Task Force on Autonomous Vehicles

May 2, 2019
Welcome & Introductions
National Update on AV Policy
Automated Vehicle Safety Consortium

**Members:** SAE International, Ford, General Motors, and Toyota

**Goal:** Establish safety principles for testing and deployment of Level 4 and 5 AVs.

**Three themes:**
1. Proper systems in place for testing
2. Interaction with people and systems
3. Collection, protection and sharing of data

**First deliverable:** “The Roadmap,” a framework that focuses on the safer deployment of AVs
NETT: a new internal deliberative body at US DOT

Goal: Resolve jurisdictional and regulatory gaps that impede deployment of new technology, including safety oversight, environmental review, and funding issues

Scope includes:
- Tunneling
- Hyperloop
- AVs

First meeting: Mid-March 2019
Federal Workforce Study - update

U.S. Department of Transportation and Department of Labor study, which will consider labor force transformation/displacement, labor force training needs, technology operational safety issues, and quality of life affects due to automation.

The first phase will focus on long-haul trucking and transit bus sectors. The results will be submitted to Congress later this year.

The second phase will look at broader range of professions and transportation modes.

USDOT held a listening session with stakeholders on March 20.
Identifies accessibility challenges, suggests unique design considerations, and calls for stakeholder engagement

Key points:
• AVs could increase mobility independence for seniors and people with disabilities.
• Industry and stakeholders need to establish standards and best practices to ensure that assistive technology is integrated into AVs.
• There is significant market growth potential for accessible automated vehicle systems.

Link: http://www.itsa.org/s/ITSAmerica_Driverless-Cars-Accessibility-Mobility_April2019.pdf
In November 2018, Waymo took additional safety measures for AV testing, including moving human safety drivers back into the driver’s seat, adding co-drivers to daytime shifts, and installing cameras to monitor driver fatigue.

To prepare for Japan’s 2020 Olympics, several companies have tested automated shuttles in downtown Tokyo and at airports. These vehicles are intended to ferry athletes and spectators.

On April 26, 2019, Toyota announced it will halt installation of DSRC technology in their vehicles because of security concerns regarding the 5.9 GHz frequency and uncertainty about the future of 5G.
AV Public Opinion Research
Most people in Oregon know little or nothing at all about automated vehicles; this is similar to the rest of the nation.

- **Oregonians**: 64% know little to nothing
- **Americans**: 60% know little to nothing

*Source: Kelley Blue Book, 2016*
Oregonians may be more hesitant about riding in AVs when compared to national results

**Very comfortable/Would definitely consider:**

- In areas with few vehicles:
  - Oregonians: 26%
  - Americans: 39%

- In lower speed areas:
  - Oregonians: 23%
  - Americans: 31%

- In higher speed areas:
  - Oregonians: 10%
  - Americans: 17%

*Source: Bloomberg Statefarm, 2016*
People who have used automated features are significantly more comfortable with AVs in several situations

<table>
<thead>
<tr>
<th>Experience with automated features</th>
<th>No experience with automated features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfortable with AVs in low speed areas</td>
<td>54%</td>
</tr>
<tr>
<td>Riding in AVs in low speed areas</td>
<td>49%</td>
</tr>
<tr>
<td>Riding in AVs with other passengers</td>
<td>42%</td>
</tr>
<tr>
<td>Riding in AVs for most trips</td>
<td>34%</td>
</tr>
</tbody>
</table>
Men are significantly more comfortable with AVs than are women

<table>
<thead>
<tr>
<th>Activity</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riding in AVs in low speed areas</td>
<td>49%</td>
<td>59%</td>
</tr>
<tr>
<td>Riding in AVs for most trips</td>
<td>34%</td>
<td>46%</td>
</tr>
<tr>
<td>Comfortable with AVs in busy downtown areas</td>
<td>22%</td>
<td>39%</td>
</tr>
<tr>
<td>Comfortable with AVs in higher speed areas</td>
<td>28%</td>
<td>38%</td>
</tr>
<tr>
<td>Riding in AVs in high speed areas</td>
<td>24%</td>
<td>37%</td>
</tr>
</tbody>
</table>
A majority support pilot projects of driverless low-speed shuttles and taxis within designated areas.

