

Michigan Connected Vehicle Initiatives

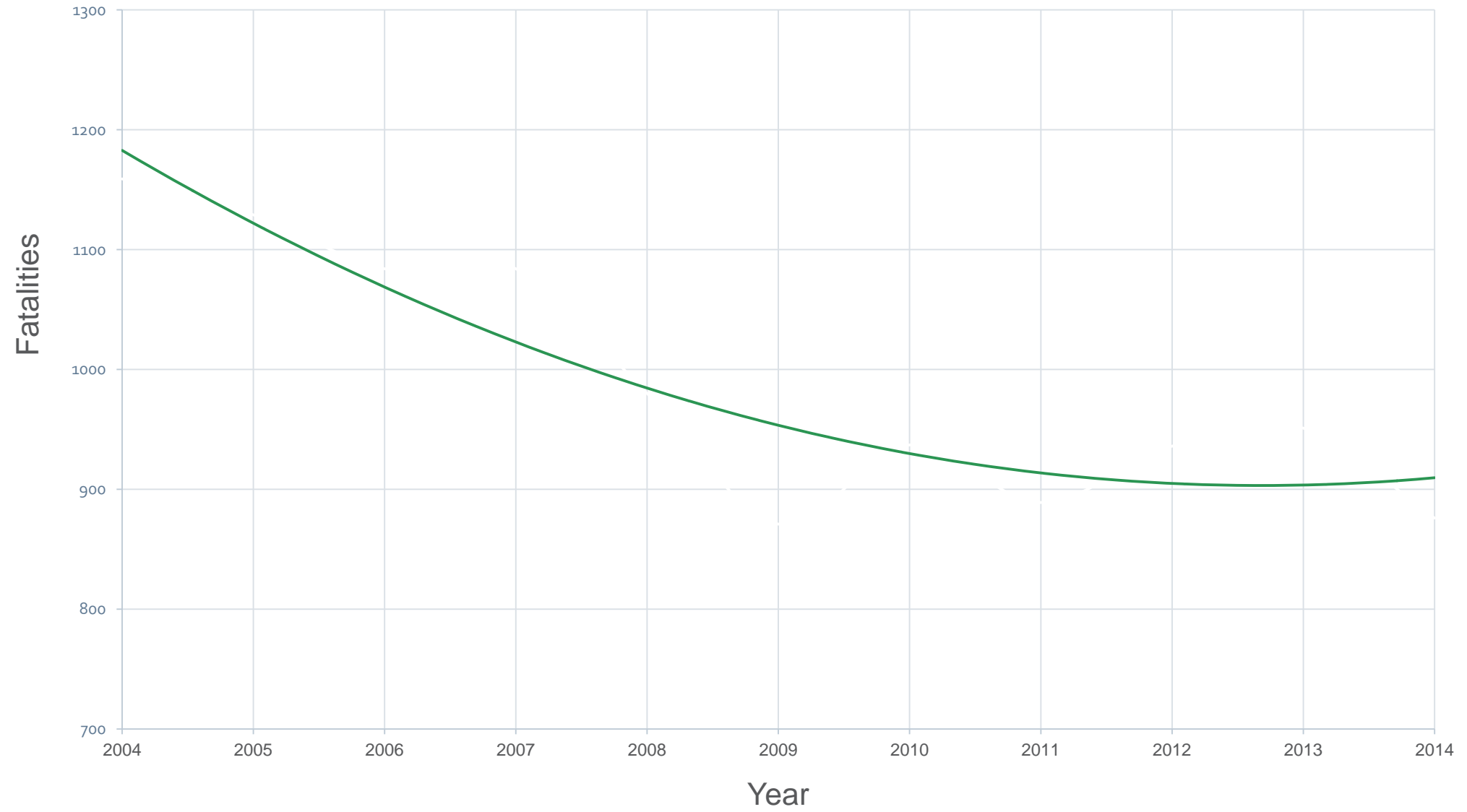
ADVANCING SAFETY AND OPERATIONS THROUGH TECHNOLOGY

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Romulus, MI | April • 2016



Michigan Traffic Fatalities



MICHIGAN FOCUS AREAS

1

Infrastructure

2

V2I
Applications

3

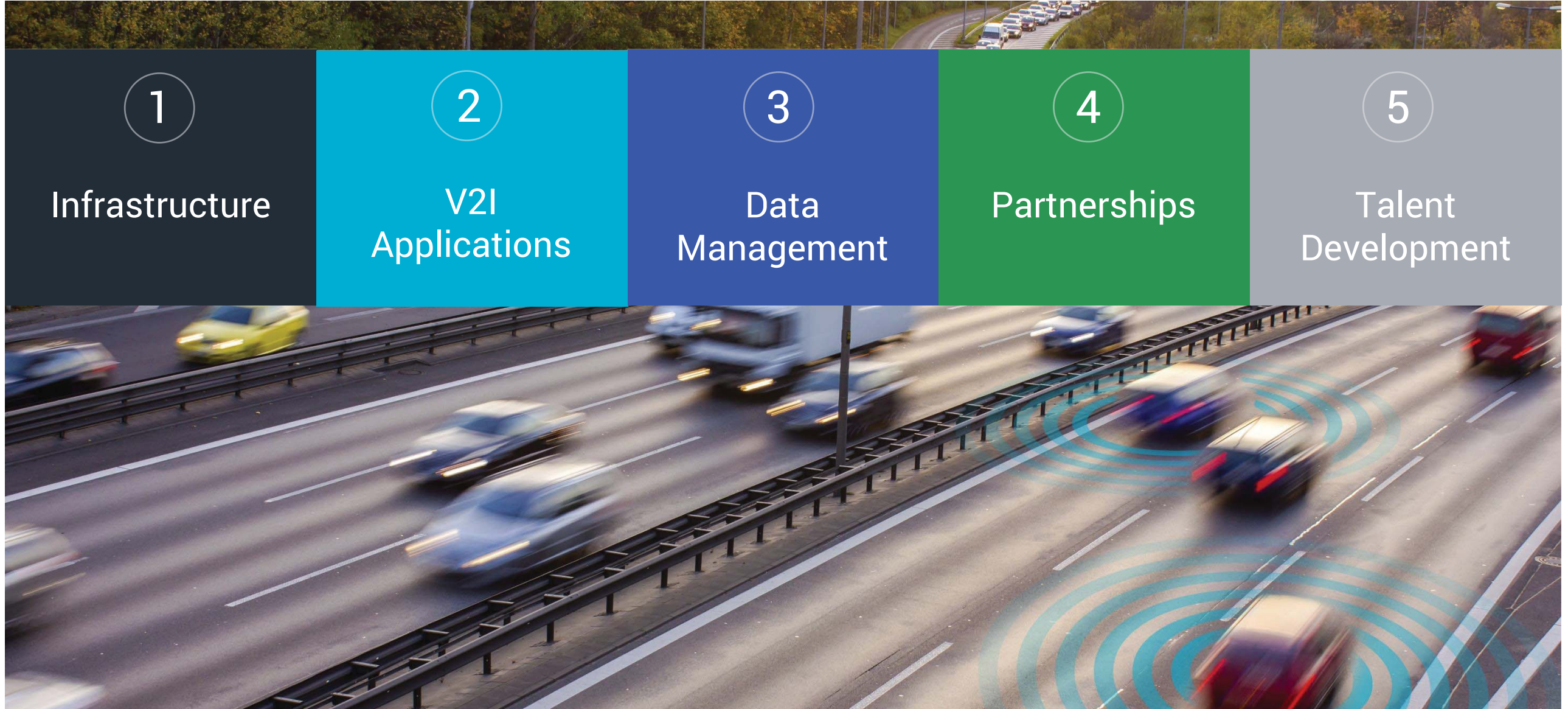
Data
Management

4

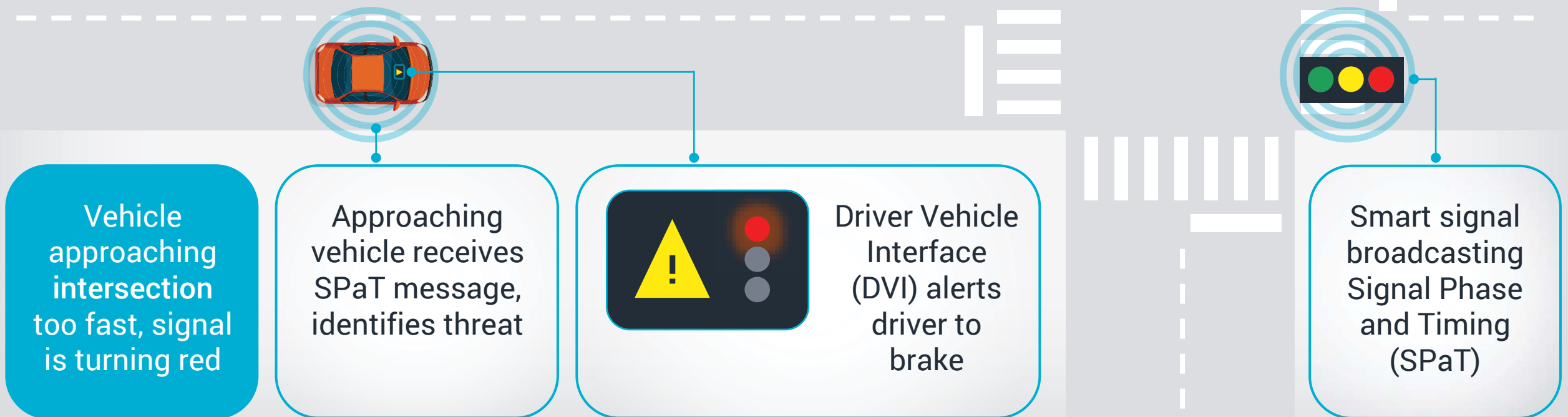
Partnerships

5

Talent
Development

