Safety Pilot Model Deployment Test Conductor

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UMTRI

How Model Deployment Supports Connected Vehicle Objectives

- Tests V2V and V2I safety and mobility applications under real-world, multi-modal driving conditions
- Data can be used to determine the effectiveness of the technologies and applications at reducing crashes
- Helps ensure that the devices are safe and do not distract motorist or cause unintended consequences.

Scope

- More than 2,800 vehicles
  - Passenger cars, commercial trucks, transit
  - Integrated Safety Systems, Vehicle Awareness Devices, Aftermarket Safety Devices, and Retrofit Safety Devices
- 73 lane-miles of roadway instrumented with 29 roadside-equipment installations
- 1 year of data collection

Test Conductor Team

Parsons Brinkerhoff & HNTB

- **PB** leads infrastructure development
  - Develop and direct infrastructure plan for installations within the City boundaries
  - Works closely with the City of Ann Arbor Public Services Department
- **HNTB** leads outreach
  - HNTB develops infrastructure plan for installations on State properties
  - Works closely with MDOT

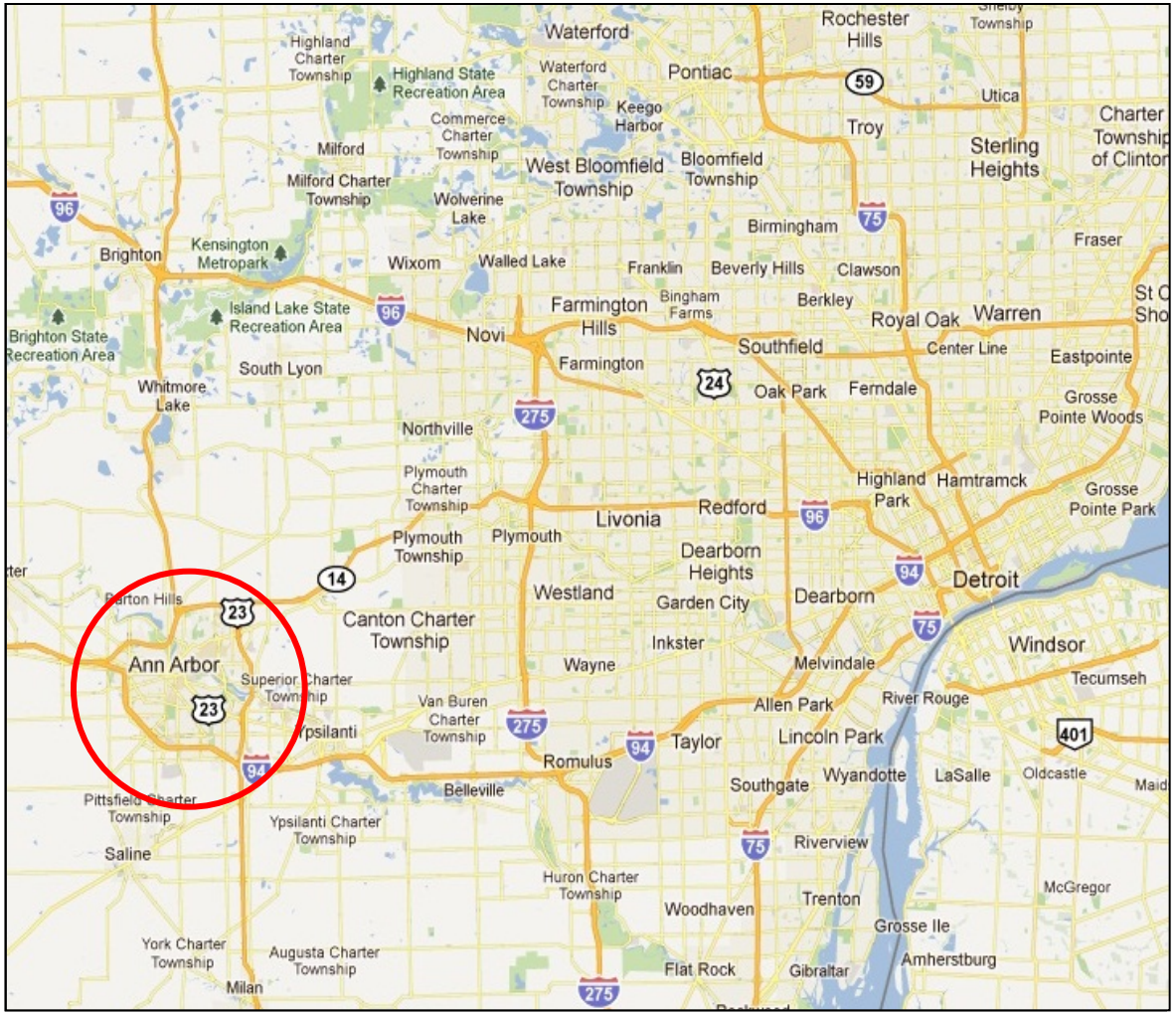
Mixon Hill & SAIC

- **Mixon Hill** leads infrastructure data mgmt.
  - Responsible for data collection spec, backhaul, and storage
  - Additional application development based on DUAP2 and VIDAS
  - Works will all partners involved in the infrastructure development
- **SAIC** leads interoperability testing
  - With UMTRI, coordinates all equipment suppliers
  - Conducts lab and field interoperability tests

