

WHO

SYSCOM: NAVSEA
Sponsoring Program: PEO IWS 1.0, AEGIS Integrated Systems Program Office
Transition Target: AEGIS Combat System Test Bed
TPOC: (202) 767-2746

Other Transition Opportunities: A virtualization platform that enables a federation of application processes to scale to High Performance Computing environments has explicit application to DoD aviation systems, manned and unmanned vehicles, as well as sensor, weapons and control systems.

Notes: This new capability will provide a mechanism for managing scenario runs in a resource-efficient manner in addition to increasing development test turnaround and reducing result time in operational test. Our Machine Learning (ML) approach also enables an application agnostic platform in which little to no application information is required for the platform to perform. There is potential for support for cloud infrastructure, GPU configuration, and development of a DSM framework.



<https://www.navy.mil/Resources/Photo-Gallery/igphoto/2002746786/>

WHAT

Operational Need and Improvement: The Combat Systems Test Bed (CSTB), as an integrated model across the entire AEGIS Combat System, is computationally intensive to operate and functions in a time-managed environment. The CSTB will be integrating numerous models and when used in a simulation will produce a high-fidelity representation of the entire AEGIS Combat System. Unfortunately, currently available commercial off-the-shelf (COTS) solutions do not address unplanned events during a simulation or compensates for additional processing requirements and resource allocation.

Specifications Required: The Navy seeks scheduling software that allocates and monitors computing resources, as well as starts the simulations using High Throughput Computing (HTC). The software will start the simulations by dynamically allocating system resources to software processes, efficiently utilize the available resources, monitor resources to ensure effective execution of priorities, and enable reallocation of resources when required.

Technology Developed: This solution will provide dynamic resource management targeted at High Performance Computing environments by enabling the optimization of compute resources usage in response to unanticipated running simulation events across the CSTB federation of processes. Our technology aims to provide near real-time performance metric and resource visualization. This provides increased productivity within the development cycle via improved runtime through intelligent resource allocation and increased turnaround by yielding results faster than consecutive execution.

Warfighter Value: Support the Navy in transitioning the technology to Navy use in order to meet a critical Navy need to decrease the amount of time it takes to generate data required to answer engineering questions posed by the technical team.

WHEN

Contract Number: N68335-21-C-0157 **Ending on:** Feb 26, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Study Completion Time Decreased	Low	Final Demo	7	2nd QTR FY23

HOW

Projected Business Model: Bringing this technology to market will require proper coordination between IDT and other government entities. This may require some research into other simulation test beds as well.

Company Objectives: Engage with commercial (non-DoD) and non-commercial entities. IDT is pursuing an Amazon Web Services IL6 cloud environment where the DSM capability could be used for multiple DoD programs where multi-run/monte-carlo analysis is required.

Potential Commercial Applications: This scheduling software can be utilized in large industries that have intensive computational needs. Academia, the aviation industry, the weather industry, and the energy industry, could benefit from this technology. Additionally, the Commercial space offers many potential programs where this dynamic resource platform may be utilized such as utilities control systems and the automobile, manufacturing, and financial industries. We believe the DSM capability to support cloud infrastructure and GPU configuration would be attractive to prospective customers as these features are commonly featured among competing products in the marketplace.