Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

ONR Approval #43-8729-21

Topic # N191-037

SecMUAS - Secure Modular Unmanned Aerial Systems

Secmation, LLC

WHO

SYSCOM: ONR

Sponsoring Program: Tactically Enabled Reconnaissance Node

Transition Target:

TPOC:
David Gonzalez
david.r.gonzalez@navy.mil

Other transition opportunities: SecMUAS is a modular robot development system which enables rapid development while “baking in” cybersecurity. It is designed to support small unmanned systems applications in multiple environments and to produce security documentation with traceability to expedite the path to security approvals. Groups and platforms such as PMS 406, PMA 231, XLUUV, LDUUV, Blue UAS, and other Unmanned Systems programs would benefit from this technology

U.S. Navy photo, VIRIN: 201019-N-LI768-1111P.JPG
https://www.defense.gov/observe/photo-gallery/igphoto/2002521585/

Notes: Secmation, a leading small business in the fields of Cybersecurity R&D and Product Development, is on the Applied Research Associates (ARA) team awarded a $18.8M four-year base contract to provide unmanned maritime systems support for the Naval Information Warfare Center, Pacific’s (NIWC PAC) ISR Department.

WHAT

Operational Need and Improvement: This is a need for rapid deployment and validation of novel flight control effectors and algorithms designed for the most challenging operations. A solution will serve as an integrated avionics backbone for UAVs with high-performance control systems, sensors and cyber-secure command and control.

Specifications Required: The backbone will consist of modular hardware and software components necessary for manufacturing autonomous vehicles. The hardware will utilize domestically sourced components, including central processing units (CPUs), data acquisition, and transceivers. The software stack will be designed around the hardware with modules to support a wide array of input/output types. The system will support standards for common communication protocols, including encryption layers for both communications and data storage. Anti-tamper features will be included. Computational capability will be extensible with Field Programmable Gate Array (FPGA) modules. Other modules will include analog to digital converters, digital to analogue converters, actuators, and sensors. An Integrated Development Environment (IDE) will tie all of the embedded software modules and hardware components together in a manner that will allow control algorithms to be graphically designed, simulated, and deployed to the target hardware.

Technology Developed: SecMUAS incorporates a US designed/manufactured Secure Control Unit with advanced security and performance features. SecMUAS provides a Configuration IDE providing a rapid unmanned system software development capability that automatically incorporates security features needed to implement security policy. SecMUAS also incorporates a library of validated UAS hardware/software components, an NSA certified communication system, and ground station, enabling full UAS system design and integration.

Warfighter Value: Future UAVs deployed with this backbone will benefit from a greatly improved security posture by eliminating existing vulnerabilities such as channels for spyware and malware. This approach is the first step in building a larger infrastructure for distributed maritime operations with organic security, networked sensors, communications, and intelligence, surveillance, and reconnaissance (ISR) capabilities.

WHEN

Contract Number: N68335-21-C-0150 **Ending on:** July 1, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial SecMUAS Release	Low	Identification of early adopters and obtaining feedback to improve used experience	3	1st QTR FY22
Initial QuadCopter Flight Tests	Med	Initial flight tests of UAS designed using SecMUAS tools.	4	2nd QTR FY22
Second SecMUAS Release	Med	Ability of users to develop and build small UAS using the SecMUAS tools	5	3rd QTR FY22

HOW

Projected Business Model: Secmation is a small business that provides engineering, technology, and tools to add information security to new and existing products. We specialize in emerging security applications that are not well served by traditional IT solutions.

Secmation's business model leverages investment from multiple, synergetic Government R&D programs to develop modular cybersecure unmanned systems. The Secmation’s business model is to offer target customers a path to secure unmanned vehicle development regardless of the organization’s security knowledge and/or maturity. Secmation will focus on Software/IP licensing, customization services, and annual maintenance contracts as revenue sources as it pertains to the various elements of the SecMUAS solution, both hardware and software.

Company Objectives: Secmation would like to meet with relevant points of contact at Program Offices and Primes to expedite technology transition and security approvals that enables new unmanned system capabilities be deployed for use by the warfighter while offering system developers plug & play secure design solutions for unmanned systems.

Potential Commercial Applications: SecMUAS offers commercial Cyber Physical Systems (CPS) the same level of security employed by the military with shorter development and security certification timelines. The SecMUAS tools are applicable to all types of cyber physical systems including but not limited to the following: undersea, surface, air, and space autonomous vehicles, IoT and Smart devices, and industrial control systems.

Contact: Dr. Hal Aldridge, CEO
Hal.Aldridge@secmation.com 919-887-2560