

---

# Overview of United States Department of Transportation Automated Driving Research

SIP-adus Workshop – Opening Session/Regional Activities  
November 9, 2021

Robert Heilman, Director  
Highly Automated Systems Safety Center of Excellence  
United States Department of Transportation



# Organization of this Presentation

---

- Overview of the Highway Automated Safety Systems Center of Excellence (HASS-COE)
- Highlights of Automated Driving System Research at the United States Department of Transportation



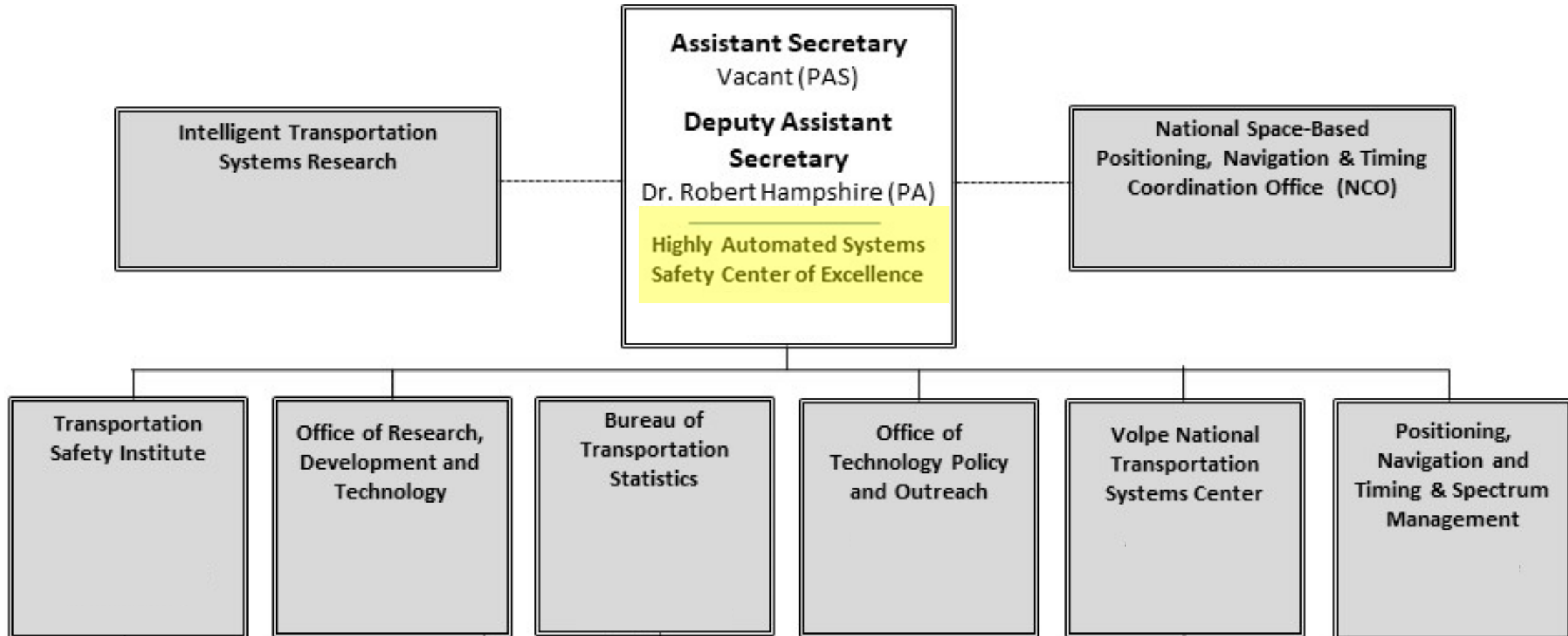
# Congress Directed the United States Department of Transportation to Establish a Highly Automated Systems Safety Center of Excellence

## Excerpts from Fiscal Year 20 Authorization Language

- The Secretary shall establish a Highly Automated Systems Safety (HASS) Center of Excellence (COE) in order to:
  1. Have a Department of Transportation **workforce capable of reviewing, assessing, and validating the safety of automated technologies across all transportation domains;**
  2. Serve as a **central location within Department of Transportation for expertise in automation and technologies involving automated systems;**
  3. **Collaborate with and provide support on highly automated systems to all Department of Transportation Operating Administrations.**

