End to End Enterprise Solutions (E3S) Establishes CRADA with Naval Air Systems Command (NAVAIR)

E3S' CRADA with NAVAIR will leverage Digital Twin Technology to improve Advanced Arresting Gear, enhancing Navy mission readiness and protecting sailors' lives.

E3S' Director of AI & Autonomous Operations: "We are applying our team's knowledge and expertise in the development of reusable XDT enabled CBM solutions, as well as our experience in working with Naval mission critical systems such as AAG."

ALEXANDRIA, VA, UNITED STATES, February 17, 2025 /EINPresswire.com/ -- End to End Enterprise Solutions (E3S) has entered into a Cooperative Research and Development Agreement (CRADA) with the Naval Air Systems Command (NAVAIR), of the United States Navy, to facilitate collaboration on an AAG CBM Project to support an assessment of the feasibility of enhancing the condition-based maintenance (CBM) and prognostic health management (PHM) of the Advanced Arresting Gear (AAG) system by leveraging Digital Twin Technology.

The CRADA began on August 9th and the prototype is due to be submitted by end of summer 2025. E3S has clearly identified the problem sets and is now keenly focused on answering these. Our platform will allow the AAG system to predict system failures at earlier junctures in the process and will therefore enable the Navy to detect failure modes across their systems to ensure safer landing of jets on Navy aircraft carriers. This project has the capacity to enhance the mission readiness of the Navy and will protect sailors' lives during Navy flight operations.

The work conducted under this CRADA is expected to provide the avenue for the resolution of a

critical need faced by the NAVY for a Digital Twin that integrates model-based and data-driven methodologies to simulate the expected behavior of the AAG system under various operational conditions and compare it with actual sensor data. This approach is essential for developing usable metrics for CBM and PHM, ultimately improving the system's reliability, reducing maintenance costs, and minimizing downtime.

E3S' President, Esteve Mede: "By leveraging our NIMBLE platform, we will enable the Navy to achieve advanced CBM and PHM levels, addressing complex AAG challenges and delivering transformative results."

Project leader for this CRADA is Mark Walker, Director of AI, and Autonomous Operations. Mr. Walker described the impact this project will have for NAVAIR, he said, "We are excited by this opportunity to apply our team's knowledge and expertise in the development of reusable XDT enabled CBM solutions, as well as our experience in working with Naval mission critical systems such as AAG. The primary objectives are to accurately assess equipment health and performance and identify the optimal maintenance strategies necessary for ensuring readiness."

At the end of the project, four (4) desired outcomes will be fulfilled: the first, a Feasibility Assessment of Digital Twin Implementation to evaluate the practicality of developing a comprehensive digital twin for the AAG system that accounts for its unique operational characteristics, Secondly, the Validation of Predictive Maintenance Algorithms, this step determines whether predictive maintenance algorithms, when applied within the digital twin framework, can accurately forecast maintenance needs and potential failures.

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>
> *Mark Walker, Director of AI & Autonomous Operations*

The third and fourth outcomes of the project will be, Identification of Technical and Operational Gaps and the creation of a Roadmap for Future Development and Funding. The former will address gaps in current technology, data availability, or system knowledge that may hinder the successful implementation of CBM and PHM for the AAG system.

In summing up his company's latest CRADA, E3S' President, Esteve Mede remarked, "E3S is excited about this project since it will focus on fusion of model-based and data-driven methodologies to effectively simulate the complex, transient operational conditions of the AAG system, in order to improve predictive maintenance and the related metrics that guide actions.

By leveraging our proprietary NIMBLE platform, we will enable the Navy to reach more comprehensive levels of CBM and PHM than are currently deployed and reap transformative results that will address the complex challenges currently being faced by AAG. The research will considerably advance NAVAIR's mission-critical objectives."

Editor Notes
What is a CRADA?
A Cooperative Research and Development Agreement (CRADA) is an agreement between a federal laboratory and a non-Federal party to perform collaborative research and development in any area that is consistent with the Federal laboratory's mission. CRADAs are a frequently used mechanism for formalizing interactions and partnerships between private industry and national research labs and the only mechanism for receiving funds from non-Federal sources for collaborative work.

About End to End Enterprise Solutions (E3S)
End to End Enterprise Solutions, LLC founded in 2012, by Esteve Mede and Carlton Harris, is an 8(a), Service-Disabled Veteran-Owned, and Disadvantaged Small Business, managed together with principal Wilfredo (Freddy) Candelaria. In February 2023, E3S established its AI division; and now specializes in Deployment of Integrated Cognitive Computer Systems which are Artificial Intelligence (AI) systems that assist private and public-sector clients to manage and maintain their mission. E3S also offers advanced technology solutions, and cybersecurity. With a primary base in the Gov-Con space, it has achieved solid success and growth in that segment.

E3S also boasts proprietary products/services such as Singularity-IT™, a (FedRAMP certified) Security Operations Center (SOC) solution, Prognos-IQ™ a monitoring and advisory system for real-time monitoring and predictive health assessment of mission critical assets, XDT™, advanced Digital Twin Technology incorporating features such as Large Language Models (LLM), Data Analytics, and AI reasoning, and NIMBLE™ a low-code\no-code AI\ML digital twin development platform.

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