Policy and Planning for New Technologies

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Federal Highway Administration
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East-West Gateway Council of Governments Annual Meeting
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Overview

• New Technology Challenges
• Automated Driving System Guidance
• Managing Future Risks and Opportunities
You can observe a lot, just by watching
Transportation Challenges

- Shared Rides
- App-based Mobility
- Delivery on Demand
- Local Just-in-Time Manufacture
- Experiential Retail ("Placemaking")
- Drones
- Crowd-Sourced Navigation
New Transportation Technologies

- Connected / Cooperative Vehicles
- Automated Driving Systems
- Truck Platoons
- On-demand Aviation
- Hyperloop
The future ain’t what it used to be
Potential Implications on Roadway Infrastructure and Related Policies and Programs

Physical Infrastructure

Roadway Operations

Digital Infrastructure

Programs and Practices
Physical Infrastructure

• Unclear infrastructure requirements for AVs (signs, signals, markings)
• Possible need for adaptations to design standards, greater consistency
• Implications for maintenance and investment
Roadway Operations

Potential Implications on Roadway Infrastructure and Related Policies and Programs

- Managing mixed traffic environment (AVs, CVs, non-AVs, C/AVs)
- New challenges in harmonizing traffic flow
- Potential travel demand changes
- Potential efficiency, congestion benefits
Potential Implications on Roadway Infrastructure and Related Policies and Programs

- AVs as new sources of roadway data
- Data updates on construction and road closures
- Maintenance of digital infrastructure
Potential Implications on Roadway Infrastructure and Related Policies and Programs

- Potential land use impacts and uncertainty in long range planning process
- Implications of shared vehicle fleets and new mobility on travel demand forecasting
- Revenue and budget implications
Automated Driving Systems 2.0: A Vision for Safety

• Replaces 2016 Federal Automated Vehicles Policy
  – Section I: Voluntary Guidance for Automated Driving Systems
  – Section II: Technical Assistance to States

Automated Driving Systems (ADS)

**New Terminology**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Automation</td>
</tr>
<tr>
<td>1</td>
<td>Driver Assistance</td>
</tr>
<tr>
<td>2</td>
<td>Partial Automation</td>
</tr>
<tr>
<td>3</td>
<td>Conditional Automation</td>
</tr>
<tr>
<td>4</td>
<td>High Automation</td>
</tr>
<tr>
<td>5</td>
<td>Full Automation</td>
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</tbody>
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Source: SAE J3016 Standard (http://standards.sae.org/j3016_201609/)
Section I – Voluntary Guidance

- Focus on Level 3-5 ADS.
  - No compliance requirement or enforcement mechanism
  - No waiting period or delay to begin testing or deployment
  - No new barriers or reporting requirements
- Maintains NHTSA’s enforcement, defect, and recall authority
- Encourages public disclosure of Voluntary Safety Self-Assessments.
Section I – ADS Safety Elements

- Focus when developing, testing, and deploying ADSs on public roadways:
  
  1. System Safety
  2. Operational Design Domain
  3. Object and Event Detection and Response
  4. Fallback (Minimal Risk Condition)
  5. Validation Methods
  6. Human Machine Interface
  7. Vehicle Cybersecurity
  8. Crashworthiness
  9. Post-Crash ADS Behavior
  10. Data Recording
  11. Consumer Education and Training
  12. Federal, State, and Local Laws

- Privacy, ethical considerations, registration/certification, sharing data beyond crash data are areas for further discussion and research.
Section II – Technical Assistance to States

• Replaces Model State Policy from 2016 document
• Clarifies and delineates Federal and State roles
• Please do not codify into statute any portion of the Guidance
• Suggests ways to include common safety-related components and significant ADS elements in legislation
• Best practices when developing procedures and conditions for safe operation of ADSs on public roadways.
Next Steps

- Request for Comment (RFC) on 2.0 voluntary guidance
  - Comment period just closed (November 15, 2017)

- USDOT beginning to work on a 3.0 approach, to address automation across the entire roadway system.
If you don’t know where you’re going you might not get there
Performance-Based Planning

Vision

Observe → Evaluate → Build → Plan

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Scenario Planning for New Technologies

• How do new technologies fit our vision?

• What are the opportunities and challenges?

• How to meet today’s needs yet still support tomorrow?
It ain’t over ‘til it’s over
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