



# Weather Alert Data Integration with Digital Road Signs for Minnesota Travelers

State of Minnesota – Minnesota IT Services

**CATEGORY:**

Cross-Boundary Collaboration & Partnerships

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**INITIATION DATE:**

October 2019

**END DATE:**

December 2020



## Executive Summary

Putting the people that Minnesota IT Services (MNIT) and state government serve at the center of our IT solutions requires transformative innovation. With a human-centered design approach, we create systems, services, and applications that use information and communication technology to not only solve problems and answer questions, but to improve government services for all.

The Minnesota Department of Transportation (MnDOT) deployed multiple upgrades in 2020 to its 511 Traveler Information site to help travelers seamlessly access real-time information about road conditions, traffic incidents, weather information, and more. The system is visited by around 2 million Minnesotans and visitors per month, and up to 7 million people used it during winter storm season.

With the support of Minnesota IT Services (MNIT), MnDOT launched a web responsive design, a modified API, and streaming videos. MnDOT and MNIT also integrated automatic road condition reporting into the 511 application through an existing system, MnDOT Maintenance Decision Support System (MDSS), providing timely information to the public and reducing the need for manual reporting.

This nomination describes the project to **develop the application and data integrations for a system that would post National Weather Service alerts on physical roadway signs** through a collaboration with the Minnesota Department of Transportation (MnDOT), MNIT and the National Weather Service.

## Idea

### What problem or opportunity does the project address?

Road and driver safety is a [top priority in Minnesota](#), aimed at reducing serious injuries and fatalities across the state. Minnesota IT Services (MNIT) collaborates with the Minnesota Department of Transportation (MNDOT) on initiatives and programs to meet their mission, digitize services, and improve the citizen experience for Minnesotans.

This project provides weather condition and traffic information both on the road, and in digital formats. Many Minnesota drivers have smartphones, GPS navigational devices, or in-vehicle GPS.

All the broad datasets – traffic, weather, road sensors, geospatial, public service announcements — are integrated into a no-proprietary data pool that is available to private and public sector partners such as Google/WAZE, Garmin, media partners, and municipalities. This technology provides in-vehicle alerts to drivers, in addition to road signs.

### Why does it matter?

Winter driving conditions typically happen anytime from October through April in Minnesota and can change rapidly and vary in severity across the state. Increasing awareness of road conditions is key to improving road and driver safety. The system is visited by around 2 million Minnesotans and visitors per

month, and up to 7 million people used it during winter storm season. On any given day, there are [hundreds of thousands of travelers](#) on highways and roads in Minnesota.

### **What makes it different?**

Multiple data sources are integrated into this system: data about vehicles and pavement conditions from sensors embedded in roadways; National Weather Service alerts and updates; ARC/GIS (geospatial mapping software) data and message signs along the freeway/highway system. The system provides data analysis using algorithms and visualization.

### **What makes it universal?**

Minnesota government is actively improving and digitizing the citizen experiences, one of the NASCIO CIO Priorities. This project also used data and business intelligence to drive innovation, and inform citizens about road and weather hazards to promote safe driving.

