

# FHWA Roadway/Automated Vehicle Integration Activities

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U.S. Department of Transportation  
**Federal Highway Administration**

# Disclaimer

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Except for the statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide information regarding existing requirements under the law or agency policies.



# Agenda

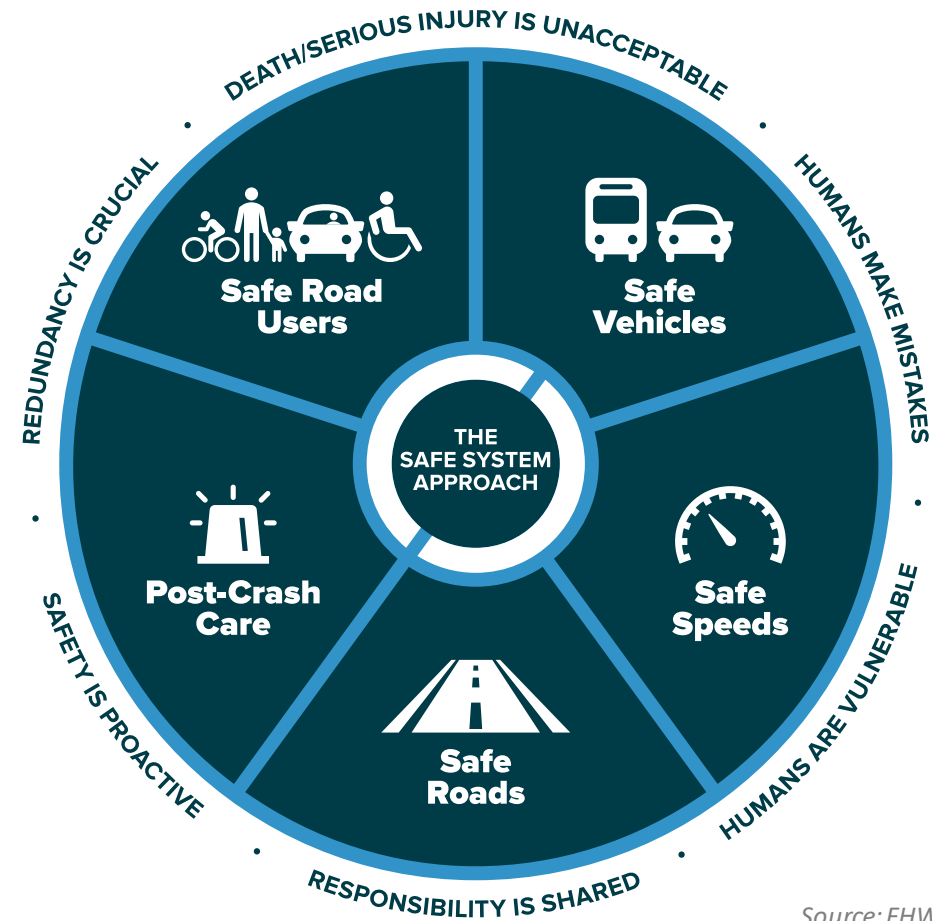
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- Overview of FHWA Activities on Automated Driving Systems (ADS)
- Study of Impacts on Roads from ADS

# New Paradigm for Safety

The Safe System Approach aims to eliminate fatal and serious injuries for all road users by:

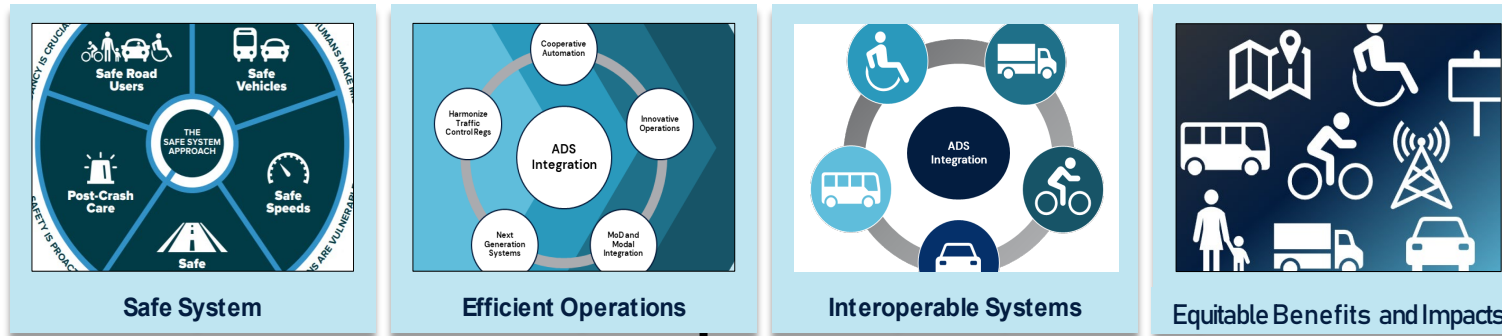
- Accommodating human mistakes.
- Keeping impacts on the human body at tolerable levels.



