

Fare Collection 102

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

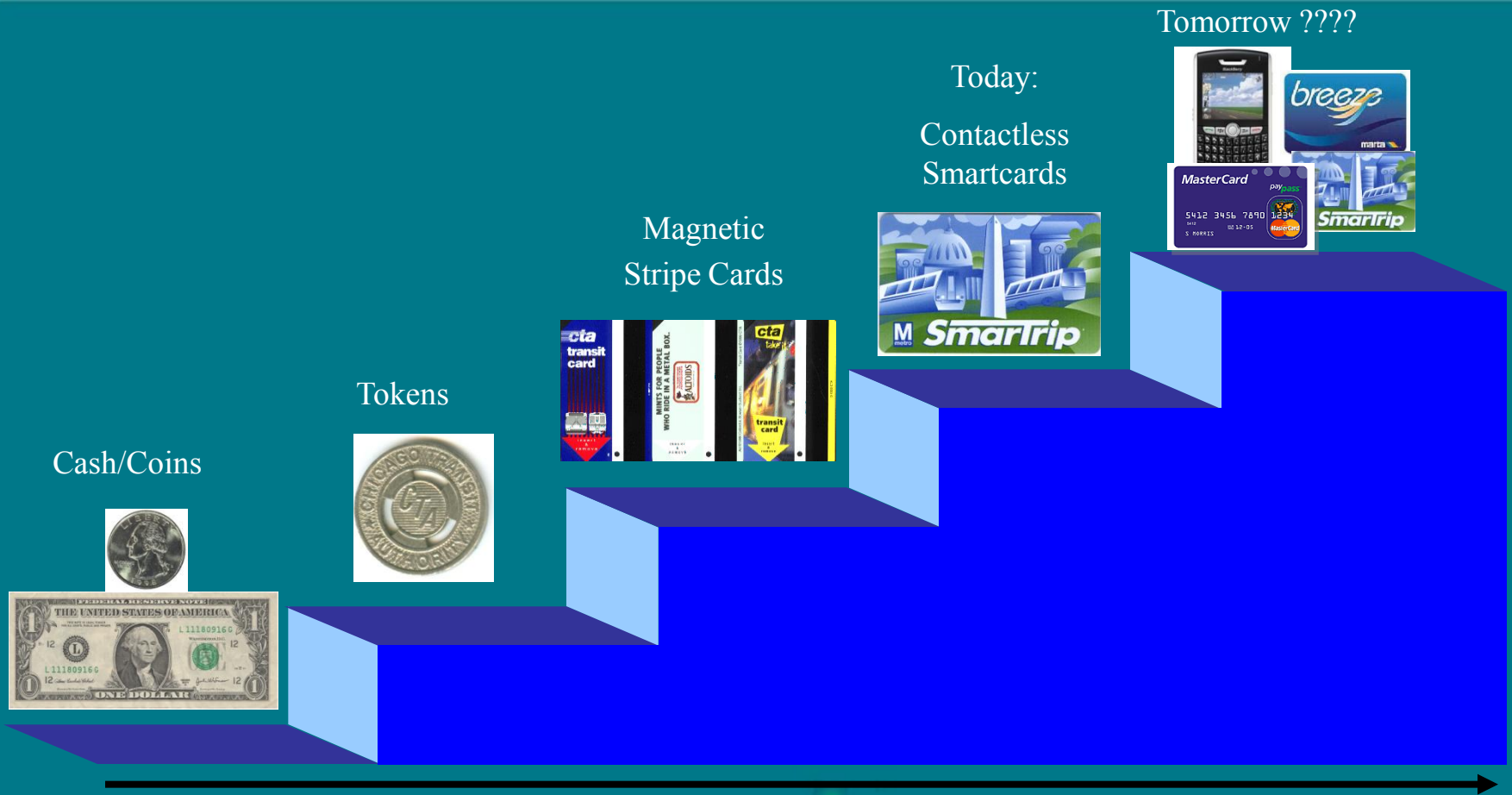
Tim Weisenberger

US DOT John A. Volpe Center



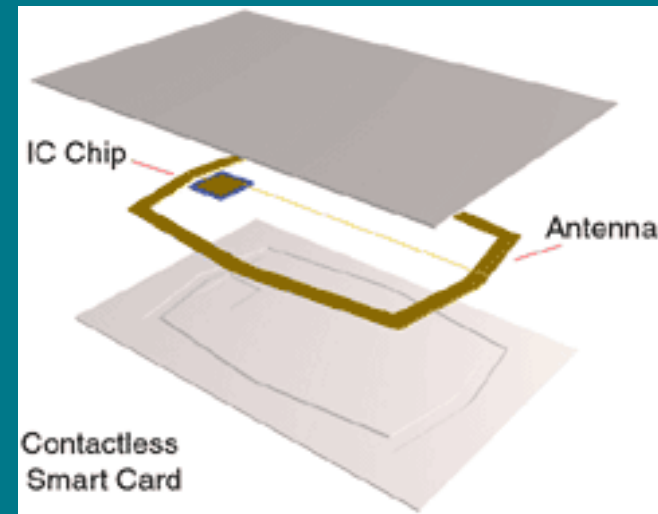
