

## ITS STRATEGIC PLAN 2015–2019

# AUTOMATION

### ABOUT AUTOMATION

Automated vehicles are those in which at least some aspect of a safety-critical control function (e.g., steering, throttle, or braking) occurs without direct driver input. Automation has the potential to significantly impact our driving safety, personal mobility, energy consumption, operating efficiency, environmental sustainability, and land use. While research into automated vehicles and other aspects of automation are in the early stages, it is rapidly gaining attention around the world in all sectors of the economy.



Developing and adopting varying levels of automation technologies offer tremendous possibilities for enhancing safety, mobility, and the environment, but also pose new technical and policy challenges. The U.S. Department of Transportation (USDOT) is already working closely with stakeholders to address these challenges and develop technology and systems to ensure the safety of automated vehicles; however, greater focus will be required as automated features are introduced into the nation's vehicles and transportation systems.

### THE BENEFITS OF AUTOMATION

Automated vehicles offer several potential benefits to our nation's surface transportation system, including:

- Reducing the number of crashes caused by drivers or other conditions (e.g., weather and roadway conditions)
- Reducing aggressive driving
- Reducing travel time and improving travel time reliability
- Expanding the reach of transportation modes to disabled and older users, as well as providing "first mile, last mile" connectivity service for all users
- Increasing the efficiency and effectiveness of existing transportation systems.

### ITS Strategic Plan Program Areas:

- Connected Vehicles
- Automated Vehicles
- Emerging Capabilities
- Enterprise Data
- Interoperability
- Accelerating Deployment



View the ITS Strategic Plan at:  
[www.its.dot.gov/strategicplan](http://www.its.dot.gov/strategicplan)



U.S. Department of Transportation

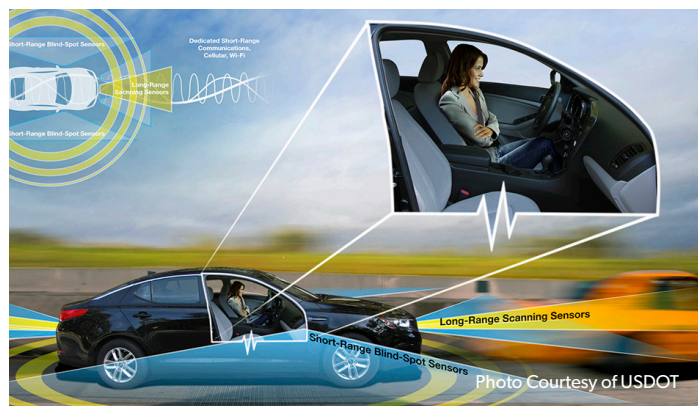


## RESEARCH ACTIVITIES

The USDOT's Automation program focuses on research about automated road-vehicle systems and related technologies that transfer some amount of vehicle control from the driver to the vehicle. The focus of the USDOT's Intelligent Transportation Systems (ITS) Program in this area will be on the advancement of technology and systems to enable the smooth and safe introduction of automated features into the nation's vehicles and transportation systems.

The USDOT's Automation research areas include enabling technologies, safety assurance, transportation system performance, testing and evaluation, and policy and planning. The program will have three capability-based tracks with some differences in research emphasis in each but similar cross-cutting areas:

- 1. Human-in-the-loop (HITL) Connected Driving Assistance:** Develop, test, and demonstrate the safety, mobility, and sustainability benefits of automation based on HITL technologies such as cooperative adaptive cruise control. Platooning, merge/weave assist, speed harmonization, and eco-approach and departure are among the applications that could be deployed in the next 5 years.



- 2. Conditional Automation Safety Assurance:** Original equipment manufacturers are selling vehicles that automate all control functions under certain conditions for limited amounts of time while requiring driver monitoring. The industry is also testing prototypes that provide control and monitoring automation in certain environments with the expectation that a driver will re-engage when needed. Human factors, control system reliability, testing procedures, and cybersecurity are critical areas of research needed to underpin agency guidance and rulemaking.
- 3. Limited Driverless Vehicle Operations:** There are large potential benefits in accessibility and sustainability from automated shuttles. Civilian and military organizations in the United States and abroad are developing and demonstrating prototypes in limited operating environments, such as low-speed (pedestrian/bicycle walkways) and private roadways. This program track will develop concepts and test and evaluate existing prototypes.

### LOOKING AHEAD: What's Next for Automation?

In addition to investigating various standalone aspects of automation, the USDOT is also researching how connectivity could enhance the potential benefits of vehicle automation systems—in effect, bridging the gap between connected vehicle research and automation research.

#### ABOUT THE ITS STRATEGIC PLAN

The USDOT has long been a leader and strong supporter of research, development, adoption, and deployment of ITS around the nation.

[Learn more about the ITS Strategic Plan 2015-2019.](#)

For questions about the USDOT's Automation program, contact:  
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