

NCTCOG Work Zone Data Exchange (WZDx) Workshop

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Mixon Hill

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Mixon Hill

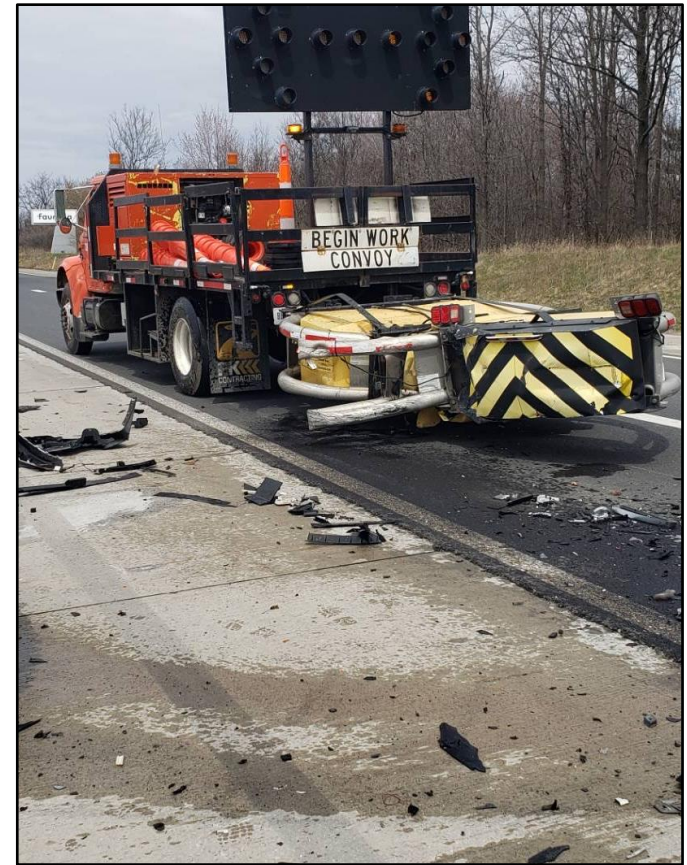
- **Mixon Hill**
 - Founded by Lee Mixon, P.E. in 2003
 - Over 20 years in business
 - Focused on building comprehensive, sustainable transportation enterprise systems and products to serve all transportation business functions
 - Headquarters in Overland Park, Kansas
 - Offices in Dallas, Texas and Charlottesville, Virginia
 - Christopher Poe, Ph.D., P.E.
 - 26 years with TTI (Retired) / 6 Years with Parsons Brinckerhoff
 - Connected and Automated Vehicle Strategy Lead
 - I-35 Mobility and Traveler Information Project

TerraForm Manager (TFM)

- TerraForm Manager (TFM) is a **production-grade**, software solution
- TFM's purpose was to :
 - **tear down the existing silos** of systems at DOTs,
 - create an **integrated system** approach / architecture
 - enable **integrated applications** that use all agency information
 - **grown and expand** with an agencies evolving needs
- Supports **collaboration with all partners and stakeholders**
- **Applications**
 - Work Zone Management
 - Connected Vehicle Infrastructure and Message Management
 - Weather
 - Pavement Management
 - Device Lifecycle Management

The Problem

- **Local agencies** do not have comprehensive knowledge of all their work zones
- Agencies need to **share work zone information** internally, with each other, and with the traveling public
- Distracted or unaware **drivers need real-time information** of work zones, lane closures, and workers present to improve safety
- **Too many crashes** resulting in damaged equipment, injured workers, and fatalities.



What is a Work Zone?

- Construction
- Maintenance
 - Pavement
 - Traffic control (signs, signals, markings)
 - Lighting
 - Barrier/Guardrail
 - Snow/Ice removal
 - Right-of-way maintenance
 - Mowing
 - Trash pick-up/removal
 - Drainage, storm water, culvert repair, etc.
- Inspection
 - Bridges
 - Pavement
- Utility Activities (power, comm, water, etc.)
- Incident Management
 - Service patrol, law enforcement, fire, emergency services, towing
- Disaster Response (flood, hurricane, fire, etc.)
- Special Events

Work Zone Crashes

- Texas Statistics (2023)

- Total Crashes = 26,000+ crashes
- Fatalities = 190 people (2 workers)
- Serious Injuries = 803 people

Source: TxDOT

Severity	Comprehensive Crash Unit Cost (2016 dollars)	
K	Fatalities	\$11,295,400 ←
A	Serious Injury	\$655,000 ←
B	Minor Injury	\$198,500
C	Possible Injury	\$125,600
O	No Injury	\$11,900 ←

