

Road Condition Reporting App



Wyoming Department of Transportation

Ali Ragan

RCR APP

Tablet-based app installed in maintenance vehicles allows maintenance employees to use a computer to perform the functions previously done over the radio:

- » Make road condition reports
- » Report incidents
- » Get weather data
- » See what's posted on DMS
- » Recommend changes to VSLs



RCR App Backgrounds

There is strong demand for road condition information in the state of Wyoming

During the 2014-15 Winter season (October to May)

679,860,988 hits to the text pages of wyoroad.info alone. This does not include hits to the map portion of the website

15,338,050 total visitors, an average of 63,288 visitors per day

511 Notify Service delivered text and email messages to more than 33,000 subscribers

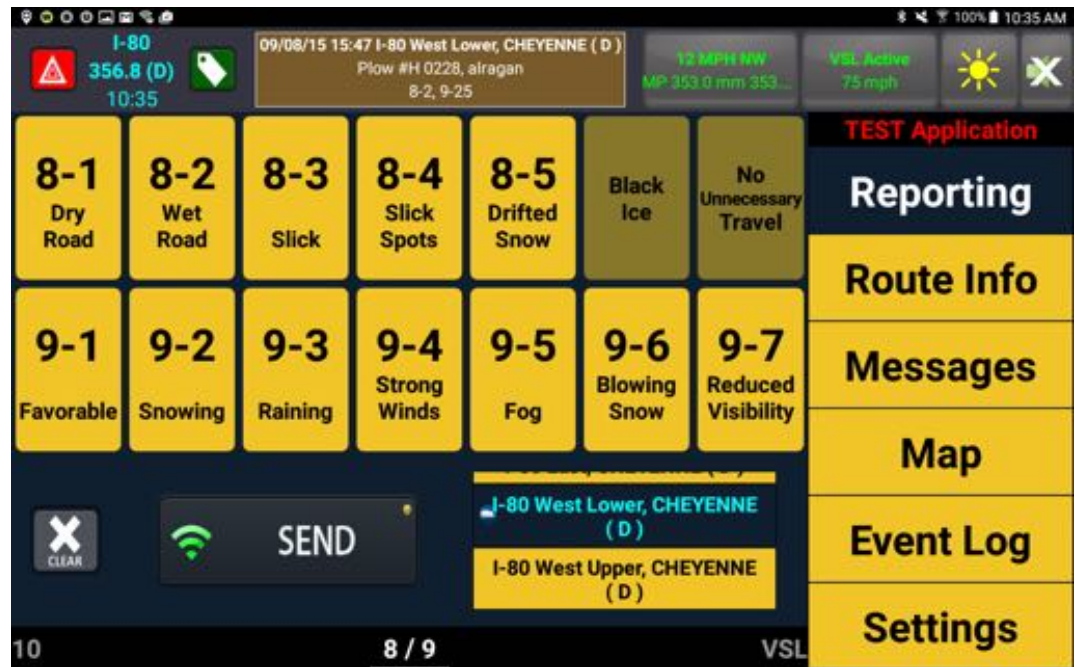
511 Phone System received 502,505 calls

Wyoming travelers expect to receive timely, accurate road condition information when they visit information systems

In 2014, TMC operators made more than 106,000 updates to the WTI, nearly 75 percent of those updates happened during storm conditions

Goals

- » Provide more information to maintenance personnel
- » Improve timeliness, accuracy of condition reports
- » Improve roadway safety
- » Reduce radio traffic
- » Increase efficiency



