  - Financial payment smart cards were *contact* cards



# Sample System Architecture



# Traditional Approach Strengths

- Proven and Reliable
- Addresses agency need to increase operational efficiencies
- Gives customers more convenience and flexibility
  - Multiple avenues for top-up/purchase of fare products
  - Ability to pay for transit and park n' ride with same card (WMATA)
- Has the “magic” factor with customers
- Represents a generational leap from magnetic technology



# Traditional Approach Limitations

- Industry-specific system integrators and vendors
- Proprietary technology limits competition and truly open procurements
  - Standards development viewed as a “silver bullet”
- However, still not fully standardized
  - Security
  - Front-end devices
- Closed system limits partnering, particularly among transportation modes



# Smart Card Systems Led to Innovations



- Regional coordination (in Seattle, Bay area, Washington) targeted key benefits:
  - Single card for multiple transit services
  - Enhanced customer experience
  - Cost sharing
- Enhanced institutional programs (Universities, Transit benefits automation, Visitor Passes, etc.)
- Early multi-modal payment programs (WMATA parking)

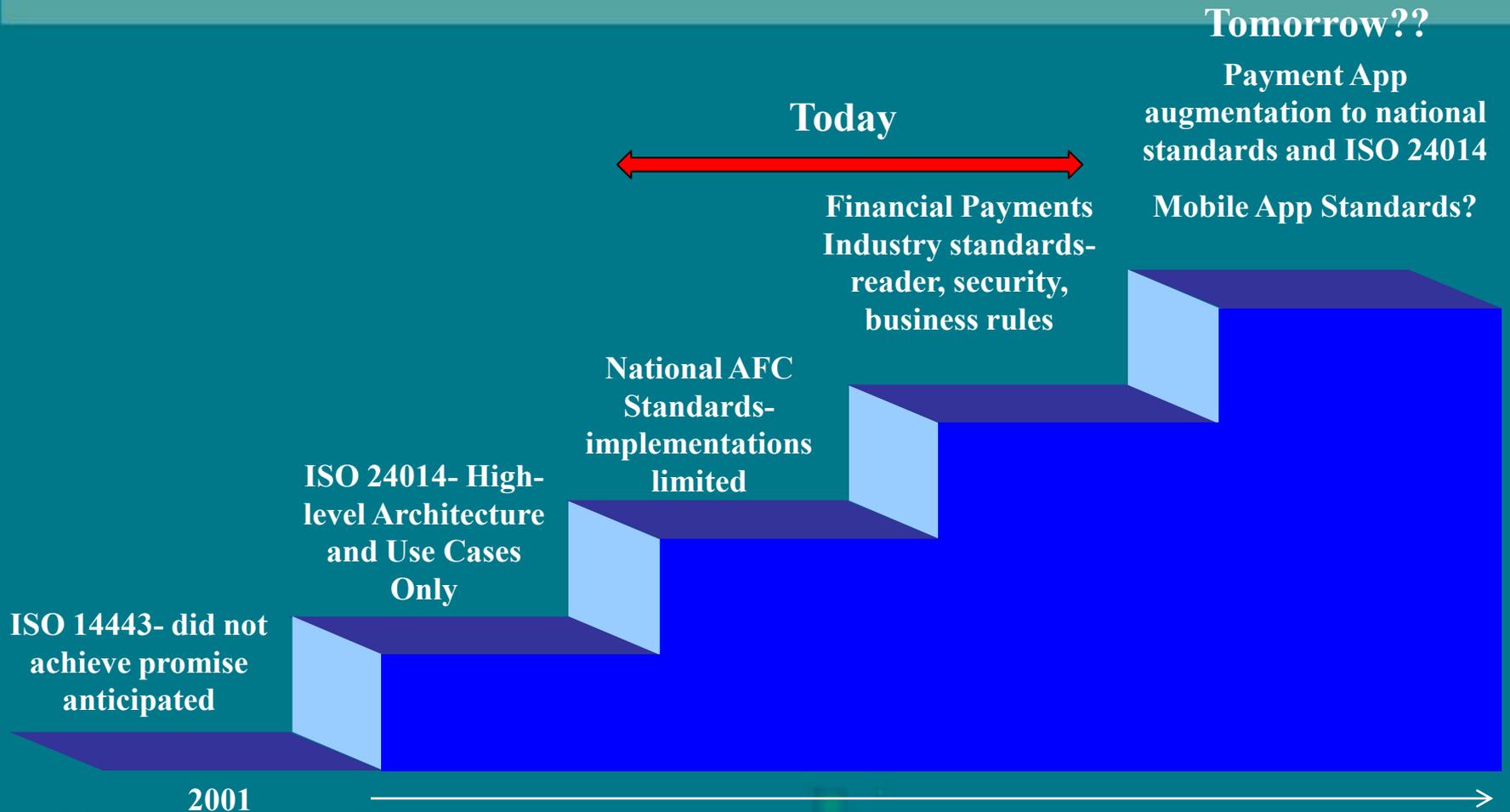


# Traditional Approach leads to Open Approach

- Financial Industry interest in transit market and micro-payments
- Transit Industry desire for non-proprietary, open architectures
  - Solid advocacy for contactless interface by transit industry
  - Idea that fare collection is not a transit agency core competency
  - Active pursuit of pilots for co-branded payment card/transit card, Mobile Payments, etc.
  - Development *by transit industry* of standards for traditional systems



