

Department of the Navy SBIR/STTR Transition Program

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Topic # N191-013

Phase II: Maritime Agile Intelligent Data Exploitation Network (MAIDEN)

Colvin Run Networks, Inc.

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA 290

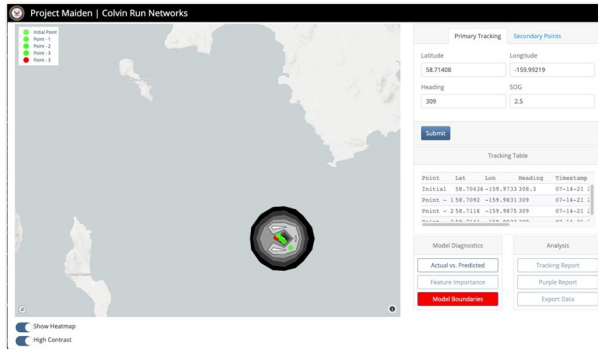
Transition Target: PMA 290

TPOC:

(301)342-2611

Other transition opportunities: Deployable Artificial Intelligence has extensions to any platform where onboard analytics are utilized on planes, ships, or ground vehicles. We have had discussions with other NAVAIR offices, and initiatives with USAF / F-35 Joint Program Office.

Notes: P-8A operator users requested ability to modify map / visualizations on the fly per crew need. Incorporation of live data feeds from multiple sources as well as manual input was a significant user requirement.



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WHAT

Operational Need and Improvement: MAIDEN leverages established tactics and empower operators in the field with better analytics that support better decision making. Man + Machine = Better Outcome. Aircrew needs to position aircraft ahead of a subsurface contact in order to maximize tracking probability, predicting future course of contact improves sensor placement. Historical data on submarine behavior must be identified, tagged, and engineered in order to create a training set useful for predicting future action.

Specifications Required: AI software deployable to P-8A aircraft. Per customer discovery interviews, P-8A processes include time-intensive manual information supply chains with multiple analysts spending lots of time on manual data preparation and reporting. MAIDEN provides big data analytics capability to effectively manage the abundance of ingested and disparate data for the purpose of enhancing the decision-making process for maritime missions. Multi-format data streams are processed separately using a variety of tools can be augmented and integrated for analysis in the MAIDEN environment.

Technology Developed: System architecture for secure and scalable artificial intelligence model development, deployment, and data exploitation, initially tailored to P-8A program needs. The models are developed independently of the deployment - i.e. MAIDEN bridges the models available from multiple disparate intelligence sources to meet varying operator needs.

Warfighter Value: Warfighting Capability, based on User Driven Design with 20+ operators:
 Ability to reposition aircraft more efficiently
 Improve aircrew response and decision time
 Decreased sensor consumption
 Ability to rapidly reposition strategically
 Continuous threat contact improves data collection creating a virtuous cycle supporting future collection and targeting
 Decrease aircrew distraction / improve tracking
 Improve lethality of P-8 platform; shorten ISR kill chain

WHEN

Contract Number: N68335-21-C-0001 **Ending on:** November 7, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype model and interface: user driven design start	N/A	Proof-of-concept demonstration ready to iterate	3	February 2021
Anti-Submarine Warfare Third-Party (i.e. ex-PMA 290) Assessment	N/A	Identify models of potential value to P-8A operations	3	March 2021
MVP (minimal viable product) software iterative with regard to onboard data streams, sandbox adaptability, and user needs / tailoring	Low	MVP incorporating user input	4	March 2021
System Architecture	Low	Full AI deployable, scalable, secure transition plan	5	November 2021
Prototype Mature to TRL-6	Med	MAIDEN tested in a relevant environment	6	November 2022

HOW

Projected Business Model: For Navy transition, we are targeting direct contracting with Navy in a bundled software and services contract to include MAIDEN software componentry and data engineering to evolving P-8A systems & requirements. We can also license the software to contractors if needed. While this is initially a highly tailored build for the Government, the components and IP developed will have applications to many agencies and companies for deployed AI solutions.

Company Objectives: We will continue to identify avenues to deploy MAIDEN into later stage developments beyond Phase II, targeting Phase III transition to Navy Programs of Record. The Colvin Run corporate vision entails addressing the Transportation Data Management Market projected to be worth \$198.82 Billion by 2025. MAIDEN has broad deployed AI applications that are critical in the global trade and commercial shipping security, maintenance, and compliance contexts. As data and tools shift to open models, the key differentiators for companies like Colvin Run are the methods, algorithms, and user experiences in the "last mile" of advanced analytics delivery that will be furthered in the NAVAIR SBIR. Colvin Run was also identified by the US Air Force as a Top 10 Startup via MassChallenge.

Potential Commercial Applications: There is natural extension of MAIDEN to commercial enterprise since its solution components map directly to common enterprise analytics requirements:

- Data Integration & Fusion: "Ability to collect data exceeds capacity to process it." Extracting data and transferring externally with other systems, Application Programming Interfaces / API for DOD and NAVAIR / platform-specific implementation
- Data Lake: Retaining data and storing long-term for the purpose of retrieval
- Staging Environment: Preparing, Modeling, and Querying data for Business Intelligence, Analytics and Reporting using Machine Learning Methods
- Microservices: Interfacing with existing tools and systems for point of utility
- Data Governance: Normalizing and Standardizing retrieved data

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