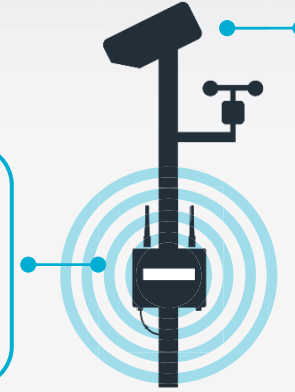


Red Light Violation Warning

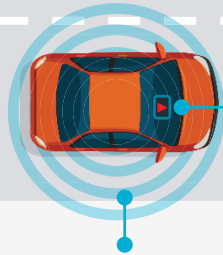


Road Weather Management

Portable Road Side Unit (RSU) sends weather warning **to vehicle**



Road weather station detects icing conditions, reports conditions to weather office



Vehicle is approaching hazardous weather conditions area

Approaching vehicle receives message of road ice in area **from RSU and/or cellular network**



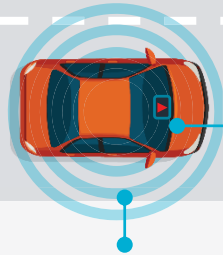
Driver Vehicle Interface (DVI) example

Driver reduces speed in response to warning

Work Zone Warning/ Management

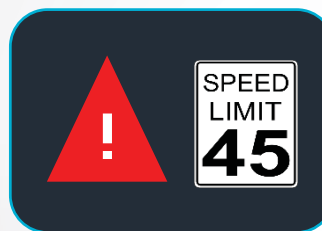


Portable RSU sends
work zone info to
vehicle



Vehicle is
approaching
work zone too
fast

Approaching
vehicle receives
message
from RSU with
work zone
information



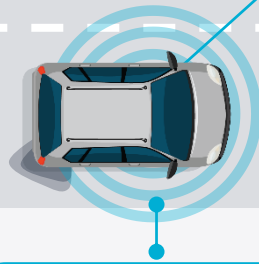
Driver Vehicle
Interface (DVI)
provides
warning to
slow down



