

WHO

SYSCOM: ONR

Sponsoring Program: ONR - Office of Naval Research

Transition Target: Joint Service Explosive Ordnance program

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Other Transition Opportunities: Law enforcement bomb squads

Notes: Our prototype system, which incorporates augmented reality visual precision aiming and a mechanical steering mechanism equipped with recoil mitigation (as shown above), has already demonstrated superior aiming precision. Its accuracy at range has been demonstrated to be limited only by the barrel pointing stability for a 24-inch disrupter.



Image courtesy of Vadum, Inc, 2024.

WHAT

Operational Need and Improvement: Explosive Ordnance Disposal (EOD) disrupters and tools are used to remotely open or render safe a suspect item or improvised explosive device (IED). Current precision aiming systems utilize reusable lasers that are expensive and under certain recoil forces or conditions might exhibit limited survivability or lose alignment. Additionally, laser aiming devices might suffer poor visibility in certain lighting conditions and on certain target surfaces, thus reducing the mission scope.

Specifications Required: The EOD community has identified the need for a low cost, lightweight, precise aiming capability for one-time use (single shot) on a variety of disrupters and tools. The aiming capability should aim and hit targets with different surfaces at a standoff distance threshold of 25 feet and objective of 50 feet with a 1-inch accuracy. The capability should apply to multiple disrupter/tool barrels with a threshold requirement of 1"-2" diameters and an objective requirement of 1"-6" diameters. A concept of employment that provides minimal setup time with no tools is preferred along with the smallest, lightest weight configuration.

Technology Developed: Vadum has created an innovative smartphone-based augmented reality (AR) precision aiming system for EOD and law enforcement units. A virtual designator, an AR beam displayed on the smartphone screen, visually aligns an EOD tool with its target. Our product extends stand-off distances, improving safety and operational efficiency in EOD tasks. This lightweight, cost-effective, add-on solution is compatible with existing EOD toolkits and procedures and does not rely on traditional laser-based sighting devices.

Warfighter Value: Vadum's technology enhances operator safety by increasing standoff distances. It broadens the mission scope, making it applicable to multiple EOD tools and projectile types, even in restrictive environmental conditions. Our solution reduces cognitive load through an easy operator setup, ensuring reliability and intuitive aiming, which requires less training and field experience.

WHEN

Contract Number: N68335-22-C-0548 **Ending on:** Aug 02, 2024

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Concept Demonstration	Medium	Precision Aiming at Short Distances	3	3rd QTR FY22
Prototype I	Low	Program Threshold Achieved: Precision Aiming at Mid-range validated	4	4th QTR FY23
Prototype II	Medium	Program Objective Achieved: Precision Aiming at Long Range	4	2nd QTR FY24
Complete System Test	Low	System Integration and Live Fire Test Completed	6	4th QTR FY24
If Option Exercised: On-robot Integration Capability	Low	On-robot System Live Fire Demonstration	6	4th QTR FY26

HOW

Projected Business Model: Vadum will offer its standalone precision aiming solution for EOD tools à la carte, utilizing various package tiers. We'll sell directly and collaborate with system integrators who have an established customer base. Our services will span from providing comprehensive disrupter solutions to offering add-on components for upgrading existing EOD tool arsenals with precision aiming capabilities. Additionally, we'll provide custom design and production to address specific use cases.

Company Objectives: Vadum strives to safeguard U.S. lives and assets by providing superior tools to EOD operators. We view and execute this program as an integral part of our broader initiative to enhance the safety and efficiency of EOD operations through the development of autonomous robotic solutions for detecting, identifying, disarming, and removing unexploded ordnance.

Potential Commercial Applications: Vadum's precision aiming will improve operational capabilities of government or local law enforcement EOD units.