State of Missouri
2016 Governor's Award for Quality and Productivity
Executive Summary

Project or Team Name: Field Traffic Alert System

Nominator: Jon Nelson

Nominating Department: (Nominations must include names of all agencies/departments/organizations/ businesses, etc.):

Missouri Department of Transportation

Category: Technology in Government

Executive Summary: (Executive Summary page must be 500 words or less, 12 point, Times New Roman font, and left justified. **Attach the Executive Summary to the front of the nomination.**)

In March 2014, MoDOT began purchasing real-time traffic data on over 11,000 miles of roads in the state. This data provides live average speeds for various road segments throughout the state. MoDOT receives a continuous, live traffic data from HERE 24/7. A program was developed by MoDOT staff to monitor this data and alert individual users when certain conditions are met. For example, a construction inspector responsible for traffic flow through a work zone on I-70 cannot monitor the situation at all times. However, this program allows the inspector to set up individual preferences for when a text alert should be sent to their phone warning of traffic congestion. Thus, even if the inspector isn't on site or monitoring the work zone remotely, an alert can be received at any time the established conditions are met, and the inspector can respond accordingly. The alert system, while designed for use by MoDOT staff, has also been shared with contractor personnel working on MoDOT right of way as well as law enforcement partners.

MoDOT then used the HERE data to work with TransCore to develop a method for auto-populating rural DMS along I-70 with congestion warning messages as soon as they are detected. The intent of this program is to reduce high speed, rear-end crashes that often result in fatalities or serious injuries of major highways. The software being used to push messages to the DMS on I-70 was programmed to monitor the HERE data 24/7. When certain conditions are met, the program automatically sends a warning message to the appropriate DMS depending on the traffic speeds and location. These warning messages are instant and provide just enough information to the motorist to warn them about what they should expect to encounter. In addition, an expected length of delay is usually provided.

This program has greatly enhanced MoDOT's ability to receive earlier notification of adverse traffic conditions due to an incident, road construction, weather, or recurring congestion. Earlier notification means MoDOT can respond quicker on the ground and also provide earlier warning to the traveling public. In addition, contractors, customers, and partners utilizing the program can be notified immediately of traffic delays, congestion in a work zone, adverse weather, or just everyday congestion. The earlier notification provided by these alerts allows staff and customers to respond more promptly, a critical component of improving safety.

State of Missouri – 2016 Governor's Award for Quality and Productivity

NOMINATION FORM

I. GENERAL INFORMATION

Department: Missouri Department of Transportation

1. **Project or team name:** Field Traffic Alert System

2. **List the name of all team members, job titles, state agency department, and/or other organizations including public, private sector or business:** *(Please list alphabetically by last name – 2 to 20 team members maximum.)*
   1. Brandon Campbell - Traffic Operations Engineer
   2. Chris Engelbrecht - District Safety and Health Manager
   3. Stuart Harlan - Lead Information System Technologist
   4. Jon Nelson - Traffic Safety Engineer
   5. Raymond Shank - Senior Traffic Studies Specialist
   6. Mark Sommerhauser - Transportation Project Manager
   7. Julie Stotlemeyer - Traffic Liaison Engineer

3. **Nomination Category:** *(Check only one.)*
   - ☐ INNOVATION
   - ☐ CUSTOMER SERVICE
   - ☐ EFFICIENCY / PROCESS IMPROVEMENT
   - ☒ TECHNOLOGY IN GOVERNMENT

4. **Explain why you selected this category:**
This project is heavily based on utilizing new wireless technologies to improve MoDOT operations, information, and processes. While it also fits in the categories for innovation, efficiency/process improvement, and even customer service, the overall solution is centered on utilizing new technologies.

II. BACKGROUND

1. **When did the team begin its work?**
Initial work efforts began in the summer of 2014. The bulk of the effort occurred late 2014 into the spring of 2015.

2. **What date did the team initiate the implementation phase of the project?**
April 17, 2015

3. **Is the project:**
   - ☐ Time Limited
   - ☒ Completed
   - ☐ Ongoing

III. PROJECT DESCRIPTION

1. **Why was the project necessary?**
MoDOT historically has only had access to live traffic data in metropolitan areas like St. Louis and Kansas City. This data was collected via a combination of roadside sensors or loops in the pavement along the region's most heavily traveled roads. While beneficial, this approach was costly to both install and maintain because it required physical roadside detectors that must be installed and routinely calibrated. Combined, there are about 1,000 devices in St. Louis and Kansas City to collect this data. This type of data was not being collected outside of St. Louis and Kansas City because of the cost and maintenance demands.

MoDOT has made great efforts in recent years to improve the operations and reliability of the highway system.

However, MoDOT can only respond to a problem or inform travelers of a problem once it has been identified. While some events can be easily detected or noticed via cameras in the urban areas, it is nearly impossible for MoDOT staff to maintain situational awareness on thousands of miles of roads simultaneously. Even where CCTV (closed-circuit television) cameras exist, there are not enough personnel to watch all available cameras 24/7. Additionally, the ability for MoDOT to know what's occurring at any moment on roadways outside of the metro areas was very limited.

