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PAPER

# Multimodal Payments Convergence – Part Two: Challenges and Opportunities for Implementation

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## About the Secure Technology Alliance

The Secure Technology Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption and widespread application of secure solutions, including smart cards, embedded chip technology, and related hardware and software across a variety of markets including authentication, commerce and Internet of Things (IoT).

The Secure Technology Alliance, formerly known as the Smart Card Alliance, invests heavily in education on the appropriate uses of secure technologies to enable privacy and data protection. The Secure Technology Alliance delivers on its mission through training, research, publications, industry outreach and open forums for end users and industry stakeholders in payments, mobile, healthcare, identity and access, transportation, and the IoT in the U.S. and Latin America.

For additional information, please visit [www.securetechalliance.org](http://www.securetechalliance.org).

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## Background

The mobility options available to travelers are expanding, and services such as ride-hailing, bike share, car share and micro transit have grown rapidly. Travelers can get real-time information on available transportation options, but payment for each type of service varies and can be confusing. Travelers expect convenient ways to plan, book and pay for multimodal transportation. Transportation service providers want to leverage new technology to provide better service to customers. Integration of payment services across transportation modes is a natural part of the evolution to seamless mobility services.

The white paper, “Multimodal Payments Convergence – Part One: Emerging Models and Use Cases,”<sup>1</sup> was developed in a collaboration between the Secure Technology Alliance Transportation Council and the Association for Commuter Transportation. “Part One” describes emerging types of payments convergence, and provides real-world use cases from Chicago Transit Authority, Dallas Area Rapid Transit, Los Angeles County Metropolitan Transportation Authority and other regions. Four categories of payments convergence were identified: use of common payment media, linked or integrated mobile apps, common or linked payment accounts and multimodal incentives and co-marketing. At the time the Part One paper was written, over 15 examples of convergence were identified.

Several of the examples of convergence in Part One were part of demonstration projects funded by the Federal Transit Administration’s (FTA) Mobility on Demand Sandbox Program. These projects have provided experience integrating payments of transit, bike share and other forms of mobility. The demonstrations, along with the Part One white paper and outreach activities of the Secure Technology Alliance, have helped generate widespread interest in multimodal payments. The FTA is working with the Secure Technology Alliance and many stakeholders to develop a Framework for Mobility Payment Integration, which describes best practices and outlines how to achieve payments convergence.

This paper, “Multimodal Payments Convergence – Part Two: Challenges and Opportunities for Implementation” describes alternative visions of multimodal payments, the drivers and benefits of payments convergence, potential barriers to implementation and suggestions for actions to achieve payments convergence.

## Future Visions for Payments Convergence

The goal of payments convergence is to have simple, convenient ways for all travelers to pay for any type of transportation or mobility service. Payments should be part of seamless multimodal travel, where travelers can dynamically plan, book and pay for trips involving a variety of mobility services. For example, a traveler could plan a journey involving rail, bus and bike share using a single mobile trip planning app and pay for these services with a contactless smart card or an app on a mobile device, using value from a single account.

Open payment architectures make it easier for customers to use a variety of payment media. Customers with bank accounts can pay using contactless bank cards and wearables, mobile tickets and mobile wallets. Other customers may choose to purchase pre-paid cards at retail outlets or vending machines. Also, customers will be able to use contactless identification credentials which are linked to employer, academic or social service accounts.

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<sup>1</sup> <https://www.securetechalliance.org/publications-multimodal-payments-convergence-part-one-emerging-models-and-use-cases/>

Account-based payment architectures are being implemented by transit agencies in many regions. In some regions, customers can use value in transit accounts to pay for other types of mobility services. Some organizations envision offering customers a “universal transportation account” for any type of transportation payment. Account-based payment systems strengthen customer relationships and will make it easier to dynamically adjust pricing and incentivize travel. Incentives will be personalized to individual travelers and will anticipate their needs and preferences before and during their journey. Transportation payment accounts can be linked directly to employer and social service benefit accounts and will facilitate offering special fares and loyalty programs.

In some regions, transit authorities and other mobility management organizations may provide a Mobility as a Service (MaaS) platform, which aggregates mobility offerings for the region into a mobility marketplace and provides a single point for booking and payment of any mobility service. Multimodal platforms will have middleware to connect the service providers, and to manage pricing computations to provide the customer with best value for multimodal journeys. The pricing and payment platform would be integrated with each service provider using a standard set of payment application programming interfaces (APIs).

A key goal of payments convergence is to provide convenience and efficiency by reducing friction in the payment process. All electronic tolling systems have revolutionized highway toll payment by replacing cash collection with radio frequency (RF) tags and video license plate readers. Connected vehicle technology is extending this capability to enable vehicles to make wireless payments for fuel services, parking and other services. Some transportation organizations are using cell phone locations and contactless tokens to detect travelers’ movements on different modes of transportation and charge them without the traveler being actively involved in making a payment.

## **Drivers of Payments Convergence**

Several factors are driving multimodal payments convergence. Travelers are expecting to have a diverse set of transportation services to choose from and are expecting seamless ways to plan, book and pay for every part of their journey.

Transit authorities and other mobility service providers are linking their services to provide seamless end-to-end journeys, and payments convergence supports this integration.

The majority of travelers have mobile phones and devices, and many travelers are accustomed to using mobile apps for trip planning and payment.

Mobile apps and open architectures are expanding, enabling travelers to use a variety of payment media to pay for their trips, including contactless smart cards, mobile wallets, and mobile ticketing.

Transit authorities are under continual pressure to make payment processes more efficient and secure, and to reduce the costs of handling cash.

