PLANNING FOR THE ARRIVAL OF CONNECTED AND AUTOMATED VEHICLES

Transportation Planning Considerations

- Potential paradigm shift in how we travel
- How goods are shipped on land, sea, air
- Greater mobility and access for those underserved
- How society interacts with its built environments

Transformational Transportation
Michigan Traffic Fatalities

Mobility, Land Use and Transportation

Drive Sweden: a new approach to mobility

Safety, Capacity and Congestion
Rush Hour - From Black Sheep Films
Other Planning Opportunities...

- Demographic and generational
- Intergovernmental Coordination
- Data and information
- Timing, phasing and long-range planning cycles
- Funding

Time & Money

- Transportation transformations have happened before
  - Railroads – changed the world so much that time zones were created
  - Paved Roads – got us out of the mud & expanded local commerce
  - Interstate System – created commerce & industry of today

Future of Time & Money

- Connected & Automated Vehicles
  - Not just passenger vehicles
    - Semi-trucks
    - Freighters
    - Farming Equipment
    - Onsite- vehicles in shipping yards, mines, ports
    - Delivery Vehicles
  - The potential change is enormous & could impact all aspects of transportation & commerce
Southeast Michigan Connected Vehicle Assets

CV Infrastructure Deployment Plan

350+ Miles of equipped freeway and major arterial by 2019

MDOT V2I Applications

Red Light Violation Warning
Work Zone Warning/Management
Road Weather Management
Pavement Condition
V2I Applications

Red Light Violation Warning

- Vehicle approaching intersection too fast, signal is red.
- Approaching vehicle receives SPaT message, identifies threat.
- Driver Vehicle Interface (DVI) alerts driver to brake.
- Smart signal broadcast

- Phase and Timing (SPaT)
- Vehicle approaching intersection too fast, signal is turning red.
- Driver Vehicle Interface (DVI) alerts driver to brake.

Lansing/M-43

- W Saginaw Highway/M-43

Equipped Intersections

Work Zone Warning/Management

- Vehicle is approaching work zone too fast.
- Approaching vehicle receives message from RSU with work zone information.
- Portable RSU sends work zone info to vehicle.
- Driver Vehicle Interface (DVI) provides warning of lane closure.
- Portable RSU sends work zone info to vehicle.

- Driver Vehicle Interface (DVI) provides warning to slow down.
Road Weather Management

Vehicle is approaching hazardous weather conditions area

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

Driver reduces speed in response to warning

Vehicle Interface (DVI) example

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

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

Vehicle approaches hazardous weather conditions area

Roadside unit sends pothole data to operations center

Vehicle drives over pothole in pavement

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

Mainteinance crew responds to location and fills pothole

MDOT receives pothole data from roadside unit and deploys maintenance crews to repair

Heat map of pavement conditions

Mainteinance crews respond to fix pothole

Roadside unit sends pothole data to operations center

MDOT Operation Centers

West Michigan TOC

Southeast Michigan TOC

Southeast Michigan Emergency Operations Center

Blue Water Bridge TOC

Statewide TOC
Truck Parking Information and Management System (TPIMS)

**Project Goals**
- Enhance highway safety by providing timely and reliable truck parking information
- Provide an efficient and accessible truck parking solution
- Provide a secure solution that protects user privacy and data
- Maximize user acceptance of the system for truck parking decisions

**Federal TIGER Grant**
- Awarded $25 million
- $3 million for MI MAAS TO

**Available Truck Parking**
- Rest Area
- Exit 112
- Exit 110
The main package in the bill proposes five significant changes to current law:

- Autonomous Operations
- Platooning
- Automated Networks
- Council on Future Mobility
- American Center for Mobility
Why Here, Why Now

A public/private R&D partnership that will lead a revolution in mobility and develop the foundations for a commercially viable ecosystem of connected and automated vehicles.

The MTC: Building a Mobility Ecosystem

A public/private R&D partnership that will lead a revolution in mobility and develop the foundations for a commercially viable ecosystem of connected and automated vehicles.
Yet, numerous barriers exist...

- Cost
- Safety and security
- Market saturation
- Privacy concerns
- State and local policy and regulation
- Federal policy and regulation

For More Information:

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Developing Regional Solutions