2. What were the primary goals of the project? *(150 words or less.)*

The primary goals of the project were to: 1) expand MoDOT's coverage of live traffic data to other parts of the state outside St. Louis and Kansas City, 2) provide real-time information to MoDOT staff and partners to facilitate quicker and more informed responses to incidents and congestion along the roadway, and 3) provide better information about traffic conditions to the public.

3. Describe the project: *(200 words or less.)*

MoDOT contracted with HERE to receive live traffic data on over 11,000 miles of roads in Missouri. Using wireless technology through HERE, MoDOT is able to collect live traffic data on these roads without installing or maintaining any physical roadside devices (poles, detectors, etc.). MoDOT receives a continuous, live feed from HERE 24/7. Using the HERE data, MoDOT developed a field text alert system to immediately notify staff of issues along the road that may require a response. This system is highly personalized meaning each user of the system can establish their own preferences for when and how alerts are received. For example, a MoDOT responder can receive a text alert when speeds on a section of highway fall below a specified value.

Even with the alerts, it takes time for staff to verify the event, gather information, and communicate to the public. Recognizing the need to provide an immediate warning to travelers while information is being gathered, MoDOT worked with TransCore to develop a method for auto-populating rural dynamic message signs along I-70 with congestion warning messages. When conditions are met, the program automatically sends a message to the appropriate sign depending on the traffic speeds and location.

4. Explain how the accomplishment of the team exceeds its regular duties and responsibilities. *(150 words or less.)*

Prior to this project, MoDOT had limited capabilities to learn of traffic issues along the roadway in a very timely manner. While roadside detection and cameras provided this ability in the metro areas, issues aren't typically learned about until a call is received from a customer, law enforcement, or MoDOT staff that happened to be in the area. The field alert system instantly expanded MoDOT's ability to receive notification of traffic issues throughout the state without the burden of installing and maintaining equipment in the field. This, in turn, has allowed MoDOT to respond in a quicker and more informed manner than what was previously possible. The use of this technology has allowed MoDOT staff to exceed previous expectations in responding to adverse traffic conditions such as crashes, weather and road construction.

5. Which of the following describes the intended benefits of the project? (Check all that apply and provide an explanation. - 150 words or less)

☒ Cost Reduction   ☒ Time Savings   ☒ Increased Effectiveness

☒ Improved Process   ☐ Other: Describe

As described above, the field alert system saves time in that staff is notified instantly of adverse conditions along their roadways of interest. This, in turn, improves MoDOT's ability to respond and set up necessary traffic control to manage the event. MoDOT can also more quickly notify the public of these events. The overall process is improved by giving individual responders the tools and information they need while lessening the dependence on receiving a call about an event. The system has also allowed MoDOT to not spend money on deploying roadside devices to collect this data in other locations. It could even be used to replace some of the

existing detectors in St. Louis and Kansas City in the future, thus reducing the ongoing maintenance costs of these devices.

IV. RESULTS / MEASUREMENT

1. Explain how the success of the project was measured and what outcomes were achieved. (Explanation should not exceed 300-500 words.)

This program has greatly enhanced MoDOT's ability to receive earlier notification of adverse traffic conditions due to an incident, road construction, weather, or recurring congestion. Earlier notification means MoDOT can respond quicker on the ground (traffic control) and also provide earlier warning to the traveling public (traveler information). The alert system, while designed for use by MoDOT staff, has also been shared with contractor personnel working on MoDOT right of way as well as law enforcement partners. There are currently around 200 users of the system.

2. Are the benefits derived from this project: (Check only one.)

☒ Recurring   ☐ One-time

3. If recurring, how will the benefits be sustained? (Explain in 150 words or less.)

The nature of these benefits is self-sustaining. As long as the data is being received on these roadways and made available to staff, the benefits will be realized. If the use of this data and the field alert system were discontinued in the future, the benefits would go away.

V. RECOGNITION / AWARDS

1. Has this project previously been nominated for the Governor's Award for Quality and Productivity? If yes, when?
No.

2. If yes, for which category was it nominated?

N/A

3. Has this project received any other awards or recognition? If yes, describe.

Yes, the project won an award in 2015 at MoDOT's statewide Innovations Challenge.

VI. NOMINATOR'S INFORMATION

Nominating Department: Missouri Department of Transportation

Name: Jon Nelson   **Signature:** Jon Nelson

Telephone Number: 573-751-1157   **E-Mail Address:** Jonathan.Nelson@modot.mo.gov

VII. DEPARTMENT COORDINATOR'S INFORMATION

Name: Brittany Goetz   **Signature:**
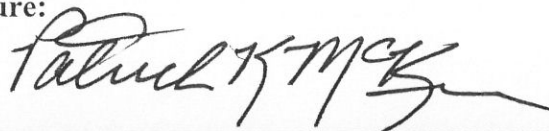
Telephone Number: 573-751-2872   **E-Mail Address:** brittany.goetz@modot.mo.gov

VIII. DEPARTMENT DIRECTOR APPROVAL

Department Director's Name:

Patrick McKenna

Signature: *Patrick K McK*

Nomination must be signed ONLY by the Department Director to be eligible for consideration. Nominations not signed by the Department Director will be returned to the agency coordinator.