escrypt, TTI, & AAA

- **escrypt** leads wireless communication security
  - Works with equipment suppliers and during interoperability tests
- **TTI** provides recommendations and preliminary assessments of additional applications to be tested
  - Works closely with UMTRI and infrastructure leads
- **AAA** provides outreach experience and services to the program
  - Works closely with outreach lead and UMTRI

Ann Arbor as the Deployment Site



Ann Arbor as the Deployment Site

- A good mix of high-volume, multi-modal traffic
- Urban, suburban and rural travel
- Significant commuter traffic
- A variety of roadway characteristics
- Weather variation to examine events, applications, and equipment durability
- Proximity to CAMP and suppliers
- Detroit is site of the 2014 ITS World Congress

Infrastructure Installations

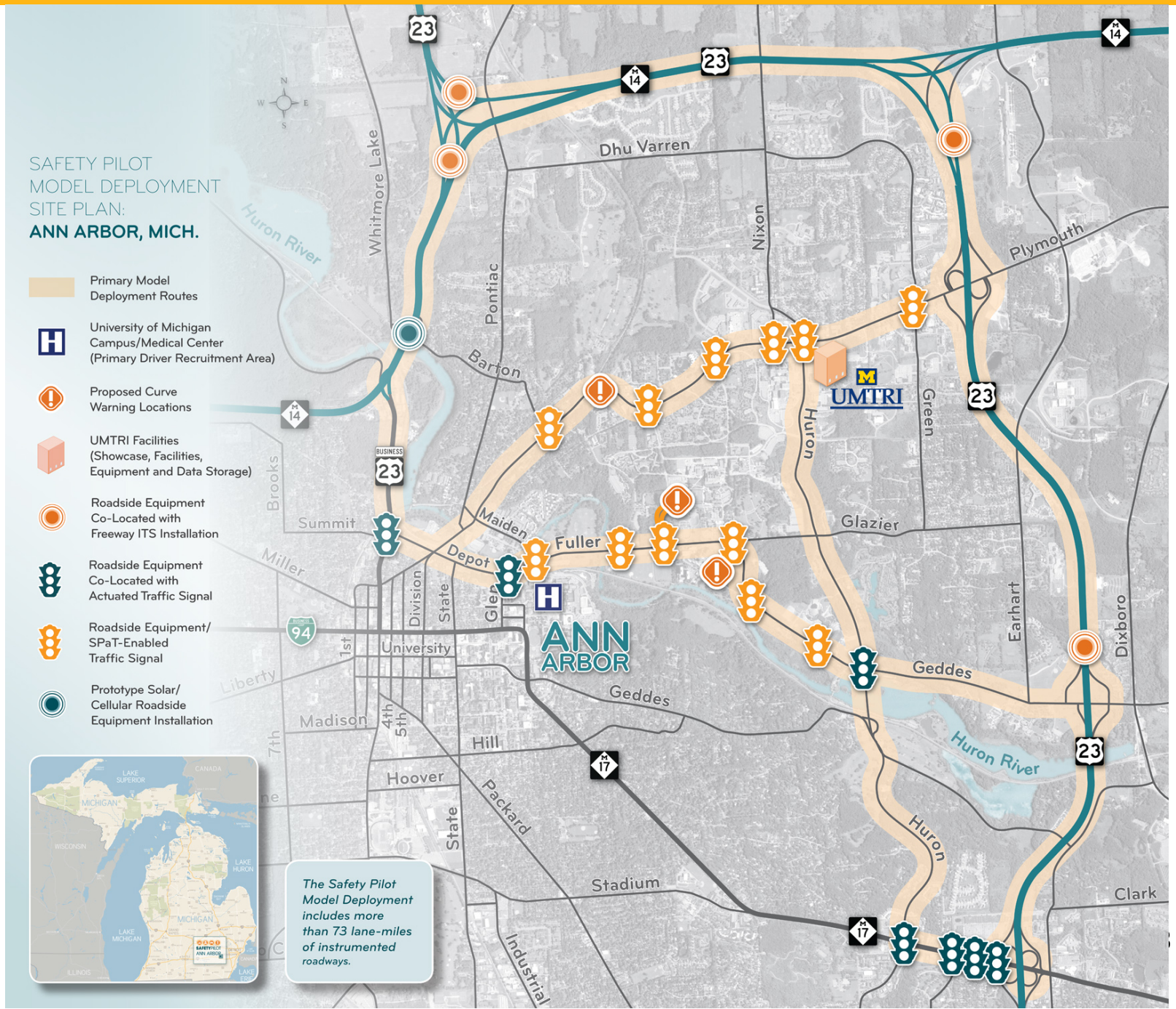
- Strategy for site location
  - Capture all traffic operating in Northeast Ann Arbor, and any commuter traffic entering from the North, East, or South
- Roadside Equipment at:
  - 21 signalized intersections
  - 3 curves
  - 5 freeway sites
- 2 SPaT enabled corridors
  - 12 intersections, 6 per corridor