Source: USDOT, "Crash Costs for Highway Safety Analysis, 2018

Est. Cost in Texas

Fatal \$2.7B

Injury +\$0.7B

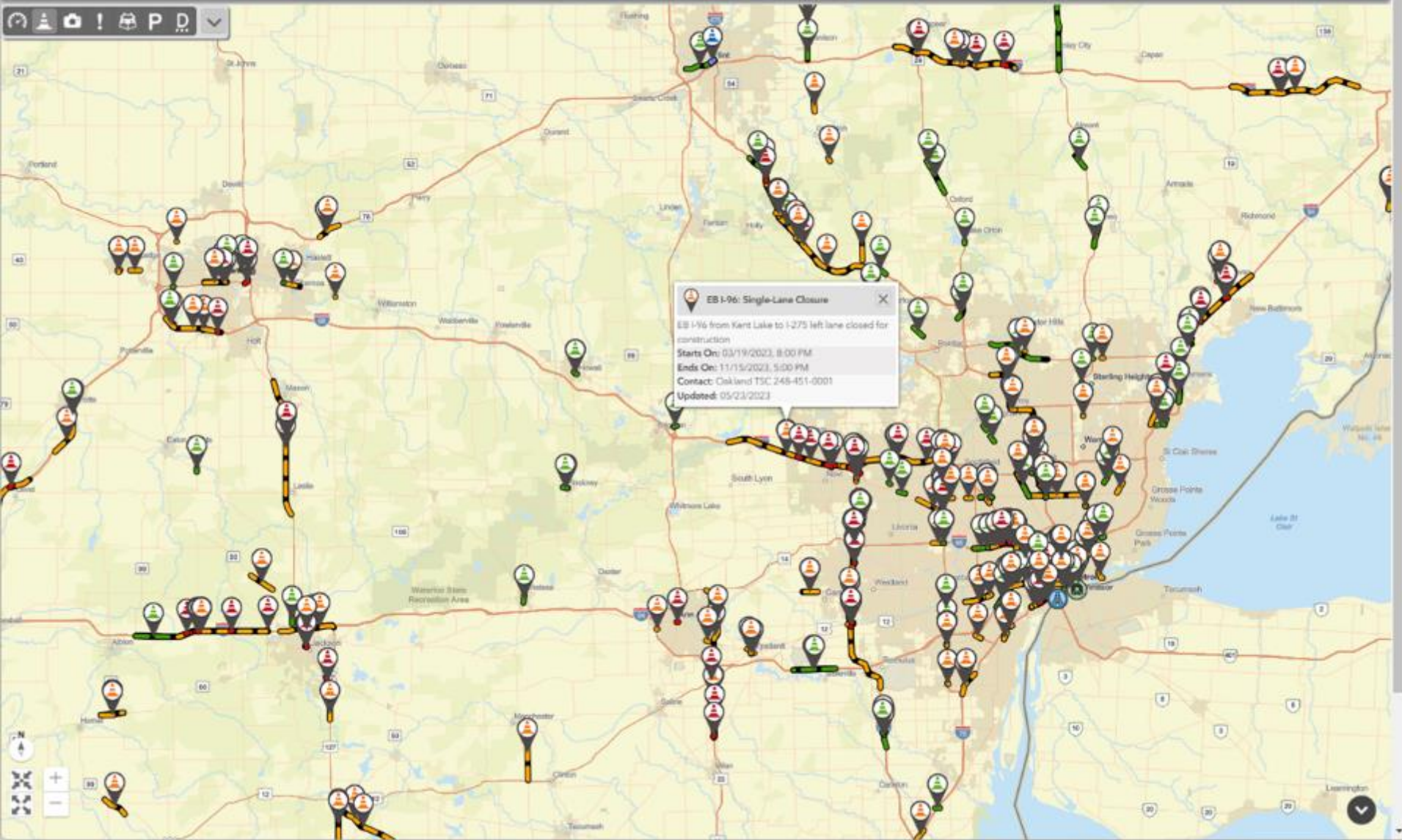
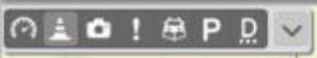
PDO +\$0.4B