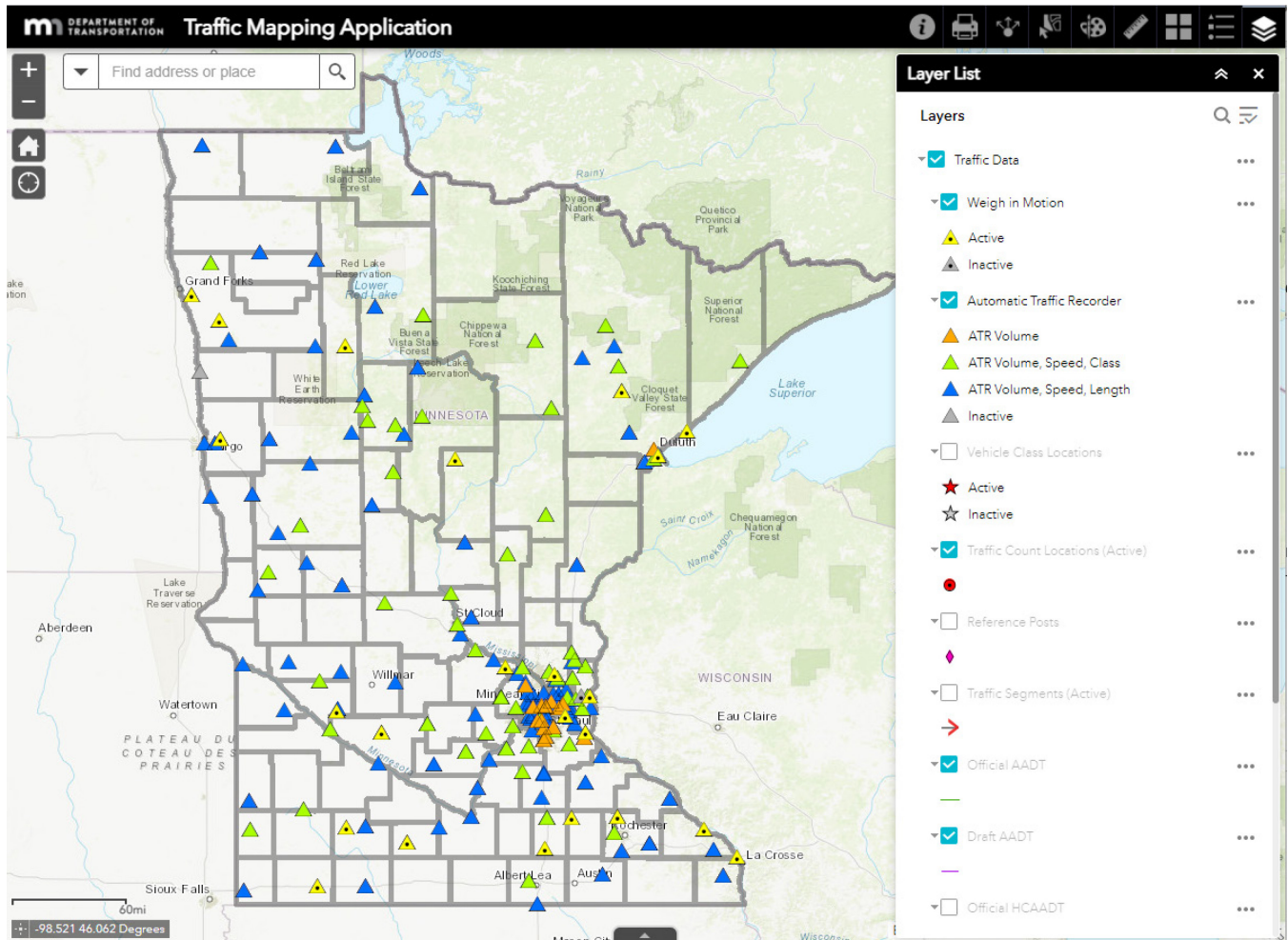
## **Implementation**

### **What was the roadmap?**

The project used an Agile, iterative methodology.

### **Who was involved?**

MnDOT has partnerships with municipalities and the Metropolitan Council. MNIT staff developed the software that posts messages to the road signs. They worked with MnDOT traffic engineers and NOAA to build the data integrations. They also host and administer the [Traffic Mapping application website](#), and the services behind the scenes that provide the data visualizations.



## Impact

### What did the project make better?

MnDOT continually strives to improve roadway communication and safety as a strategic goal. This project is just one of many concurrent efforts within [The Minnesota Strategic Highway Safety Plan](#), an integral part of Minnesota's Toward Zero Deaths.

Because the Weather Alert Signage project has just been launched, we will not have data until the next winter season. At that time, analytics tools are in place to capture data to drive future business process innovations.

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The project included developing the application and data integrations for a system that would post National Weather Service alerts on physical roadway signs through a collaboration with the Minnesota Department of Transportation (MnDOT), MNIT and the National Weather Service.

A human-centered design approach influenced the plan to provide these travel alerts in different formats. Large digital signs above roadways provide travelers with real-time warnings during the winter season, and improve public safety. The system currently displays blizzard warning messages but can be expanded to include other NWS alerts.

Travel information is also shared with private and public sector partners such as Google/WAZE, Garmin, media partners, and municipalities. Streaming videos allow drivers to see a traffic camera in full motion video, rather than just snapshots for approximately 1,000 MnDOT traffic cameras.

### **What now?**

MNIT will continue to support our business partner's efforts with process improvements that help provide data driven, actionable strategies to reduce deaths and serious injuries on Minnesota roadways.