ITS Sheet 8

Smart Fare Systems

NATIONAL ASSOCIATIONS WORKING GROUP FOR ITS

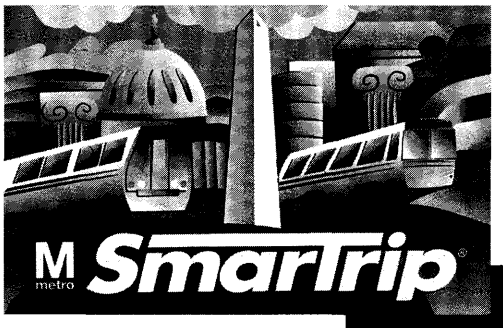
Electronic Fare Payment Systems—Smart, Convenient, Cost-Effective

Transit properties worldwide use a variety of fare collection technologies to improve revenue collection: tokens, coin counting mechanisms for turnstiles or bus fare boxes, and flash passes for limited time periods or special classes of users. Now, newer electronic technologies offer customer convenience, transit system savings, and increased ridership for regional multimodal and multipurpose integration.

Transit Customers and Operators Benefit

Electronic payment systems offer convenience and time savings for the customer and improved efficiency and revenue protection for operators. Customer convenience is difficult to quantify, but increases in ridership are an indicator of greater attractiveness to transit patrons. In New York City, for example, the Metropolitan Transit Authority estimates that greater patronage attributable to the new MetroCard has resulted in a $49 million increase in annual revenue.

With electronic systems, transit operators benefit from improved efficiency and greater flexibility. Operators can readily accommodate pricing systems that incorporate time-of-day and distance-based fares, as well as special fare categories for different kinds of users (people with disabilities, elderly persons, school children, or frequent users, for example). Reduced cash and token handling results in savings and improved security, while increasing the accuracy and efficiency of accounting and financial reporting. Reduced cash handling requirements alone can lead to significant savings. At New Jersey Transit, savings from reduced cash handling amounted to $2.7 million annually; in Atlanta, Georgia, the Metropolitan Area Rapid Transit System (MARTA) realized a $2 million annual savings.



Smart cards offer riders convenience and, potentially, seamless access to multiple systems.

Electronic farecards save transit agencies millions in reduced cash handling.

Smart Systems Evolve

Payment cards range from plastic or paper "swipe" cards with limited data storage in a magnetic stripe to "smart" cards with a tiny chip that has microprocessing and greater storage capacity. "Mag stripe" card use ranges from the complicated read-write systems pioneered by the San Francisco Bay Area Rapid Transit (BART) system in the 1970s to simple, speedy, read-only systems like the swipe card used by the Massachusetts Bay Transit Authority in Boston. Mag stripe debit and credit cards are also in use to pay fares on transit vehicles or in stations and to purchase prepaid passes and stored-value cards.

Smart cards offer more flexibility and support more complexity, including multimodal and multipurpose integration. The cards come in two configurations, the "contact card" and the "proximity card," both with processing and storage capabilities. Contact cards were used in a demonstration project in conjunction with the 1996 Atlanta Summer Olympics, where both disposable and rechargeable stored-value cards were used to pay for goods and services, including MARTA fares. Proximity cards use radio frequency technology. Proximity cards are in use at the Wash-

U.S. Department of Transportation

ington (D.C.) Metropolitan Area Transportation Authority (WMATA), where the SmarTrip farecard serves also to pay for parking at WMATA lots.

The use of smart card technology in transit is growing rapidly. A 1999 survey[1] found that of 142 electronic payment systems being deployed, 40 percent were using or planning to use smart card technology, and 35 percent were using or planning to use mag stripe applications.

Open Systems Enhance Integration

An issue currently facing the transit industry is whether agencies should continue to maintain independent (or "closed") fare collection systems, or whether they should explore integrating with other agencies, modes, or services creating more "open" systems. New payment technology offers opportunities to reduce design and implementation costs by adopting common formats and to share costs of payment infrastructure and administration. Many transit agencies are concerned about adopting systems that may be difficult to integrate in the future. As a result, transit operators are discussing the development of some type of payment system standard.

Open systems can involve one or more partners, including financial institutions, other transit operators, businesses, or social service agencies. The transit operator may accept cards from other agencies or may be a partner in some form of "electronic purse" card that can be used to purchase a variety of goods and services. Cards could be provided by employers as a fringe benefit or by social service agencies to help clients access jobs and services.

Although a closed system may be the only short-term option, the challenge is to deploy a system that can migrate to a more open architecture in the future.

An open system can result in true opportunities for integration. For example, interagency financial agreements could permit the use of a single card (or cross-acceptance of multiple cards) for different transit operators in a region. This would offer what many transit users say they really want: a seamless journey, with easy transfers and access to multiple systems. Eventually, a single card could be used across modes and operators, for toll collection, parking, transit, and other applications.

1. "Benefits Assessment of Advanced Public Transportation System Technologies: Update 2000." U.S. Department of Transportation, November 2000 (Document No. FTA-MA-26-7007-00-4, available through the National Technical Information Service, Springfield, VA 22161).

What's next...

- In Orlando, LYNX—Central Florida's regional transportation authority, the Orlando-Orange County Expressway Authority, and the City of Orlando are building a regional electronic payment system that will integrate electronic collection of transit fares, freeway toll collection, and parking fees—with potential for additional applications—with a single account structure for multiple providers. This project is supported by a Federal Transit Administration Electronic Payment System grant.
- The Ventura County (California) Transportation Commission is undertaking to provide transit users with more seamless service throughout the county by linking the operations of eight transit agencies. Transit users will experience a countywide, distance-based fare structure, implemented using proximity, smart-fare payment cards. Riders will be able to add value to their farecards by phone, charging their credit cards. Information collected will also be used in planning transit operations.
- Seven transit agencies in the Seattle, Washington, area are collaborating to create a smart farecard system for 2,200 buses as well as for ferries and light-rail and commuter trains. Riders eventually will be able to use the card for nontransit purposes, such as checking out library books or gaining access to city swimming pools.

For more information...

Federal Transit Administration,
Office of Mobility Innovation;
202-366-4991; fax: 202-366-3765.

U.S. Department
of Transportation

Publication No. FHWA-OP-01-028

Produced by the Federal Highway Administration and the Federal Transit Administration for use by members of the National Associations Working Group for ITS