Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2021-0444

Topic # N171-071

Plug-and-play Analytical Framework for Distributed Structured and Unstructured Data Sets for Condition Based Maintenance Plus (CBM+)

Progeny Systems Corporation

WHO

SYSCOM: NAVSEA
Sponsoring Program: PEO IWS 1
Transition Target: Aegis Weapon System
TPOC:
202-781-4420
Other transition opportunities: Other programs responsible for afloat networks are viable transition paths including PEO SUB
- Non-Propulsion Electronics Systems (NPES)
- C5I & Weapons Integration Test Team (CWITT) Engineering Tools and SWFTS Baselines

Notes: The image shows the system architecture of the solution, including representative network components instrumented with agents that send component health status to a central data repository where analysis is conducted.

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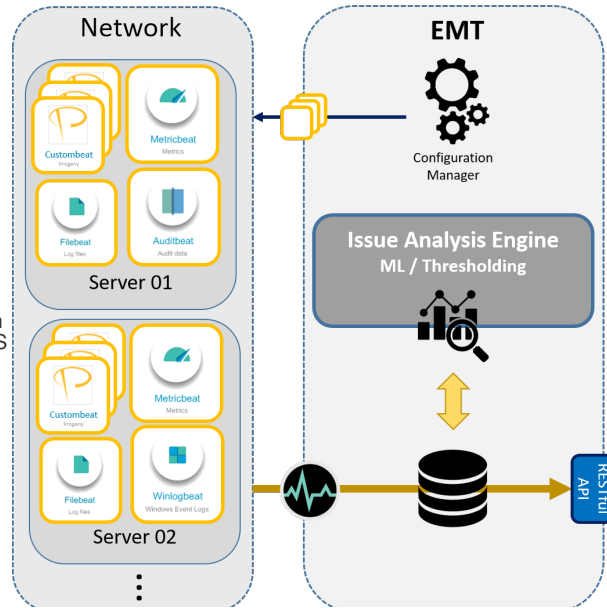
WHAT

Operational Need and Improvement: SWE STOs 2017 Distributed Agile Logistics (DAL) STO-2 Total Ownership Cost; Life Cycle Maintenance, A0; predictive and diagnostic tools for Fleet preventative maintenance & correct repair (PHM & CBM+)

Specifications Required: Plug-and-play agnostic algorithmic software framework that can deploy on board naval platforms to increase the scope, validity, veracity, and speed of PHM results in support of CBM+

Technology Developed: A central repository for system health data collected from various agents tailored to the domain. Analytics against the repository data to detect system degradation, predict errors, evaluate configuration drift and PMS status.

Warfighter Value: Analytics will be able to provide 'leading indicators' for mission readiness to command leadership based on collected structured data.

WHEN

Contract Number: N68335-19-C-0207 **Ending on:** January 30, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Lab Test Event 1	Low	Installation Procedures Verified	5	April 2022
Lab Test Event 2	Low	Data Collection Algorithms Verified	5	May 2022
Lab Test Event 3	Low	Error Detection and Prediction Verified	6	June 2022
Pilot Demonstration	Med	Deployment and operation on a production platform	7	April 2023
Seminal Transition Event	Med	Phase III Transition	8	January 2024

HOW

Projected Business Model: Leverage lab integration to provide system health monitoring for the Aegis lab
- EMT runs on lab Aegis networks to conduct "configuration change" monitoring
- EMT used to collect system health data during Aegis lab test events for new software installs
- EMT provides assessment of how the new software impacts the Aegis system network
Support development of PEO IWS 1.0 transition plan for fielding across afloat Aegis instances
- Leverage a successful pilot at the end of Phase II, Option 2 to transition to Phase III
Support development of a PEO SUB (Virginia and Columbia) NPES and C5I & Weapons Integration Test Team (CWITT) engineering tools set across SWFTS baselines
- PEO SUB establish a contract for instrumenting NPES & SWFTS

Company Objectives: The ultimate goal is to integrate and transition this technology into government and prime contractor systems for facilitating condition based maintenance.

Potential Commercial Applications: Isolated Data Center Enclave CBM+, Industrial Plant or Nuclear Plant Network CBM+

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