Connected Vehicle Safety Pilot

Jim Sayer

Program Manager

University of Michigan Transportation Research Institute

What is Connected Vehicle Technology

- The use of wireless communications to share basic information about:
  - Vehicles:
    - **Position (GPS-based location, lat/long)**
    - **Speed**
    - **Heading (i.e., direction of travel)**
  - Infrastructure
    - **Signal phase, surface conditions**
- Like Wi-Fi, but a dedicated, optimized channel, secure and private

What is Connected Vehicle Technology

What is Connected Vehicle Technology

- Vehicle to Vehicle Communication (V2V)
  - Forward crash warning
  - Electronic emergency brake lamps
  - Intersection movement assist
- Vehicle to Infrastructure Communication (V2I)
  - Curve speed warning
  - Emergency vehicle signal preemption
  - Road surface condition
- Vehicle to Everything Else (V2X)
  - Pedestrians, cyclists, trains at grade crossings

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 the how real-world drivers will respond to the safety applications
- Safety Pilot will also tests mobility and sustainability applications
- $26M, 2.5 year program
- 1-year deployment began August 21, 2012

Test Conductor Team

A Community Effort

- Working with a variety of local organizations
  - City of Ann Arbor, Ann Arbor Public Schools, Washtenaw Intermediate School District, UM Transportation, Con-way Freight, Sysco Foods, AAPD
- We need about 2600 lay participants just from northeast Ann Arbor, and the surrounding community
  - **3650 have signed up!**

Scope

- 2,836 cars, commercial trucks, and transit vehicles

- 73 lane-miles of roadway instrumented with 29 roadside-equipment installations

- A variety of different devices on vehicles
  - Vehicle Awareness Devices
  - Aftermarket Safety Devices
  - Retrofit Safety Devices
  - Integrated Safety Systems

Example Equipment

Example Equipment

Vehicles & Devices Deployed

	Integrated Vehicles	Retrofit/ Aftermarket Devices	Vehicle Awareness Devices	
Passenger Cars	64	300	2215	
Heavy Trucks	3	16	50	
Transit		3	85	
Medium Duty			100	
	67	319	2450	**2836**

To Date	64	10	471	545

Vehicle-Based Data

|	Integrated Vehicles	Retrofit/ Aftermarket Devices	Vehicle Awareness Devices	
Passenger Cars	64	100	2215	
Heavy Trucks	3	4	50	
Transit		3	85	
Medium Duty			100	

VTTI DAS

Basic Message Only

UMTRI DAS

Infrastructure Installations

- Strategy for site location
  - Capture all traffic operating in northeast Ann Arbor, with focus on local residents and commuters
- Roadside Equipment at:
  - 21 signalized intersections
  - 3 curves
  - 5 freeway sites
- 2 SPaT enabled corridors
  - 12 intersections, 6 per corridor
- Rich contextual data set
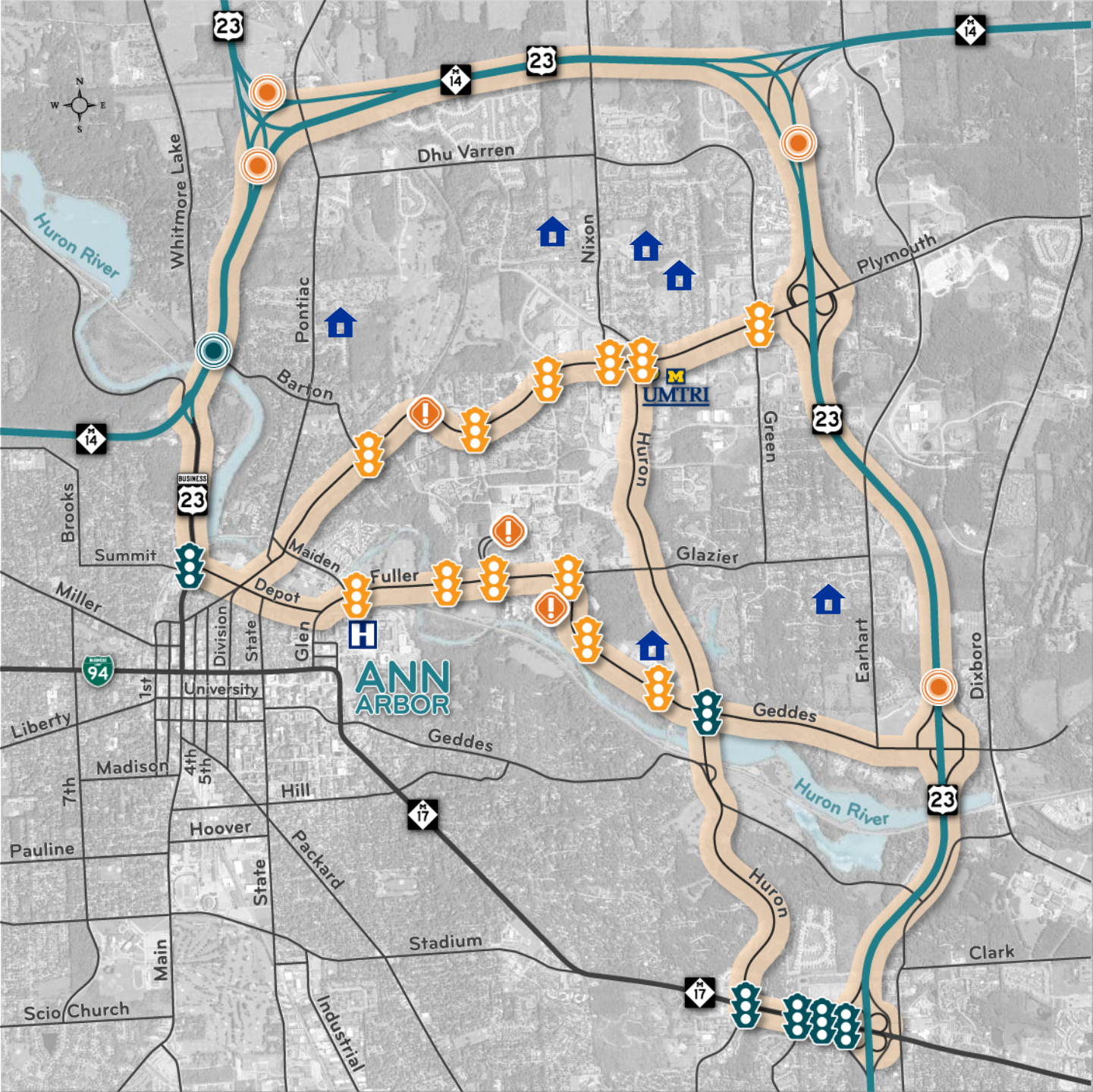
Innovation in Transportation Technology