**Pilot projects on designated routes**

<table>
<thead>
<tr>
<th></th>
<th>Strongly</th>
<th>Somewhat</th>
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<tbody>
<tr>
<td>Support</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td>Oppose</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td>Don't know</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>

**Pilot fleet of driverless taxis**

<table>
<thead>
<tr>
<th></th>
<th>Strongly</th>
<th>Somewhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support</td>
<td>25%</td>
<td>32%</td>
</tr>
<tr>
<td>Oppose</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td>Don't know</td>
<td>3%</td>
<td></td>
</tr>
</tbody>
</table>
Key takeaways

• Few Oregonians have experience with automated features or know much about automated vehicles (AVs) — this leads to higher skepticism and negative attitudes

• Attitudes about AVs are mixed with skepticism, safety concerns, an understanding about benefits, and some openness

• Experience + knowledge = comfort with AVs and widespread use = comfort with AVs

• [Link to full report](#)
Vehicle Code & Safety
Subcommittee members

Lead: Lt. Timothy Tannenbaum (Washington County Sherriff’s Office), Law enforcement

Marie Dodds, American Automobile Association
Daniel Fernández (Jaguar Land Rover), Automotive Industry
Lt. Stephanie Ingraham, Oregon State Police
Neil Jackson (OTLA), Trial lawyers
Bob Nash, Automotive insurance industry
Carly Riter (Intel Corp.), AV technology industry
Jeremiah Ross (Ross Law LLC), Consumer Protection Advocates
Sean Waters (Daimler), Commercial truck manufacturing industry
Final product goals

1) A state-by-state comparison of vehicle code amendments related to the deployment of automated vehicles

2) Guidance on the definitions of driver, passenger, and vehicles, including model language that conveys the subcommittee’s intent

3) Recommendations for law enforcement and first responder training, including any necessary data

4) A policy statement regarding safety that addresses consumer protection, insurance and liability

5) A list of topics the subcommittee decides to defer for later consideration, including why each topic has been deferred
User Roles & Responsibilities

Law Enforcement Interaction

Nuro Arizona Law Enforcement Protocol
for Fully Autonomous Vehicles
October 26, 2018
Road & Infrastructure Design
Subcommittee members

**Lead:** Galen McGill, Department of Transportation

Marie Dodds, American Automobile Association

Eric Hesse (City of Portland), League of Oregon Cities

Jana Jarvis, Oregon Trucking Association

Carrie MacLaren, Department of Land Conservation and Development

Eliot Rose (Metro), Metropolitan planning organization

Paul Savas (Clackamas County), Association of Oregon Counties

Becky Steckler (University of Oregon), Public university

Sean Waters (Daimler), Commercial truck manufacturing industry
Final product goals

1) A document outlining national guidance and how state and local jurisdictions are preparing for AVs regarding road and infrastructure design

2) Documents assessing road and infrastructure impact areas to prepare for future transportation system
National guidance and initiatives

• Updates to Manual on Uniform Traffic Control Devices (MUTCD)
• AASHTO Green Book
• AASHTO Operational Standards for Highway Infrastructure
• AASHTO Coalition on National Strategy for Highway Automation
• Cooperative Automated Transportation Coalition
• NACTO: Blueprint for Autonomous Urbanism
• ITE: Curbside Management Practitioners Guide
• FHWA: National Dialogue on Highway Automation
• SAE Committee on Infrastructure Needs Related to Automated Driving
National guidance and initiatives, continued

• National Cooperative Highway Research Project (NCHRP)
  ▪ 03-126: Operational Standards for Highway Infrastructure
  ▪ 03-127: Cybersecurity of Traffic Management Systems
  ▪ 20-102: Impacts of CAVs on State and Local Agencies
  ▪ 20-102(06): Road Markings for Machine Vision
  ▪ 20-102(15): Impacts of CAVs to Highway Infrastructure
  ▪ 20-102(21): Infrastructure Modifications to Improve Operation Domain of AVs
  ▪ 20-102(24): Infrastructure Enablers for CAVs and Shared Mobility – Near-Term and Mid-Term
Potential Topics

- Road Markings
- Curb Space Management
- Traffic Signals
- LED Signs
- Parking
- Work Zones
- School Zones
- Road Signs
- Communications Infrastructure

- Vehicle to Infrastructure Applications
- Cybersecurity for Vehicle to Infrastructure communications
- Vehicle Data Needs
- Lane Width
- EV Charging
- Equity
Land Use
Subcommittee members

**Lead: Carrie MacLaren**, Department of Land Conservation and Development

**Richard Blackwell**, Department of Consumer and Business Services

**Chris Hagerbaumer (Oregon Environmental Council)**, Nonprofit organization

**Eric Hesse (City of Portland)**, League of Oregon Cities

**Paul Savas (Clackamas County)**, Association of Oregon Counties

**Becky Steckler (University of Oregon)**, Public university
Final product goals

1) Critical data/information and enabling structures needed for land use planning

