



U.S. Department of Transportation
Federal Motor Carrier Safety Administration

Automated Commercial Motor Vehicles

Office of Analysis, Research, and Technology
Federal Motor Carrier Safety Administration
January 11, 2017



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Office of Research and Information Technology



Industry Demonstrations of Full Automation

- Freightliner
 - Continuing trials in Nevada
- Daimler
 - Platoons in live traffic
- Otto
 - Over the road demos
- Mobile Eye / Delphi
 - AV Package for OEMs
- Google
 - Patent for Self-delivery truck
- SMARTCOLUMBUS
 - Driver Assisted Truck Platooning



Technical and Policy Challenges

- Public perception
 - Acceptance of an AV Truck (or *Multiple*)
- Human factors
 - Work load, distraction,
re-engagement to the driving task >>>
- Licensing
 - Autonomously Trained Driver?
- Safety
 - Neutral at minimum?
 - Must be no degradation in safety
 - Data?
- \$ Cost / Benefit \$



Technical and Policy Challenges - Continued

- Testing and certification complexity
- Harmonizing State and local regulations
- National Highway Traffic Safety Administration (NHTSA) mandates
- Federal Motor Carrier Safety Regulations (FMCSRs)
- Vehicle condition
- Pilot program
- HOS



FMCSA Projects

- Review of Existing FMCSA Regulations for Potential Challenges with Automated Commercial Motor Vehicles
- Low-Speed Automated Truck Queue at Ports and Warehouses: (with MARAD)
 - Research related studies; feasibility; safety, driver, and operational benefits analyses.
- Commercial Motor Vehicle (CMV) Automated Vehicle Research:
 - Develop a research roadmap to better understand the impacts that this new technology will have on FMCSRs.
- Updates to FMCSRs Due to NHTSA's Electronic Stability Control (ESC) Mandate

FHWA Projects

- **Partial Automation for Truck Platooning:**

- Prime Contractor: California Department of Transportation



- **Heavy Truck Cooperative Adaptive Cruise Control (CACC)**

- Prime Contractor: Auburn University



- **ITS JPO**

- **ICF/Wyoming Pilot Deployment**
 - **Objective:** Reduce the number and severity of adverse weather-related incidents (including secondary incidents) in the I-80 Corridor in order to improve safety and reduce incident-related delays.

NHTSA Policy

- Vehicle Performance Guidance for Automated Vehicles:
 - 15 point “Safety Assessment”
- Model State Policy:
 - Suggests recommended policy areas for states to consider
- Current Regulatory Tools:
 - Outlines DOT’s current regulatory tools
- Modern Regulatory Tools:
 - Potential new regulatory tools and statutory authorities

FMCSA Policy

- Draft policy work
- Outreach and feedback
- ITF Forum
- Automation meeting
- CVSA
- Public Sessions

How Might We Inspect Technologies in the Future?



VISUAL INSPECTION?

Mandates

- ABS
- ESC
- What's next?

