



Photo Source: USDOT

ACCESSIBLE TRANSPORTATION TECHNOLOGIES RESEARCH INITIATIVE (ATTRI)



For people with disabilities, including injured veterans and older adults, inadequate mobility and transportation can hinder them from completing important tasks, such as obtaining employment, commuting to appointments, shopping for groceries, or even attending social events that many take for granted. The Accessible Transportation Technologies Research Initiative (ATTRI) leads efforts to research, develop, and implement transformative solutions, applications, and systems to help all people, focusing on those with disabilities, effectively plan and execute their travel, addressing individual mobility needs. The initiative will enhance the capability of travelers to reliably, safely, and independently accomplish their unique travel plans.

ATTRI leverages recent advances in vehicle, infrastructure, and pedestrian-based technologies, as well as accessible data, mobile computing, robotics, artificial intelligence, object detection, and navigation. These technologies are enabled by ever present wireless communications that connect travelers and their mobile devices, vehicles, and roadside infrastructure.



Photo Source: USDOT

ATTRI is being implemented in three phases: 1) exploratory and user needs research; 2) innovation, prototype development, and testing; and 3) a demonstration phase. ATTRI has completed Phase 1 and is currently focused on Phase 2 activities.

User Needs Assessment

A key differentiator of ATTRI is its emphasis on stakeholder engagement and understanding user needs. Early engagement activities include several public workshops and webinars, a user needs assessment, a public request for information, technology and innovation scans and an interagency roundtable on accessible transportation. Feedback from these activities revealed several barriers, user needs, issues with technology, and the need for foundational considerations as described below. The most critical user needs reported were related to real time and reliable traveler information. This could indicate a significant yet simple opportunity to provide better and more accessible information about transportation options. The top user needs responses are identified below.

Advancing Mobility Solutions for Travelers with Disabilities

Targeted Populations



Person with Disabilities



Older Adults



Veterans with Disabilities

Types of Disabilities



Vision



Mobility



Hearing



Cognition



U.S. Department of Transportation

Foundational Considerations

Applying foundational considerations to all technologies developed under ATTRI will ensure they adhere to all necessary elements of accessible transportation applications identified in stakeholder engagement activities. They are:

- **Standard Accessible Data Platform:** providing almost ubiquitous access to a wealth of real-time, situational data sources, including data specific to transportation systems, municipalities, points of interest, crowd-sourced information, and accessibility data
- **Universal Design Standards:** developing new applications that can be used by all travelers or leveraging existing solutions and enhancing them to meet the needs of all users
- **Integrated Mobile Payment:** incorporating or including, to the degree appropriate, integrated payment systems where travelers of any ability can use the same application to pay for various types of transportation needs, mobility options, parking, and possibly other transactions
- **Leverage Existing Technologies:** leveraging existing promising technologies, including but not limited to Intelligent Transportation Systems (ITS), on-demand technologies, data standards, innovative smartphone and mobile technology, and transportation and other assistive and enabling technologies, operations, and/or techniques whether currently being pursued in research, or readily available in the market



Technology Solutions

The acceptance and deployment of advanced transportation technologies is a complex process. Technology initiatives can address several concerns outlined by stakeholder user needs. For example, a network of ITS technologies can be used to reduce or eliminate the safety risks associated with street crossings by communicating to vehicles the presence and needs of a crossing pedestrian. Automated vehicles and personal mobility can serve to elegantly vet through the entire landscape of barriers by providing technologies whose demands of the traveler are independent of the traveler's abilities. The traveler may only need to know where they want to go and need to provide no other input, physical, cognitive or otherwise. Robotics and artificial intelligence can be invaluable resources for wayfinding as assistants to the traveler. Accessible data sets are key to all ATTRI applications, not just wayfinding.

ATTRI focuses on the following four applications to help travelers: 1) Smart Wayfinding & Navigation Systems, 2) Pre-Trip Concierge & Virtualization, 3) Shared Use, Automation, & Robotics, and 4) Safe Intersection Crossings. All ATTRI applications will follow the ATTRI foundational considerations.

These technologies should serve to reduce difficulty in commuting and tailor to each individual's unique set of abilities and challenges. ATTRI research will continue to improve the mobility of travelers with disabilities and provide enhanced capabilities for all travelers to reliably and safely execute independent travel.

Strong Partnerships

ATTRI is a joint U.S. Department of Transportation (USDOT) initiative, co-led by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), with support from the Intelligent Transportation Systems (ITS) Joint Program Office (JPO) and these Federal partners:

- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
- Office of Disability Employment Policy, Department of Labor
- U.S. Army Tank Automotive Research, Development and Engineering Center
- Interagency Committee on Disability Research (ICDR)
- National Aeronautics and Space Administration (NASA)
- U.S. Access Board
- Others

ATTRI also relies on collaboration with research institutions, international partnerships, and private industry input.

For more information about this initiative, please contact:

Mohammed Yousuf, ATTRI Program Manager
Federal Highway Administration | (202) 493-3199
mohammed.yousuf@dot.gov | www.its.dot.gov

Bob Sheehan, Program Manager, Multimodal ITS Research and Deployment
Federal Highway Administration | (202) 366-6817
robert.sheehan@dot.gov | www.its.dot.gov



FHWA-JPO-16-336