AUTOMATED DRIVING SYSTEM (ADS) DEMONSTRATION GRANT

ADS FOR RURAL AMERICA

UNIVERSITY OF IOWA

IN PARTNERSHIP WITH IOWA DEPARTMENT OF TRANSPORTATION, AUTONOMOUSTUFF, AND MANDLI COMMUNICATIONS, INC.

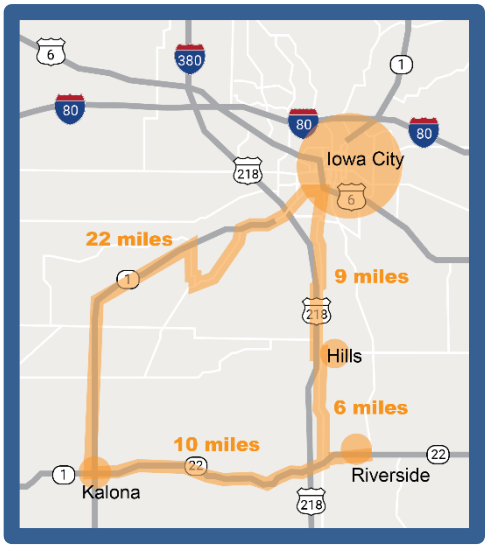
U.S. Department of Transportation

Federal Transit Administration

PROJECT SUMMARY

Automation Level(s): 2-3

The University of Iowa proposes to deploy ADS technologies in a series of eight increasingly-complex phases over 2.5 years. The demonstrations will occur on public roadways in eastern Iowa, in and round Iowa City, in a range of roadway environments (see map), weather conditions, and times of day. Each of the eight demonstration phases will involve 10 drives on the roadway environment in order to collect a significant amount of comparable data. The roadway environments are:



- Controlled access divided highway
- Two-lane undivided highway
- Connected vehicles on two-lane highways
- Roads through cities and towns
- On- and off-ramps
- Unmarked road
- Unpaved roads
- Parking areas
- Construction zones

PROJECT GOALS

- **Safety**: This project aims to improve safety on U.S. roadways by beginning to lay the groundwork for the safe integration of ADS.
- **Geographic Equity**: This project works to address disparities in U.S. roadway system by focusing demonstrations and ADS data gathering on rural roadways.
- **Enhanced Mobility**: The project will demonstrate how ADS can be used to enhance mobility for transportation-challenged populations such as aging populations in rural communities.

VEHICLE INFORMATION

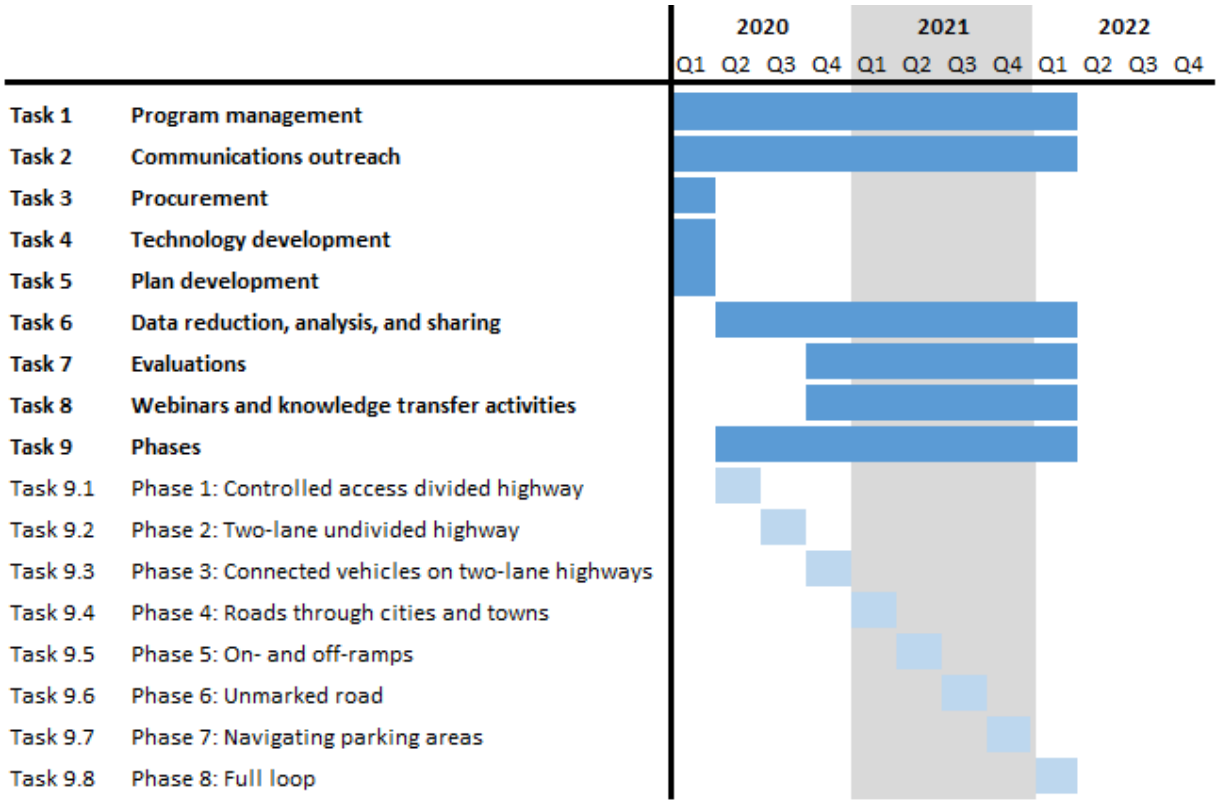
The on-road vehicle will be a custom-built, drive-by-wire, Ford Starlite Transit bus. The ADS technologies used in the project will include SAE levels 2 and 3, as well as vehicle-to-vehicle (V2V) on-board processing telemetry processors and vehicle-to-infrastructure (V2I) traffic signal technologies. AutonomouStuff will install cameras, radar, lidar, and other equipment to facilitate driving in automated mode. Mandli Communications will create high-definition maps of the vehicle route. The Starlite Transit bus includes a wheelchair lift and restraints, abides by the Buy America Act, and is compliant with NHTSA Federal Motor Vehicle Safety Standards (FMVSS).

DATA COLLECTION, MANAGEMENT, & SHARING

Data collected will be organized and stored into a relational databased available via data portal to a cloud-based digital infrastructure housed at the University of Iowa's National Advanced Driving Simulator (NADS). The vehicle will collect data using the Robotic Operating System (ROS) "bag" files, while sensors external to the vehicle will be layered in according to a universal timestamp. Nine distinct categories of data are expected – vehicle; other surrounding vehicles; U.S. DOT safety data; road surface, pavement markings, signs, and signals; occupant state; high definition map data; automation status; environment (time of day, weather, lighting); and video/lidar.

PROJECT STATUS & SCHEDULE

The project officially started in April 2020 and is expected to be completed in about three years. The initial project schedule is shown below.



BUDGET

USDOT ADS Demonstration Grant Funding	Non-Federal Cost Share	Total Amount
$7,026,769	$822,744	$7,849,513