# Standards – A Slow Evolution



# Why Standards?

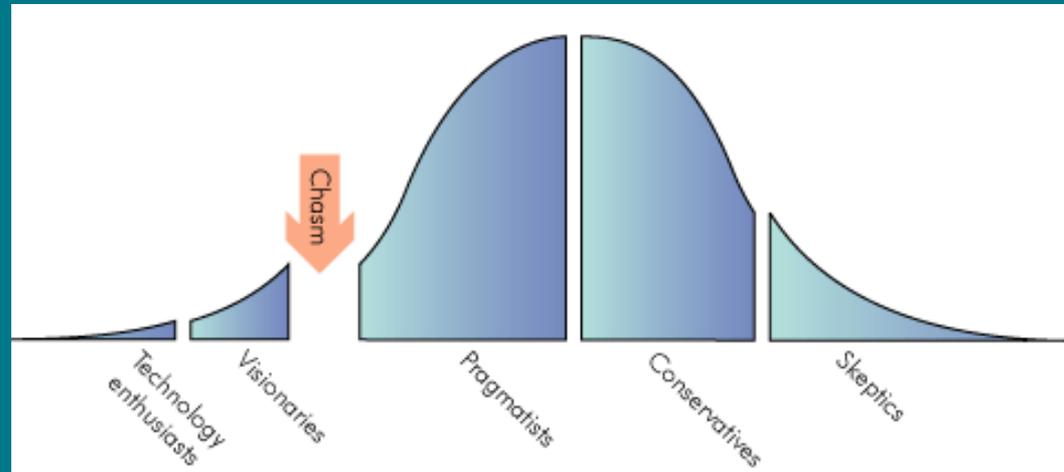
- Enhance competition
- Improve freedom to evolve system, partner, and develop applications (within a transport mode)
- Move to open architecture
- Aid migration from specialized hardware and software to COTS
- Facilitate Interoperability
- *Cost constraint is a key misconception*
  - Standards may reduce costs in the long run due to competition
  - In short term, costs often increase due to new development



# Open Architecture/Open Payment Systems- Crossing the Chasm

Issues to be addressed include:

- Prove system reliability
- Prove ability to handle all fare types, transit modes, and address issues such as proof of payment
- Show cost effectiveness versus traditional method
- Need widespread availability of contactless payment cards
- Need further education between financial payment industry and transportation industry



Source: Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers, Geoffrey A. Moore

# At the Crossroads of Innovation

- Many innovations in fare payments and in the industry in general
  - Open payments
  - Open architecture
  - Account-based approach
  - Multiple form factors for payment devices
  - Mobile payment applications
  - Use of credentials for transit payments
  - Hybrid account-based and card-based approach



# What will the Future Hold?

- Trend toward open payment systems in US is clear
- Open Architecture is *ESSENTIAL*
- Back-office centric approach allows easier migration
- Approaches will be regionally specific
- Each main approach (traditional system and open payment system) and has very strong benefits
- The choice may not be one or the other, but a hybrid
- Can multi-modal payment systems (parking, tolling, transit, HOT/HOV, dynamic pricing, etc.) be achieved?