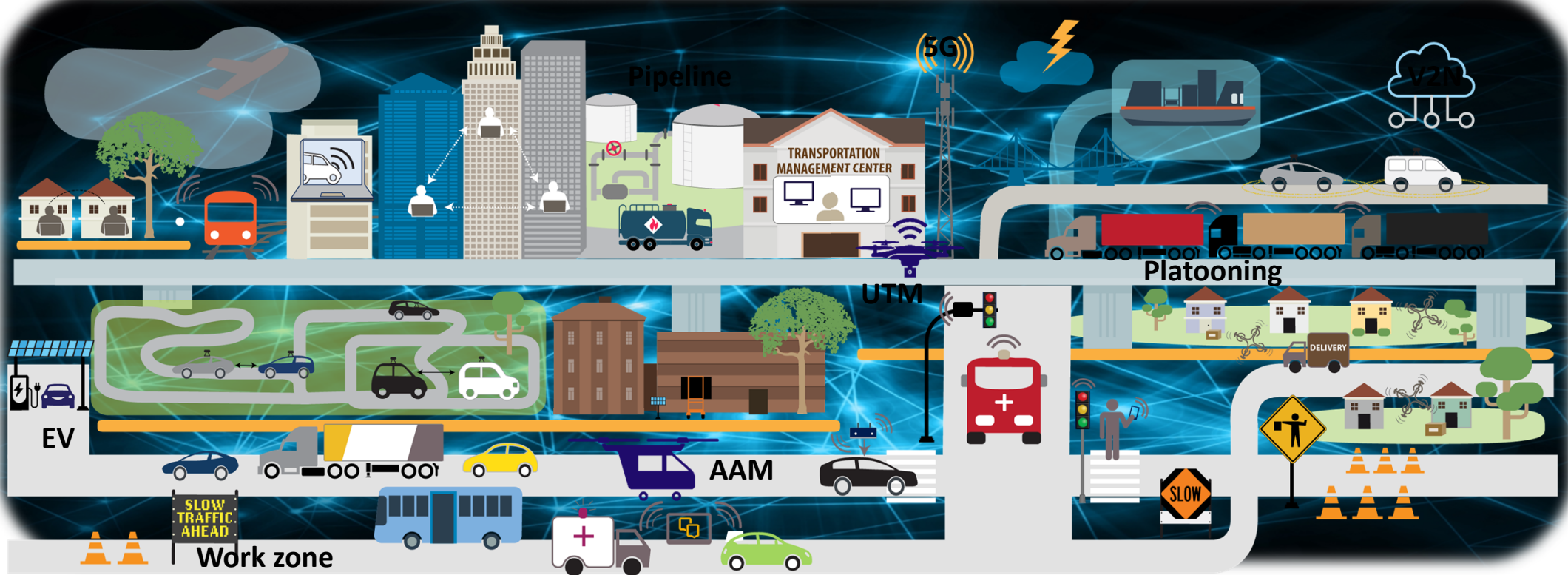


# Office of the Assistant Secretary for Research & Technology



# Can this be the Transportation System of the Future?

**An integrated, ubiquitously connected, secure, intelligent system-of-systems**



**The bright lines that once separated transportation domains are dissolving**



# Automated Driving Research at the United States Department of Transportation

---

- Office of the Secretary of Transportation
- Federal Highway Administration
- Federal Motor Carrier Safety Administration
- Federal Transit Administration
- Intelligent Transportation Systems Joint Program Office
- National Highway Traffic Safety Administration



# Office of the Assistant Secretary for Research & Technology: *Automated Driving System (ADS) Demonstration Grants Data Analysis*

## Background

\$60M to fund automated vehicle demonstration projects

## ADS Goals

- Safety
- Data for Safety Analysis and Rulemaking
- Collaboration



<https://www.transportation.gov/av/grants>

Office of the Secretary of Transportation:  
*Virtual Open Innovation Collaborative Environment for Safety (VOICES) Proof of Concept*