Driver Vehicle
Interface (DVI)
provides
warning of
lane closure



Pavement Condition Monitoring



Vehicle drives over pothole in pavement

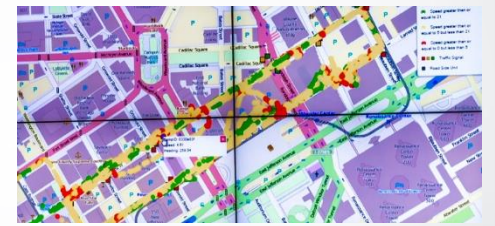
Sensors in vehicle detect sharp acceleration at that location from the pothole strike, stores data

Vehicle broadcasts data via cellular network, and sends message to **nearby roadside radio** as it drives past



roadside unit sends pothole data to **operations center**

MDOT receives data from that vehicle (and lots of others), dispatches maintenance crew



Heat map of pavement conditions

1

Infrastructure

115



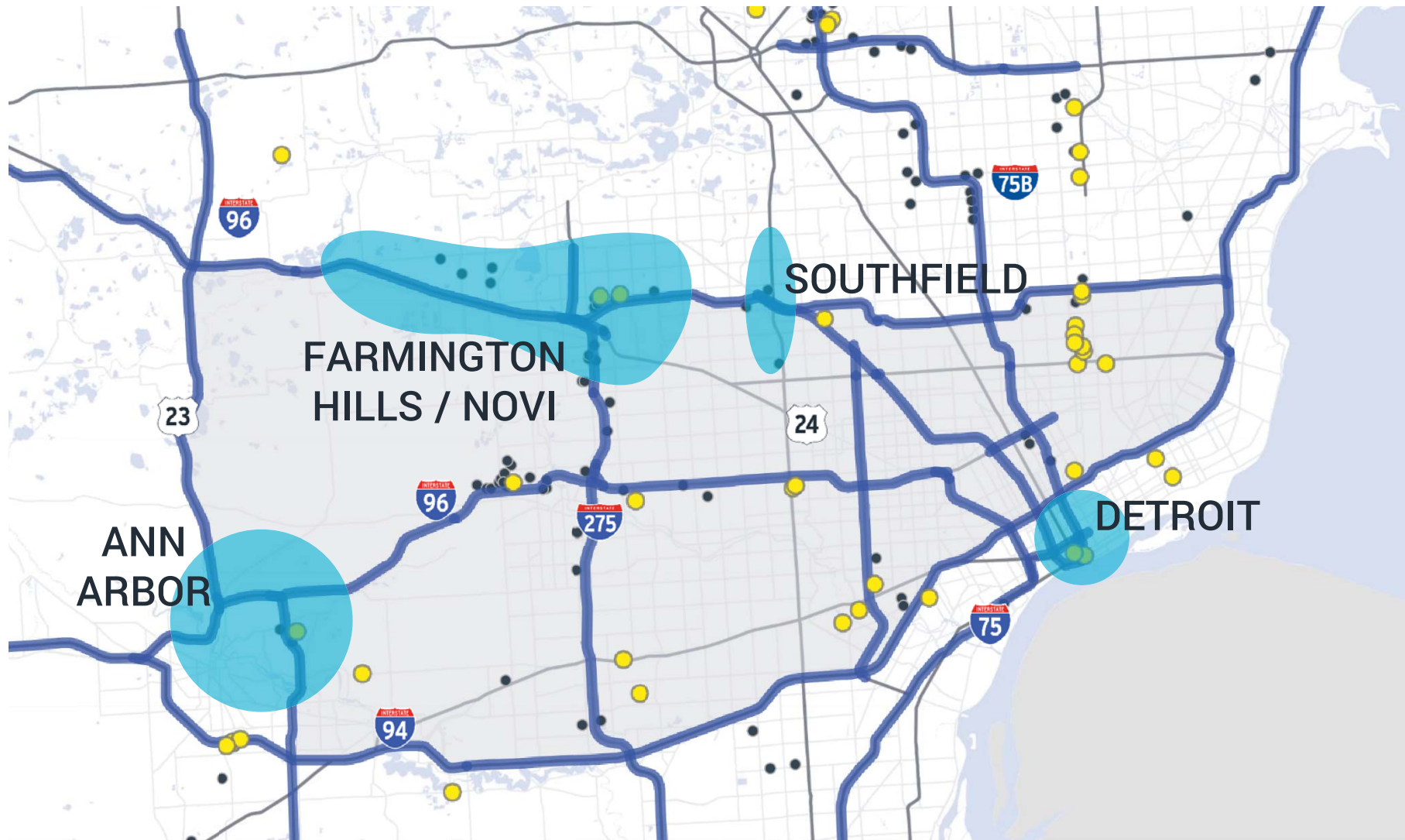
CV infrastructure investment is key to creating an environment supportive of V2I testing, and to understand the complexities of managing a large CV infrastructure deployment.



