

CRITICAL RESEARCH/INNOVATION FOCUS AREA DOCUMENT

Radio Controlled Improvised Explosive Device (RCIED) Countermeasures

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Please note that as more details are available, DHS will post updated research/innovation focus area overviews on the FutureTECH website. This is a pre-decisional draft document of the NSTC Subcommittee on Domestic IEDs. Please contact Dr. Ruth Doherty, ruth.doherty@dhs.gov for more information.

Who?

Identify any DHS component stakeholders that contain or represent potential end users. Also name any Capstone IPT (refer to http://www.dhs.gov/xres/programs/gc_1234200779149.shtm and the article entitled "Making it Easier to Work with DHS"), if any, which identified a capability gap related to this research/innovation focus area.

The U.S. Department of Homeland Security (DHS) leads for CIEDs are the Office for Bombing Prevention and United States Secret Service (USSS). The corresponding DHS Science and Technology (S&T) Capstone IPT that identified capability gaps related to this focus area is entitled "Counter-IED."

What?

Describe a required technology/capability. Describe how a technology will provide the capabilities and functional improvements needed to address the DHS need. Do not describe a specific technical solution. Instead, describe a conceptual technology for illustrative purposes. Define typical missions that the proposed technology could be utilized to accomplish.

The solution to this need must be deployable by the majority of medium bomb robots deployed with U.S. bomb squads and, if necessary, must be capable of being carried to the scene and emplaced by a bomb technician.

It must be able to preclude the radio control device from initiating a detonation within a meaningful radius of operation without affecting radio frequencies outside of that radius to a high degree of certainty.

It must allow communication with deployed bomb robots and, if required, bomb technicians operating within that radius of operation.

The solution must have meaningful mission duration, be cost effective and compliant with any applicable regulations.

It must require minimal training and be easily employed by the average public safety bomb technician.

RCIED Countermeasures include:

- 1) Optimization and characterization of the current electronic countermeasures (ECM) system on the standardized platform with the current antenna technologies.
- 2) Development of alternative approaches to interfering with the ability of terrorists to control the initiation of improvised explosive devices (IEDs) with electromagnetic radiation. This may involve more highly targeted intervention with the specific devices of interest rather than jamming.

References:

- a. HSPD-19 Requirement 5(d): Improving Capabilities to Combat Terrorist Use of Explosives within the United States.
- b. 28 U.S.C. § 533; 28 C.F.R., § 0.85(l). DOJ/ FBI Counterintelligence and Counterterrorism Authority.
- c. Executive Order 12333 – United States Intelligence Activities (December 4, 1981) (E.O. 12333).

Please note that as more details are available, DHS will post updated research/innovation focus 2 area overviews on the FutureTECH website. This is a pre-decisional draft document of the NSTC Subcommittee on Domestic IEDs. Please contact Dr. Ruth Doherty, ruth.doherty@dhs.gov for more information.

- d. PPD-39 – U.S. Policy on Counterterrorism (June 21, 1995).
- e. National Strategic Plan for U.S. Bomb Squads, December 2007, National Bomb Squad Commanders' Advisory Board, page 13, Section. 5.1.3

Why?

Describe the analysis and rationale for requiring a new technology/capability. Describe why existing technologies cannot meet current or projected requirements. Describe what new technologies/capabilities are needed to address the gap between current capabilities and required capabilities.

The radio controlled improvised explosive device (RCIED) threat continuously proliferates for several reasons. One reason is the wide range of commercially available radio-controlled equipment readily available and adaptable to IED triggers, and another reason is the stand-off distance the RCIED gives to the terrorist. It is a technical challenge to meet the changing and evolving domestic and global radio frequency (RF) threats. The domestic use of any ECM system must be in compliance with applicable laws and regulations. With each technical modification in terms of responding to or anticipating a change in the RCIED threat, the potential exists to run afoul of regulatory constraints. Regulatory responsibility for the radio spectrum is divided between the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA). The FCC, an independent regulatory agency, is assigned responsibility for the regulation of non-government interstate and foreign telecommunications. The Presidential authority for Federal government RF spectrum use has been delegated to the Administrator of the NTIA, an operating unit within the Department of Commerce. Several other Federal Spectrum Stake Holders such as: Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD) also have concerns when it comes to the RF jamming.

When?

If a technology/capability is intended as a countermeasure to a threat, summarize the threat to be countered and how the technology could be used (i.e., concept of operations). If applicable, provide a schedule/timeframe to capture when the technology/capability is needed in order to address the DHS gap.

The RCIED is a very real and formidable terrorist threat facing our homeland as was demonstrated in the attack on a women's clinic in Birmingham, AL in 1998. RF has been used in a number of ways to trigger conventional IED(s) and vehicle-borne improvised explosive devices (VBIEDs). ECM systems to jam RCIEDs, which were developed initially for the military, are a necessary tool in accessing and defeating RCIEDs. The efficacy of ECM systems is continually challenged as terrorists are forever reinventing and redeveloping RCIED technology.

Where?

Describe the projected threat environment in which the technology/capability may be potentially deployed.

A hurdle in the effort to bring this capability to American cities is the confidence in the performance of the system. To properly build this confidence in federal spectrum stakeholders, sufficient data is needed in the characterization of the current ECM platform used by Public Safety Bomb Squads.

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Characterization combined with new antenna technologies on the standardized vehicle platform will help expedite the ECM capability to future bomb squads.

Please note that as more details are available, DHS will post updated research/innovation focus 4 area overviews on the FutureTECH website. This is a pre-decisional draft document of the NSTC Subcommittee on Domestic IEDs. Please contact Dr. Ruth Doherty, ruth.doherty@dhs.gov for more information.