Topic: N08-T030

Boston Engineering Corporation

GhostSwimmer: Tactically Relevant, Biomimetically Inspired, Silent, Highly Efficient and Maneuverable Autonomous Fish Robot
Boston Engineering is capable of delivering game-changing autonomous underwater vehicles (AUV) and other novel, high value maritime domain access and data collection technologies. These sub-technologies include: submersible actuators, payloads, modular controller/power/payload/navigation systems, payload delivery systems, and controls software algorithms. We are a well-established engineering services organization that has delivered leading-edge products and solutions to customers for over 20 years. Our competitive advantage includes a patent, Trade Secrets, SBIR Data Rights, and a significant “head start” in hydrodynamics. These technologies have performed demonstrations over the last 4 years and feature in particular our highly maneuverable and stealthy AUVs and their broad-reaching applicability. We’re looking to execute an ONR TTA, direct implementation into larger operational scenarios, and set up for future procurement.

Technology Category Alignment:

Survivability

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SYSCOM: ONR
Contract: N00014-15-C-0021
Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00014-15-C-0021

Department of the Navy SBIR/STTR Transition Program

STATEMENT A. Approved for public release; distribution is unlimited.
ONR Approval # 43-2203-16

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WHO

SYSCOM: ONR

Sponsoring Program: Navy Future Naval Capability Program, Sea Shield

Transition Target: PEO C4I

TPOC:
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Other transition opportunities:

Notes: Image shows range of Boston Engineering SBIR-developed maritime access and data collection technologies. Core of UUV technology developed by ONR under N08-T030 and supported as shown by DHS S&T.

WHAT

Operational Need and Improvement: Our technologies apply to many needs but one in particular is the pivoting towards the Asia-Pacific, specifically the A2/AD techniques of near-peer adversaries (obviating US forward basing advantage while executing fait-accompli territory acquisition strategies). While unmanned systems will be increasingly adopted in this area and others, it is important that the appropriate unmanned systems be leveraged. Our technologies provide extended ISR 'reach' (for IPB, recon, etc.) into denied areas that are complex, challenging environments while minimizing the possibility of detection.

Specifications Required: The requirements for this activity are to provide more stable, highly capable, and maneuverable platforms for complex flow areas with the ability to integrate data collection payloads. Covertness is a challenging metric to specify in this context but low probability of detection is a paramount specification. Additionally, we have developed these systems for power and mission efficiency, modularity, and cost effectiveness.

Technology Developed: The development of our novel access data collection platforms includes several technologies for consideration including: hull inspection vehicles, submersible actuators, UUV payload systems, UUV dive planes, submersible modular controller/power/payload/navigation systems, actuated payload delivery systems for UUVs and others, as well as various controls software from navigation to in-situ onboard propulsion control computation and iteration.

Warfighter Value: Acquiring required data in challenging areas without detection using a risk-worthy asset provides the key pieces of intelligence required to commit or operate higher capability assets in contested areas. Knowledge of adversary movements, bathymetric and oceanographic conditions, and location of long range operational fires or other enemy assets directly enables future capabilities such as expeditionary advanced bases, large diameter unmanned vehicles, special operations, and other, larger assets to be employed with reduced risk.

WHEN

Contract Number: N00014-15-C-0021 **Ending on:** June 30, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Contract - Advance System with Customer-Specific Payload	Low	Systems ready for demonstration	6	January 2017
Contract - Verify that Delivery Near Term is Feasible	Low	Demonstration planning complete	6	June 2017
Program - Measure and Show Operational Capability	Med	Participation in operational exercise	7	March 2018
Program - Modifications and Updates pre-Program of Record	Med	Inclusion in PoR	8	October 2018

HOW

Projected Business Model: A manufacturing and distribution plan is being executed including laboratory set up, coordination with quality engineers, documentation, alignment with vendors, inventory, and more. A first run of the plan was completed in time for a May 2015 demonstration. Distribution is aligned through a long standing and successful relationship with a local contract manufacturer and a system of pre-approved vendors. Subassemblies are delivered to our facility where they're assembled at the top level and go through a detailed testing process from software download and subcomponent checks through at-sea testing before delivery. Systems are purchased through our company and we estimate an LRIP could be within 9 mo. after kickoff.

Company Objectives: Generate leads and opportunities based on our SBIR-funded Navy technology and to generate awareness of our capabilities in novel maritime access and data collection systems. Boston Engineering interest and goal is in spinning off companies based on this IP; our Advanced Systems Group is the lead candidate in this specific area. We are interested in meeting with Program Offices or project managers who need technologies like ours, including but not limited to NAVSEA 08 and 073, PMS408, PMS406, PMW120, and PEO C4I.

Potential Commercial Applications: Commercial and scientific applications make up 50% of the UUV market and our technologies provide maneuverability, real time data collection, ease of operation, and higher speeds of data collection for: harbor/port security, bathymetry studies, aquaculture, and environmental monitoring applications. Our business plan includes a structured marketing effort for non DoD applications in the 2nd year of production to leverage the inertia provided by DoD. Discussions with Shell and BP regarding offering AUV products (for O&G industry) have been initiated and we already leverage non-DoD funds to offset the initial business and non-R&D costs (grant from the state of MA).

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