Open Payment Fare Systems

Save money through operational efficiencies.
Open Payment Systems

Save money and allow transit agencies to focus on their core mission.

Like many businesses worldwide, transit agencies are under pressure to enhance operational efficiencies, boost revenue and gain the flexibility to thrive in a dynamic environment. Fortunately, a new technology solution has taken root across the country. The introduction of open payment fare systems is enabling transit agencies to focus on their core mission of transporting people. These systems simplify operations by adopting payment technologies from the financial sector.

Closed systems present several challenges.

As transit agencies seek to fulfill their mandate to provide safe, convenient and low-cost transport to regular commuters and visitors, many must also generate sufficient revenues to cover the costs associated with operations. To maintain satisfied ridership, transit agencies must provide services that meet the public’s rising expectations for speed and convenience, which often requires an investment in new technologies. U.S. transit agencies have historically developed proprietary technologies used for fare collection because standards-based technology was not available. In developing proprietary systems, agencies essentially would create their own form of currency. These closed or proprietary systems are expensive to maintain and make cooperation among agencies within the same region difficult at best—even if they all choose the same vendor.

Proprietary systems compel agencies to issue and maintain fare cards for riders, including the need for sizable numbers of ticket vending machines from which riders purchase or add value to their fare media. Many agencies also maintain a retail distribution network as a means to make their fare cards available to the riding public in environments outside of the transit system. These distribution networks require additional technology at the retailer’s point-of-sale environment and in many cases the transit agency subsidizes the retailer. Agencies must perform a broad range of accounting and auditing processes to ensure proper accounting of all fare revenues in the system. Additional support for customer service and device management functions is also required.

When fares need to be adjusted, proprietary systems often require software updates that only the transit agency’s vendor can provide. These changes need to be implemented through a lengthy process of downloading updates to all devices wherever fare rules are applied before the new fares can take effect. Daily downloads of fare tables, action lists and hotlists are also needed throughout the system.

Compelling solutions are readily available from the private sector.

Traditional fare payment systems were created at a time when communications were expensive and slow. Today, however, data transmits instantly over secure and reliable, cellular telecommunications or fiber optic networks. In addition to advances in telecommunications, banks now are offering contactless credit and debit cards and contactless payments are available via other devices such as mobile phones. Forward thinking executives in the nation’s largest transit agencies began to wonder if they could simply accept these contactless bank products just like the millions of other merchants, rather than minting their own proprietary currency. While traditional fare collection vendors resisted the idea, transaction processing companies and select systems integrators viewed advances in technology as an opportunity. Major payment brands that operate open payment systems such as American Express®, MasterCard® and Visa® also responded to the opportunity by adjusting their rules for supporting low value transactions. Specifically, the payment networks lifted the requirement for receipts and provided better protection for the merchant against losses. MasterCard® and American Express® have gone the furthest by developing risk management platforms for the mass transportation industry that can meet an agency’s needs for sub-second decisioning to permit or deny a rider’s entry into the transit system. The payment networks already have the proven infrastructure and expertise in place to handle the authorization, clearing/settlement and security functions. Open payment solutions that leverage these payment platforms eliminate the inherent inefficiency of public agencies managing proprietary schemes. By working with the private sector and fare systems integrators, transit agencies can assume the role of a traditional merchant and focus on their core mission of transporting passengers.

Common Questions and Misperceptions About Open Payment Fare Systems

Do Open Payment Fare Systems slow up transaction times at entry/exit points?

MTA New York City Transit, Port Authority Trans Hudson and New Jersey Transit all had demonstrated that contactless, open-fare payment transactions can be undertaken very quickly and efficiently. The NY/NJ Transit Trial was a crowning event in the evolution of Open Payments. Today NJ Transit continues the program.

Several of the payment brands support real-time risk management solutions that streamline the validation of a payment card or device to meet transit throughput requirements. By modifying authorization procedures for pay-as-you-go transit use, the payment brands have enabled transit agencies to offer card acceptance at all points of entry. Risk management approaches that include hot-listing, real time velocity checks and pass back rules among other checks have proven to manage risk within acceptable thresholds.
What Open Payment Fare Systems are, and how they work.

