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Project Title:
All Aboard! Easier Transit Travel with
Standardized Payments

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All Aboard! Easier Transit Travel with Standardized Payments

This study addresses the Caltrans goal of Exploring Distributed Ledger Technology (DLT) for reducing friction in fare payments.

WHAT IS THE NEED?

The proposed research will examine the potential for the adoption of a standardized fare payment system throughout California's transit operators; to better serve their customers and provide seamless trip-planning and payment. This study addresses the Caltrans' goal of exploring Distributed Ledger Technology (DLT) for reducing friction in fare payments. This project will investigate the challenges faced by California's rural and urban transit agencies and operators in the adoption of DLT for fare payments.

Challenges with cash payments and the growing abilities of digital payments have led to growing interest in DLT and integrated payments in the future of California's public transit. This will require transitioning over 350 transit agencies operating in the state to coordinated fare payment systems. There is a huge diversity among transit agencies in California, and as such, these agencies face different challenges and to different degrees, when considering the adoption of DLT, as well as participation in the California Integrated Travel Project (Cal-ITP).

Cash is a universally accepted payment method among transit operators and provides a mechanism for riders who are underbanked or unbanked to access transit services, even when digital payment systems are introduced. However, cash is not seamless for transit operators or passengers. Cash is also a challenge for agencies. It presents security concerns for drivers, and administrative burdens for agencies. While the full costs of cash handling vary per agency, the cost of handling and moving cash may be considerable.



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knowledge that improves
California's transportation system

Digital payments platforms are increasingly popular across many industries and have been adopted by transit agencies throughout the world. These systems have many benefits, including improved passenger experience, more efficient boarding, safety for drivers, discount verification, and fare validation. However, in the US, these systems typically serve one operator, or a limited regional network of operators. Other shortcomings of the current implementation include a need to continue to allow cash payments and these systems typically have limited locations for passengers to purchase or add fares to cards. This can also lead to missing your ride while waiting to purchase more fare.

California Integrated Travel Project (Cal-ITP) envisions a seamless fare payment system for all of California's transit passengers and agencies. This will enable passengers to easily plan travel even when they will use multiple transit operators and will reduce friction caused by cash payments. For fare payment integration to work at the statewide scale the leading best practice is DLT which is an open-loop system that will allow payment processing using riders' credit or debit card, industry-based prepaid cards (i.e., Visa debit cards), or phone-based payments. Furthermore, open-loop systems will enable an easier integration with other mobility services such as ridehailing and bikeshare that are increasingly termed "an extension of transit."

Introducing this technology throughout the transit systems of California will require updating and integrating hundreds of agencies serving different types of passengers, geographies, at different scales, and with different levels of capacity and knowledge. Key stumbling blocks include how to a) equitably transition away from cash payments; b) streamline discount verification procedures; and c) understand the options for implementing affordable DLT compatible fare collection systems, including hardware and software requirements. Making this system accessible for those without credit cards or bank accounts is critical as this can

be up to 20% of passengers. Some argue that the digital options may be easy for transit operators to implement because the technologies have been designed to use across many industries and are increasingly small in size. However, even these smaller devices may be difficult to implement at scale or remain expensive for smaller agencies.

WHAT ARE WE DOING?

Prior to launching data collection, the research team will consult with Cal-ITP, California Association for Coordinated Transportation (CALACT), the California Transit Association (CTA), and community-based organizations to inform the study and address the evolving landscape of transit agency needs as we begin to transition to post-pandemic operations. This project will involve a literature review, new data collection through an in-depth survey of transit agencies to assess their ability to utilize DLT, and analysis of the factors relevant to transit agencies in this area. A central area of the transit agency survey will be how agencies will address equity issues related to the underbanked and other disadvantaged groups when it comes to both the implementation of DLT systems, as well as the cash alternative (since cash also has equity issues).

WHAT IS OUR GOAL?

The outcomes of this research will help Caltrans to identify what passengers need, and therefore what transit operators must implement to continue to equitably serve these groups, while achieving goals of providing easy to access, quick boarding, etc., through a universal means of payment. Meeting the needs of passengers is one factor that must be considered by transit agencies as they explore the potential adoption of DLT systems and the software and equipment necessary to offer these options to all travelers in the state.

WHAT IS THE BENEFIT?

Expected results will be an enumeration of the issues and challenges faced by transit agencies, and their views on how to best address those challenges, i.e., what would enable transit operators to overcome these challenges, and what kind of support/assistance from the state or other entities would allow them to adopt this integrated system. This study will directly address the research aims of Caltrans, by working with transit operators to identify the key challenges, expenses, and other hurdles that will need to be overcome to make integrated transit payment and trip-planning a reality in the state.

WHAT IS THE PROGRESS TO DATE?

We held a stakeholder meeting to inform the key research questions. This included researchers from UC Davis, as well as UCLA and UCI who are working on a related project, and Caltrans staff involved with Cal-ITP.