## Department of the Navy SBIR/STTR Transition Program

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Topic # N201-027

Artificial Intelligence Software-Based Autonomous Battle-space Monitoring Agent for a Distributed Common Operational Picture Software Subsystem Daniel H. Wagner Associates, Incorporated

## WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO IWS 1.0

Transition Target: AEGIS / ICS

TPOC: (540) 653-3052

Other Transition Opportunities: Submarine Surface Ship Aircraft Carrier

Notes: Al: Artificial Intelligence

ML: Machine Learning

RL: Reinforcement Learning

SA: Situational Awareness

DCOP: Distributed Common Operating Picture SABM: Software-based Autonomous Battle-space Monitoring

LM-RMS: Lockheed-Martin Rotary and Mission Systems SENSIS: Sensitivity Analysis (Modeling & Simulation Tool)



Inside the CIC aboard the cruiser USS Normandy (CG-60). , Courtesy USN

## WHAT

**Operational Need and Improvement:** The Distributed Common Operating Picture (DCOP) represents information that must be analyzed and interpreted manually. Intelligent automation is needed to ensure optimal, timely decision-making.

**Specifications Required:** Develop a Software-based Autonomous Battle-space Monitoring (SABM) Agent with the capability to augment and assist combat systems operators and watchstanders in maintaining SA and successfully executing their mission. Integrate with the AEGIS combat system.

**Technology Developed:** Enhancements to LM-RMS SENSIS. Software for defining mission accomplishment as an RL goal. Software to train Deep Neural Networks for optimal decision-making.

Warfighter Value: Automated optimal decision making. Customized alerts based on optimal decision making.

HEN Contract Number: N68335-22-C-0109 Ending			<b>3 on:</b> Nov 24, 2023	
Milestone	Risk Level	Measure of Success	Ending TRL	Date
Lab Demonstration	Medium	More correct and timely decision making, when compared to human decision maker.	4	1st QTR FY24
Land-Based Test Site Integration	Medium	More correct and timely decision making, when compared to human decision maker.	6	3rd QTR FY24

## HOW

**Projected Business Model:** Continue to work with government sponsor to identify instances of sub-optimal decision making; formulate these problems as RL problems and solve them (i.e., determine the optimal decision making rules).

Identify additional customers that could benefit from this technology and integrate it with their domainspecific Modeling and Simulation tools.

**Company Objectives:** The company objective is to become a trusted provider of reinforcement learning tools to the NAVY and other customers.

**Potential Commercial Applications:** Al is defined as the ability to learn to make decisions to achieve goals. RL is a general purpose framework for performing Al. Applications of RL include: self-driving cars, industrial optimization, financial optimization, medical diagnosis and treatment, news recommendation, gaming, and robotics.