



# **IBTTA Interoperability and All-Electronic Toll Collection Workshop**

## **Smart Cards – Transit Industry Parallels and Toll Applications**

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# Agenda

- **EVOLUTION OF SMART CARDS IN TRANSIT**
  - Closed payment cards
  - Open payment
  - Account based processing
- **SMART CARDS IN TOLL COLLECTION**
- **OPPORTUNITIES**

# Transit Applications – Payment Evolution



**Cash**



**Tokens**



**Magnetic Stripe Cards**



**Contactless Smart Cards**

**Today**

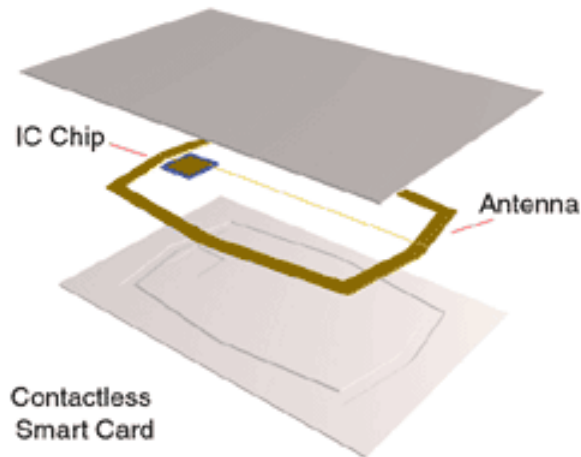


**Tomorrow...**

# Transit Applications – Closed Payment Cards



- An “intelligent” card that be used for fare payment and other services
- Typically a contactless card
- Computer chip is embedded in a credit-card size plastic card
- Can be printed with custom graphics and photos
- Available in two types – “permanent” and “disposable”



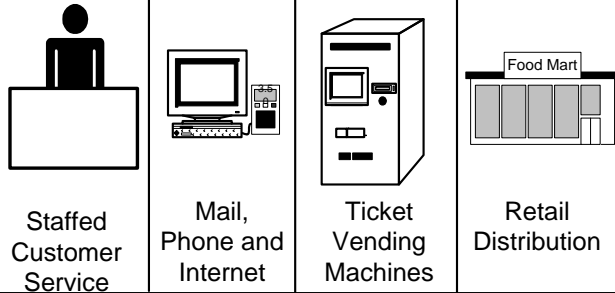
# Transit Applications – Closed Payment Cards



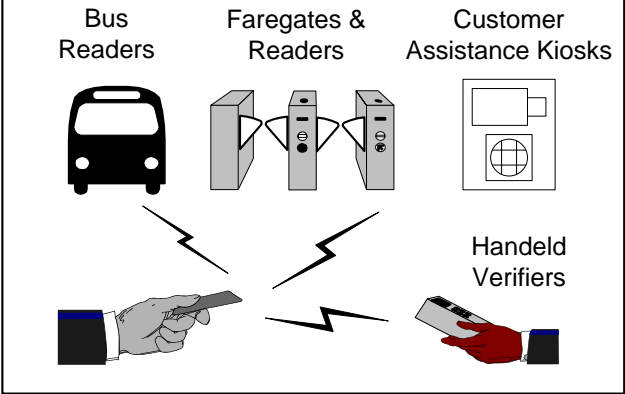
- Systems to-date have used an e-purse on the card – allows stored value to be decremented as used
- Card can store passes and trips
- Card stores sufficient information for real-time calculation of complex fares between agencies - transfers
- Many systems also maintain back office records