1

Infrastructure

Southeast Michigan Connected Vehicle Assets



- Connected Vehicle Environment
- Connected Vehicle Test Beds
- Tier 1 Automotive Suppliers
- Major OEM Facilities
- MDOT Roadway ITS Coverage

2

V2I Applications

Critical Connected Vehicle Environment Element:

Equipped vehicles to engage in the system. MDOT is accomplishing this through a combination of partnerships and state vehicle fleets.



Truck Parking Information and Management System (TPIMS)

The image displays the Mi Drive website interface for Michigan's Department of Transportation, showing a map of Michigan with truck parking information. A pop-up window for "I-94 @ Exit 12 - Available" provides details:

- Status: Available
- Name: Truck Parking Center
- Route: I-94
- Cross Street: Exit 12
- Open Spaces: 94
- Total Spaces: 174
- Update Time: 9/5/2014 2:02:36 PM

Overlaid on the right is a mobile application interface for TSPS (Truck Stop Parking System) showing a list of truck parking locations:

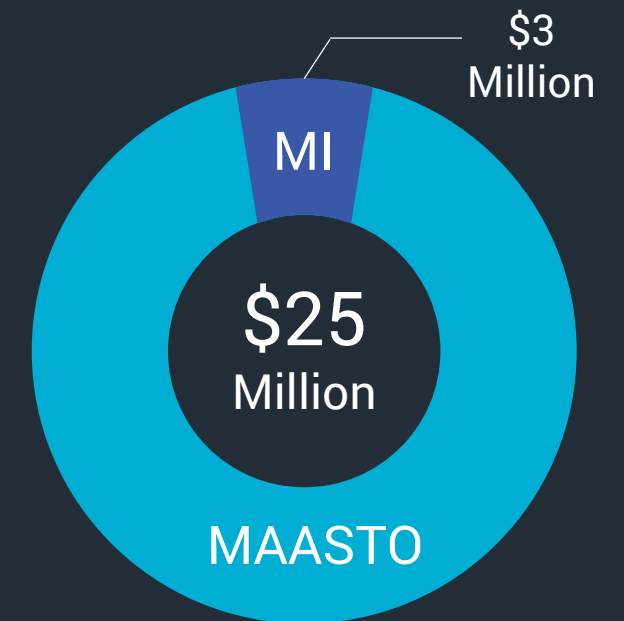
Location	Spots	Code
TPC	12 spots	45A
FIFTH WHEEL	6 spots	46
Speedway	2 spots	45A
Oasis Truck Center		49B
Rest Area		46A
Prime Trucking		49B

The mobile app also shows a clock at 2:30, a microphone icon, and a "100 miles out" indicator. In the background, a physical sign for "AVAILABLE TRUCK PARKING REST AREA" is visible with digital displays showing "40" and "53".

