Self-Driving Cars: Opportunities & Implications

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Levels of Automation

**MONITORED DRIVING**

**EYES ON**

- **LEVEL 0**: Driver only
  - Driver is continuously exercising longitudinal AND lateral control

**HANDS ON**

- **LEVEL 1**: Assisted
  - Driver is continuously exercising longitudinal OR lateral control

**NON-MONITORED DRIVING**

**EYES OFF**

- **LEVEL 5**: Full automation
  - Lateral or longitudinal control is accomplished by the system

**LEVEL 2**: Partial automation

- Driver has to monitor the system at all times

**LEVEL 3**: Conditional automation

- Driver does not have to monitor the system at all times; must always be in a position to resume control

**LEVEL 4**: High automation

- Driver is not required during defined use case

**LEVEL 2**: Partial automation

- System has longitudinal AND lateral control in a specific use case.
  - System recognizes the performance limits and requests driver to resume control within a sufficient time margin

**LEVEL 4**: High automation

- System can cope with all situations automatically in a defined use case

**LEVEL 5**: Full automation

- System can cope with all situations automatically during the entire journey. No driver required
self-driving car technology

GPS (global positioning systems) combined with readings speed sensors, altimeters, gyroscopes to provide accurate positioning.

Ultrasonic sensors to measure the position of objects very close to the vehicle.

Odometry sensors complement and improve accuracy of GPS data.

Central computer combines and analyzes all sensor input data, applies rules of the road and operates the steering, acceleration, and brakes.

Lidar (light detection and ranging) monitors the vehicle’s surroundings (road, vehicles, pedestrians, etc.).

Video cameras read road signs, detect traffic lights, lane markings, pedestrians and other road hazards.

Radar sensors monitor other vehicles nearby.
# Federal Automated Vehicle Policy

| I. vehicle performance guidance | outlines a 15 point “Safety Assessment” for the safe design, development, testing & deployment of automated vehicles |
| Ii. model state policy           | outlines the distinction between federal and state roles in regulating autonomous vehicles |
Federal Automated Vehicle Policy

III. Current Regulatory Tools

III. outlines the agency’s current regulatory tools and authorities that modified or streamlined to accelerate autonomous vehicle deployment

IV. Modern Regulatory Tools

IV. identifies potential new regulatory tools and statutory authorities that the agency may consider adopting or requesting