**Safe**

Enhanced ConOps  
Testing

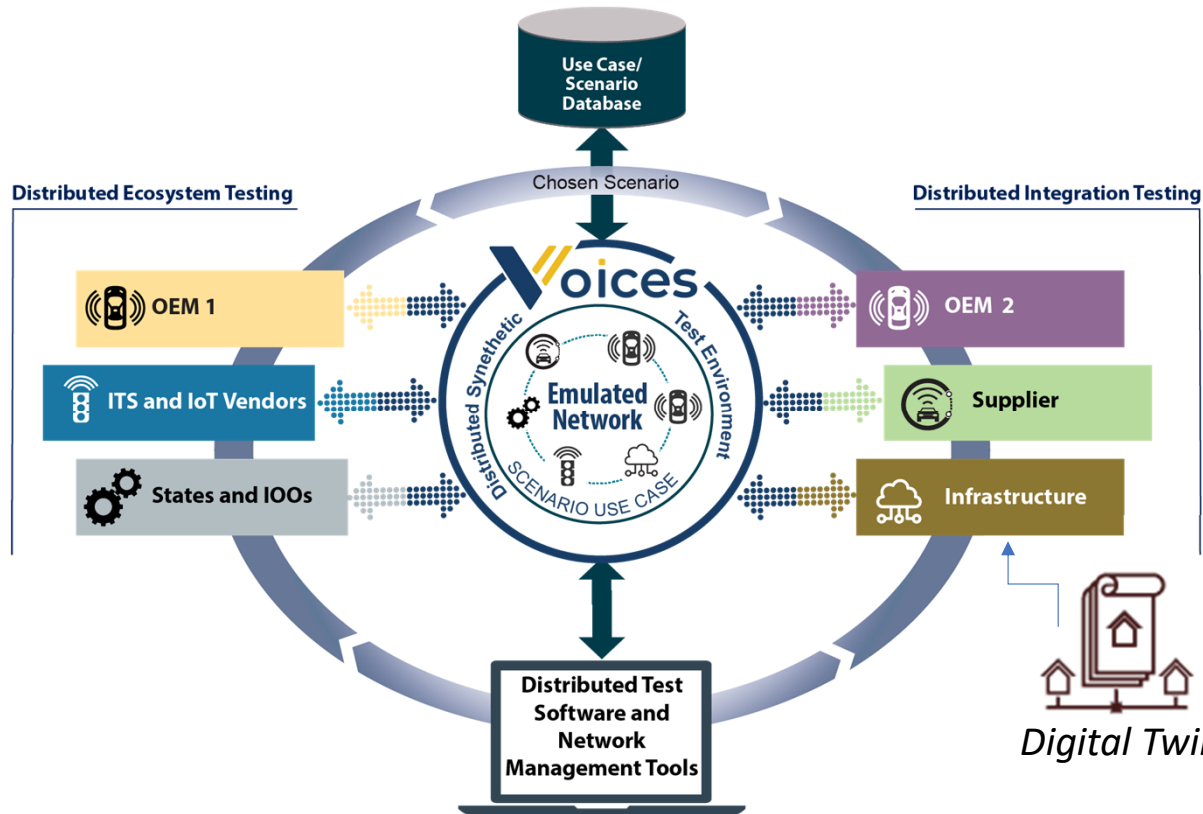
*Concurrent integration  
testing across a  
system-of-Systems*

