# DHS Science and Technology Directorate
# Broadband Demonstration Network – Deployables

## Improving Network Coverage for Public Safety

Commercial cellular networks, and the soon to be implemented, the First Responder Network Authority's (FirstNet) Nationwide Public Safety Broadband Network (NPSBN), will provide first responders with the ability to exchange vast amounts of data in support of their mission. However, coverage and capacity limitations will continue to challenge the dependability of these networks. In areas or circumstances where fixed network coverage and capacity are inadequate, deployable systems (DS) are considered essential to fill these gaps. Settings where DS can provide network coverage may include natural disaster areas where existing networks are unusable, congested areas where the network is saturated, and remote or geographically isolated areas without network access.

In collaboration with the Department of Homeland Security Science and Technology Directorate Office for Interoperability and Compatibility, the Public Safety and Communications Research Division of the Communications Technology Laboratory at the National Institute of Standards and Technology is evaluating key aspects of DS in laboratory, field and real-world environments. DS are divided into two primary classifications: Core-Ready Deployable Systems (Cell on Wheels – COW) and Core-Enabled Deployable Systems (System on Wheels – SOW). The key difference between the two systems is that the COW requires a connection to the main network in order to provide users with LTE network access. The SOW, on the other hand, has a built-in, evolved packet core, a feature that allows the system to have its own self-contained network. This permits the SOW to provide users with local network access and connectivity to other networks as the backhaul allows.

## Reducing Network Gaps during Emergencies

The Deployables project examines ways in which first responders could access and communicate critical information during incidents occurring in areas that are not served or are underserved by the fixed NPSBN or alternative access networks, such as commercial carriers or public Wi-Fi. The goal of the project is for public safety to have a better understanding of the state of DS in the industry, thereby enabling public safety to develop requirements that can be used in future releases of DS standards. Having DS standards that reflect the requirements of public safety will permit manufacturers to build solutions that meet their needs. From local to national levels, public safety administrators, planners and stakeholders could benefit from the results of the project in devising their requirements and applications, acquiring equipment and formulating training for their unique jurisdictions.

Highly Mobile Deployable System

## Current and Future Goals of the Project

In 2017, the focus of DS was to build a rapidly deployable research platform (RDRP) to integrate technologies that are deemed essential to DS operations. To expand on the recent research, the goals for 2018 are: (1) to integrate a situational awareness system, an unmanned aerial vehicle/system (UAV/S), and a personal area network (PAN) to provide additional capabilities and functionalities with the RDRP; and (2) through continued research and testing, to gain a deeper understanding of the complexities and technical challenges of integrating multiple DS into a single operational platform.

Aerial coverage provided by the UAV/S, whether in a tethered or untethered configuration, could provide LTE access and surveillance capability via video or thermal imaging cameras as needed. The PAN/internet of things (IoT)/sensors integration is aimed at improving situational awareness through introducing sensor technologies into DS.

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To learn more about the Deployables project, contact First.Responder@hq.dhs.gov.

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