



AUTOMATION AT THE INTELLIGENT TRANSPORTATION SYSTEMS JOINT PROGRAM OFFICE

The U.S. Department of Transportation's Intelligent Transportation Systems Joint Program Office (ITS JPO) conducts technical and policy research to accelerate the safe, efficient, and equitable integration of automation into the transportation system. The ITS JPO partners with the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Transit Administration (FTA), Maritime Administration (MARAD), and National Highway Traffic Safety Administration (NHTSA) to conduct research; assess impacts; communicate results; convene and coordinate internal and external stakeholders; and provide guidance, education, and assistance.

The ITS JPO's automation research supports the federal role in automation safety assurance, infrastructure interoperability, and policy analyses.

Safety Assurance

The ITS JPO, NHTSA, and FHWA are studying **user behavior** in the context of automated vehicle operations, to improve our understanding of safe operations and gather input from the public related to driver behavior.

The ITS JPO and FHWA are examining how **adverse road weather conditions** affect the abilities of automated vehicles to operate safely. Outcomes include actionable data and decision support results for infrastructure owners and operators (IOOs) and information providers.

Infrastructure Interoperability

The ITS JPO and FHWA, in partnership with NHTSA, FMCSA, and FTA, are working with stakeholders to understand what IOOs must do to plan for and initiate design, build, and maintenance activities to support **infrastructure readiness** for automated vehicle testing and deployment.

Cooperative automation can improve the efficiency of the transportation system. Cooperation is achieved through continuous exchange of information and coordination of tactical and strategic driving maneuvers.

- The ITS JPO, FHWA, and FMCSA are evaluating the on-road safety and operational impacts of truck platooning. Outcomes will support assessments of bridge and pavement performance as well as regulatory and technical issues that may inhibit nationwide truck platooning.
- In addition, the ITS JPO and FHWA are partnering with the automotive industry to investigate how light-duty vehicle cooperative automated driving systems can improve the operations of freeways and surface streets, with a focus on traffic signal systems and freeway speed harmonization. Outcomes will include cooperative automation applications and data exchanges to enable speed harmonization on freeways, as well as safe automated operation in work zones and around incidents.

Cooperative Automation Efforts



FHWA developed the Cooperative Automation Research Mobility Applications (CARMA) software platform to enable vehicles to interact and cooperate with infrastructure and other vehicles. CARMA3 is now under development in collaboration with the stakeholder community.

<https://highways.dot.gov/research/research-programs/operations/CARMA>



In 2017, FHWA conducted a two-day demonstration of three-truck platoons on I-66 in Centreville, VA, to test four years of research on the use of vehicle-to-vehicle (V2V) technology to improve the efficiency of freight shipping nationwide. Increased efficiency through truck platooning has the potential to alleviate traffic congestion and reduce shipping costs.



U.S. Department of Transportation

Policy Analyses

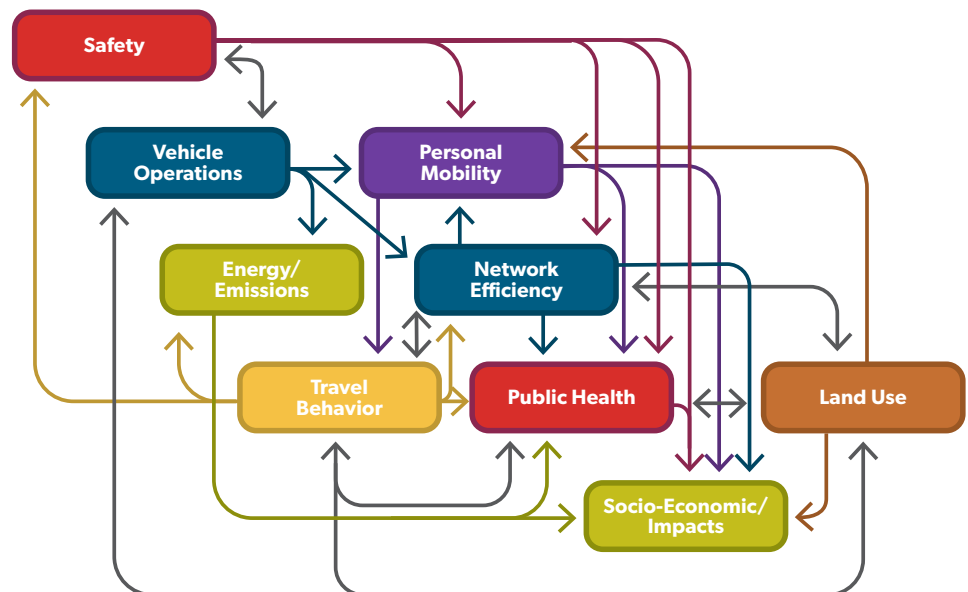
Impact assessment supports a clear understanding of how automated vehicle adoption may affect the public interest, and is important to federal, state and local policy-making. The ITS JPO and FHWA are assessing the impacts of automation on travel behavior as well as economic impacts at the regional and national

level. This research will help the USDOT and its state and local partners conduct performance-based planning and programming in the face of uncertainty. Outcomes will include performance measures as well as the development of models to support exploratory scenario planning.

Research Reports

Review the following reports for more details on the USDOT's automation research:

- *Review of Federal Motor Vehicle Safety Standards (FMVSS) for Automated Vehicles* identifies potential barriers and challenges for the certification of automated vehicles using existing FMVSS. This paper found that only a few standards pose a challenge as long as the vehicle does not significantly diverge from a conventional vehicle design. See <https://rosap.ntl.bts.gov/view/dot/12260>.
- *The Benefits Estimation Model for Automated Vehicle Operations: Phase 2 Final Report* uses a modeling framework to summarize the potential impacts from automated vehicles, in safety, mobility, energy/emissions, travel behavior (user response), as well as the economy and jobs. The paper explains impact mechanisms, noting that uncertainties in technology, users, and policy will influence the size and directionality of impacts. See <https://rosap.ntl.bts.gov/view/dot/34458/>.
- *The Low-Speed Automated Shuttles: State of the Practice Final Report* describes current conditions in testing and deployment of low-speed automated shuttles and identifies challenges (such as the role of the onboard attendant) that must be resolved to enable a broader and more useful deployment. See <https://rosap.ntl.bts.gov/view/dot/37060/>.



Automated Vehicle Benefits Framework
Source: USDOT

For more information about this initiative, please contact:

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