WYDOT Road Condition Reporting App

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Road Condition Reporting App

Allows maintenance employees to use a computer to perform the functions previously done over the radio:

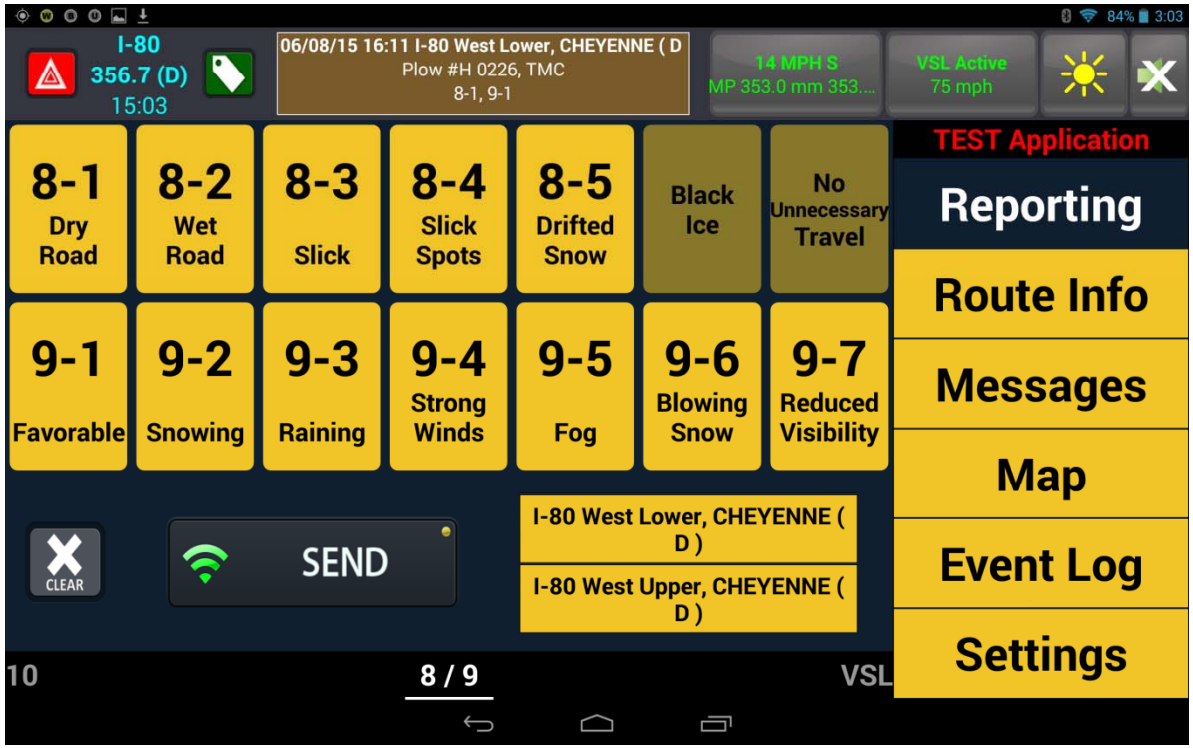
- Make road condition reports

- Report incidents

- Get weather data

- See what's posted on DMS

- Recommend changes to VSLs



Road Condition Reporting App

- Goals
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- Demonstration

Goals

RCR App: Goals

- Reduce radio traffic
- Streamline TMC processes
- Improve timeliness, accuracy of road condition reporting
- Provide more information to maintenance workers
- Increase efficiency
- Improve roadway safety

Background

RCR App: Background

- WYDOT's Transportation Management Center serves as a hub for maintenance vehicle dispatching and road condition reporting for the entire state
- It is staffed 24 hours a day, seven days a week
- In 2014, TMC operators made more than 106,000 updates to the WTI, nearly 75 percent of those updates happened during storm conditions

RCR App: Background

- There is a strong demand for road condition information in 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 sent information to 33,365 subscribers, who subscribed to an average of 33 topics
  - 511 Phone System received 502,505 calls