\$3.8 Billion

Adjusted for inflation, US Bureau of Labor Statistics

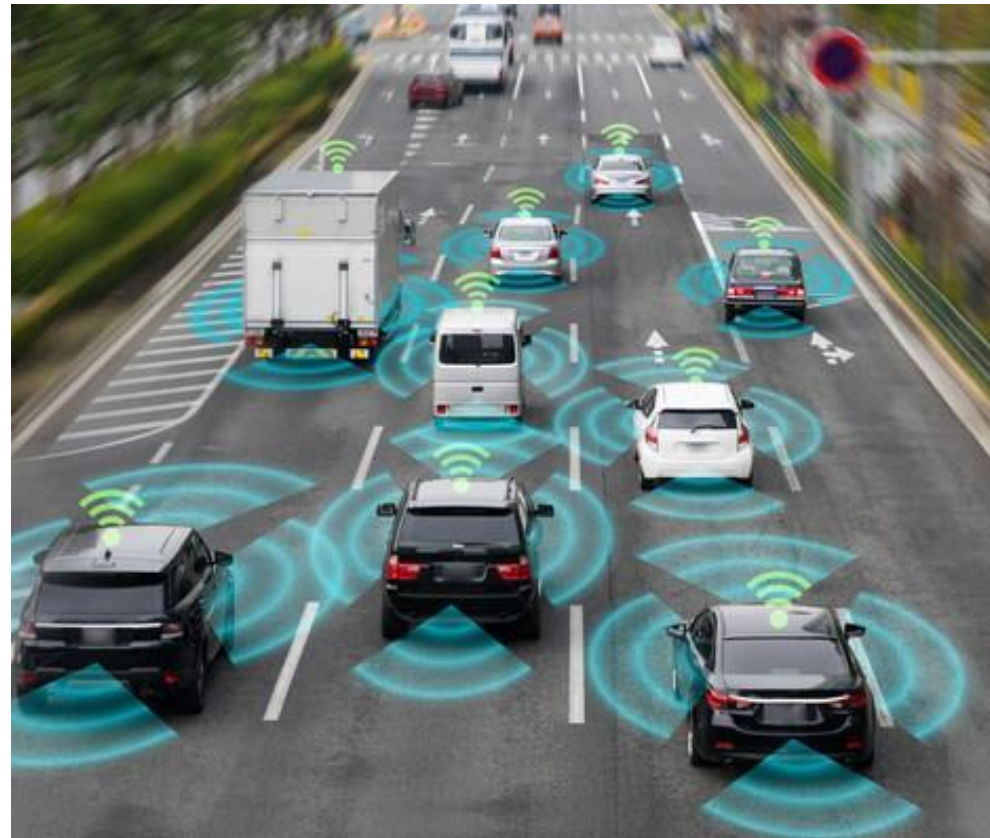
TFM-TFR Application

- TFM-TFR is meant to cover any type of restriction to traffic flow:
 - Construction
 - Maintenance
 - Special Events
 - Incidents
- Benefits to Users/Agencies
 - Capture Work Zone data
 - Maximize data accuracy and quality
 - Notifications and alerts
 - Data feed for internal / external users



V2X Environment

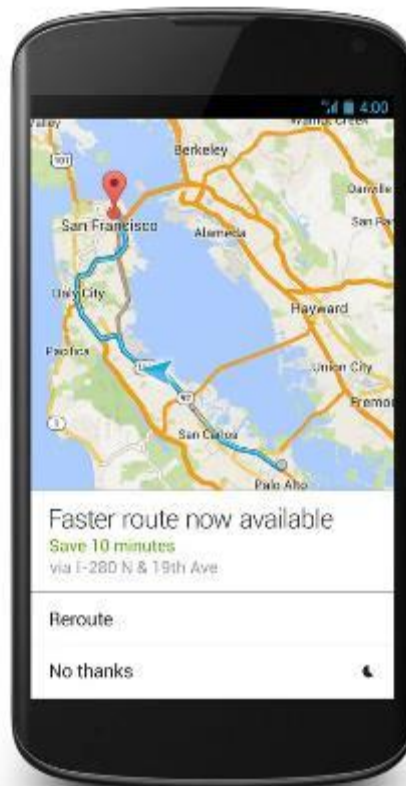
- Automatic broadcast of lane closure message over V2X roadside units



Source: Danlaw, Inc.



WAZE



GOOGLE MAPS



APPLE MAPS

Advancing the Industry

- Get staff closest to work zone activity entering data
 - Maintenance staff
 - Construction & Maintenance Contractors
 - Utilities (franchise contractors)
 - Developers (thru permits process)
- Use real-time work zone technologies
 - Vehicles
 - Devices (start/end markers, arrow boards, dynamic message signs, etc.)
 - Wearable devices (vests)
- Automate the activation / expiration of work zones
- Automate moving operations
- Collaboration of planned and active work zones for efficiency

Conclusions

- Technologies are Ready and Available
- Need Participation from Everyone
- Generate High Quality, High Accuracy Data
- Share Information with All



Source: City of Overland Park, KS

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