2) Alignment and incentives for AVs to further Oregon’s land use, transportation and greenhouse gas reduction goals

3) Pricing, including policies for occupancy pricing and road pricing
### Completed work and next steps

- Research on cities that have incorporated AVs into land use planning
  - Ann Arbor, Michigan
  - Austin, Texas
  - Lincoln, Nebraska
  - Pittsburgh, Pennsylvania
  - San Jose, California
  - Seattle, Washington
  - Tallinn, Estonia
  - Tokyo, Japan

- Draft memo on public sector information needs to guide AV policy and manage AV testing/deployment

- Next: Joint meeting with Subcommittee on Cybersecurity, Privacy & Data
Cybersecurity, Privacy & Data
Subcommittee members

Lead: David McMorries (Oregon State University), Cybersecurity industry

Richard Blackwell, Department of Consumer and Business Services
Daniel Fernández (Jaguar Land Rover), Automotive industry
Cheryl Hiemstra, Department of Justice
Robert Nash (State Farm), Automotive insurance industry
Eliot Rose (Metro), Metropolitan planning organization
Jeremiah Ross (Ross Law LLC), Consumer protection advocates
Caleb Weaver (Uber), Transportation network company
The subcommittee decided that the topics from the scoping exercise could be grouped into three categories:

1) Cybersecurity
2) Consumer protection and privacy
3) Data sharing and intellectual property

The subcommittee agreed to develop white papers on each of the three scoping categories to capture their considerations and conclusions. The subcommittee and the full task force will be able to refer to the white papers when preparing materials to submit to the legislature.
March 1 Meeting
- Agreed on principles and process
- Received update on national guidance and cybersecurity industry
- Documented recommended position on cybersecurity for AVs

April 24 Meeting
- Received presentation on privacy considerations
- Discussed data perspectives
Next steps

Homework
• Industry will provide privacy perspective
  — Auto Alliance Privacy Pledge
  — Privacy principles from Uber
• Further refine data perspectives

Future efforts
• Joint meeting with Land Use Subcommittee
• Define data support needs for other subcommittees
Public Transit
Subcommittee members

Lead: Jeff Owen (TriMet), Oregon Transit Association

Chris Hagerbaumer (Oregon Environmental Council), Nonprofit organization

Graham Trainor (AFL), Workers’ union
Final product goals

1) Define “public transit” and clearly differentiate distinct components of public transit systems. Identify how AVs could affect each component.

2) Investigate and document any existing national guidance or national initiatives relating to the intersection of AVs and public transit.

3) Identify what other jurisdictions are doing on this topic.

4) Develop principles and values statements.
Diagram of Public Transit Components

<table>
<thead>
<tr>
<th>Commuter Rail / Heavy Rail</th>
<th>Light Rail</th>
<th>Streetcar</th>
<th>Articulated Bus / Bus Rapid Transit</th>
<th>Standard Bus / Local Shuttle</th>
<th>Paratransit Vehicles</th>
<th>Express Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly dedicated ROW (right of way), but shares with freight trains, some crossings are at-grade, and some are grade separated</td>
<td>Mostly dedicated ROW, mostly crosses other modes at-grade, and some grade separated crossings</td>
<td>Part dedicated ROW, but mostly in mixed traffic, uses some transit specific signals</td>
<td>Some dedicated ROW, and some mixed traffic; uses some transit specific signals</td>
<td>Generally operates in mixed traffic conditions, mostly general traffic signals, small bus priority treatments where possible</td>
<td>Door to door service for those who qualify; Customers likely still need help with boarding and securement device</td>
<td>Mixed traffic; long distances between stops; serves a few key points along a longer route; unique stops and routes</td>
</tr>
</tbody>
</table>

- Two distinct questions going forward:
  1. How will AV technology **affect** each type of transit operating in the roadway?
  2. How could transit vehicles **utilize** advances in AV technology?
Workforce Changes
Subcommittee members

Lead: Todd Nell, Office of Workforce Investments

Steve Entler (Radio Cab), Taxicab industry

Mark MacPherson (Teamsters), Transportation union

Graham Trainor (AFL), Workers’ union

Caleb Weaver (Uber), Transportation network company
Final product goals

1) A report on current employment statistics and information about transportation sectors that could be affected by automated vehicles, produced by the Oregon Employment Department

2) Recommendations for elements to be included in a future independent workforce study
Example: OED’s Maritime Sector Workforce Report

- Current employment numbers
- Projected employment change
- Types of occupations
- Wages
- Geographic distribution
- Demographic information (e.g., age)
- Link to report
Final Product Discussion
Legislative Update: HB 2770
Public Comment
Recap and Next Steps