

Background

Located in South Central Indiana, the Muscatatuck Urban Training Center (MUTC) is a full-immersion contemporary urban training environment. MUTC offers an array of wireless environments including concrete buildings, tunnels, caves, and dense urban areas. All of these locations present unique and challenging wireless communication scenarios. MUTC is one of several locations that are part of the Tactical Network Testbed (TNT) experiments conducted by the United States Special Operations Command (USSOCOM) in cooperation with the Naval Postgraduate School (NPS).

The Challenge

The ability to share information among various assets within a mission scenario can mean the difference between success and failure. With today's spectrum limitations, this is becoming increasingly difficult to achieve in cases where high rate data is being passed among more than a few users. Using revolutionary MIMO technology, Silvus has been able to overcome this challenge. Silvus demonstrated its multi-domain mesh during the USSOCOM TNT exercises at MUTC by passing high-fidelity video among several underground, surface and airborne assets as depicted in Figure 1 below.

cameras were attached to dismantled man-portable vests, 2 were attached to vehicles and 1 was mounted on top of a 20 foot high lookout tower which also acted as a sink for all data back to the Tactical Operations Center (TOC). A twin engine Cessna 440 aircraft equipped with synthetic aperture radar (SAR) was transmitting images to the tower as well.

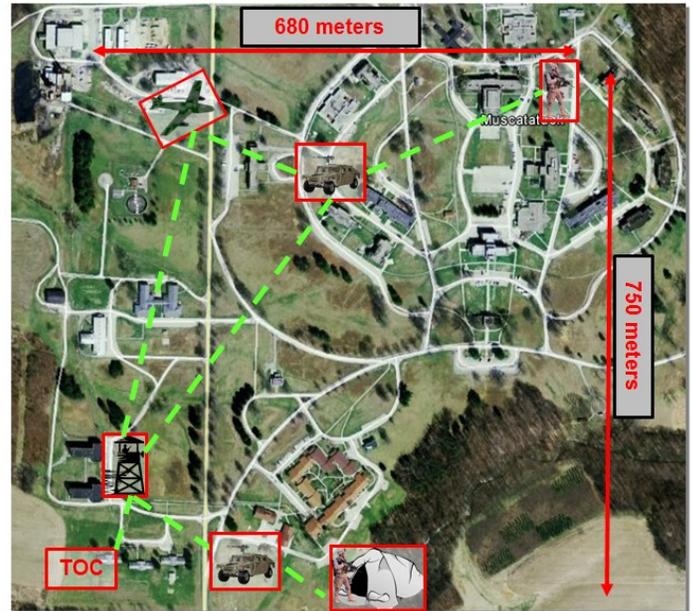


Figure 2. Node Deployment at the Muscatatuck Urban Training Center

Figure 2 above shows the location of each node during the exercise. The aircraft in this demonstration covered a 5 kilometer radius around the training center while successfully beaming images down to the TOC via the lookout tower. One vehicle was parked near the mouth of a cave at the South end of the complex while a dismantled unit went in to explore the cave. Further North, a second vehicle parked at the edge of the dense urban area while another dismantled unit set out to explore in and around the buildings in the area.

Summary

Silvus successfully demonstrated a multi-domain mesh network connecting airborne, underground and surface assets sharing video and SAR images across the network. Silvus' revolutionary MIMO technology provided impressive wireless network coverage of the Muscatatuck Urban Training Center as well as good penetration into the nearby caves.

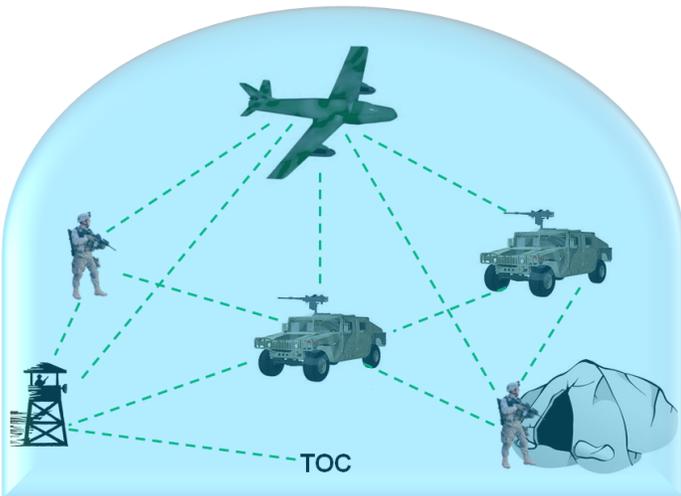


Figure 1. Multi-domain Mesh Network Connecting Airborne, Surface and Underground Assets

Silvus Solution

The exercise brought together 7 nodes into a single multi-domain mesh network. The setup comprised of 5 mobile cameras with a 500 kbps video per stream. Two of the