

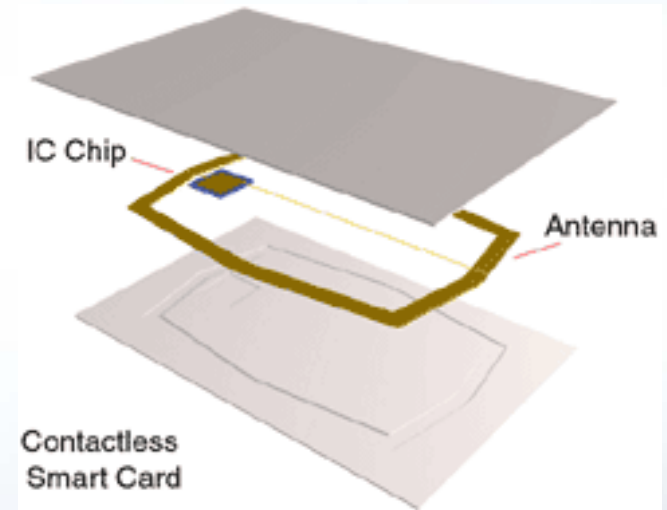
The Emergence of Open Payment Fare Systems

Traditional, Card-Based, Transit Agency-Issued Approach

Sponsored by the ITS Professional Capacity Building Program, ITS Joint Program Office, Research and Innovative Technology Administration, U.S. Department of Transportation

