Michigan C/AV Test Facilities Transition from Research to Reality

ITS Georgia Annual Meeting October 9, 2017 USDOT Connected Vehicle Program

— Standards development

- Application concepts
- Security system s
- Research and analysis
 - Pilot deployments



Pilot Deployments Still Dominated by Federal Funding



Three regional connected vehicle pilot programs underway:

- **§** Tampa (THEA) Pilot
- *Wyom ing/ICF Pilot*
- S New York City Pilot

(*Many other State and Local deployments, including GDOT SPaT Challenge initiative)

SMART CITY





Smart Columbus Initiative

- Extensive connected traffic signal system to support enhanced bus rapid transit
- Electrified Autom ated Vehicle (EAV) to serve as circulator for Easton commercial district
- Transit kiosks to link community to technology and ondem and services

History of C/AV in Michigan



CV Proof of Concept Test

- Began in 2007 in and around Novi, Michigan
- 50 equipped intersections around suburban Detroit
- Validate Vehicleto-Infrastructure (V2I) concept and initial architecture
- Still maintained as a USDOT test bed resource

Safety Pilot Model Deployment

- 27 DSRC Roadside Units (RSUs)
- 3,000 equipped vehicles
- Served to validate V2V benefits and inform rulemaking process





2014 ITS World Congress

- Downtown Detroit, Michigan
- Permanent CV infrastructure established around downtown streets
- Temporary infrastructure on Belle Isle to support technology show case



Next Generation Began Transition from Federal Funding



Ann Arbor Connected Vehicle Test Environment Background

- Original site of the Safety Pilot Model Deployment
- 30 DSRC Roadside Unit (RSU) sites, currently expanding to 60
- Nearly 2,000 equipped vehicles
- 50% match to federal funding
- Federal funding expires in 20 18



Michigan DOT Connected Corridor Program



Mcity

- Testing track purpose-built for C/AV testing
- Developed by the University of Michigan
- Multiple simulated environments
- Designed for research and development activities





How can testing and development be transitioned from research to reality?

Mcity Model

Membership fee (or in-kind contribution) for partner companies

"Pooled funding" for multi-use environment/cooperative research

Access to Mcity test track (for fee)

Currently insufficient to fund roadside infrastructure operation and maintenance

Leadership Circle Members:



Plus over three dozen affiliate members including WSP

Other Business Models Considered

- Auto industry investment as an on-road test environment (extension to Mcity model)
- Public sector model: repurpose infrastructure for transit signal priority in order to maintain it (with public transport funding)
- Turn-key approach
- No-cost lease of infrastructure to private operator
- Operator is allowed to collect all data over the system and determine how to monetize it (both to public agencies and private entities)
- Operator is responsible to maintain the equipment and provide data to the University of Michigan

Automated Shuttles



wsp

Source: University of Michigan

MDOT C/AV Strategic Plan

- Established vision, goals and objectives for overall C/AV program
- Key Goals:
 - Serve as a national model to catalyze C/AV deployment
 - Accelerate C/AV
 benefits to users



Approach Includes Three Key Elements



Accelerating Customer Benefits Through Mobile-Based V2I Develop Foundational Systems to Support V2I



MDOT Looking to Mobile for Near-Term Benefits







American Center for Mobility

- Federally-designated automated vehicle proving ground
- 330-acre purpose-built C/AV test facility
- Built near Willow Run Airport, on the form er site of a critical World War II bom ber plant
- Phase 1 opening in late 20 17 includes 3-mile highway speed loop

American Center for Mobility at Willow Run

- Range of communications technologies and safety/monitoring systems
- Future phases include urban, suburban, com m ercial and rural districts
- Wide range of testing scenarios, including Smart Cities technologies, drones, etc.





* TRL = Technology Readiness Level

\\SD

Certification Services (TRL 5-9)

Opportunities to Transition

- Consider data policies and developing a data governance plan
- Dialogue with the private technology sector –what are they looking for and what can you get in return
- Be flexible in considering new business models for managing technology systems



Questions?

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