

SMART TRANSPORTATION TESTBED AT FORT CARSON

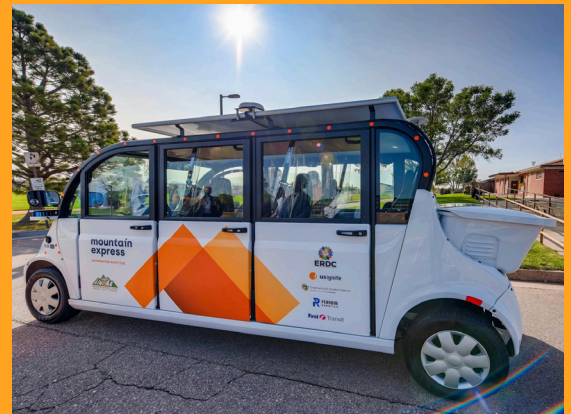


SNAPSHOT

- The \$4M Smart Transportation Testbed at Fort Carson aimed to advance the Department of Defense's (DoD) understanding of high-tech commercial transportation solutions and help Fort Carson improve transportation services.
- US Ignite led three distinct use cases to test the viability of Automated Vehicles (AV), Unmanned Aircraft Systems (UAS), and a private Citizens Broadband Radio Spectrum (CBRS) wireless network.
- The use cases demonstrated the potential of these technologies and revealed insights on how DoD can scale them across other bases and nearby communities.

ABOUT FORT CARSON AND THE SMART TRANSPORTATION TESTBED:

Fort Carson is home to tens of thousands of active duty military members, families, and civilians, and is the largest city by square miles in Colorado. Fort Carson takes pride in being "The Mountain Post" and the "Best Hometown in the Army - Home of America's Best." The post is recognized as one of the Army's premier locations to lead, train, and maintain while preparing soldiers to win on the battlefield. The Fort Carson garrison has been an essential host and partner in adopting and developing smart base technologies to improve the lives of soldiers, families, civilian employees, and retirees. The Smart Transportation Testbed objectives aligned with the vision to modernize and innovate to strengthen the installation's readiness through partnerships and programs.



THE GOALS AND APPROACH:

Many soldiers living and working on Fort Carson do not own personal vehicles, so the garrison must provide shuttle service during business hours. The lack of service during evening hours hurts soldiers' access to amenities and overall quality of life on the post. The Smart Transportation Testbed aimed to advance the DoD's goal of providing services with improved safety, efficiency, and lower costs via an automated shuttle.

Another goal of the Smart Transportation Testbed focused on improving a costly operation conducted regularly at Butts Army Airfield. Staff must inspect the runway for foreign object debris (FOD) to make sure it does not cause damage once an aircraft takes off or lands. US Ignite deployed an Unmanned Aerial System (UAS) at Butts Army Airfield to help with the labor-intensive process of detecting FOD.

To facilitate the deployment of these smart base technologies on the post, US Ignite successfully installed and operationalized a private CBRS wireless network with fiber optic backhaul to the Internet. This 5-node network remains in operation today and is the foundation for additional smart base projects.

THE SOLUTIONS AND USE CASES:



Mountain Express Shuttle

US Ignite worked with the garrison to deploy an automated shuttle to service a fixed route that included the barracks, Post Exchange, Commissary, and Physical Fitness Center. The AV Shuttle operated in the evening hours on weekdays, providing passenger service along a fixed 3.1-mile route. Over 200 passengers used the AV shuttle throughout the deployment.



Unmanned Aircraft Systems

An advanced autonomous drone capable of detecting FOD was authorized by the flight operations team for testing at Butts Army Airfield. Through several demonstration flights, the autonomous drone was used to detect discarded hardware, tools, hold-down chains, and broken pavement through intelligent video analytics and machine learning.



CBRS Wireless Network

A new, private, and program-dedicated Citizens Broadband Radio Spectrum (CBRS) wireless network was installed at Fort Carson. The CBRS network was designed to support the upload of the Mountain Express AV data to the Azure Gov Cloud. The network remains in operation as a foundation for the 2nd phase of smart base projects at the post.

RESULTS AND BENEFITS:

The Smart Transportation Testbed Program demonstrated the value of automated ground and aerial systems and the benefits of advanced wireless networks in deploying these smart technologies on the Fort Carson Army Post. A few of the key results from the program include:

- The AV shuttle served over 200 passengers
- A new advanced UAS platform was certified and successfully flown at Butts Army Airfield in coordination with the flight operations team
- A fully functional CBRS wireless network was installed and remains operational for DoD use in follow on smart base projects

PROJECT PARTNERS:

U.S. Army Engineer Research and Development Center (ERDC)
Fort Carson Army Post