

SYSTEMS ENGINEERING DEVELOPMENT AND INTEGRATION PROGRAM
Automated Safety Warning System Controller

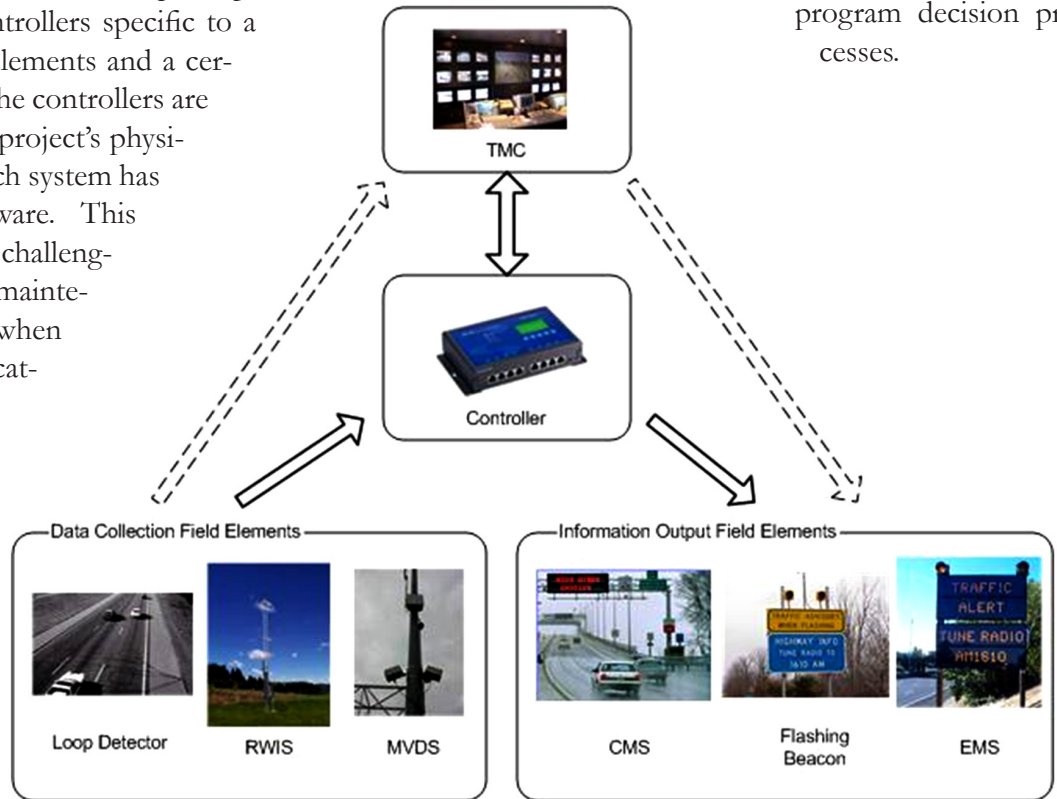
Problem:

California has many different warning systems on the state's highways, disseminating warnings via changeable message signs (CMS), Highway Advisory Radio (HAR), and flashing beacons, all of which play an important role in traveler safety. These warning systems often depend on data collected from sensors in the field. Sensor data may be interpreted in a TMC or maintenance shop, where decisions are made about the issuance of warnings. This dependency on human interaction may slow what otherwise could be a timely activation of a warning. Further, every such system to date has been a unique implementation with custom controllers specific to a particular set of ITS field elements and a certain warning system type. The controllers are customized for a particular project's physical and electrical layout. Each system has its own one-of-a-kind software. This distinctiveness poses many challenges to TMC operators and maintenance personnel, especially when the warning systems are located in remote locations.

Solution:

To address the challenges associated with numerous unique warning systems, many in remote and hard to reach locations, this project is developing and building an automated

safety warning system controller that will interface with roadside sensors and warning systems such as CMS or HAR in a standardized way. The controller will collect automated data and apply best practice algorithms to analyze sensor data and actuate appropriate warning messages and signals. It will operate autonomously, be remotely accessible, and/or able to interconnect with a Transportation Management Center (TMC) or other automated systems. In addition, the controller will have extensive programming/scripting capability which allows field engineers to easily program decision processes.



Benefit:

The automated safety warning controller will consider maintenance, flexible implementation, reliability, and communications challenges. A controller that can interface with a variety of field sensors/elements and safety warning systems in a uniform manner will enhance operations and avoid a multitude of one-of-a-kind deployments.

An automated controller for safety warning systems can improve traveler safety with more timely and relevant warning messages.

Using commercial off the shelf equipment makes the automated controller an economical solution.

The ability to remotely access the controller will reduce the cost of service for warning systems.

TMC operators and field engineers will have the ability to adjust decision thresholds in response to changing weather, road, and incident conditions. This improves effectiveness and efficiency and in turn improves traveler safety.



Kelvin Bateman tests the automated safety warning system controller.

For further information, please visit
www.westernstates.org or www.westernstates.org/Projects/Controller/

or contact:

Douglas Galarus,
 Principal Investigator
 Senior Research Associate/Program Manager
 WTI Systems Engineering Development
 and Integration Program
 (406) 994-5268 • dgalarus@coe.montana.edu

Sean Campbell, P.E.
 Caltrans Project Manager
 Chief, ITS Special Projects Branch
 Caltrans Division of Research and Innovation
 (916) 654-8868
sean_campbell@dot.ca.gov

Ian Turnbull, P.E.
 Caltrans Project Champion
 Chief, Office of ITS Engineering and Support
 Caltrans District 2
 (530) 225-3320 • ian_turnbull@dot.ca.gov