Financial institutions are planning to issue contactless cards and NFC-enabled mobile apps which enable customers to pay for any type of transportation service which accepts their payment media. Financial institutions are focusing on the transit and mobility markets as key parts of their implementation strategies for deploying contactless payment media.

Transit agencies are moving to account-based ticketing and payment systems, making it easier for customers to pay for any transportation service. Account-based payment systems facilitate multimodal payments convergence and provide ways to strengthen and personalize customer relationships.

Transit authorities must provide transportation service for all types of customers, so strategies must be developed to enable the under-banked and those without mobile phones to easily pay for any type of transportation.

The FTA, which provides funding for innovative technology demonstrations, is encouraging transit agencies to consider multimodal payments integration as part of the FTA Mobility on Demand and Mobility Payments Integration programs.

In some regions, national, state or local governments are exploring or mandating interoperability among payment systems to increase customer convenience and mobility.

## **Benefits of Payments Convergence**

Multimodal payments convergence will provide benefits to customers, transit and mobility service providers and technology vendors. Customers will be able to easily plan, book and pay for every part of their journey. More convenient access to different mobility services will provide improved access to jobs, medical services, and other services, and may result in increased ridership, with potential increases in revenue.

Payments convergence and contactless payment media will decrease boarding times and increase operational efficiencies.

Adoption of open, integrated payment system architectures for all modes of transportation should reduce overall development and operational costs and accelerate the delivery of new payment capabilities.

Account-based payment systems will make it easier for service providers to introduce changes in pricing, and to provide incentives to travelers to manage travel demand. Multimodal incentives may help reduce congestion, air pollution and energy use by encouraging use of more sustainable transportation options and supporting regional growth strategies.

Customers will be able to add value to their payments account, and to use it immediately to pay for any transportation service.

Partnerships with retailers, sports venues and other activities could increase sales and stimulate travel demand. Security and transparency of transportation payments will be improved, resulting in increased public trust. Mobile payment apps provide retailers and other service providers with ways to reach large markets very quickly.

Open contactless payment systems enable financial institutions to enter the large transit market and achieve the critical mass needed to justify issuance of contactless media.

Payments convergence and open architectures will provide flexibility in adopting new technology. Markets will expand for technology providers and barriers to entry will be reduced.

Payments convergence will potentially provide a wealth of information on travel behavior, valuable to transportation planners, retailers, financial institutions and many other stakeholders.

## **Challenges to Payments Convergence**

Payments convergence involves many public and private organizations which have little experience working together. Strategies for collaborating and governing their relationships must be developed. Data sharing agreements are needed, as well as agreements on pricing policies, revenue sharing, payment reconciliation, account management, customer service and liability. The business case for

convergence should be defined, as well as a better understanding of the value propositions and risk tolerance of all potential partners.

There is little consumer research on multimodal payments convergence, and the needs of all types of riders must be understood and accommodated. Educational material will be needed to make sure that customers understand how to use multimodal payments services.

Standards and specifications to ensure interoperability of payment technologies, systems and accounts are needed. Issues of intellectual property, security and privacy must be addressed. Contracting mechanisms and partnership agreements are needed to allow public and private organizations to collaborate and continually adapt to evolving innovative technology.

Regulatory requirements must be addressed to ensure compliance with tax rules for use of commuter benefits, regulations on co-mingling of funds, requirements for equitable access to services, and other regulations.

## **Recommendations**

The Secure Technology Alliance Transportation Council advocates that industry stakeholders should continue to play a role in defining multimodal payments challenges and opportunities, and facilitating information sharing and collaboration among the transportation, payment and technology sectors.

Partnerships among key industry groups, such as the Secure Technology Alliance, U.S. Department of Transportation (DOT), the Fare Collection Systems Committee of the American Public Transportation Association (APTA) and other industry associations will help to develop guidance for payments convergence. Working with the U.S. DOT Federal Transit Administration and the Volpe Center is critical to develop and disseminate a Framework for Mobility Payment Integration. These efforts may include collaboration to ensure use of open APIs, common data definitions, data sharing agreements, improved customer education, innovative contracting methods, partnership agreements and other guidance to help drive convergence.

The Transportation Council also recommends that industry work with U.S. DOT to identify priorities for demonstrations of innovative payments convergence, and to promote adoption of multimodal payments best practices.

Technology providers and system integrators should develop and implement open payment system architectures, with flexible capabilities to link to any type of transit and mobility service.

Mobility service providers and payment processors should adopt open APIs and agree to share data to enable payments integration among all types of mobility services and payment accounts.

Cross-industry collaboration on the models, policies and infrastructure can help the U.S. transportation industry move more quickly to multimodal payments convergence and deliver its benefits to all stakeholders.

## Publication Acknowledgements

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Publication of this document by the Secure Technology Alliance does not imply the endorsement of any of the member organizations of the Alliance.

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## About the Secure Technology Alliance Transportation Council

The Transportation Council is one of several Secure Technology Alliance Technology and Industry Councils, focused groups within the overall structure of the Alliance. These councils have been created to foster increased industry collaboration within a specified industry or market segment and produce tangible results, speeding smart card adoption and industry.

The Transportation Council is focused on promoting Promoting the adoption of interoperable contactless smart card and other secure device payment systems for transit and other transportation services. The Transportation Council includes participants from across the smart card and transportation industry and is managed by a steering committee that includes a broad spectrum of industry leaders.

Transportation Council participation is open to any Secure Technology Alliance member who wishes to contribute to the Council projects. Additional information about the Transportation Council can be found at <https://www.securetechalliance.org/activities-councils-transportation/>