CONNECTED & AUTOMATED VEHICLE TECHNOLOGY FOR WORK ZONE SAFETY
WZDx is a simple, open standard for sharing data about planned and active work zone events.
MDOT wants to eliminate work zone injuries and deaths for construction workers and motorists.

Promoting advances in Smart Work Zone device adoption leads to improved data quality and improves overall safety of the roadway and work zone.
Proof of Concept: Work Zone Data Exchange (WZDx) Live Information Sharing
How MDOT can leverage connected vehicle technology to improve work zone safety?
LEVERAGING CONNECTED VEHICLE TECHNOLOGY TO IMPROVE WORK ZONE SAFETY
THE BENEFITS OF SMART WORK ZONES

- Improved overall safety of the roadway and work zone
- Improved MDOT work zone data quality
- Improves automated driving systems (ADS) by recognizing when road construction is active

COMMERCIAL VEHICLE GRANT

This application will demonstrate how MDOT and its partners plan to address the U.S. Department of Transportation’s Federal Motor Carrier Safety Administration (FMCSA)’s High Priority – Innovative Technology Deployment’s (HP-ITD) goals and objectives by implementing new video detection scene recognition technology, integrated V2X, digital signage, and traffic management safety alerts for work zone management.
THE NEXT STEPS

• Utilizing a common passenger vehicle such as a Chevrolet Tahoe
• Testing worker presence in live construction zones
• Utilizing smart work zone devices for information in real time
Trial our use of new WZDx 4.0 JSON data structures in a GM Chevy Tahoe:
- Workers Present
- Lane Closures from arrow boards
- Variable speed limit
- Road construction start/end points
Leveraging Connected Vehicle Technology To Improve Work Zone Safety

Trial our use of new WZDx 4.0 JSON data structures in a Chevrolet Tahoe:
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Continued Testing with Orange Pavement Markings
Orange Pavement Markings Pilot

56% of Motorists Report Improved Visibility From Orange Lane Markings

MDOT tested orange pavement markings as both an innovative way to provide delineation and as a reminder to drivers they are in a work zone.

In effort to gauge the impact of orange pavement markings, MDOT conducted a survey on motorists driving through the I-96 work zone.

Our survey showed that over 93% of respondents noticed the orange markings within the work zone.
Commercial Vehicle FMCSA Grants

Connected Traffic Control Objects
Vendor Backend Data Aggregation
Agency Backend Data Publication
CMV Data Distribution Mediums
Real-time In-vehicle And Work Zone Alerts

Safety Alerts for Work Zones (SAFZONE)

1) Detect Vehicle Traffic Volume & Speeds
   - On-Camera video analytics
   - RADAR detection (optional)
   - Low light and inclement weather tolerant

2) Communications
   - Cellular: modern (4G LTE)
   - DSHC (602.11p)
   - C-V2X

3) Secure Backend Cloud Services
   - Data collection, monitoring, and analytics
   - Data and alert dissemination to 3rd parties
   - Technical Support

4) Real-time in-vehicle and work zone alerts
   - CMV transponders, on-board systems, cell phone apps, ancillary CMV routing and dispatch systems

- FMCSA grant awarded in 2021
- Improving static work zones

Partnering Automated Work Zones (PAWZ)

- Interstates 94, 96, 696, 75, and 275
- Improving mobile work zones for CMV
Bringing the cloud to the road

Impact Detection System
3M Partnership

Pi-Link Vehicle to Cloud Connectivity

Connected WZ:
- Equipment Tagging
- Sequential Guidance
US-127 Demo
LOW-COST SOLUTION
THAT CONNECTS WORK ZONE TRAFFIC CONTROL DEVICES TO...
KNOW IN REAL TIME WHEN TRAFFIC CONTROL DEVICES ARE ADDED TO THE ROADWAY
Technologies
Why Should IOO’s Smarten their Work Zones

Information Dissemination:
Sending messages to vehicles and non-motorized users

Measurement of Effectiveness and Efficiency:
Safety and Mobility

Economic & Societal Savings:
Cost-reduction in auto related issues
GREAT SCOTT!

THE FUTURE IS COMING, AND I’M NOT SURE WE’RE READY FOR IT