

Mobility > Transportation

*The ability to move or be moved
freely and easily.*



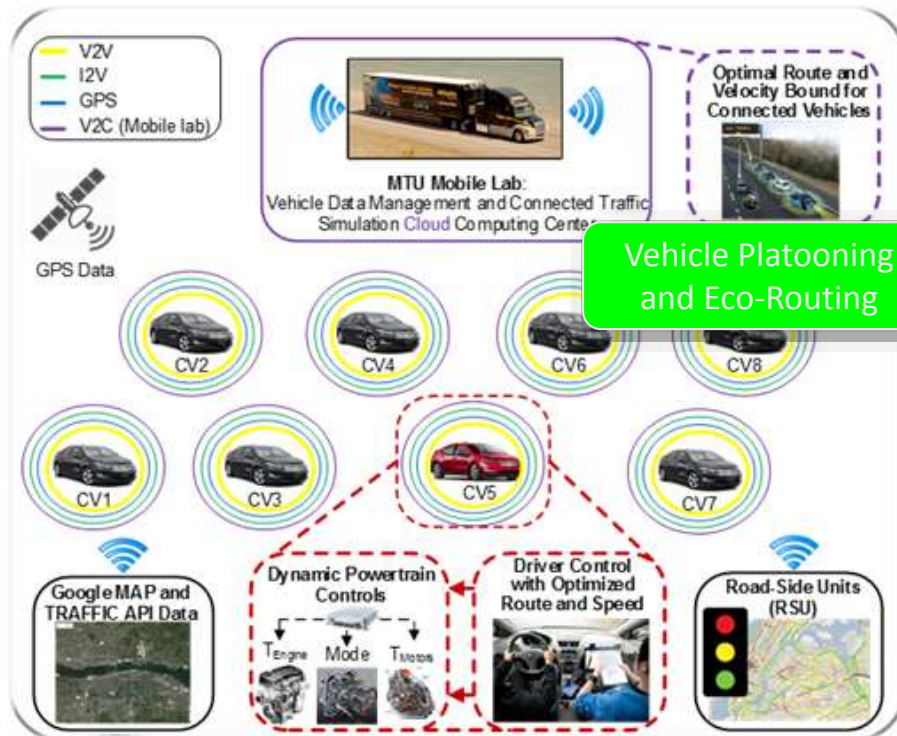
USA Today, 2/20/2017: "Cheap gas and a surging economy are taxing the nation's roads and contributing to congestion that cost U.S. motorists almost **\$300 billion** last year in wasted time and fuel ... Los Angeles had the worst traffic in the world ... INRIX."



USA TODAY
NETWORK

1. LA

ARPA-e NEXTCAR: Connected and Automated Control for Vehicle Dynamics and Powertrain Operation (GM Partnership)



Vehicle Platooning and Eco-Routing

Houghton/Hancock
 Detroit, Chicago, M-City

Large databases of single and multiple vehicles.

GM Volt2

L2 Autonomous vehicles controls with V2X
 5 Modes: Conventional – HEV – PHEV – EREV - EV



Bo Chen: Model based Controls

Darrell Robinette: Powertrain and Optimization

Mahdi Shahbakhti: Dynamic Models & Controls

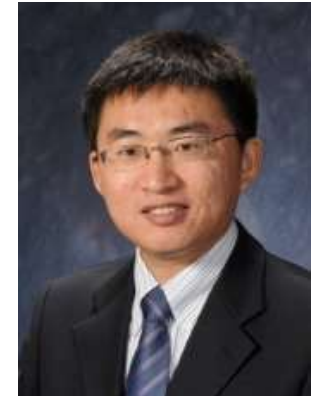
Kuilin Zhang: Traffic Theory and Simulation

Chris Morgan / Chris Pinnow: Vehicle Instr. & Testing

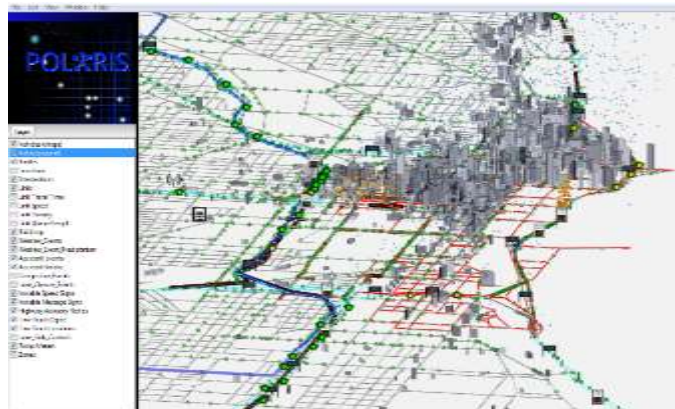
Jeremy Worm / Chris Morgan: Training and outreach

Traffic Theory and Simulation

- Optimal Routing and Velocity Bounds
 - Connected and Automated Vehicle Traffic Simulation Platform
 - Real-time and Simulated Traffic with Optimal Routing and Velocity Bounds
- Integrated vehicle and traffic simulation for technology assessment



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Transportation Network Modeling and Optimization

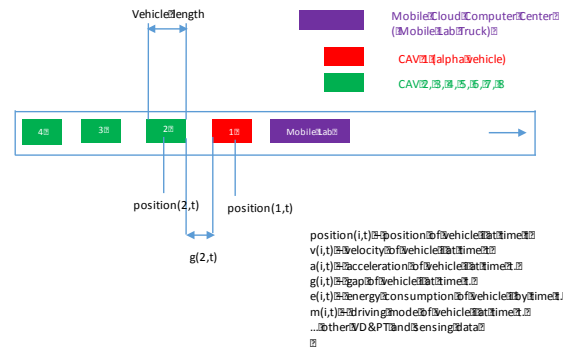
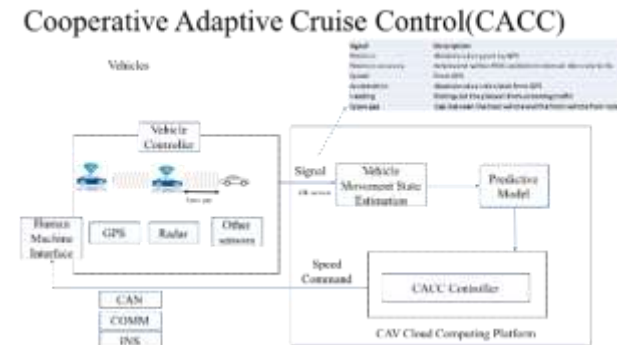


Figure 1. Connected and Automated Vehicle Driving Scenario
 Traffic Flow Theory and Traffic Simulation



CAV Driving Models and Applications

Technical Training and Outreach



High Impact, Hands-On
training and outreach



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Contacts

Centers and Institutes:

MTTI (Pasi Lautala) – Transportation and Traffic

MTRI (Joseph Burns) – Sensors and Signal Processing

KRC (Jay Meldrum) – Vehicle mobility and testing in unstructured environments

ICC (Ming Song) - Computing and cyber-systems

GLRC (Guy Meadows) – On and In Sea

APS LABS (Jeff Naber) – Vehicle technologies

AIM (Wayne Weaver) – Robotics, connected vehicles, cyber security

www.mtu.edu/research/about/centers-institutes

Educational programs

ACIA (ECE,CS, ST) – Cyber Security

ME / ECE – Automotive Systems and Controls

Coordination

Brent Burns – Director of Federal & Industry Relations

Discuss and Engage with the
Panel Members and Others

MICHIGAN TECH
RESEARCH FORUM
MOBILITY **TECH**TALKS



February 21, 2017