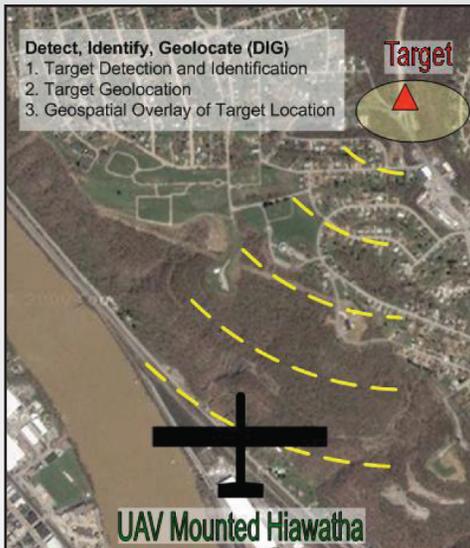


“RADICAL” Improvements to IED Detection



With Small Business Innovation Research funding, Nokomis, Inc., developed a RADICAL—Remote-Controlled Improvised Explosive Device Detection Identification and Classification Algorithms—system (pictured) to mitigate improvised explosive device threats for deployed troops. (AFRL image)



Newly funded enhancements to RADICAL's geolocation functionality add capabilities such as geospatially mapped overlays of target electronics (pictured). (AFRL image)

The urgency of improvised explosive device (IED) threat mitigation for deployed troops warrants an immediate and sweeping response, and an AFRL/Electronic Systems Center (ESC) program aptly hailed as RADICAL delivers just that. The chief goal of RADICAL—referenced more formally as the Remote-Controlled Improvised Explosive Device Detection Identification and Classification Algorithms effort—is to provide ground forces operating in urban and similarly complex terrain with real-time, accurate information concerning the presence, type, and location of IED-associated electronics.

Developed by Nokomis, Inc., with AFRL/ESC Small Business Innovation Research (SBIR) funding, RADICAL leverages the company's Advanced Electromagnetic Location of Electronic Devices (AELED) technology. This patented capability is specially designed to detect and identify electronic devices, with a concerted focus on IED triggering mechanisms. The AELED system is proven in its capacity to pinpoint commonly used IED electronics at distances exceeding 1 km. RADICAL enhances this existing capability via the addition of phenomenologically based plug-in modules for detection and geolocation. This updated approach, which incorporates tactically favorable arrays widely accepted throughout the Department of Defense, provides precise detection, identification, and location data for a given target. Users access this real-time information through an intuitive, easy-to-use graphical user interface (GUI).

Nokomis has transitioned its RADICAL technology into SBIR Phase II and Phase III

contracts with the Defense Threat Reduction Agency, Navy, and Air Force, collectively satisfying three major service components in fielding technology for expertly detecting, identifying, locating, suppressing, and neutralizing electronic devices from range. The involved parties are currently working to coordinate the RADICAL integration aboard both small unmanned aerial vehicles and ground vehicles.

Further, RADICAL recently earned transition funding from AFRL's Commercialization Pilot Program, following stakeholder concurrence regarding an appropriate SBIR Technology Transition Plan (STTP). The agreed-upon STTP takes specific aim at strengthening—and accelerating the development of—RADICAL geolocation algorithms, which essentially shape the technology's capacity to pinpoint the location of electronic emitters. Such enhancements to geolocation functionality will enable users to localize multiple targets, account for different array configurations in order to accommodate changes in the array, analyze geolocation data from a moving platform, and employ the GUI to view target overlays on a map. These improvements are slated for transition onto a platform newly funded by the Joint IED Defeat Organization. Ultimately, this breakthrough electronics detection capability carries with it the far-reaching—or radical—potential to transform how commanders in the field operate and, consequently, how missions unfold towards success.