Advances in network architecture and telecommunications, combined with innovations in the financial payments sector and widespread adoption of contactless banking products have propelled the adoption of open payment systems by mass transit agencies. Today, leading agencies around the globe are implementing, or are in the process of procuring, new open payment fare systems. In addition to accepting bank issued contactless cards/devices, Near Field Communications (NFC) enabled mobile phones are being introduced to the market. NFC is a standards based wireless communications technology that is being integrated with mobile phones. The technology allows the consumer to download content such as a coupon or a movie tickets to their phone. Additionally, if the consumer desires, they can securely download payment card applications to a mobile device that later can be used at a merchant’s payment card reader with a single tap. A transit agency that has adopted an open payment fare system can automatically accept these NFC enabled devices in addition to the millions of contactless cards that are issued by banks around the world.

The ISO/IEC 14443 RFID communications standard defines how the contactless card or mobile phone and the merchant’s payment card reader speak to one another. The adoption of this standard helps achieve interoperability between cards/devices and readers and enables consumers to use cards anywhere in the world. These standards are now readily available to transit agencies. Payment brands have modified several of their business rules to encourage adoption of contactless products by the mass transit industry. Payment brands now have provided for certain chargeback protections, have eliminated the need for customer signatures for transactions under $25 and have modified risk policies to reduce or limit risk exposure to the transit merchant. All of these developments enable transit agencies to start accepting contactless bank devices on buses and in subway stations without delay.

Typically, the open payment fare systems operate as follows:

- Riders tap the contactless bank card or mobile device at the point of entry to the transit system. The point of entry could be a subway gate, the front or back of a bus or even the entrance/exit to a parking area. From the point of entry, the transactions are routed to the back office system managed by the transit agency or their systems integrator/service provider on the agency’s behalf. Transactions are treated differently based on the consumer’s relationship with the transit agency. Some consumers purchase their fares prior to travel and others simply tap at the entry point without having to make any prior purchases. Regardless of fares being prefunded, every transaction is routed for authorization across the payment brand’s network to the issuing bank. In all instances, the appropriate fare(s) is calculated, the agency’s payment card processor makes payment to the agency and the rider’s bank or payment card is billed accordingly. With the open payments approach, transit agencies play the role of merchant with the traditional relationship with a payment processor/acquirer.

- All open payments transactions—whether credit, debit, branded prepaid cards or private label transit fare media—are processed through the third party financial payment systems and use standard industry processes for clearing and settlement of fare revenues. An account-based architecture allows payment from any open standards contactless card or mobile device. Other cards including employer ID, federal PIV cards or college IDs can also be used in the system by linking them to a funding source. Acceptance of these types of cards is in addition to accepting contactless bank branded products is a capability that exists today.

- Open payment fare systems provide the same data security that is provided with traditional credit and debit card processing. As a requirement, payment card systems must comply with the Payment Card Industry Data Security Standards (PCI DSS). These standards provide a comprehensive security approach that governs the safekeeping of cardholder and other sensitive information as it is processed by the transit agency and/or their service providers. Published standards provide a common framework for the transit and financial industries to protect data.

How Open Payment Systems reduce costs.

As discussed in this paper, the open payments environment operates using standards developed and maintained by the financial payments industry, whereas proprietary fare collection systems often require expensive customized software and hardware that could make system upgrades costly and time consuming.

Agencies implementing open payment fare systems have access to products and services that have been
developed by a variety of providers for a larger global merchant market. Hardware and software from these providers can be implemented by a transit agency with little to no modification.