# Transit Applications – Closed Payment Cards

## 1. Card Purchase and Reload



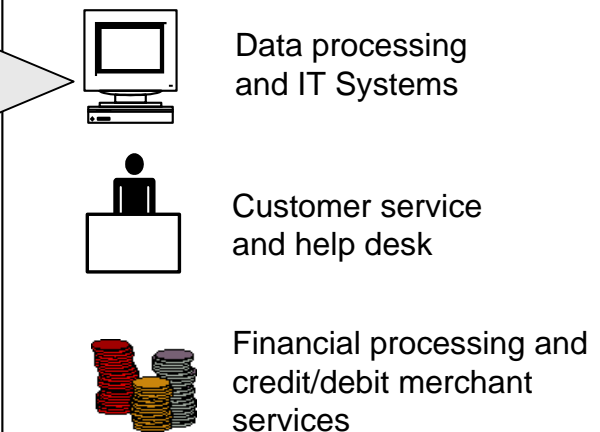
## 2. Fare Payment



Many systems also maintain back office records

- Protected balance for lost cards
- Reporting
- Fraud detection

## 3. Customer Service Center



# Transit applications – Closed Payment Cards



## Achievements

- Mobile validation
- Regional coordination (interoperability)
- Institutional programs and partnerships
- Multi-modal (Parking)

## Issues

- Proprietary cards
- Back office complexity
- Complexity of fare structures can be programming challenge
- Managed by transit industry

# Transit Applications – Open Payment Cards



- Enabled by finance industry standards
- Contactless bank cards
- Potentially same tap and go capability as closed card
- Finance industry management
- Less cards to issue and manage

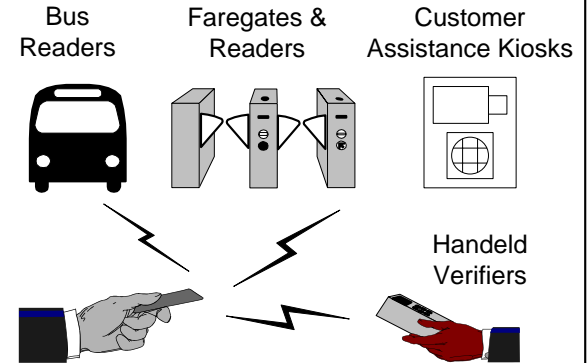


# Transit Applications – Open Payment Cards

## 1. Card Purchase and Reload

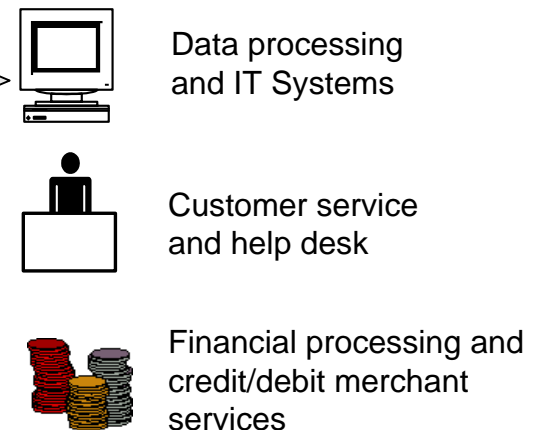


## 2. Fare Payment



- *Aggregate transactions*
- *Calculate complex fares*
- *Support passes, rides and trips*
  - *Challenge putting transit agency application on card*

## 3. Customer Service Center



# Transit Applications – Open Payment Cards



Pre-Pay or Post-Pay

Customer choice

- Credit card
- Gift card
- Anonymous card



# Transit Applications – Open Payment Cards



## Issues

- On-line verification preferred
- Ability to handle all fare types, transit modes, and address issues such as proof of payment
- Cost effectiveness versus traditional method
- Availability of contactless payment cards
- Need further education between financial payment industry and transportation industry

# Toll Applications – Smart Cards

## Greece

- Smart card used for
  - Commercial
  - Exempt vehicles
- Benefits
  - Lower cost than transponder
  - Vehicle and user information stored on card and reviewed by collector



# Toll Applications – Smart Cards

## Singapore

- Transponder with card slot in every vehicle
- Single application contact card – rechargeable at banks and kiosks



## 'Touch n Go' – Smart Cards in Malaysia

- Electronic purse used on highways, major public transport, parking sites and theme parks in Malaysia
- Uses Mifare contactless technology
- SmartTag Transponder



# Potential Applications and Interoperability



## Opportunities

- Toll lane readers – similar to dip readers
- Common transportation account
- HOT validation
- Cash customer – prepaid open loop contactless cards