TSAG

TRANSPORTATION SAFETY ADVANCEMENT GROUP

Promoting Technology for Public Safety

Maryland CAV Working Group – Aug. 11, 2020

What is TSAG

- TSAG is a group of transportation and public safety professionals working with the USDOT to address safety needs through proven and emerging technologies
- TSAG represents nine communities of interest focused on various aspects of enhancing public and responder safety on transportation facilities
- TSAG supports research and education in technology to improve responder safety

TSAG Communities of Interest

- Emergency Communications
- Law Enforcement
- Emergency Medical Services
- Fire and Rescue
- Transportation Operations
- Emergency Management
- Technology and Telematics
- Academic and Research
- Governing Agencies

TSAG

TRANSPORTATION SAFETY ADVANCEMENT GROUP

Promoting Technology for Public Safety

CV/AV Needs Specific to Emergency Response

Background

- Connected vehicles (CV) and automated vehicles (AV) have implications for how public safety emergency responders will respond to and manage incidents
- CV/AV technology includes automated driving systems and V2V, V2I, and V2X connectivity
- CV and AV are separate technologies that are developing in parallel and present similar issues to responders

Vehicle Automation

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation

0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

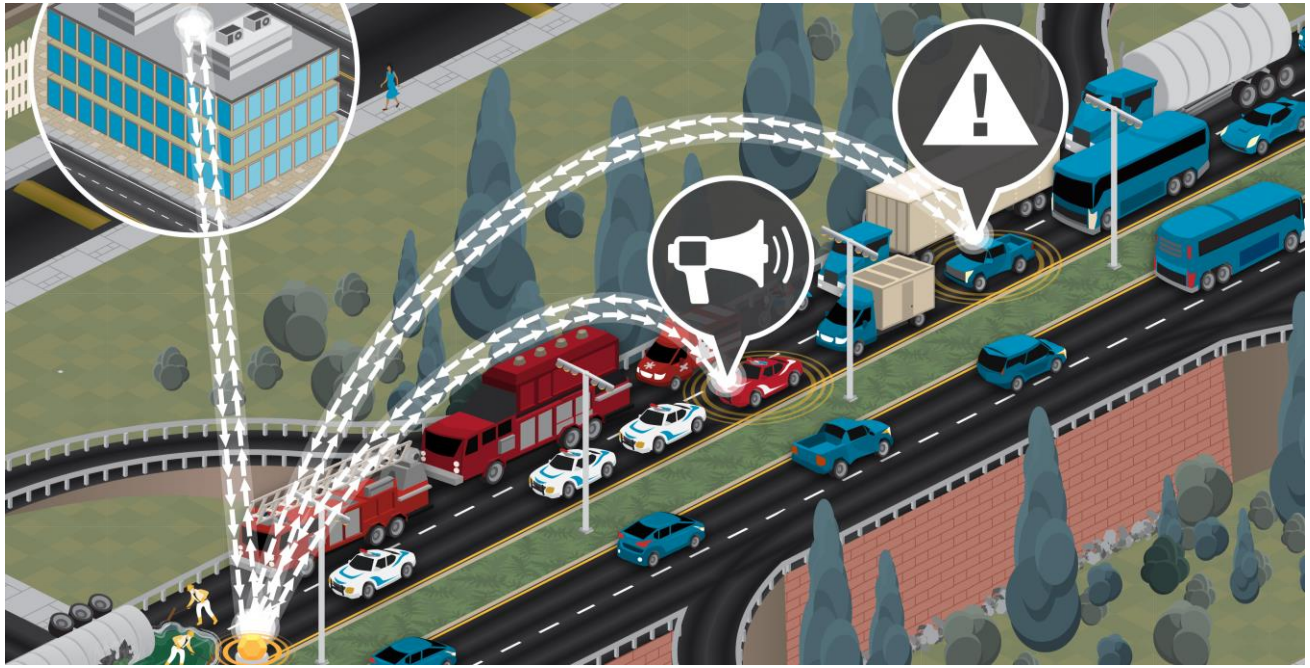
Source: FHWA Office of Operations

USDOT Research Activities

- USDOT automated driving guidance
  - Ensuring American Leadership in Automated Vehicle Technology
  - Preparing for the Future of Transportation
  - Automated Driving Systems 2.0
- USDOT Connected Vehicle Pilot Deployment Program
- FHWA Cooperative Driving Automation research
- FHWA National Dialogue on Highway Automation

Other CV/AV Research

- NCHRP 20-24(98) – Connected/Automated Vehicle Research Roadmap for AASHTO
- NCHRP 20-102(16) – Preparing TIM Responders for Connected and Automated Vehicles
- APSCS Consortium – An Examination of Emergency Response Scenarios for ADS



Source: USDOT

Gaps in the Research To Date

TSAG
TRANSPORTATION SAFETY ADVANCEMENT GROUP
Promoting Technology for Public Safety

- Current research mainly focused:
  - Driver and user safety
  - Infrastructure needs
  - V2V and V2I communication
  - Cybersecurity
- Little focus on:
  - Interaction of emergency responders and CV/AV
  - How CV/AV will interact with public safety

CV/AV Opportunities for Emergency Response

- Enhanced and automated crash notification
- Enhanced crash data
- Reduced response times
- Improved patient outcomes
- Reduction in number of crashes
- Reduction in severity of crashes
- Geofence to reduce incident scene intrusion
- Automated, cooperative lane change
- Safer response

Source: USDOT

CV/AV Concerns for Emergency Response

- Electrical hazards and ability to disable power
- AV's ability to detect and respond safely to emergency scene traffic control
- AV's ability to detect and respond appropriately to response vehicles with lights and sirens
- Compliance with move-over laws
- AV actions when there is an operational issue

CV/AV Concerns for Emergency Response (cont.)

- Emergency access for patient care and extrication
- Stabilizing vehicles and disabling self-drive mode
- Ability to communicate with vehicle system operator
- Preservation of on-board event data
- Vehicle towing requirements
- Additional training for public safety responders

What Do Agencies Need for CV/AV Incident Response?

- Changes to agency protocols
- Training
- New equipment
- Confidence in the technology

Source: USDOT

TSAG

TRANSPORTATION SAFETY ADVANCEMENT GROUP

Promoting Technology for Public Safety

Visit us at:

www.tsag-its.org