Connected Vehicles in Michigan: Moving to Reality

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What is Safety Pilot

- Safety Pilot is:
  - Model for a national deployment of the technology
  - Designed to determine the effectiveness of the safety applications at reducing crashes
  - Designed to determine how real-world drivers will respond to the safety applications

- Safety Pilot will also test mobility and sustainability applications

- $18M, 2.5 year program

- 1-year deployment begins August 21, 2012
Test Conductor Team

UMTRI

PARSONS BRINCKERHOFF

Mixon Hill

HNTB

escrypt

SAIC

MDOT

Michigan Department of Transportation

CITY OF Ann Arbor

PURE MICHIGAN

Michigan Economic Development Corporation

Texas Transportation Institute
Scope

- More than 2,836 cars, commercial trucks, and transit vehicles
- 73 lane-miles of roadway instrumented with 29 roadside-equipment installations
- A variety of different devices
  - Vehicle Awareness Devices
  - Aftermarket Safety Devices
  - Integrated Safety Systems
  - Retrofit Safety Devices
  - Roadside Equipment
## Vehicles & Devices Deployed

<table>
<thead>
<tr>
<th></th>
<th>Integrated Vehicles</th>
<th>Retrofit/Aftermarket Devices</th>
<th>Vehicle Awareness Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Cars</td>
<td>64</td>
<td>300</td>
<td>2200</td>
</tr>
<tr>
<td>Heavy Trucks</td>
<td>3</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td>Transit</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Medium Duty</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>67</td>
<td>319</td>
<td>2450</td>
</tr>
</tbody>
</table>
Two-Stage Deployment

- **Stage 1: Launch 1-year V2V deployment**
  - August 21st launch
  - Collect data on V2V interactions to support 2013 rulemaking decision
  - Limited infrastructure to support security credentialing

- **Stage 2: Full infrastructure rollout**
  - “Rolling start” completed by December 4th
  - Full suite of RSEs and V2I apps
  - SPaT rollout
Upcoming Steps

- August 21st LAUNCH
- Stage 2 interoperability field testing
- Testing of SPaT implementations on-site
- Deploy Stage 2 infrastructure
- Incorporation of additional V2I/I2V applications
  - Transit safety
  - Rail grade crossing
Test Beds
Ongoing Initiatives

- DUAP (Data Use and Analysis Program)
- VIDAS (Vehicle Information Data Acquisition System)
- Slippery Roads
- Road Weather Management
Pavement Conditions and Accelerometers

Correlation Testing

- Objective: compare subjective MDOT PASER ratings with accelerometer measurements
- Testing consisted of vehicles with:
  - SmartPhone
  - Laser Profilometer
- Test Route
  - 7 circuits
  - Segments were PASER Rated by MDOT expert
Multi-path SPaT Broadcast

Driver Display

1. **Go faster...**
   - Slower
   - Faster
   - 45 sec 3500 Ft

2. **Maintain Speed...**
   - Slower
   - Faster
   - 15 sec 1500 Ft

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Network

Cellular Communication System

GPS

Location based Services

VII Network Operations Center

DSRC

Signal Controller

Driver Display

Go faster...

Maintain Speed...

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Faster Slower

45 sec 3500 Ft

15 sec 1500 Ft
I-94 Truck Parking

- I-94 from Indiana state line to Marshall (I-69)
- Federal grant through FHWA Truck Parking Facilities Program
- Monitors public and private truck facilities
- In addition to the value to the freight industry and truck drivers
- Real-world, sustainable deployment of to ensure safety of commercial vehicle operators
  - Infrastructure and vehicle-based
Program Research

- Ethical and Legal Issues Relating to Government Agencies and Intelligent Transportation Systems Data
- Public Perception of Connected Vehicles
Partnering

- Michigan Connected Vehicle Working Group
  - www.michigan.gov/cv
- Test Bed
- Cooperative Transportation Systems Pooled Fund Study
- Safety Pilot
- MIS
Looking Forward
Questions?

“Providing the highest quality integrated transportation services for economic benefit and improved quality of life.”