Why Transit Needed Contactless Smart Cards

- 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

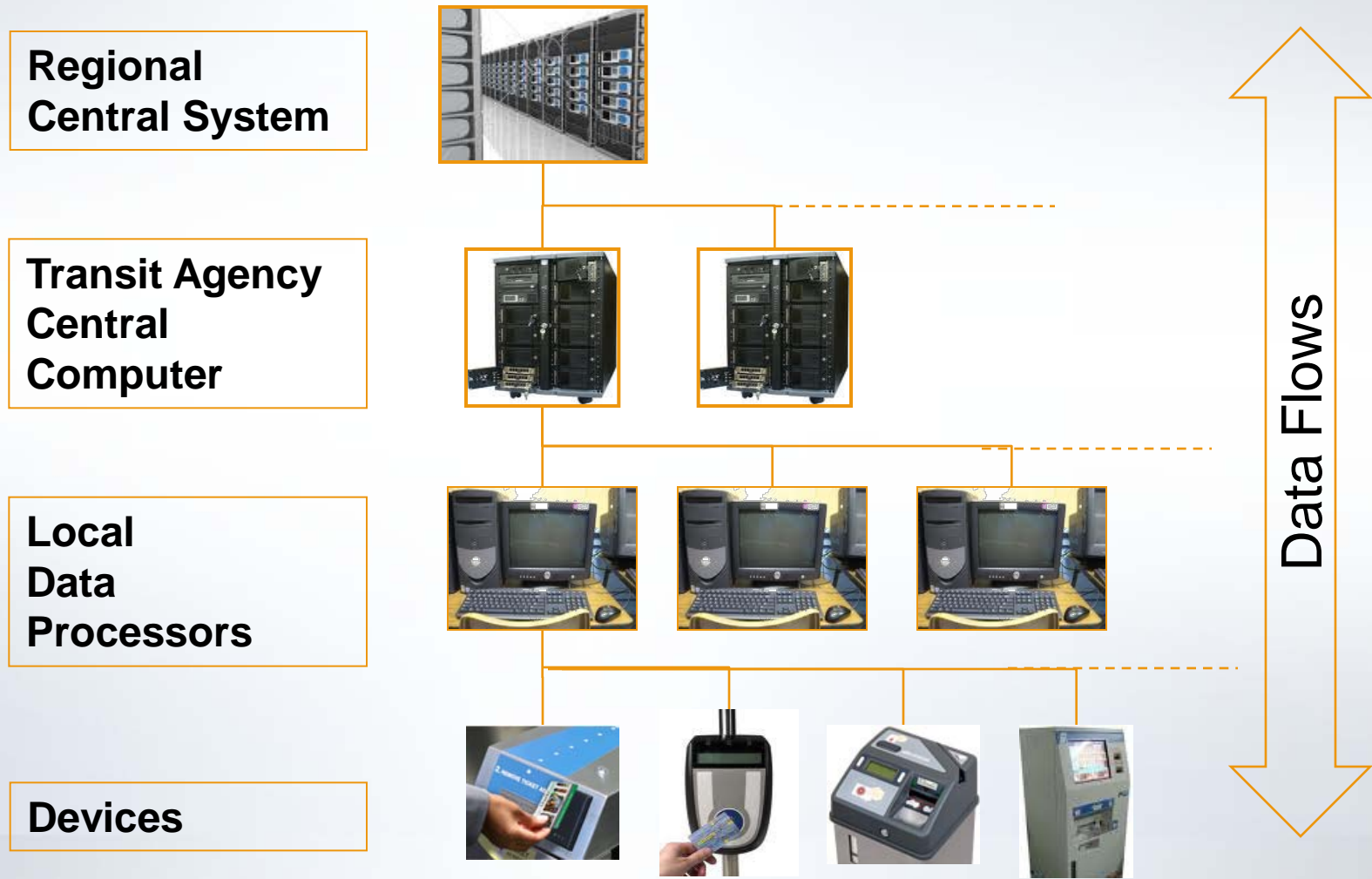


The Traditional Smart Card Fare Collection System

- 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



Data Flows

- Transaction data flows up through the system to the central computer (**regional** or single operator)
 - Transaction location, time, and amount
 - Transit card type, number, etc.
 - Health and welfare data
- Data flows down through the system to the readers
 - Fare information updates
 - Revisions, patches, etc.
 - Autoload information, updates to card bad lists, etc.



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 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

