**WHEN**

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Risk Level</th>
<th>Measure of Success</th>
<th>Ending TRL</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working prototype of ATML tool</td>
<td>Low</td>
<td>Test of prototype tool</td>
<td>5</td>
<td>June 2013</td>
</tr>
<tr>
<td>Working prototype of Test Diagram tool</td>
<td>Low</td>
<td>Test of prototype tool</td>
<td>5</td>
<td>July 2013</td>
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<tr>
<td>Update of Test Diagram tool to include digital capability</td>
<td>Low</td>
<td>Test of prototype tool digital capability</td>
<td>6</td>
<td>December 2015</td>
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<tr>
<td>Working prototype ATML WireLists tool</td>
<td>Low</td>
<td>Test of prototype tool</td>
<td>6</td>
<td>March 2018</td>
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<tr>
<td>Additional Test Diagram tool capability</td>
<td>Low</td>
<td>Test of tool in operational environment</td>
<td>7</td>
<td>May 2018</td>
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Contract Number: N68335-17-C-0243   Ending on: May 25, 2018

**WHERE**


**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.

**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 tool 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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