Source: FHWA

# Developing a Concept of Operations for Automated Driving Systems

The ConOps defines four overarching target **outcomes** for ADS integration:



The ConOps defines eight ADS vehicle **use cases** (arranged in four categories):

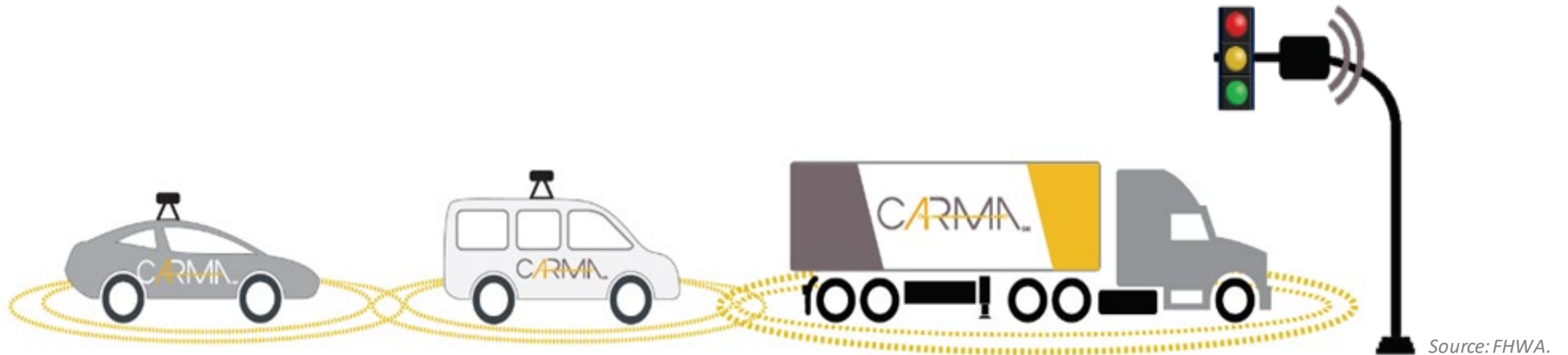


Use outcome-based needs for ADS integration.

Use case-based needs for ADS integration.

Roadway ADS integration needs (what ADS integration needs to accomplish by 2035).

# Cooperative Driving Automation (CDA)



SAE  
International  
Standard  
J3216\_202005\*

**CDA** can be defined as automation that uses machine-to-machine communication to enable cooperation among two or more entities with capable communications technology and is intended to facilitate the safer, more efficient movement of road users, including enhancing performance of the Dynamic Driving Task for a vehicle with driving automation feature(s) engaged.\*

\*SAE International. 2020. *Taxonomy and Definitions for Terms Related to Cooperative Driving Automation for On-Road Motor Vehicles*. SAE J3216\_202005. Warrendale, PA: SAE International. [https://www.sae.org/standards/content/j3216\\_202005/](https://www.sae.org/standards/content/j3216_202005/), last accessed October 19, 2020.



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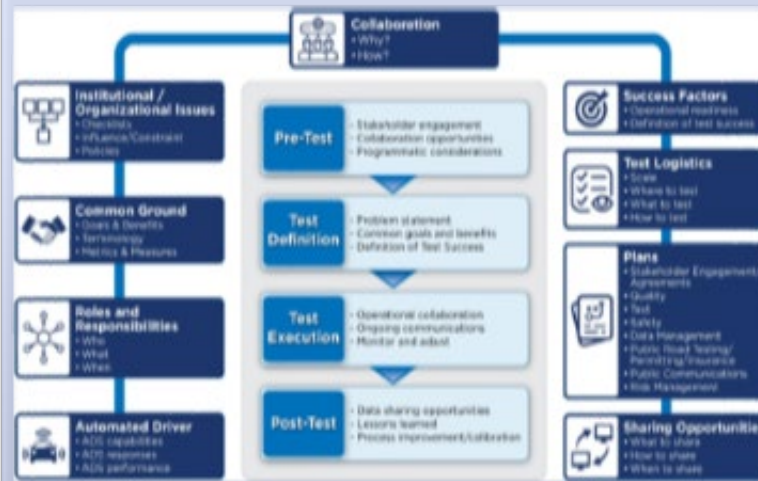
## Connected/Automated Vehicles and Emerging Technologies (CAVET) AV Activities

