

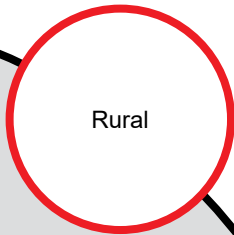


Caltrans Division of Research,
Innovation and System Information

Research



Results



Rural

MAY 2019

Project Title:

Refining the next generation roadside weather interface for Caltrans

Task Number: 2916

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Refining the next generation roadside weather interface for Caltrans

Adding alerting functionality and performing real-time testing during inclement weather allows WeatherShare users make better decisions during weather events

WHAT IS THE NEED?

Caltrans used a third-party application to aggregate and present weather information from RWIS sites to maintenance and operations personnel. Other third-party applications were used by individual districts to provide additional capabilities such as weather-based alerting. Caltrans desired to combine these functionalities into a single, open-source system, owned and maintained by the department – the WeatherShare project.

WeatherShare streamlines and integrates essential road weather information from Caltrans Road Weather Information System (RWIS) sites and includes nearby roadside CCTV image. This data is combined with weather data from other sources, such as MADIS and MesoWest, as well as with National Weather Service forecasts, into one unified source.

This information is displayed on an interactive map as well as detailed tabular and graph displays, allowing maintenance personnel and incident responders to quickly and easily visualize road conditions for an entire region or a specific location. The system allows Caltrans personnel to make a more informed and efficient assessment of current road weather conditions in the region for a variety of purposes, including incident management and highway maintenance.

During initial development of WeatherShare, California experienced five years of drought conditions. To fully test and debug the functionality of the application, Caltrans opted to add an additional testing phase to ensure the system worked as envisioned. In addition, alerting functionality and user profiles were added into the application, which were postponed



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from earlier phases for technical reasons. Fortunately, California had a record winter in 2017 which allowed for significant testing and code improvements to the WeatherShare system.

WHAT WAS OUR GOAL?

WeatherShare is to become the central repository for Caltrans RWIS data and weather information. Caltrans maintenance and operations personnel will have access to real-time and historical weather information that will help them better manage roadways, apply treatments and handle weather-related incidents.

WHAT DID WE DO?

Using a systems engineering approach, the team made several code improvements to ensure WeatherShare was ready to be utilized enterprise wide within Caltrans. These improvements included:

- Alerting capability – when a user defined weather threshold is exceeded, the system messages the user stating what the current conditions are for that location
- User profiles – users can set up how they would like to view the various data sets of weather information
- Code improvements and testing – as time goes on, application program interfaces need updating as well as a need for real-time testing during inclement weather events.

WHAT WAS THE OUTCOME?

The WeatherShare application has the following functionality:

- Repository for current and historical RWIS data.
- Leveraged resources (more than 2,000 weather stations in addition to 150 Caltrans

- RWIS stations)
- Scalable, interactive elements for map, tabular and graph display.
- An easy-to-maintain, cost-effective product powered by an open-source platform backfill material stiffness properties,

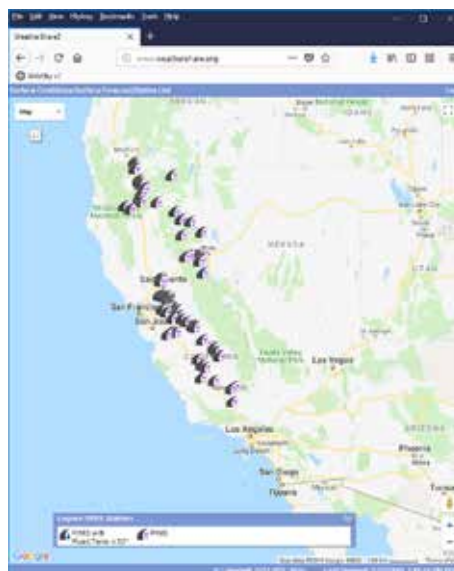
WHAT IS THE BENEFIT?

This platform of weather observations and forecasts with near real-time road sensor data will allow Caltrans crews to make the best-possible decisions both for maintenance operations and incident response

LEARN MORE

<http://westernstates.org/Projects/Weathershare/Default.html>

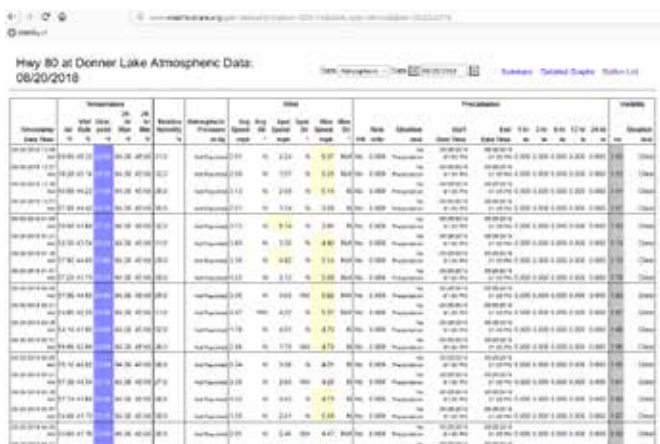
IMAGES



Statewide view of Caltrans Roadside Weather Information Systems



Typical current weather information presented to the user



Typical historical weather data presented to user



Typical graphs used to present current weather conditions