2011 Fare Collection Workshop

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

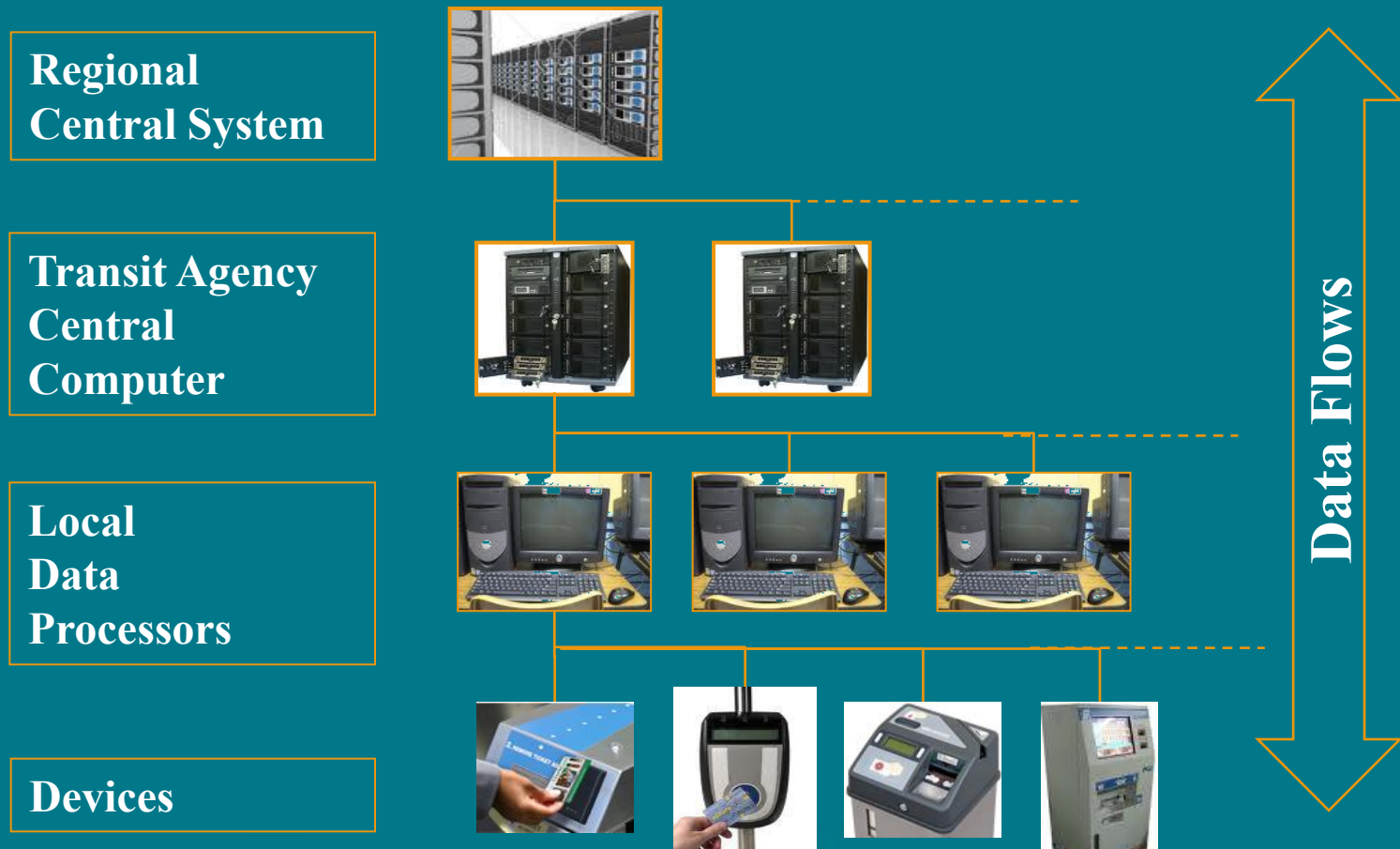


The Traditional Smart Card Fare Collection System

- 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)

