# Mcity

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# The Role of the University of Michigan

- **Research:**
  - The U-M has invested tens of millions of dollars on facilities to aide in the research being conducted across the state - facilities such as Mcity, the new Robotics Lab. In addition, millions are being spent on actual research – research that will bring intelligent transportation solutions to market faster than ever before.

- **Deployments:**
  - From research to real-world deployment, the U-M and its partners are making Ann Arbor the first city in the world that has an operational, connected vehicle and connected infrastructure environment.

- **Investments:**
  - The U-M has contributed tens of millions in tech transfer, entrepreneurship, working with students and entrepreneurs to catalyze these technologies.

- **Education and Workforce Development:**
  - Key of course is our commitment to education and workforce development. Nearly 20,000 employees in Michigan have jobs involving R&D of intelligent transportation system and thousands more will be created in the near future. Much of the worlds focus on identifying a qualified workforce is centered on Michigan.

- **Partnerships:**
  - The U-M has created partnerships through the public and private sector, partnerships that enable the funding of research, launch technologies, operate world-leading deployments, providing educational opportunities – and of course jobs creation.

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# Why Connected Vehicle Technology is Important



- I-94, Western MI
- Jan 9, 2015
- Temp 16°F
- 0°F wind chill
- 193 vehicles
- 1 death
- 21 hospitalized
- Reopened after 2 days

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# Safety Pilot Model Deployment (SPMD)

- $30.1M
  - $25.5 M Federal Funds
  - $4.6 M Cost Share
    - University of Michigan
    - MEDC
    - MDOT
- 30 month program
  - 12 months planning
  - 12 months deployment
  - 6 months decommissioning
- Extended to 36 months program with limited decommissioning



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# Safety Pilot Model Deployment Impact



- Key data for USDOT analysis and rulemaking
  - 70+ TB data collected to date
  - 6.9 Million Trips
  - 44.9 Million Miles
  - 1.6 Million Hours
  - 138.5 Billion Records
- NHTSA Advanced Notice of Proposed Rulemaking:
  - New FMVSS No. 150: V2V communication capability for light vehicles
  - Minimum performance requirements for V2V devices and messages
- New Industry Standards

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# Ann Arbor Connected Vehicle Test Environment (AACVTE)

- **$15M**
- **3 year program**
- **Improve Quality of the existing environment**
  - Improved verification for new installations
  - Characterize existing installations with corrective actions
  - Migrate to GNSS
- **Update to new DSRC standards**
  - SAE J2735
  - SAE J2945
  - IEEE 1609.2,3,4
  - SCMS
  - RSU 4.1
  - CVRIA
- **Expand Infrastructure footprint**
- **Increase number of vehicle deployments**



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# Mcity

- Simulated urban and suburban environment sits on 32-acre site on U-M's North Campus, with 18 acres of roads and infrastructure

- Roadway Attributes
  - 13 signalized intersections
  - 1000' North/South straight
  - Various road surfaces
  - (concrete, asphalt, dirt)
  - Variety of curve radii, ramps
  - Two, three, four and five-lane
  - roads
  - Round-about and "tunnels"
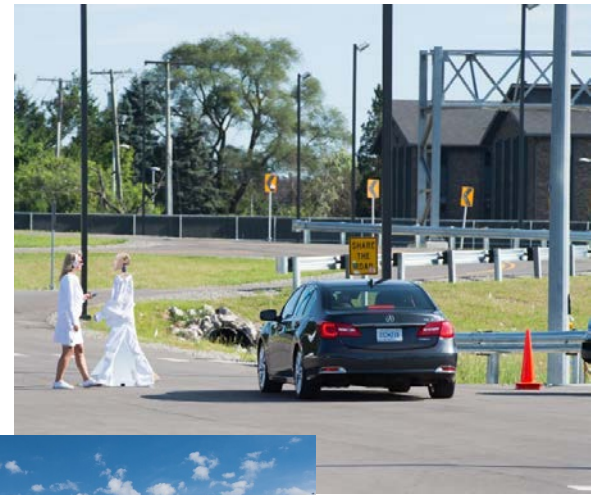  - Sculpted dirt and grassy areas

- Road-side Attributes
  - Variety of signage and traffic control devices
  - Fixed, variable street lighting
  - Cross walks, lane delineators, curb cuts, bike lanes, grade crossings
  - Hydrants, sidewalks, etc.
  - "Buildings" (fixed and movable)



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# Mcity Up Close



- Opened in July 2015

- Designed in partnership with MDOT, operated by MTC

- World's first facility purpose-built for testing connected, automated and driverless vehicles

- Designed to support rigorous, repeatable testing of new technologies before they are tried out on public streets and highways



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# Get Connected!

# [www.aacvte.org](www.aacvte.org)