By embracing open standards fare systems, transit agencies gain a variety of operational efficiencies that could lead to notable cost savings and service improvements including, but not limited to:

- **Standards-based hardware can be procured from traditional and non-traditional transit vendors.** This drives down cost through competitive bidding, which most agencies must follow. Hardware does not need to be provided by the systems integrator.
- **Standard-based software allows the agency to integrate with whatever new technology they choose and in many cases, this can be both procured and implemented at a fraction of the time and cost when compared with a traditional system.**
- **As more riders use contactless payment cards or smart phones as fare media, the amount of cash used to pay fares is reduced, which lowers cash management costs for the agency.**
- **Agencies no longer have to procure, encode, secure and distribute fare cards as a majority of cards accepted in the open standards fare system are issued by other entities (banks, mobile phone providers, employers, etc.)**
- **Back-office functionality allows simplified fare changes and reduces the lag time to introduce new policy. These changes can be performed by the agency with no vendor support required.**
- **Customer service related needs, in most cases, can be addressed by the entity that issued the card/device (e.g.: bank, employer, etc.).**
- **Open payment systems enable retail distribution at thousands of locations in most transit systems operating area which reduced the need to purchase and maintain large quantities of vending equipment.**
- **Agencies can reallocate staff resources to other areas of the transportation operation, for example enhance Customer Service with representatives assisting riders on station platforms.**

**Outsourcing**

Open payment fare systems present the transit agency with the opportunity to give up its role of fare collector and assume the much simpler role of a traditional merchant. By outsourcing parts of an agencies fare collection operations, the agency can significantly lower its operating costs. Often, partnerships with the private sector can eliminate large capital outlays by recouping system costs incrementally through revenue sharing or other creative partnership constructs. The transit agency can delegate the responsibility for all system functions to a third-party provider, which can dramatically reduce the cost of operations.

**Open Payment Fare Systems drive greater revenue.**

As proprietary systems are phased out so does the rider’s need to keep and maintain an additional card that can get lost or stolen. Driving cash out of the transit system speeds up boarding time and improves the rider experience because more people do not need to stop and load value to a card before they can access the system. Riders can enjoy the benefit of getting on and off the bus sooner or enjoy shorter lines and reduce, if not eliminate, waiting periods. The open payments model gives the transit customer an experience consistent with what they are accustomed to in the retail environment.

Perhaps more importantly, contactless payment cards and devices enable transit agencies to collect usage data in real time. Data provides the basis for programs that reward riders for frequent use and encourage people to use mass transit more often. Open payment fare systems provide the capability for real time dynamic fare policy modification capabilities that can be used to provide ridership incentives. For instance, if a natural disaster floods city streets, the transit authority may respond immediately by providing commuters with an incentive to use public transportation: a 50 percent fare reduction could be announced through media channels and implemented that morning, a process that could take weeks with a closed proprietary system.

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**How would contactless, account-based systems work for open platforms such as light rail and commuter rail?**

Most, if not all, contactless fare systems, open or proprietary, use proof of purchase inspection to insure riders pay their fares. There are currently several systems operating around the world that allow conductors to use handheld devices to verify rider payment onboard trains. Today, mobile ticketing systems using QR codes offer a “proof of payment” supported through the use of a consumer’s mobile phone or other device with which a secure credential such as a QR code can be recalled on the device and displayed to agency personnel for verification. More sophisticated systems provide the conductor with a hand held unit to check the QR code for use and authenticity at the back office.

**How do you handle unbanked customers?**

Riders without bankcards can be accommodated using contactless prepaid cards as discussed above.
Capturing Data to Improve Operating Efficiency

Ridership data can be analyzed to develop improved operating solutions that optimize service efficiency. With an understanding of the ridership behavior – how riders travel, how often and what the regular stops are—transit agencies can model travel behavior and predict demand and improve the efficiency of daily operations by making adjustments for weekends, holidays and atypical work or school days. Being able to anticipate customer flow with greater precision enables an agency to make scheduling adjustments and cut down on operating expenses.

Summary

Open payment fare systems provide a host of benefits not just to the transit agency implementing the technologies, but also to riders that use the services. Modern technologies with open standards and open architecture link agencies to the future and create an abundance of operational efficiencies that result in cost savings to the agency. Riders benefit by being able to use their contactless card or NFC enabled mobile device to quickly and securely access mass transportation.

For more information about Open Standards Fare Systems, please contact your local Xerox Representative.

Xerox supports the transportation industry through innovation that streamlines operations, reduces costs, and maximizes resources. As an integrator, Xerox offers a full spectrum of services that include parking management, fare collection for public transport, fleet management, photo enforcement, electronic toll collection, PrePass® and motor vehicle services solutions.

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