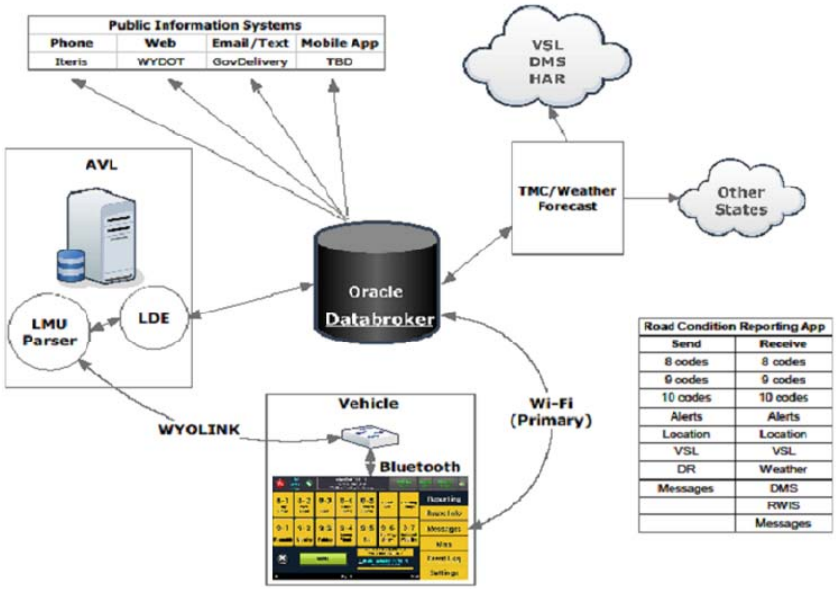
RCR App: Background

- As the state adds ITS devices to make it easier to share information with the public, the demand on TMC operators' time increases, while staffing levels remain the same

- One of the project's goals was to eliminate a portion of the TMC's workload so they could focus on other tasks, while at the same time making condition reporting easier for maintenance

RCR App: Background

- The app allows maintenance employees to update the database that feeds information systems and to pull information from that database, which frees radio traffic and saves employee time



System Description

RCR App: 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)

RCR App: 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

RCR App: System Description

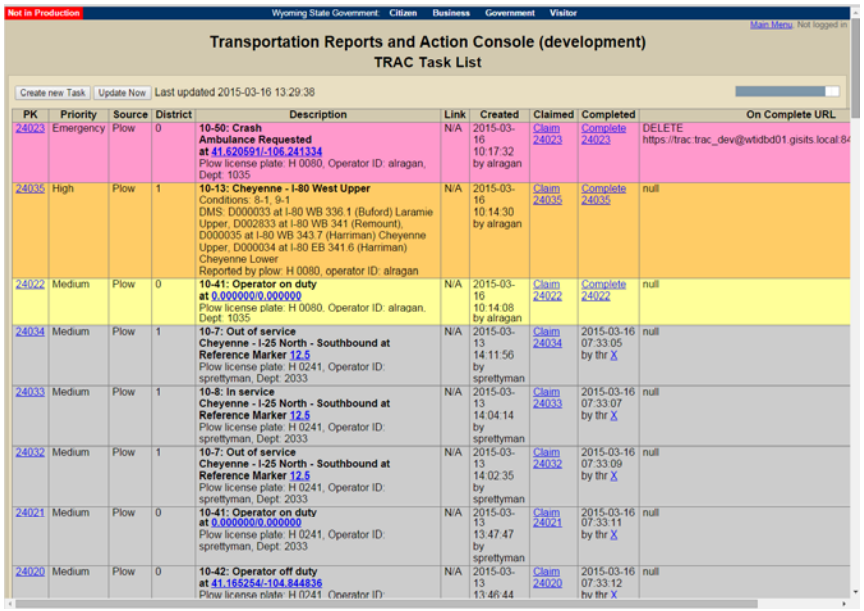
- The primary communication method is via WiFi
  - Connects to WYDOT Backhaul
    - No ongoing communication costs
  - Low-cost, high-gain antennas
    - Cost about $200 per site
  - All existing WYDOT hotspots, including trooper's vehicles
  - Only the map portion of the app requires Wi-Fi connectivity

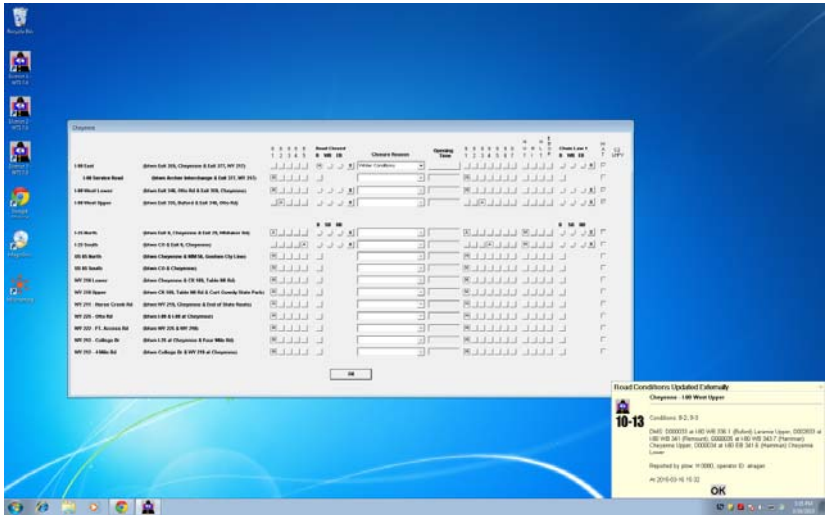
RCR App: System Description

- 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

RCR App: System Description

- Reports made from the field are integrated into existing road condition reporting software and an existing alerting system for TMC operators





