

Topic: N131-082

Adaptive Immersion Technologies

Stealth Optimized, Adaptive Assessments for Multistage UAS Operator Selection (Stealth Adapt)

Adaptive Immersion's technology addresses the challenge of accurate Unmanned Aerial System (UAS) operator selection with a customized suite of performance-based assessments delivered within an adaptive, engaging, and secure content delivery and optimization framework. The technology has been engineered for rapid transition to selection systems for military, DoD, and public sector UAS operations. It is the product of a novel and proprietary method for integrating assessment content within realistic UAS mission simulations, enhancing prediction and test security, minimizing assessment time, and ensuring functionality on multiple delivery platforms. Our quality control and risk mitigation strategy includes extensive usability research, feedback from transition stakeholders, and planned validation. Adaptive Immersion Technologies (AIT) is focused on the synthesis of predictive data analytics, simulation, and assessment technology to optimize performance in high-risk, cognitively challenging work.

Technology Category Alignment:

None

None

None

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SYSKOM: ONR

Contract: N00014-14-C-0260

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00014-14-C-0260

Department of the Navy SBIR/STTR Transition Program

STATEMENT A. Approved for public release; distribution is unlimited. ONR

Approval # 43-1256-16

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WHO

SYSCOM: ONR

Sponsoring Program: ONR Code 34 - Warfighter Performance Department

Transition Target: Unmanned Aerial Systems Interface, Selection, and Training Technologies (UASISTT)

TPOC:

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Other transition opportunities:

Other military UAS programs - Air Force, Army, Marines.

Intelligence Community UAS programs

Federal/state/local law enforcement

Department of Homeland Security (DHS) - Customs/Border Protection, FEMA

Commercial/private sector companies employing UAS technologies

Search-and-Rescue; disaster casualty response

Medical robotics

Space exploration



Screen capture from Stealth Adapt cognitive simulation assessment.

WHAT

Operational Need and Improvement: Over 50% of all UAS mishaps are attributed to human factor issues, beginning with poorly defined UAS operator selection capabilities. Adaptive Immersion Technologies' Stealth Adapt assessment system meets all the U.S. Navy's present and projected future requirements for UAS Air Vehicle Operator (AVO) selection eliminating suboptimal outcomes for UAS operators.

Specifications Required: (1) Compatible within existing military assessment frameworks, platform – specific systems for unmanned aviation, and private sector transition clients. (2) Accurate AVO performance prediction, with emphasis on adaptive management of operational stress. (3) Minimization of assessment time and content protection. (4) Performance-based assessments measuring latent cognitive traits while affording uninterrupted immersive and realistic gameplay of simulated AVO tasks. (5) Cross-platform scoring optimization algorithms to validate AVO selection.

Technology Developed: Adaptive assessment content for accurate prediction of UAS operator performance - to include components measuring executive level cognition, personality, and biographical history. Adaptive content sequencing and generation algorithms. Configurable multistage architecture, and stealth scoring optimization. Simulation-based assessment content embedded within a realistic UAS Search and Rescue game environment.

Warfighter Value: Use of Stealth Adapt enables more efficient and accurate selection of qualified AVO's which will significantly reduce selection, acquisition; training costs; reduce the probability of catastrophic failures – and associated costs – due to poor AVO performance; and enable increased productivity and successful mission accomplishment.

WHEN

Contract Number: N00014-14-C-0260 **Ending on:** December 31, 2015

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Update of Phase I prototype content	Low	TPOC review	4	October 2015
Initial delivery of draft assessment content	Low	TPOC review	4	October 2015
Construct validation study and pilot test results with Navy pilot review	Low	Validity coefficients per benchmark	5	December 2015
Criterion validation with AF pilot sample	Med	Validity coefficients per benchmark	5	March 2016

HOW

Projected Business Model: The product of this effort will be delivered as a direct development product to the government customer. The commercialization plan entails licensing agreements for other military and private sector transition customers, including DHS, EPA, and private industry. The licensing agreements will include both base licenses for assessment use, scoring, and interpretation, and maintenance licenses for ongoing evaluation of psychometric qualities, cut scores, validation, and adverse impact. The small business concern will retain IP rights per the SBIR data rights model.

Company Objectives: Our primary objective is to serve as the industry lead for integrated UAS operator recruitment, selection, classification, and training tools. Our commercialization plan is intended to support this objective by planning the development and delivery of customizable versions of the assessment framework to other military and private industry clients with specific UAS operator hiring requirements. We look forward to meeting key stakeholders within the military, defense, intelligence, and private sector communities with firsthand knowledge of the status quo of operator selection, and a vested interest in our product as a means for improving the process.

Potential Commercial Applications: Transition targets include other military and civilian unmanned aviation selection systems. Within the U.S. government, this customer base includes any military, intelligence, and security or law-enforcement agencies currently employing unmanned system operators, and with a requirement to select and/or train qualified operators. This includes all of the military branches, the Department of Homeland Security (e.g., U.S. Customs and Border Protection), and the Central Intelligence Agency (CIA), among others.

DHS and an increasingly militarized CIA will likely have a strong demand in the next coming years. External to the U.S. government, high risk domains involving any form of human-robot interaction will be targeted for transition, such as search and rescue, robot-assisted IED disposal squads, and robotic or robot assisted surgery.

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