- Ann Arbor becomes the "sandbox" for connected vehicle technology testing and development
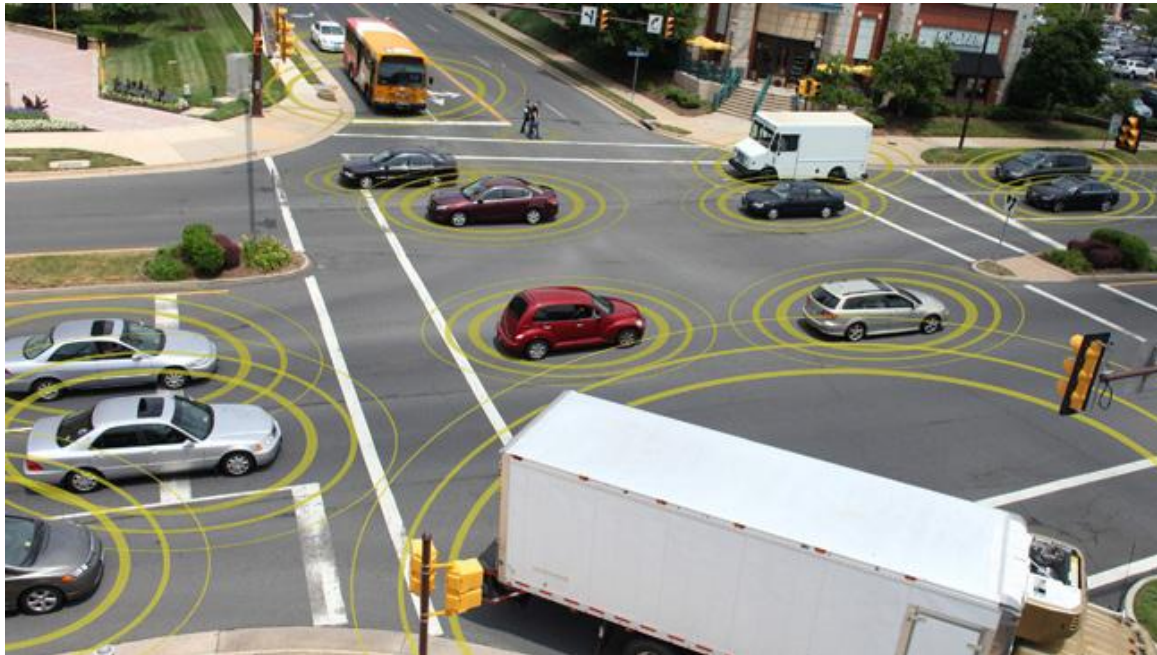
Stakeholder Utilization of the Site and Data Access

- Provide access to, and support for, use of the operating environment by other stakeholders

- Showcase facility to support stakeholder use of the site

- Support wide-spread dissemination of the data for use by a variety of researchers
  - Vehicle level and infrastructure-based data

Questions?

jimsayer@umich.edu

734-764-4159