



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Traffic Operations

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Project Title:
Traffic Management Center -
Communications

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California Data Standards and State-level Standardization

A research project by UC Berkeley PATH program to review the current data standards and provide guidance to Caltrans and other state transportation agencies to improve data and system interoperability across the transportation system.

WHAT IS THE NEED?

Transportation data standards are an increasingly complex topic, particularly as the types and volume of data becoming available is exploding. New data sources, private data providers, and uses for data are exploding. Data standards can provide significant benefits, including the ability to integrate different systems and different vendor products, improve and ease data analysis, and enable Transportation Systems Management and Operations (TSMO) and many cross-jurisdictional and cooperative solutions and strategies. Without data standards, these benefits cannot be realized.

However, data standards are not always universal, they are constantly evolving with transportation technology and information technology advances, and are not always implemented universally and in the same manner across the vendor community. Resulting patchwork solutions increase costs, undermine integration efforts, and invite opportunities for wasted effort. California needs a roadmap for data standardization, ensuring that it has a universal set of standards for all of its contractual systems integration efforts and that those standards are implemented in the same manner across its vendor community.

WHAT ARE WE DOING?

This project will review the current information technology and standards landscape and provide practical guidance. Analysis and recommendations will address the following:

- A list of data standards and their usage to be applied to various information technology related projects



DRISI provides solutions and
knowledge that improves
California's transportation system

- An analysis, where information is available, of implementation of selected standards across multiple vendor products, identifying similarities and differences in implementations
- Roadblocks to standardizing the implementation of selected data standards
- Review of various data semantics, temporal differences, and other data characteristics that can hinder standardization.

This project will focus on improving standardization of data communications which will be achieved by:

- Providing recommendations regarding selection and implementation of specific data standards and appropriate usage of such standards in State transportation projects.
- Using publicly available information or vendor provided information, providing information regarding current or future implementation of recommended standards within vendor products.
- Providing information to assist with standardization of the implementation of these standards across transportation projects within the State.

WHAT IS OUR GOAL?

The goal of this research is to provide a guide for Caltrans and other state transportation agencies to improve data and system interoperability across the transportation system. The results of this project will form the basis for California data standards and data management guidance to be implemented across all California transportation systems efforts.

WHAT IS THE BENEFIT?

This research will improve standardization of data communications across California's transportation infrastructure and provide the following benefits:

- Improve systems integration effort success and reduce integration costs
- Improved ability to access, analyze, and utilize data
- Increase opportunities for new systems capabilities and related benefits
- Improve the ability to connect all elements of the California transportation system
- Cultivate a marketplace where vendors develop compatible components according to a public set of common data standards and semantics.

WHAT IS THE PROGRESS TO DATE?

The project is anticipated to begin December 1, 2022.