[OST Billing Code No. 4910-9X]

DEPARTMENT OF TRANSPORTATION

[Docket No. DOT–OST–2025–1029]

Office of the Assistant Secretary for Research and Technology; Request for Information - Research Ideas to Support Nationwide Automated Vehicle (AV) Deployment

AGENCY: Department of Transportation (DOT).

ACTION: Request for information (RFI).

SUMMARY: The U.S. Department of Transportation's (U.S. DOT) Office of the Assistant Secretary for Research and Technology (OST-R) is seeking information from the public, industry, infrastructure owner/operators, and other stakeholders to inform coordinated national research supporting Automated Driving Systems (ADS) transportation technology deployment and realizing safe efficient operations on our Nation's roadways. ADS-equipped vehicles have significant potential to transform safety and mobility but in order for national deployment to scale effectively, research questions relating to the challenges and opportunities of ADS, including understanding disengagements, identifying factors that contribute or detract from reliable and consistent operations and interactions, and facilitating interoperable data standardization and real-time analytics, among others, are important to investigate further to support deployment and broad public acceptance.

DATES: Written submissions must be received by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Submission Instructions: Responses should be submitted electronically as a Microsoft Word document, preferably not to exceed 15 single-sided pages in length, and no greater than 15 MB in file size. Recommended format for responses includes Times New Roman 12-point font and 1 inch page margins. Responses should be emailed to AVResearchRFI@dot.gov (with the Subject Line of "AV Research RFI Response <Institution Name>". No Confidential Business Information or Sensitive Security Information should be submitted in response to this RFI.

FOR FURTHER INFORMATION CONTACT: For questions about this RFI, please email AVResearchRFI@dot.gov. You may also contact Shaz Umer, Director of Strategic Initiatives, Office of the Assistant Secretary for Research and Technology (202-738-7964) or by email at shaz.umer@dot.gov.

SUPPLEMENTARY INFORMATION:

This RFI seeks information that will assist OST-R in carrying out its transportation research and development responsibilities under 49 U.S.C. Chapter 65, "Research Planning". This RFI is neither a request for proposals nor a notice of funding opportunity. Respondents are requested to supply the following information at a minimum in their written responses:

A. Name of the responding entity ("respondent").
B. Respondent's Contact information, including that individual's title, name, address, telephone number and email address.
C. The respondent's input to U.S. DOT AV research planning needs relating to any or all of the questions below.

Specific Information Required

This RFI seeks feedback from industry, technology developers, operators of ADS vehicle fleets, State/local transportation agencies, researchers, and other stakeholders to inform United States Department of Transportation (U.S. DOT) on AV research activities necessary to support nationwide Automated Vehicle (AV) deployment. This RFI centers on the intersection of advanced software, real-time data analytics, and the complex management of roadway operational domains – emphasizing the role transportation system data plays in supporting AV operations at scale. OST-R intends to enhance the current understanding of the technical, data, and resource needs to improve the ability of software-driven AV systems to operate and interact with other road users and infrastructure safely and efficiently at scale on roadways across varied U.S. geographies and operational design domains (ODD). This understanding will help OST-R develop a research agenda to facilitate nationwide AV deployment. This RFI does not cover vehicle safety topics already included within existing vehicle safety regulatory responsibilities under the National Highway Traffic Safety Administration (NHTSA) including its recently released AV Framework, and the Federal Motor Carrier Safety Administration (FMCSA).

1. **Data Standards and Integration**: What comprehensive data frameworks could be studied, piloted/demonstrated or otherwise tested that could inform standardization of data on AV interactions and impacts on transportation system operations (e.g., obstructions to traffic, behaviors that are not expected of human-driven vehicles, etc.) and how it is categorized, reported to agencies and the public, and validated for normal and anomalous events based on the factors below?

a) What new or enhanced statistical methodologies, including but not limited to metrics, confidence intervals, significance thresholds, and negative control events, can be applied to create benchmarks for AV impacts on transportation system performance, and considerations relating to appropriate human driver baseline(s)?

b) What specific data, and methods to publish that data via open-data portals or protocols (dynamic/real-time and non-real-time), designed to meet the needs of operations, maintenance, research, policy, and the general public across all operating scenarios and environments and interactions with other road users, is needed?

c) What additional research is needed to improve understanding of operational needs related to automated fleet operations (including both commercial motor vehicles and non-CMV fleets such as ride hailing), e.g. transcontinental automated truck trips, including fueling, inspection, emergency maintenance and other services. What interoperable digital data would be valuable in supporting these services for automated fleets?

d) What are the near-term infrastructure-related data needs for deployment of AVs, including roadway operations, maintenance, and planning? Which data needs require standardized information exchange, and how should this occur?