### Road Automation Concept of Operations



Source: FHWA

### Collaborative Research Framework for Automated Driving System (ADS) Developers and Infrastructure Owner Operators (IOOs)



Source: FHWA

### Feasibility of Changeable Road Environment Capabilities



Source: FHWA

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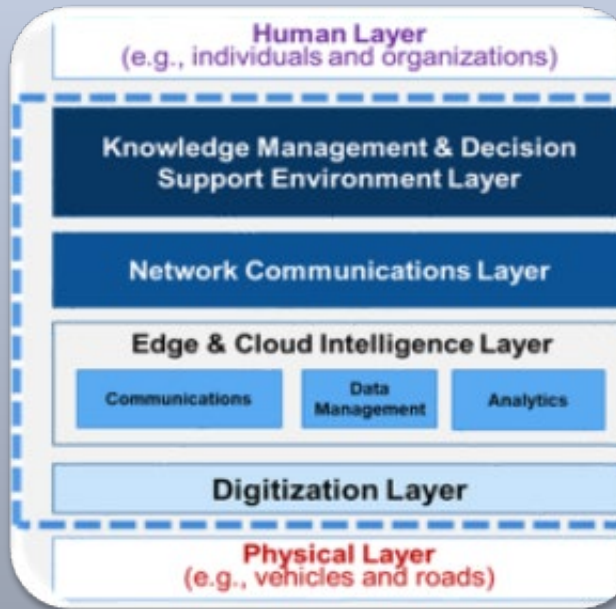
## Connected/Automated Vehicles and Emerging Technologies (CAVET) AV Activities Continued

### Automated Driving Systems and Traffic Regulations



Source: FHWA

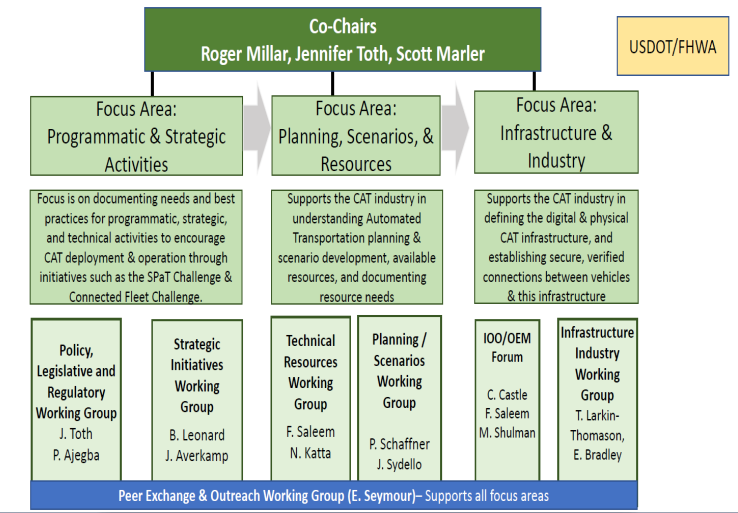
### Digital Infrastructure Framework



Source: FHWA

### Cooperative Automated Transportation Coalition

#### CAT Coalition – Organization (October 2021)



Source: FHWA



# New Study: Impacts on Roads from Automated Driving Systems

**Section 11504 of the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58, also known as the “Bipartisan Infrastructure Law” (BIL)) calls for a “study on the existing and future impacts of self-driving vehicles to transportation infrastructure, mobility, the environment, and safety.”**

# Study Scope

- Study shall consider existing and future impacts on:
  - Interstate system
  - Urban roads
  - rural roads
  - corridors with heavy traffic congestion
  - transportation systems optimization
- Focus is on ADS (SAE Levels 3-5)
- Should consider “...the need for and recommend any policy changes to be undertaken by the Federal Highway Administration...”<sup>1</sup>
- Completion within 1 year of being initiated



# Considers a Range of Impacts



Roadway infrastructure

Commercial and private traffic flows

Congestion, and vehicle miles traveled

Environment

Mobility

Safety

# Stakeholder Engagement: Expert Panel

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- Operators and users of the Interstate System
- States and State departments of transportation (DOTs)
- Metropolitan planning organizations
- Motor carrier industry
- Representatives of public transportation agencies or organizations
- Highway safety and academic groups
- Nonprofit entities with experience in transportation policy
- National Laboratories
- Environmental stakeholders
- ADS producers, manufacturers, and technology developers



# General Discussion Questions

- What are safety impacts of ADS on vulnerable road users, including pedestrians, bicyclists?
- How could ADS impact the physical roadway infrastructure?
- What infrastructure improvements may be necessary for ADS operations?
- How could ADS impact network efficiency and transportation system capacity?
- How could ADS influence travel behavior, travel demand, and personal mobility?
- How will ADS impact the environment, congestion, and vehicle miles traveled?