Overview: Reporting



Sent to TMC and public info systems



Sent to the TMC, maintenance



Sent to TMC, maintenance



Sent to geology

Overview: Reporting



Sent to TMC



Sent to meteorologist

Overview: Route Info



DMS

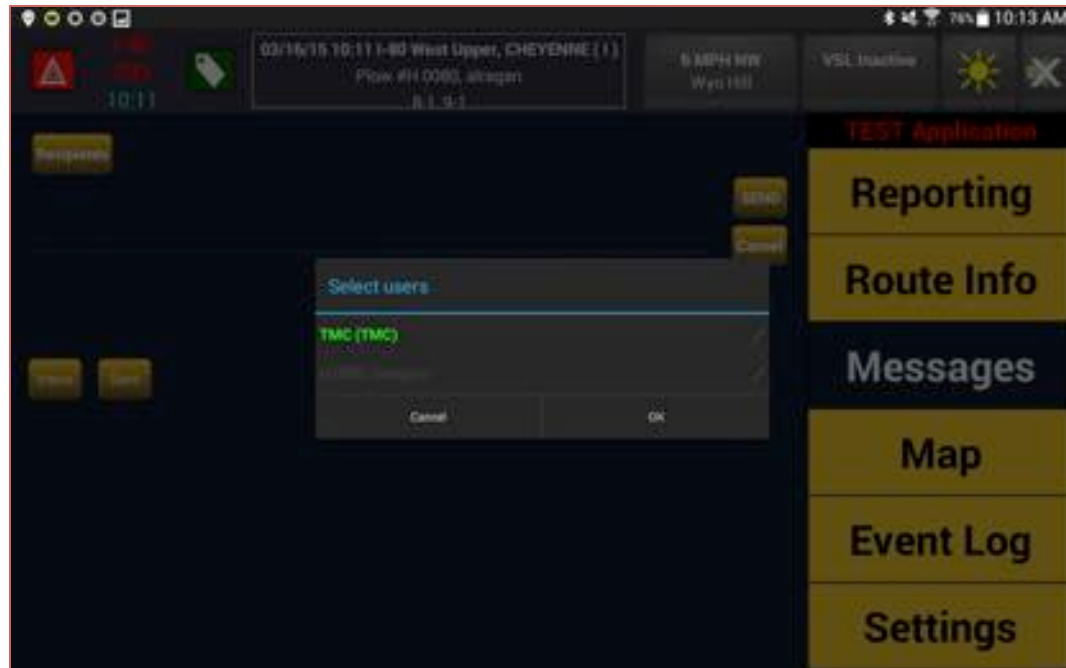


RWIS



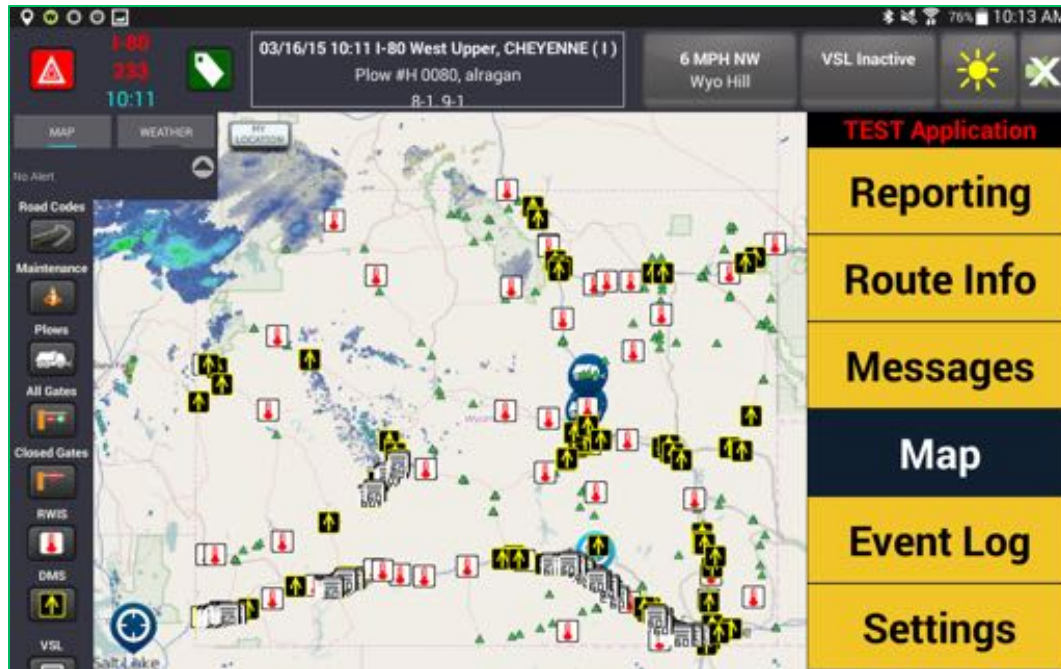
Condition information

Overview: Messages



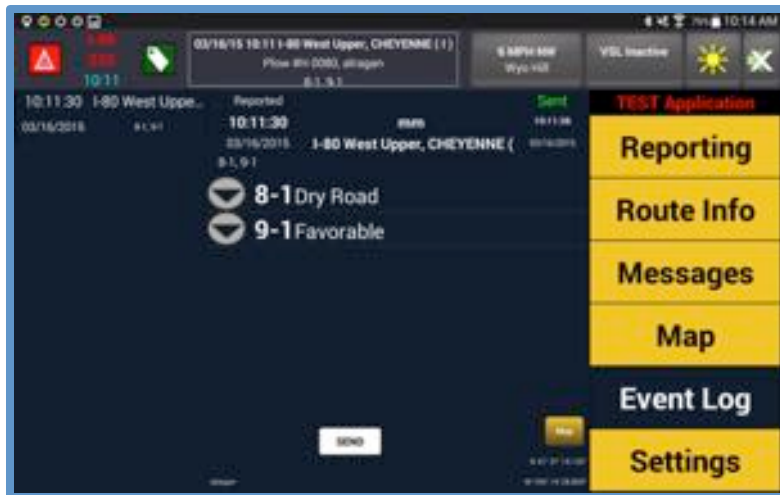
- Send messages to the TMC
- Messages to and from maintenance personnel
- Plans to add email

Overview: Road Map



- WYDOT fixed and mobile assets
- Weather radar
- Weather watches and warnings

Overview: Event Log



- Review previous reports
- Append information
- Send report as a message

System Description

Android-based operating system

Off-the-shelf Samsung Galaxy Tab 4 with a 10.1-inch screen

Mounting hardware

- » Ram Ball Mount

- » Havis Universal Mount

Less than \$600 to outfit each vehicle, excluding manpower and the systems already installed in vehicles (LMU, radio)

System Description

App Development: Approved a sole-source contract with WYDOT's existing AVL vendor CompassCom because of their experience with two-way communication over the radio network; sub-contractor NeoTreks performed the development work

System Integration: In-house developers, contractors

Communication: Telecom, Versatel

Installation: Telecom

System Description

The primary communication method is via WiFi

- Connects to WYDOT Backhaul

 - No ongoing communication costs

- Low-cost, high-gain antennas ~ \$200 per site

 - Cost about \$200 per site

- All existing WYDOT hotspots, including trooper's vehicles

When Wi-Fi is not available, communication is done over the

WyoLink radio network, a P25 VHF Trunked radio system

- In addition to voice traffic, the system can handle low-speed data, similar to a slow modem

- The system covers about 80 percent of the roadways in the state, providing superior coverage than cellular networks

Evaluation

- » The app was well received by maintenance employees and Transportation Management Center Operators:
 - » 100 percent of maintenance employees who responded to a survey said the agency was better off with the app than without it
 - » All maintenance respondents said the milepost information was useful
- » Having the app in the vehicle doubled the number of road condition reports made to the TMC and tripled the number of variable speed limit changes.

Next Steps

- » Continued improvements
- » Adding more reporting sections to improve functionality
- » Expand to more vehicles
- » System integration
 - » Precise information
 - » Damage Repair
 - » Agile Assets

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