

Department of the Navy SBIR/STTR Transition Program

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Topic # N192-065
Artificially Intelligent Object with Virtual Presentation of Engineering and Logistics Data
AVNIK Defense Solutions, Inc

WHO

SYSCOM: NAVAIR

Sponsoring Program: NAVAIR

Transition Target: Enterprise level adaptation across multiple platforms

TPOC: (703) 850-9457

Other Transition Opportunities: Our software is platform agnostic - we can support decision makers align and synchronize workflows to extract new insights into degrader analysis, across any enterprise in the DoD

Notes: Concurrent Engineering Logistics Layered Structure (CELLS)



<https://www.dvidshub.net/image/6983437/mq-4c-triton-arrives-ns-mayport>

WHAT

Operational Need and Improvement: Naval Aviation maintains extensive, separate and disparate degrader datasets for maintenance, logistics, operations, and engineering in order to manage aircraft readiness. These disparate data sources increase cost, and risk as issues develop.

Specifications Required: There is a need to combine into a single view to obtain situational awareness and predict upcoming potential issues to solve before they become catastrophic at multiple echelons. To increase value, these degraders must be linked to identify new and emerging trends, failure modes, and logistics needs, well in advance of rendering aircraft non-mission capable.

Technology Developed: AVNIK proposes, a web-enabled e-tool, Concurrent Engineering Logistics Layered Structure (CELLS), based on repeatable workflows and multiple technologies of data mining, qualitative reasoning, and machine learning to support the Navy's Enterprise objective of digital transformation.

CELLS rapidly extract data from disparate sources, including DECKPLATE, IETMS, and JDRS and works in existing DoD decision support environments.

Warfighter Value: CELLS can provide the aviation maintainer a resilient, intelligent network to rapidly extract, compile, analyze, and present information derived from disparate Navy databases relevant to users across the Naval Aviation Enterprise. Who needs it?

Engineers and Logisticians - Analysis of the discriminators should provide a means to predict future maintenance for these parts, and highlight anomalies worthy of further engineering investigation and root cause analysis...

Maintainers – Predict when parts will fail to provide enough advanced warning to optimize maintenance...

Fleet Operators - Improve aircraft readiness as well as the ability to return assets to the flight line more consistently and predictably...

Logisticians – Improved strategic planning to forecast forward supply chain actions and reverse supply chain Depot preparation.

WHEN

Contract Number: N68335-21-C-0448

Ending on: Sep 30, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Access To Navy Data & Navy Networks	High	Navy Use Case Defined	4	2nd QTR FY23
Data Preprocessing On a Common Timeline	Medium	Link Maintenance Action Form (MAF) count to Elapsed Maintenance Time (EMT) Hours across same time	4	3rd QTR FY23
Conduct Correlation Exercise	Medium	Discover Statistical Relationship of Patterns to Confirm our Findings	4	3rd QTR FY23
Identify Patterns in Data	Medium	Drill Down Capability to search for possible root cause	4	3rd QTR FY23
Data Discovery Role-Based User Workbench	Low	Partial List Of Likely New Group Faults Correlated To Each Other	4	4th QTR FY23
Demonstration	Medium	Link Reliability Control Board (RCB) Degraders to Reliability & Maintainability Metrics	5	4th QTR FY23
Phase II Option	Medium	Prototype demonstrates extension of operational capability to cover defined degrader sources	7	4th QTR FY23

HOW

Projected Business Model: AVNIK Defense Solutions, Inc., a small business specializing in programmatic, technical, and logistics management services, was formed in January 2006, is privately held and classified as a Woman Owned, Small Business (WOSB), Sub-Chapter S Corporation. We anticipate offering CELLS technology as a Software as a Service (SaaS) directly to the USG, as the technology is software based for Enterprise sustainment use. AVNIK Defense would also provide on-going support and upgrades.

Company Objectives: We would like to meet with those who may assist with the transition and integration of CELLS into Navy and other US Service component logistics enterprise systems. AVNIK Solutions is ready to use actual fleet maintenance data to validate the technology. Also, AVNIK would like to engage with Maintenance, Operational, and PM Engineering and Logisticians and personnel associated with various fleet readiness centers, depots, and sustainment organizations to understand their needs and requirements for maintenance optimization, commanders' situational awareness, and to anticipate logisticians supply chain actions.

Potential Commercial Applications: Commercial applications include Maintenance Repair and Overhaul (MRO) of various transportation industries: aviation, automotive, rail, etc.

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