2. **Edge Case Characteristics Identification**:

a) What research is needed to understand the data capture and support for longitudinal tracking of AV impacts on transportation system operations across varied roadway environments (including potential longitudinal data for a specific street/road segment vs. segments with similar characteristics)?

3. **Supervision Dynamics and Human Interaction:**

a) What research is required to establish standardized processes and supporting data with appropriate sampling strategies (e.g., across urban, suburban, and rural ODD) to support long-term transportation planning? What methods can incentivize AV operator transparency while protecting proprietary information?

b) What research is needed to leverage the Evidence Act's requirements for data integrity, chain of custody, and long-term preservation that may be applicable to datasets that combine AV interactions with transportation system data, to ensure that such data remains reliable, legally admissible, and useful for safety evaluations and policy development? Are existing data-management architectures and technical safeguards sufficient (across in-vehicle systems, edge servers, and central repositories) to guarantee cryptographic integrity, tamper-proof evidence, and write-once/read-many storage techniques, or is additional research necessary?

c) What research is needed to optimize human-machine interfaces for diverse user groups, including emergency responders, pedestrians, cyclists, other

human drivers and passengers, to enhance safety, accessibility, and trust in mixed traffic environments?

4. **Evidence Based Evaluation:**

    a) What research is needed to support safe, transparent, and equitable nationwide evidence-based evaluation of AV operational impacts on the transportation system?

5. **Transparency and Building Public Understanding of Variations in AV Impacts on the Transportation System:**

    a) What data standards, formats, and APIs, need to be researched to integrate needed supporting information on AV impacts on the transportation system (e.g., raw AV operational and post-disengagement data), including temporary road conditions (construction, detours, etc.), into publicly accessible research hubs (including supporting enhancements to DOT-supported hubs such as the ITS Datahub) and to ensure consistent edge-case mapping nationwide?

    b) What statistical methods are suitable to adequately capture emerging anomalous behavior or rare-event factors associated with AV impacts or interactions on the transportation system?

    c) What areas and resolution of nationwide mapping is required or would be used for roadways, intersections, bridges, tunnels, interchanges, right of ways, and/or parking areas, be they public, private, paved, unpaved or otherwise? What data standards, formats and APIs are required for the

nationwide mapping? If the road surface is mapped in 3 dimensions, what are the height resolution requirements above a surface reference datum or similar base point? What datum reference would be required? Would your company use the map data if it was at no cost? If there was a charge for the map data, what is the reasonable estimated charge for the map data, and would your company be willing to pay this reasonable estimated charge? How would you propose downloading and subsequently updating the map data in company servers or in road vehicles?

6. **Evaluation of Consistent and Robust Vehicle Behavior Interactions with Other Road Users and the Transportation System:**

    a) What research is needed to develop new or improved standardized methods to evaluate vehicle behavior consistency (e.g., car following, lane changing, pedestrian/cyclist detection) across diverse environments (e.g., rain, fog, snow, work zones, potholes), interactions (e.g., unpredictable human drivers, emergency vehicles), and situations (e.g., sensor failure, loss of cellular network, mechanical failures) when ADS-equipped vehicles are involved?

Confidential Business Information

Do not submit information disclosure of which is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information "CBI") in response to this RFI. Responses submitted to OST-R cannot be claimed as CBI. Responses received by OST-R will waive any CBI claims for the information submitted.

(Authority: 49 U.S.C. 102(e)(1).)

Issued in Washington, D.C., on August 13, 2025.

Michael A. Halem,

Acting Assistant Secretary for Research and Technology.

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