Driver Recruitment in Ann Arbor

- Recruit to maximize vehicle exposure to the site
- Large potential recruitment population
  - City's population about 114,000
  - 40,000 UM employees (20,000 at UM Hospital)
  - VA Hospital, EPA, etc.
  - High employee retention at rates
- Two trucking firms
  - Con-way Freight and Sysco Foods
- Two transit agencies
  - Ann Arbor Transit Authority and UM Transit

Vehicles to be Equipped

Connected Vehicle Device	Vehicle Type	Vehicle Source	Total Units in Model Deployment
Integrated Devices	Light vehicles	CAMP	64
Integrated Devices	Commercial trucks	Battelle team	3
Vehicle Awareness Devices	Light vehicles	UM employees	2200
Vehicle Awareness Devices	Local truck fleets	Con-way, Sysco	50
Vehicle Awareness Devices	Light/medium duty	University fleet	100
Vehicle Awareness Devices	Transit vehicles	AATA, UM buses	100
Aftermarket Safety Devices	Light vehicles	UM employees	300
Retrofit Devices	Local truck fleets	Con-way, Sysco	16
Retrofit Devices	Transit vehicles	AATA, UM buses	3
		Total	**2836**


SAFETY PILOT
MODEL DEPLOYMENT
SITE PLAN:
ANN ARBOR, MICH.
Primary Model Deployment Routes
University of Michigan Campus/Medical Center (Primary Driver Recruitment Area)
Proposed Curve Warning Locations
UMTRI Facilities (Showcase, Facilities, Equipment and Data Storage)
Roadside Equipment Co-Located with Freeway ITS Installation
Roadside Equipment Co-Located with Actuated Traffic Signal
Roadside Equipment/ SPaT-Enabled Traffic Signal
Prototype Solar/ Cellular Roadside Equipment Installation
The Safety Pilot Model Deployment includes more than 73 lane-miles of instrumented roadways.
Huron River
Whitmore Lake
Dhu Varren
Nixon
Plymouth
Pontiac
Barton
UMTRI
Huron
Green
Brooks
Summit
Maiden
Fuller
Glazier
Miller
Depot
Division
State
Glen
ANN ARBOR
University
1st
Liberty
Madison
4th
5th
7th
Geddes
Earhart
Dixboro
Hill
Hoover
Packard
Stadium
Industrial
Clark
Huron River
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BUSINESS 23

Additional Applications

- USDOT strategic goals of Safety, State of Good Repair, Economic Competitiveness, Livability, and Environmental Sustainability
- MDOT Data Use Analysis and Processing (DUAP) Project
  - Applications that enhance transportation operations
- Vehicle-based Information & Data Collection System (VIDAS)
  - Application of actionable road and weather data

Other Applications Under Investigation

- Emergency vehicle preemption
  - Two hospitals on the SPaT enabled Fuller/Geddes corridor
- Pedestrian/Bicyclist detection
  - Detect pedestrian traffic at instrumented intersections

Program Outreach

- Coordinated effort, involving all team members in cooperation with the USDOT
  - Model Deployment Showcase
  - Printed and Video Materials
  - Industry Publications
  - Public Meetings
  - Technical Papers and Presentations
  - Website
    - **http://spmd.umtri.umich.edu**

Program Outreach

Stakeholder Utilization of the Site

- Provide access to, and support for, use of the operating environment by other stakeholders
- Showcase facility located at UMTRI to support stakeholder use of the site
  - Displays and video presentations of the applications
  - Driver training facilities, demonstration areas, and a vehicle-based demonstration staging area
  - Demonstration routes for on-road application demonstrations

Stakeholder Utilization of the Site

- Establishing:
  - Registration process
  - Check-in and check-out procedures
  - Rules for use
  - Safety procedures
  - Coordination of competing or conflicting testing
  - Assistance in subject recruitment
  - Vehicle support and facilities
  - Data retrieval

Questions?

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