**Secure**

Enhanced  
Development Testing

*Concurrent systems  
integration testing  
across a system*

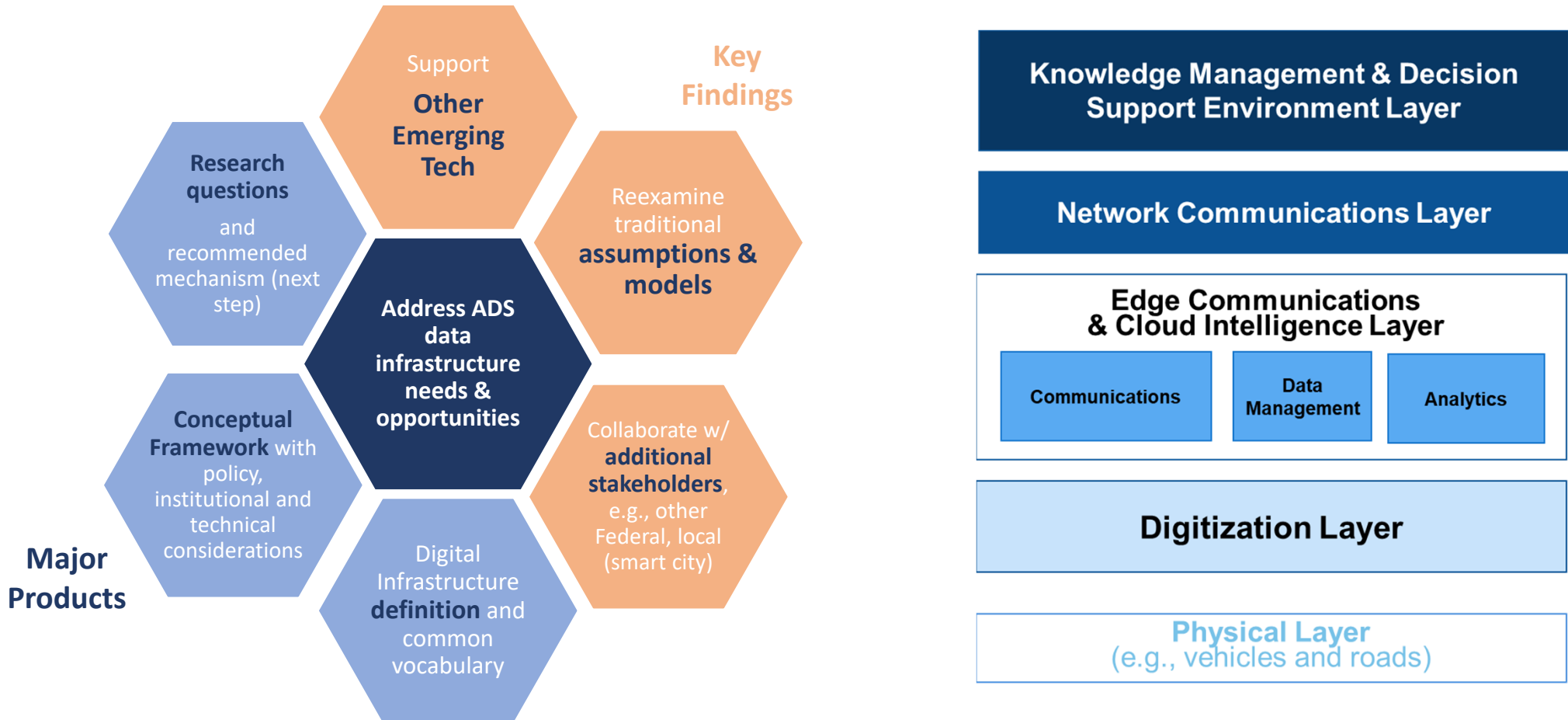
**Efficient**



**Realistic**



# Federal Highway Administration: *Digital Infrastructure Framework*



# Federal Highway Administration: *National Roadway Integration of Automated Driving Systems (ADS) Concept of Operations*

- Describes the interaction of the physical and emerging digital layers of the transportation system to enable safe and efficient operations of Automated Driving System-equipped vehicles with other road users in the system.
- Designed to orient current research, development, and coordination efforts towards generating future system-wide benefits for Automated Driving System deployment



# Federal Motor Carrier Safety Administration: *Automated CMV Evaluation (ACE) Program*

- Multi-faceted research, development and test program
- Utilization of Federal Highway Administration-developed open-source software
- Testing of actual vehicles at various locations
- Government, academic, and industry partnerships



