



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Transportation
Safety and
Mobility

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Project Title:
Integrated Corridor Management
- Connected and Automated
Vehicles (CAV)

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System Impact Of Connected And Automated Vehicles: An Application To The I-210 Connected Corridors Pilot

Model Connected Automated Vehicles (CAV) into the current ICM systems.

WHAT IS THE NEED?

In the current Integrated Corridor Management (ICM) systems, the control targets are ordinary objects such as vehicles, buses, pedestrians, etc. However, in recent years, a great amount of effort has been devoted to the field of connected and automated vehicles (CAVs), which may be implemented in the future and become one of the dominant travel modes.

Given that this important piece is missing from the current ICM systems, it will become a serious problem for public agencies like California Department of Transportation and local Traffic Management Centers to manage traffic properly and efficiently once CAVs are deployed in the field.

Unfortunately, at the current moment it is impossible to evaluate the system impact of CAVs on transportation networks in the field, and insights from existing CAV studies are very limited since they were applied to small networks. Instead, a more appropriate way is to build a well-calibrated large-scale traffic network in microsimulation and add the CAV components for testing purposes.



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WHAT ARE WE DOING?

This research aims to fill this gap by developing an integrated platform in microsimulation that allows the modeling of CAVs in current ICM systems. For demonstration purposes, the Interstate 210 Connected Corridor Pilot model developed in the microsimulation software, Aimsun, will be used as a test site.

The proposed platform will incorporate the most appropriate CAV models/applications into Aimsun using the available Software Development Kits and allow public agencies to play with different scenarios in microsimulation and understand potential impacts of CAVs on their proposed ICM strategies.

WHAT IS OUR GOAL?

The primary goal of this project is to develop an integrated platform to incorporate CAVs into microsimulation and evaluate their system impacts on large-scale transportation networks.

WHAT IS THE BENEFIT?

The research results will provide public agencies useful tools to better understand the system impact of CAVs and help them perform long-term planning.

WHAT IS THE PROGRESS TO DATE?

The project has been kicked off as of 1/14/2020. The kick off was an in-person meeting with the Principle Investigator and the customer from Traffic Operations.

The first deliverable for this project, a technical memo on the literature review is expected by 7/31/2020.

- Review of car-following models in prevailing simulation software has been completed.
- Review comparing the models from Aimsun, Vissim, TransModeler, and Paramics has also been completed.
- Review of car-control models for AVs/CAVs is in progress.