App Description

Information Provided by Maintenance

Road and weather condition updates

Incidents 10 Codes (road hazards, crashes)

Damage to infrastructure

Snow performance measures

Messaging (similar to e-mail)

Emergency reports

Variable Speed Limit recommendations

Information Provided to Maintenance

Location Information

Real-time weather data

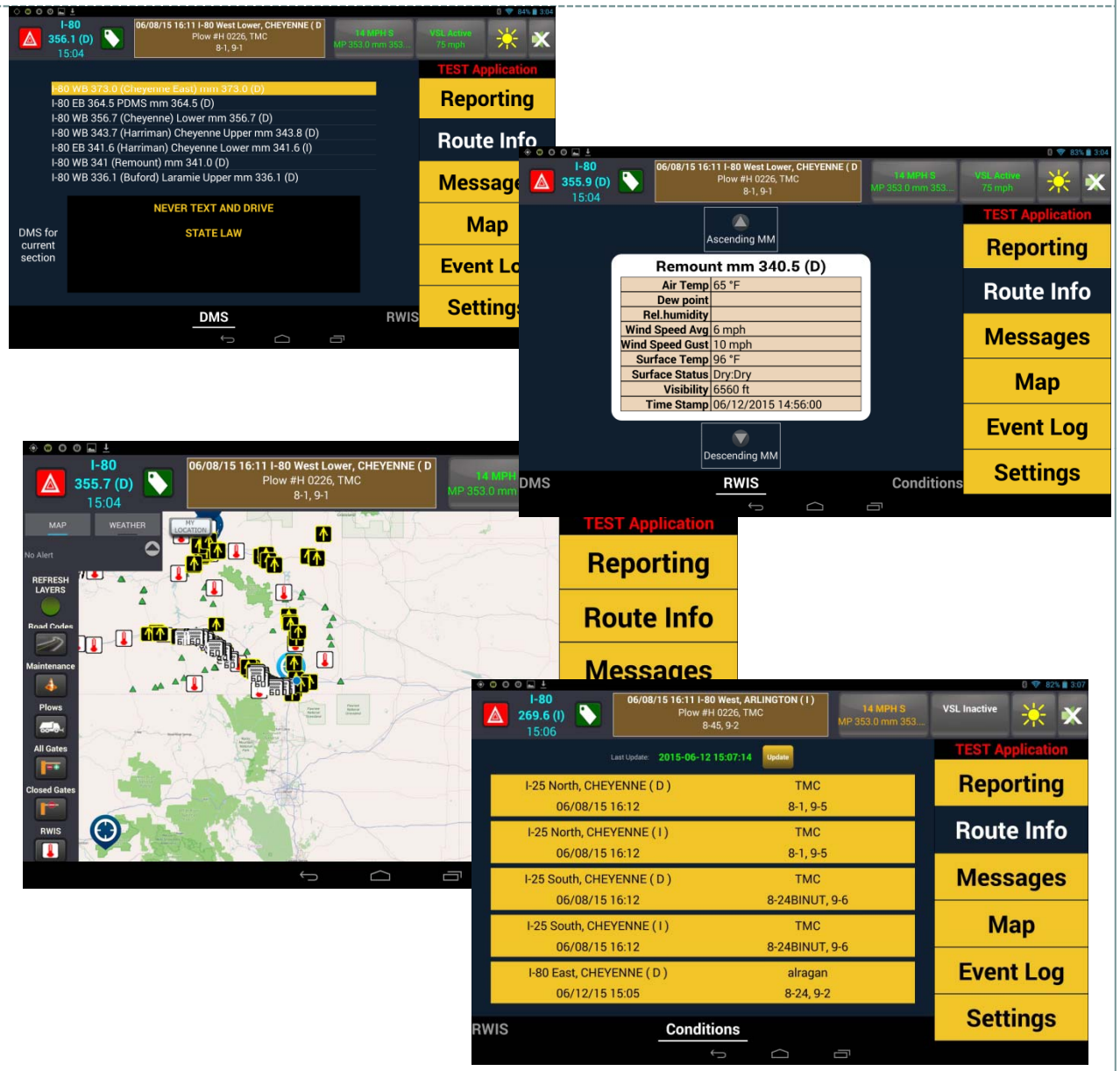
Weather forecast

Current road condition reports

DMS messaging

Variable Speed Limit data

Vehicle speed data



Demonstration

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