DHS Science and Technology Directorate

Mobile Ad-hoc Networking (MANET) to Improve Public Safety Situational Awareness

Public Safety Situational Awareness is Essential

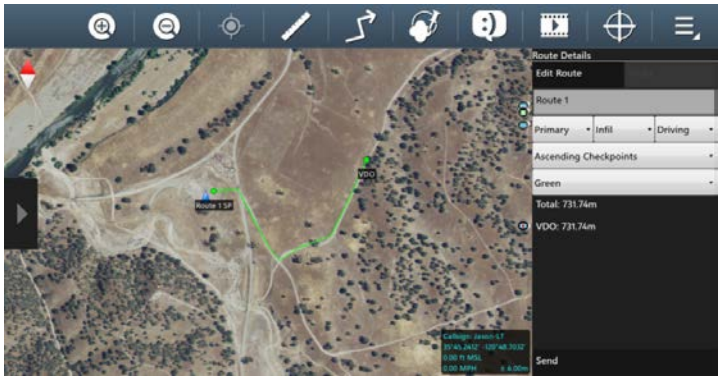
During an emergency, first responders need timely and relevant data to make informed decisions. Land Mobile Radio networks are intended for voice communications and do not have the capacity to transmit large amounts of data. Commercial cellular networks can become overloaded or fail completely, as the network becomes saturated by public use. This leaves public safety agencies competing for the same network resources when trying to transmit their mission-critical information, especially video. Further, in rural areas lacking the needed critical communications infrastructure, first responders rapidly become disconnected and lose their situational awareness.

Real-time Situational Awareness using MANET Technologies

Exploring MANET's Uses and Benefits

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Next Generation First Responder (NGFR) and the Border Situational Awareness (BSA) Apex Programs are jointly exploring ways to improve public safety situational awareness through the piloting of MANET technologies. DHS S&T will investigate MANET technologies to enable 2-way video, voice and data services, and cover the following key attributes:

- Digital meshed and/or point-to-point radios to establish communications for disconnected users;
- Secure and encrypted data communications;
- Licensed and/or unlicensed spectrum operation; and
- Mobile applications (e.g., Android Tactical Awareness Kit (ATAK) developed by Air Force Research Laboratory) providing situational awareness capabilities to both connected and disconnected users.



Key Approach

DHS S&T, the Johns Hopkins University Applied Physics Lab, and several federal, state, and local public safety agencies are leading a pilot project to determine the benefits and limitations of MANET technology for public safety use. DHS will conduct this project in three phases that will last approximately 10-12 months, to include the following:

Phase 1 - Develop work plan, work breakdown structure and schedule, then identify and initiate discussions with end-users/stakeholders at state and local evaluation sites.

Phase 2 - Acquire MANET systems and provide to stakeholders at three pre-determined locations.

Phase 3 - Evaluate the operation of the MANET systems with end users in various locations.

Next Steps

DHS S&T will investigate the key features of MANET technologies to support situational awareness to serve disconnected public safety users. Throughout fiscal years16 and 17, DHS S&T will characterize MANET system performance and interoperability with other advanced broadband networks services by conducting field exercises with key stakeholders.