

CONOPS

Trucking Fleet Concept of Operations (CONOPS) for Managing Mixed Fleets



CONOPS ROADSHOW DEMONSTRATION AT ITS AMERICA ANNUAL MEETING DECEMBER 6-10, 2021

CONOPS ROADSHOWS

To support the concept of operations (CONOPS) and provide the trucking industry with clear information on how to safely implement automated driving system (ADS)-equipped trucks among mixed fleets, the Virginia Tech Transportation Institute (VTTI) and Pronto, a leading automated heavy vehicle transportation company, are hosting a series of demonstrations under the Trucking Fleet Concept of Operations (CONOPS) project, a four-year, \$10 million effort sponsored by the Federal Motor Carrier Safety Administration and the Federal Highway Administration (Figure 1).

Three demonstrations, or roadshows, will allow end users, stakeholders, and the public to experience ADS technology on closed test tracks. The roadshows will engage the public with driving automation systems to share information about their functionality, benefits, and limitations. The roadshow events demonstrate real-world, practical integration of increasingly sophisticated ADS into road freight operations with live traffic.

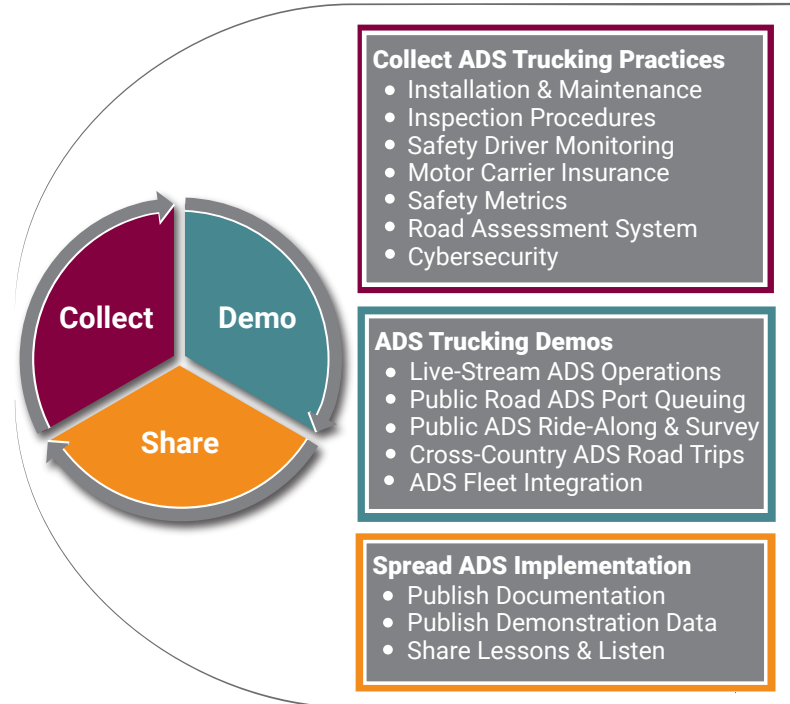
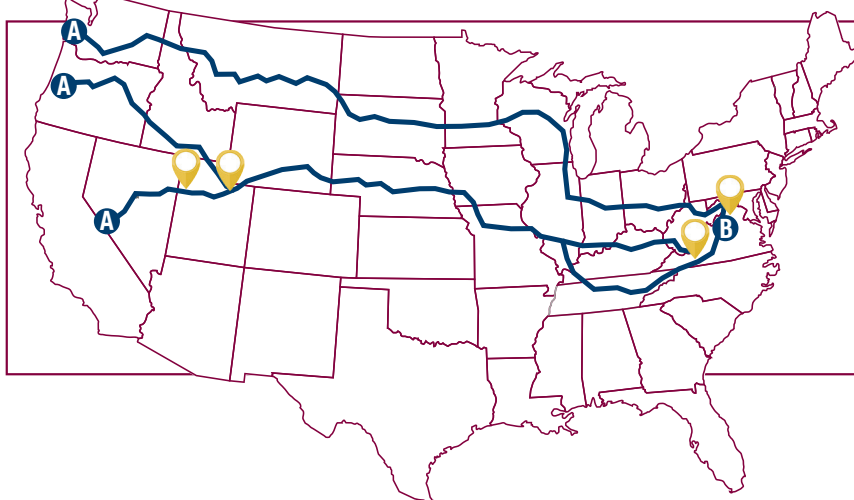


Figure 1 CONOPS Process

ITS AMERICA ROADSHOW

The first of three roadshows was held at the Intelligent Transportation Society of America (ITS America) Annual Conference in Charlotte, North Carolina, December 2021. The CONOPS Roadshow at ITS America highlighted two demonstrations of ADS. The ITS America Roadshow showcased an interactive and behind-the-scenes look at ADS-equipped truck cross-country corridor operations, as well as a port queuing demonstration highlighting the safe deployment of ADS technologies in port operations.



METHODS

Drive an ADS truck over candidate routes multiple times under a variety of conditions in order to collect detailed inventories of ADS perception of roadway features, the quality of supporting communications and location data.

Data collected includes:

- Video library of ADS truck attempting to drive a wide variety of interstate highways
- Scores on the availability, quality, and strength of required supporting infrastructure
- Real-world truck ADS performance metrics



The VTTI and Pronto roadshow at ITS America featured:

- Interactive visualizations of a prototype truck ADS database and map created from data being collected during the ADS cross-country operations.
- Presentations highlighting a “behind-the-scenes” look at the ADS cross-country operations, including preparation, planning, training, data inputs, and real-world applications.
- Displays of real-time data streams collected from the ADS-equipped trucks during the cross-country operations.
- An interactive live chat with a Pronto engineer who was monitoring the cross-country data collection from the ADS truck cab in real time.
- A slideshow, drawn from the port queuing demonstration, illustrating how ADS-equipped trucks can relieve major congestion points in daily port operations.
- Attendee opinions and perceptions of ADS-equipped trucks and their application and utility for the trucking industry collected.



Port queue



A driver testing Pronto's ADS equipped truck



Port queuing demonstration

EXHIBITOR BOOTH

The CONOPS Roadshow Demonstration also featured an exhibitor booth that highlighted the research and real-world applications of the Division of Freight, Transit, & Heavy Vehicle Safety (DHVY) at VTTI. DHVY researchers solve complex and meaningful heavy-vehicle problems through deployment, testing, analysis, education, and outreach. With a focus on addressing real-world challenges, this division follows a research-to-practice philosophy by translating research findings into actionable countermeasures—most recently with a strong focus on cutting-edge driver assistance and automated truck and bus technologies. With a long history of establishing key partnerships across a variety of industry and government stakeholders, DHVY has conducted innovative research-based initiatives that support the safety, health, and well-being of truck and bus drivers and efficient and sustainable transportation for all who share the roads with them. The exhibitor booth highlighted DHVY research and outreach initiatives by showcasing a looped video summary of division projects and priorities. DHVY researchers were at the booth available to answer attendee questions and hand out research briefs, project pamphlets, and DHVY giveaway items.



ITS America exhibitor booth



ITS America cross-country demonstration presentation

