

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2017-717

Topic # N101-029

Automated Generation of Advanced Test Diagrams to Reduce Test Program Set Life-Cycle Costs
Summit Test Solutions

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA 260, Aviaton Support Equipment Program Office

Transition Target: Navy Consolidated Automated Support System (CASS)

TPOC:
(732)323-4877

Other transition opportunities: This automated wiring test diagram solution, while targeted to the CASS test station the tools would be applicable to the electronic CASS (eCASS) program. In addition the tools developed in the SBIR would be applicable to any Automatic Test System in any of the services. The Army and Air Force have already expressed interest in the tools.



U.S. Navy photos, <http://www.navy.mil> & Navy 110318-N-00760 release

WHAT

Operational Need and Improvement: Ensuring weapon systems are fully operational is critical to support the mission of the warfighter. Providing accurate reference data to the operator of Automatic Test Systems (ATS) in the testing of this equipment is essential. Test diagrams, which identify the routing of signals for each test in a Test Program Set (TPS), are a valuable resource to support the operator when testing the weapon system hardware. Test diagrams are typically generated manually, which is a labor intensive process and the resultant diagrams tend to be error-prone and difficult to update.

Specifications Required: Current test wiring diagram generation requires extensive manual analysis of test program source code, interface hardware, and test station capabilities. The desire is for an automated solution to generate test wiring diagrams to support TPSs that allows for the inclusion of electrical signal data in the test diagram.

Technology Developed: The process and associated tools generate test diagrams automatically using data compliant with the IEEE ATML family of standards. The automated process for test diagram generation promises to reduce the time to generate test diagrams by eliminating countless hours of analysis of test stations, test programs and associated interface hardware. In addition the solution simplifies the update process and minimize errors and inconsistencies typical of manually generated diagrams.

Warfighter Value: 1) Help ensure weapon system is fully operational. 2) Minimize weapon system downtime. 3) Reduce cost to maintain weapon system. 4) Utilizing the Automatic Test Markup Language (ATML) standards for the format of data provides an open-system approach and yields interoperability with other support tools.

WHEN

Contract Number: N68335-17-C-0243 Ending on: May 25, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Working prototype of ATML tool	Low	Test of prototype tool	5	June 2013
Working prototype of Test Diagram tool	Low	Test of prototype tool	5	July 2013
Update of Test Diagram tool to include digital capability	Low	Test of prototype tool digital capability	6	December 2015
Working prototype ATML WireLists tool	Low	Test of prototype tool	6	March 2018
Additional Test Diagram tool capability	Low	Test of tool in operational environment	7	May 2018

HOW

Projected Business Model: A suggested transition plan for this technology to NAVAIR would consist of our company using the software tools to generate test diagrams for the Navy and updating and maintaining the tool as needed. The depot and fleet Users could then use the tool and the generated test diagrams to support testing. Then if TPS changes are made, the depot or our company could make the changes to the ATML files and re-generate the test diagrams with the tool. This concept is suggested for the initial deployment of the tool and at a later time the tools could be transitioned to NAVAIR personnel for their use in generating the test diagrams. This would be an efficient way to provide comprehensive accurate test diagrams to the fleet in the shortest time possible and allowing for changes to the tool as needed.

Company Objectives: We are seeking DoD programs that are interested in applying these technologies to enhance the automatic test process. We would like to expand this technology to be used by other DoD test stations such as the Air Force VDATS and the Army NGATS stations.

Potential Commercial Applications: With similar issues, the commercial test industry requirements are also being addressed in this SBIR. We are currently in talks with a commercial satellite company regarding modifying the tools to utilize in their test processes.

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