



Florida Department of Transportation Research Evaluation of Automated Vehicle Technology for Transit BDV26-977-07

Automated transportation has been portrayed in futuristic literature since the 19th century, but making vehicles truly autonomous has only been possible in recent decades with advanced control and computer technologies. Automating cars is a subject of ongoing research, and new technologies appear in cars with every model year. The Florida Department of Transportation (FDOT) has an active interest in both automated vehicles and infrastructure that supports them. In December 2014, FDOT hosted an Automated Vehicles Summit in Orlando. And as of fall 2014, FDOT was testing collision avoidance technology from Mobileye on transit vehicles in FDOT District 7.

In this report, FDOT asked University of South Florida researchers to review the state of automated vehicle (AV) technology in mass transit. FDOT wished to know what AV technology was currently available and applicable to mass transit that could be used in demonstration projects. The researchers surveyed manufacturers in the U.S. and Europe, and they searched for examples of proposed and implemented projects.

The researchers reached out to several U.S. bus manufacturers to ask whether they offer or plan to offer AV technology. Manufacturers contacted included New Flyer/NABI1, Gillig, El Dorado National, Nova Bus/Volvo, and Proterra. With the exception of Nova Bus/Volvo, none of the bus manufacturers contacted had plans to add AV technology. The exception was Nova Bus/Volvo; however, the only system that they are considering adding is a pedestrian/bicyclist warning system, which does not involve any automation of vehicle operation.

The researchers reached out to contacts in Europe to see if they knew of any new developments in AV technology for public transit. The International Association of Public Transport (UITP) has been involved in two projects related to updating public transit vehicles in Europe: the European Bus System of the Future project and the follow-



Few manufacturers are equipping buses for automated technologies.

on 3iBS project. However, both projects focus on passenger, social, and environmental needs; AV technology is not part of their mandate. There are no immediate plans to make AV technology a priority for transit in Europe.

In the U.S. to date, there have been only two operational uses of transit-related AV technology. Both are prototypes developed by universities under Federal Transit Administration (FTA) grants: a GPS-based driver assist system in Apple Valley, Minnesota, and a magnetic guidance system for precision docking of buses in Eugene, Oregon.

The researchers reviewed three related programs: the Busses on Shoulders System (BOSS), pursued by the San Diego Association of Governments but not implemented; USDOT Connected Vehicle Safety Pilot Model Deployment; and personal rapid transit (PRT), of which there is one operating system in the U.S., at Morgantown, West Virginia.

This report has provided essential insight into the state of AV technologies. No doubt, there are many opportunities for the use of advanced technologies in mass transit. In automobiles, these technologies often focus on driver assistance and warning systems, and even these have been little explored in buses.