Driving Towards Driverless: How Governments Should Prepare for Autonomous Vehicles

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Connected and Automated Vehicles

OTEC 2016
Driverless Cars Are Closer Than They Appear

GM’s survival plan  p48
DISCUSSION TOPICS

- Driverless Vehicles 101
- Our Driverless Future
- Current Status of Government with Driverless Vehicles
- Proposed Actions for State and Local Governments Regarding Driverless Vehicles
Driverless Vehicles 101
NHTSA defines “Full Self-Driving Automation” as:

“designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip. Such a design anticipates that the driver will provide destination or navigation input, but is not expected to be available for control at any time during the trip.”
LEVELS OF VEHICLE AUTOMATION (SAE)

Source: http://www.sae.org/misc/pdfs/automated_driving.pdf
IS THIS A LEVEL 5 FULLY AUTOMATED VEHICLE?
THE RACE TO DRIVERLESS …
THE RACE TO DRIVERLESS …

Source: Morgan Stanley
RESULTING IN IMPROVED SAFETY…
CHANGES IN DEMAND & OPPORTUNITY…

Will new segments to the population become “drivers?”
REDUCED CAR OWNERSHIP

What if this…

…increasingly became this
Our Driverless Future
SCENARIO 1
SCENARIO 2
SmartColumbus AV Deployment
POTENTIAL FUTURE SCENARIOS

Scenario 1: Driverless Nightmare

Scenario 2: Driverless Utopia

Level of Vehicle and Ride Sharing

0% of Society

100% of Society
## CHANGES FROM TODAY’S SOCIETY

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CURRENT STATUS OF GOVERNMENT WITH DRIVERLESS VEHICLES
FEDERAL RESPONSE
U.S. STATES’ DRIVERLESS VEHICLES LEGISLATIVE UPDATE

As of September 2016, eight states have enacted legislation allowing driverless vehicle testing on public roadways.

Source:
http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action
DRIVERLESS VEHICLE TEST SITES INVOLVING LOCAL GOVERNMENT (SAMPLING)
Proposed Actions For State And Local Governments Regarding Driverless Vehicles
“While many governments have acknowledged the arrival of new mobility, few recognize the extent to which it will change the industry, and fewer still have worked to understand the pragmatic implications for tomorrow”

Known Knowns = 110%
Known Unknowns?

- New Mobility Report (Metrolinx), July 2016
PROPOSED GOVERNMENT ROLE IN DRIVERLESS VEHICLES

### Federal Role
- Update, Establish and Enforce Policies and Regulations
  - Safety
  - Privacy/Data Sharing
  - Cyber Security
- Establish and Enforce Standards
  - Manufacturing
  - Vehicle Design
  - Infrastructure
  - Data/Communications

### State and Local Role
- Update, Establish and Enforce Policies and Plans
  - Mobility
  - Infrastructure
  - Transit
  - Financial
LOCAL GOVERNMENT RECOMMENDATIONS

What can be done now?

- Stay educated/build awareness
- Incorporate driverless vehicles into city goals
- Establish communications and/or coalition with driverless technology stakeholders
- Support testing activities
- Establish policies and plans with consideration for the future
- Encourage (and use!) open data
LOCAL GOVERNMENT RECOMMENDATIONS

What can be done in the medium (1-2 years) to long-term (3-5 years)?

**Planning**
- Update travel demand model
- Evaluate road capacity needs
- Assess transit requirements
- Forecast financial implications

**Infrastructure Modifications**
- Update traffic signs and markings
- Reduce lane width
- Alter speed limits
- Adjust traffic signal locations and timing
- Eliminate/reduce parking and add more “drop-off/pick-up” locations
- Add electric vehicle charging infrastructure
- Develop new predictive models for pavement maintenance
- Certify roads for driverless and/or manual usage

**Miscellaneous**
- Update enforcement function within the government
- Update incident management function within the government
- Incorporate driverless vehicle technology into government services
- Update government workforce to match needs
What policy changes can be made by local governments to influence potential AV impacts in our cities?

- Update roadway policies and infrastructure to manage the VMT impact
- Adjust land use policies to reduce urban sprawl
- Adjust the tax/fee structure to dis-incentivize car ownership and/or parking
- Alter parking policies to reduce the need for private parking
- Incentivize electric vehicle usage/ownership
- Change transit pricing
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