FTA

FEDERAL TRANSIT ADMINISTRATION

U.S. Department of Transportation
Federal Transit Administration

REPORT SUMMARY

Dallas Integrated Corridor Management (ICM) Transit Vehicle Real-Time Data Demonstration,

Final Report

Background

The Integrated Corridor Management (ICM) Initiative is a U.S. Department of Transportation project designed to aid the integration of multiple transportation networks and modes located within a corridor. The ICM Initiative selected two sites for a Pioneer Demonstration, Dallas and San Diego. Within those sites, critical data gaps limiting ICM adoption were identified; one such data gap was real-time transit vehicle passenger loads. To address this data gap in Dallas, Dallas Area Rapid Transit (DART) was awarded $900,000 by the Federal Transit Administration (FTA) to install automatic passenger counter (APC) equipment that was capable of transmitting passenger load data in real-time back to the train control center and ICM system.

Objectives

FTA sponsored this study to better understand how this new technology is being used and what benefit it can have for transit agencies. The purpose of the Dallas ICM System is to implement a multi-modal operations decision support tool enabled by real-time data pertaining to the operation of freeways, arterials, and public transit. The system is shared between information systems and people involved in transportation operations and incident management in the US-75 Corridor. The Dallas ICM System is intended to provide improved integration of operation procedures, including procedures that take advantage of the data-sharing capabilities of the Dallas ICM System and facilitate improved incident management, and traveler information.

Findings and Conclusions

The project explored and assessed the utility of real-time transit vehicle data and examined the issues, challenges, and feasibility of its use; it also evaluated the ability to collect and transmit transit location and passenger loading data to a transit management center(s) and/or ICM system in real time.

Several documents were developed for the Transit Vehicle Real-time Data Demonstration Project using a systems engineering process. This report discusses the steps of the process and the deliverables that were produced. DART lacked access to real-time LRT loading data prior to this project, making it difficult to implement some ICM strategies that included transit, such as adding transit capacity in real time to accommodate dynamic mode shift to transit (e.g., drivers may shift to transit as a result of a major incident on an adjacent freeway). This project demonstrated

and evaluated the ability to collect and transmit transit location and passenger loading data to a transit management center(s) and/or ICM system in real time. The project also demonstrated and evaluated the ability to use the data in real time in a decision support subsystem.

The project included the development, installation, testing, and demonstration of on-board APC equipment and communications technologies to support real-time connectivity between transit vehicles and central facilities to support ICM and normal DART operations. The Dallas ICM demonstration site was used as a test bed for this project. The project included the development of this operational concept to identify the appropriate transit vehicle real-time data applications that supports Dallas's proposed ICM strategies and operations. The applications selected for Dallas were demonstrated on DART's Red Line LRT system, which is located in the US-75 ICM corridor.

Real-time data on loads has permitted DART to make same-day decisions in consideration of the following:

- Addition of supplemental bus service if loads exceed capacity.
- Dispatch of additional trains if real-time data show the inability to accommodate loads.
- Advertisement of train capacity (if available) in the event of traffic accidents or major construction related delays.
- Reduction of train capacity (cars or extra trains) if real-time load data indicate that capacity is not needed.
- Deployment of supervisors, DART ambassadors, and DART fare enforcement and police to key stations when unplanned real-time loads are unusually high.

Benefits

New applications of technologies such as use of real-time APC data may allow transit agencies to be more flexible in how they respond to unplanned incidents by better understanding passenger load and demand across a network. Agencies can use this information to enact new strategies that were previously unavailable, impractical, or unreliable. To obtain and use real-time information, agencies may need to invest significant resources in updating equipment and software as well as training employees to use the new equipment.

While ICM and APCs have eased one major constraint—the ability to obtain real-time passenger load data—they have not eased other constraints such as network capacity and organizational policy. DART and other agencies around the country face issues such as platform length restrictions, headway limitations, and light rail vehicle availability that impact their ability to respond to passenger demand issues in real-time. Additionally, agencies may need to examine their internal policies to understand how much impact ICM and APC technologies could have on their operations.

Project Information

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