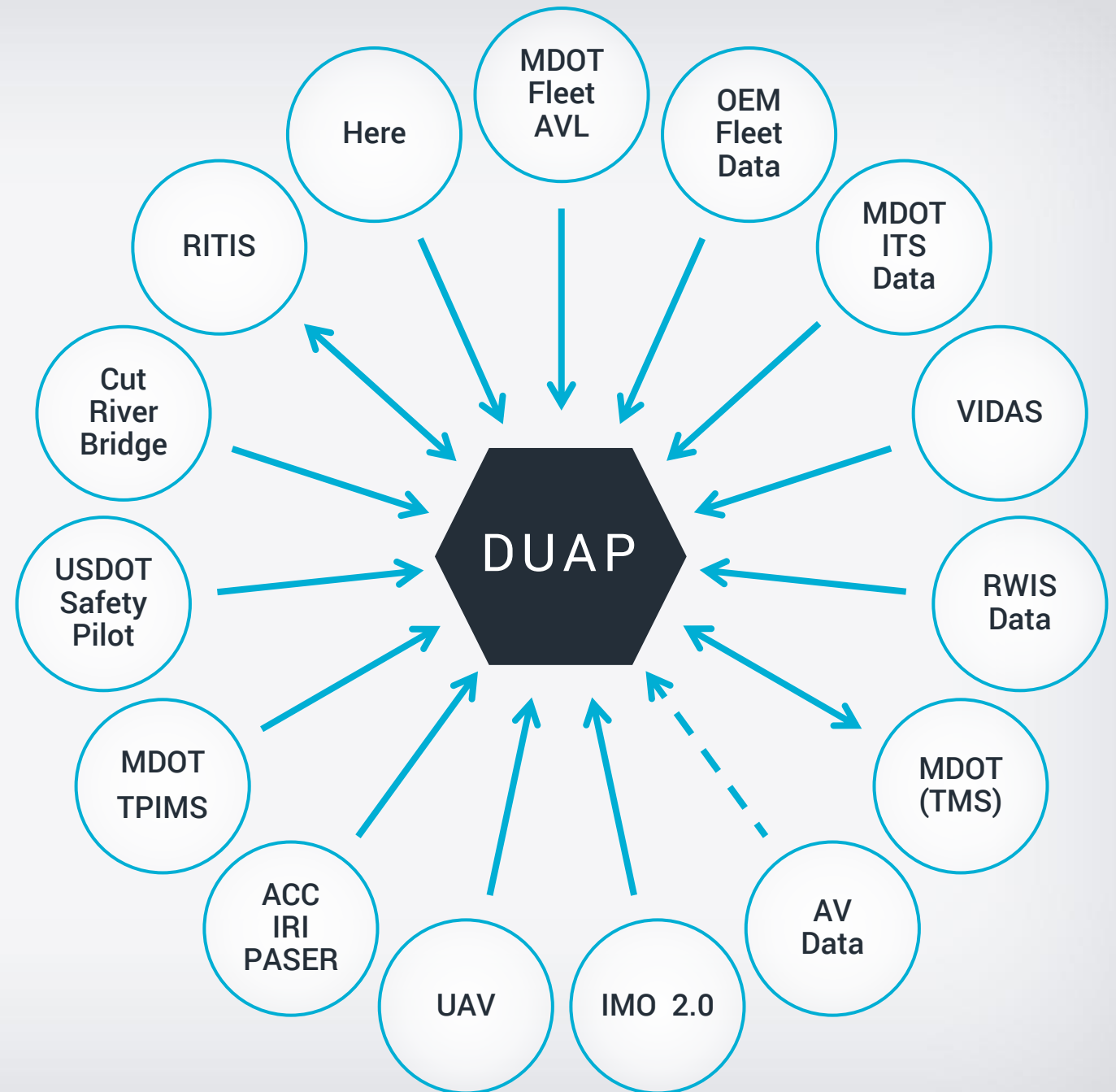
Truck Parking Information and Management System (TPIMS)



Federal
TIGER Grant
Awarded



MDOT's Data Use Analysis and Processing (DUAP) program is pioneering the collection and fusion of CV data with a wide range of data sources.



Mobility Transformation Center



All photos courtesy of the University of Michigan



Communications

Applications

Talent

Research

Data

Infrastructure

Vehicles

Get Engaged

Michigan is Open for Business for CV Partnership Opportunities