Contact Information



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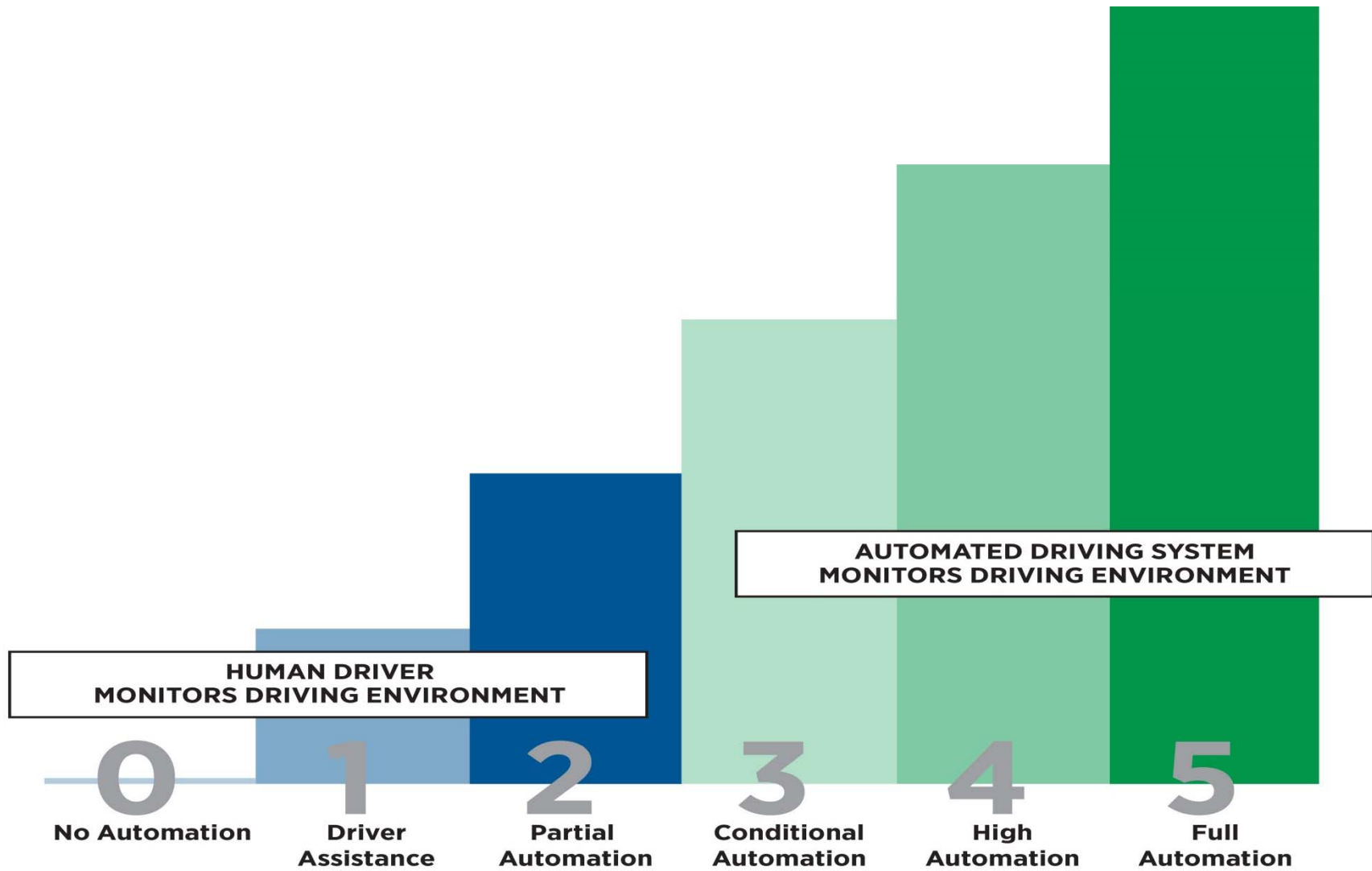
USDOT

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SAE Levels of Automation



FMCSA and International Transport Forum Roundtable

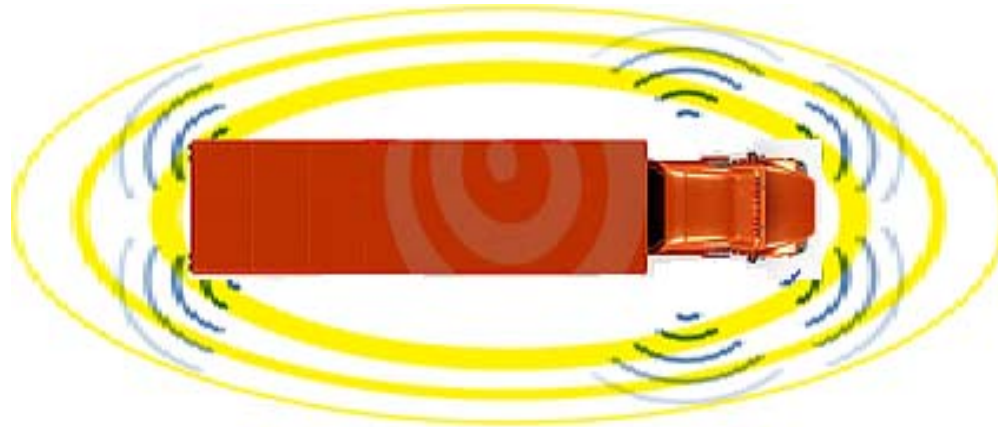
“Commercial Vehicle On-Board Safety Systems”

January 5-6, 2017, U.S. DOT Headquarters

- What CMV-specific technologies for automation exist?
- What are specific implications of the range of technology options on infrastructure requirements and human factors?
- How do these systems need to be regulated in order to allow safe operation?
- What are the policy implications of heavy vehicle automation in order to ensure safe operation?

Connected/Automated Vehicle

- Combining V2V and V2I with AV systems.



Connected Automated Vehicle

Leverages Autonomous and Connected Vehicle capabilities

Multi-Modal Work

“Development of a coordinated message on truck platooning research.”

FHWA - NHTSA - FMCSA



Commercial Vehicle Automation Today: Level 2

- Automatic emergency braking (AEB) now required on heavy trucks in Europe.
- US Fleets are specifying:
 - Forward collision warning (FCW).
 - Lane departure warning (LDW).
 - Smart Cruise.
- Cars and light trucks
 - Automated braking by 2022
 - NHTSA estimates half of rear end collisions could be mitigated by AEB



Platooning

- Level 2 - Driver-operated
- Following Drivers under lateral and longitudinal control.
- Under ideal conditions, platooning trucks can travel as close as 36 feet from each other.
- Are the “following” drivers on-duty not-driving?



NHTSA Policy

Figure I: Framework for Vehicle Performance Guidance