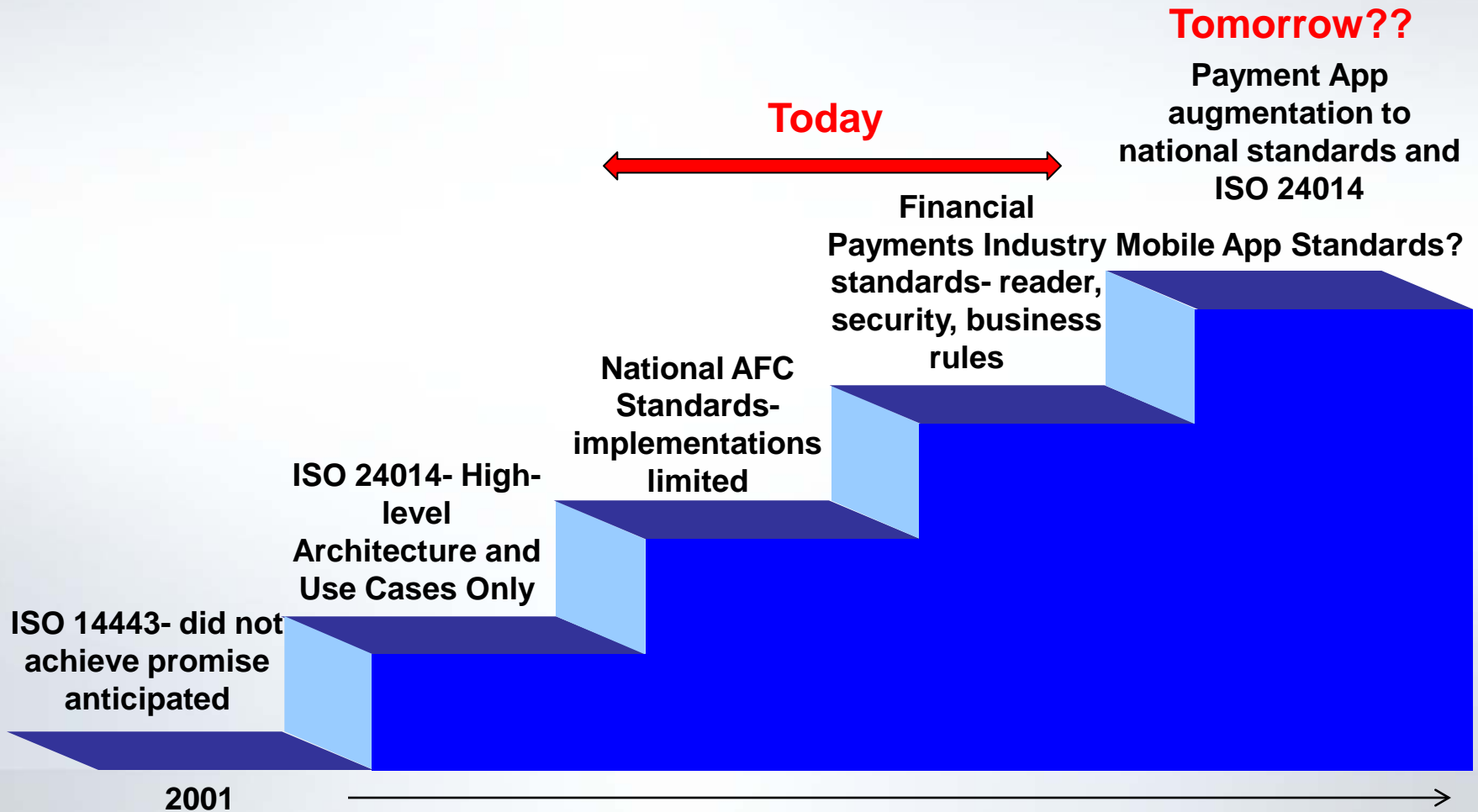


Traditional Approach Limitations

- 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



Standards – A Slow Evolution



Why are Standards so Vital?

- 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



Traditional Approach leads to Open Approach

- Several factors have led to financial payments industry involvement in transit
 - 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
 - Development *by transit industry* of standards for traditional systems
 - CFMS- American Public Transportation Association supported by US Federal Transit Administration and Federal Highway Administration
 - Unique regional approaches
 - Presto- Program lead by Ontario Ministry of Transportation and transit providers and based on OIS to achieve regional integration.
 - Development roadmap embraces open payments, mobile/NFC



The Future of Fare Systems

- The trend toward open payment systems is clear
 - One roll-out (UTA in Salt Lake City) and one major pilot in it's third phase (NYC-New Jersey metro region)
 - Current RFPs from transit operators of all sizes are requiring open payments solutions to some degree
- Perception exists that open payment systems are the next generational leap
- Non-transit industry vendors and integrators are emerging
- ***Where does this place the traditional approach?***



Unique Regional Solutions

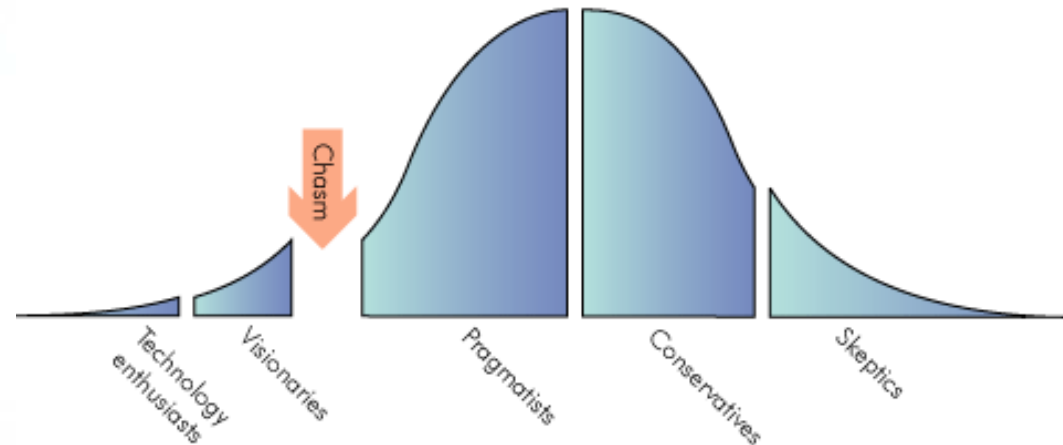
- Operators must evaluate their unique circumstances
 - Legacy traditional smart card payment systems with remaining life
 - Single-agency or multi-agency
 - Political environment
 - Trend toward leasing systems to private sector entities throughout transportation
- Migration paths will vary based on these factors
- Potential for hybrid systems utilizing multiple payment methods to leverage strengths of different approaches



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

Additional Innovations On the Horizon

- Mobile payment applications- pilots galore
 - Mobile application has its own chasm-crossing issues!
 - Will open payment application emerge?
- Acceptance of PIV credentials and other PIV-compliant credentials being piloted
- Open payment application on PIV credentials under examination by DoD
- Open payment approach could be key to multi-modal payment approaches (transit, parking, tolling, HOT/HOV, demand pricing, etc.)
 - All modes can leverage a solution that is not mode-specific



Thank You for Your Attention!

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