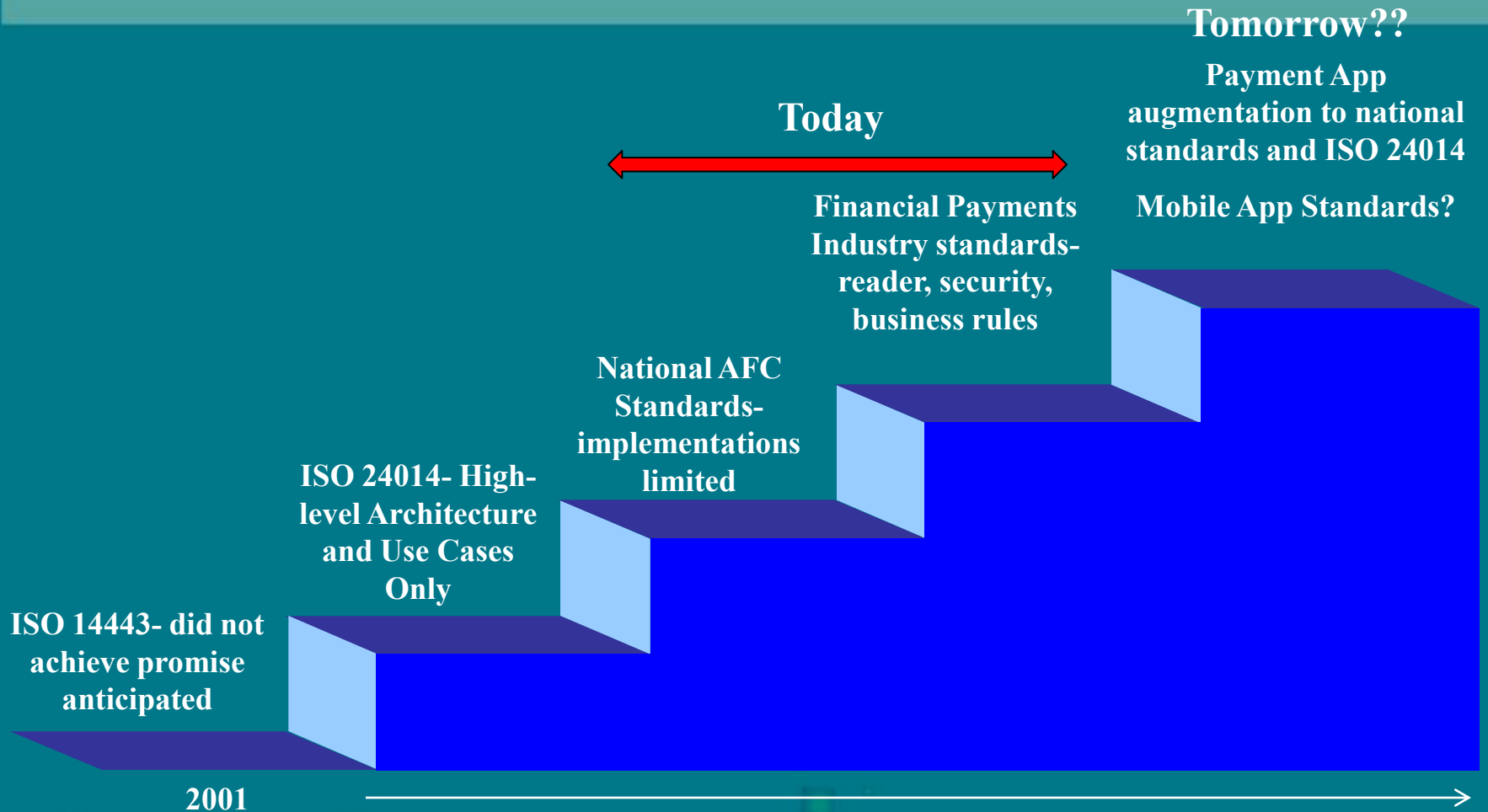


Traditional Approach leads to Open Approach

- 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?

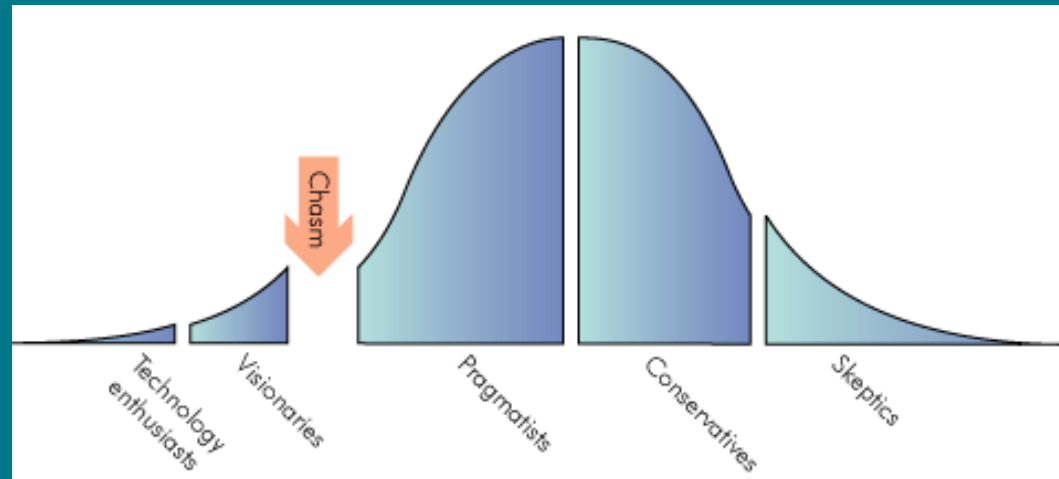
- Enhance competition
- Improve freedom to evolve system, partner, and develop applications (within a transport mode)
- Move to open architecture
- Aid migration from specialized hardware and software to COTS
- Facilitate Interoperability
- *Cost constraint is a key misconception*
 - Standards may reduce 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?

