

Advanced
Research

SEPTEMBER 2020

Project Title:
Connected and Automated
Vehicle Application Development

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Collect Data using Connected Vehicles (CV) for Real-Time or Future Use

A research to address the technology gap in gathering useful information from CV data and integrating it with Traffic Management Center operations.

WHAT IS THE NEED?

Connected Vehicles (CV) can provide real-time data to California Department of Transportation, used to not only monitor the traffic condition on the road, but also optimize the throughput in real-time, support ITS planning activities, and keep travelers informed about travel conditions.

As CV become more prevalent, it will produce massive quantities of data that will need to be reduced, managed, and analyzed to provide useful information for real-time traffic management, and archived for offline planning and evaluation purposes. There is a need for a mechanism in place for data collection, processing, analysis, dissemination of information to the Traffic Management Center (TMC), and data archiving.

Furthermore, messages transmitted between connected vehicles and connected infrastructure include mandatory and optional data elements. Some of the optional data elements would be beneficial to collect for the use of traffic management but are subject to on-board unit (OBU) vendors' support.



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WHAT ARE WE DOING?

The objective of this research is to use CV to collect the following real-time data so that it can be used by TMC to monitor the traffic condition on the road and optimize the throughput in real-time:

1. Vehicle speed/travel times
2. Origin and destination
3. Vehicle classification
4. Vehicle lane position (which lane is the vehicle in)

The main steps include:

1. Development of a data collection plan to ensure that CV data are appropriately collected, processed and disseminated to meet the project object
2. Development of roadside applications to collect and process cv data and disseminate the data to transportation management systems
3. Collection and evaluation of data to assess the accuracy of the estimated metrics

WHAT IS OUR GOAL?

The goal of this research project is to address the technology gap in gathering useful information from CV data and integrating this new information with TMC operations through real-time CV data collection, analysis, and information dissemination between connected infrastructure and the TMC.

WHAT IS THE BENEFIT?

Conducting testing and evaluation of the mechanism for data collection, analysis, and information dissemination in a real-world setting with OBUs from different vendors will help to address the interchangeability issue (use of OBUs from various vendors), leading to more robust and efficient use of CV data for TMC operations

WHAT IS THE PROGRESS TO DATE?

Project kick off meeting was conducted in April 2020. Due to delays in the availability of the Roadside Units in the field, this project schedule will have to be extended till June of 2022.