Roadside Inspection / Enforcement



Port Drayage



Emergency Response



Work Zones

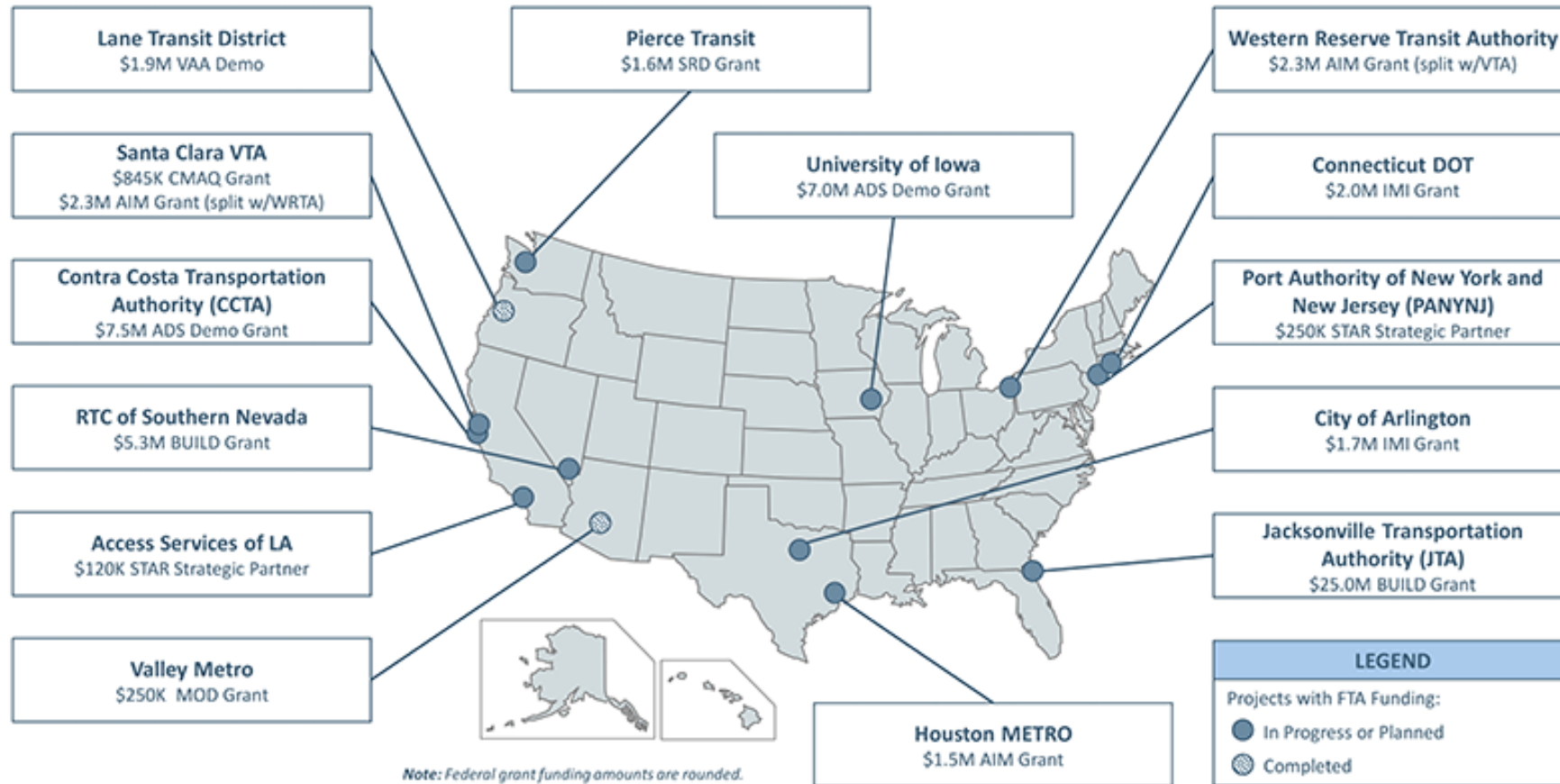


# Federal Motor Carrier Safety Administration: *Future Automated Driving System-equipped Commercial Motor Vehicle Activities*

- Human Factors
  - Understanding performance of human-automated driving system shared driving scenarios to inform future exemption requests under 49 Code of Federal Regulations 381
- Vehicle Research
  - Working with the National Highway Traffic Safety Administration on brake and sensor performance and maintenance for automated driving system-equipped commercial motor vehicles.
- Stakeholder Engagement
  - Supporting development of consensus-based standards for law enforcement—automated commercial motor vehicle interactions and roadway operations
  - Attending automated driving system workshops with all stakeholders: states, motor carriers, AV developers/truck manufacturers, state and industry associations, standards organizations
- Leveraging ADS Demonstration Grants (Virginia Tech Transportation Institute and DriveOhio)
  - Incorporating data and research results into research planning
  - Conducting collaborative research with Automated Driving System Grant Recipients



# Federal Transit Administration: *FTA-Funded Pilots and Demonstrations*



<https://www.transit.dot.gov/research-innovation/fta-funded-and-managed-transit-bus-automation-demonstrations-pilots>

# Federal Transit Administration: *Automated Bus Project Updates*

- **Integrated Mobility Innovation (IMI)**
  - Connecticut Department of Transportation CTfastrak Bus Rapid Transit L4 bus unveiled
  - Arlington, Texas project launch with Via and May Mobility
- **Accelerating Innovative Mobility (AIM)**
  - Western Reserve Transit Authority and Santa Clara VTA issue Request for Proposal
  - Kickoff for Houston METRO (L4 bus)
- **Automated Driving System Demonstration Grants**
  - Kickoff for Contra Costa Transportation Authority projects
  - Automated Driving Systems for Rural America: operations to begin this fall

<https://www.transit.dot.gov/research-innovation/fta-funded-and-managed-transit-bus-automation-demonstrations-pilots>



# Intelligent Transportation Systems Joint Program Office: *Emerging Automated Urban Freight Delivery Concepts*

- **Scope:** Automated vehicles and devices for urban freight delivery (middle-mile, last-mile, or last-100-feet)
- **Sponsor:** United States Department of Transportation Intelligent Transportation Systems Joint Program Office (ITS JPO)
- **Purpose:** Improve understanding of concepts and activities, identify emerging issues, and present objective findings
- **Audience:** United States Department of Transportation staff and state/local officials
- **Methodology:** Literature reviews, test and concept monitoring, and stakeholder engagement
- **Publications:** State of the Practice Scan report available at: <https://rosap.ntl.bts.gov/view/dot/53938>



Photo Credits: United States Department of Transportation Volpe Center