Topic: N162-106

Technology Service Corporation

Advanced High Speed Bus Technologies for Units Under Test (UUT), Test and Evaluation
Technology Service Corporation (TSC) is a high technology company providing engineering consulting and products, electronic components for microwave, digital processing computer software, and automated test & control systems to the U.S. Government and industry. TSC is developing a High-Speed Bus Tester that will utilize IEEE Automatic Test Markup Language (ATML) Std. to incorporate Open Architecture (OA) test capability into DOD standard Automated Test Equipment. Our OA design allows users to modify and expand capabilities as necessary without proprietary restraints. To reduce risk and accelerate development, TSC is leveraging our proven automated test tool, TestForge Test Execute (TE). Initial market is U.S. Navy Depot Sustainment efforts using electronic Consolidated Automated Support System (eCASS); looking for the opportunity to fully develop and mature our TE and interfaces to provide DOD with the OA solution for High Speed Bus testing

Technology Category Alignment:

Computational Research Engineering Acquisition Tools and Environment
Maintainability/Sustainability
Frameworks for Interoperability

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SYSCOM: NAVAIR
Contract: N68335-18-C-0104
Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-18-C-0104

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2018-732

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Technology Service Corporation

WHO

SYSCOM: NAVAIR

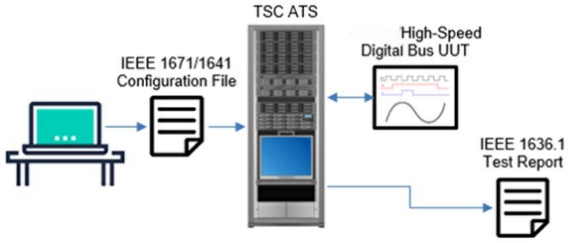
Sponsoring Program: PMA 260 and NAVAIR 4.8.6.12 Lakehurst

Transition Target: DOD Sustainment Activities and Test Instrument Original Equipment Manufacturer (OEMs).

TPOC:
(732)323-4877

Other transition opportunities: OEM/DOD Activities Family of Testers (FOT) needing High-Speed Digital (HSD) Bus testing.

Notes: Graphic represents the Technology Service Corporation (TSC) Automated Test Station (ATS) Open Architecture (OA) framework. The ATS will be rack-mounted and can be rolled up and connected to Host Automated Test Equipment (ATE) such as USN Electronic Consolidated Automated Support System (eCASS) pictured to the right.



IEEE Open Architecture Framework implementation for ATS life cycle cost reduction



Image Courtesy of Technology Service Corporation, Copyright 2018.
Includes NAVAIR image, https://goo.gl/images/5pnKVM

WHAT

Operational Need and Improvement: Within DoD there are a multitude of different test systems, with each of these test systems programmed differently and generally using closed architectures. This results in a fragmented knowledge base and expensive test standup requirements. DoD FOT requires OA HSD Bus test capability for units under test (UUT). TSC is developing HSD test capability using the IEEE Automatic Test Markup Language (ATML) Standard Family and an OA Tester to augment DoD FOT.

Specifications Required: The test capability will be built to IEEE 1671 Standard for Automatic Test Markup Language, IEEE 1641 Standard for Signal and Test Definition and IEEE 1636.1 Standard for Test Results. The ATS design will be based on COTS hardware and OA standards that will allow the extensibility and flexibility DoD demands while reducing life-cycle costs.

Technology Developed: The TSC ATS consists of a portable rack of COTS equipment with the TSC TestForge running on a modern PC platform. Interfaces will communicate with existing ATE and UUTs via a PXI/PXIe chassis. It will be extensible and flexible having rapid development capability through our proven TestForge software. It will have FPGA-based digital processing for validation of modern HSD Buses.

Warfighter Value: The TSC ATS will provide life cycle cost reductions by granting in-house test engineers and technicians the ability to perform automated test definitions on the fly. They will have the ability to update instruments without the need to re-compile the software. Current and future UUT testing with HSD Buses will be supported and the TSC ATS will be adaptable to any ATE family.

WHEN

Contract Number: N68335-18-C-0104 **Ending on:** August 20, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Completed Phase I	N/A	Test Executive (TE) parses UUT data in ATML	2	March 2017
Demonstrate Prototype ATS	Med	Phase II prototype tested on eCASS under CRADA with NSWC Crane	6	December 2019
Complete Phase II Base; Phase II Option Awarded	Med	Phase II conceptual feasibility proved	7	February 2020
Complete Phase II Option	Med	Expand prototype to other DoD Activities	8	August 2020
Transition to Phase II.5 or 3 to complete OPEVAL	Med	Full Rate Production Orders	9	December 2020

HOW

Projected Business Model: Our business model is to market, manufacture and sell the TSC ATS to DoD Sustainment Depots beginning with the USN FOT (eCASS), followed by other DoD Services and NATO partners. These FOTs include the USAF Versatile Depot Automatic Test Station (VDATS); selected parts of the USA Integrated Family of Test Equipment (IFTE), and USMC General Purpose Automated Test System (GPATS). In parallel, we will demonstrate the value and benefits to the test instrumentation OEMs that conform to the ATML Standard for the DoD market will result in revenue growth.

Company Objectives: TSC is an experienced DoD automatic test and control system developer and a National Instruments (NI) Systems Integrator. Leveraging the tools and expertise developed designing and delivering test capability to the Naval Surface Warfare Center, Crane (NSWC Crane), we will mature our ATS under a cooperative research and development agreement (CRADA) at NSWC Crane using eCASS as the host ATE. We anticipate positive reactions to our HSD Bus ATS capability at the 2019 SBIR/STTR Transition Program Forum, particularly from DoD Sustainment Activities and Industry manufacturers that develop capabilities requiring HSD Bus testing. Our immediate objective is to secure additional funding through Phase II.5 and/or Phase III contracts that will allow us to complete OPEVAL and prepare the ATS for Full Rate Production (FRP). We will commercialize the TSC ATS so those requiring HSD Bus test capability can benefit by having a flexible, scalable, cost effective in-house HSD Bus test capability.

Potential Commercial Applications: Our ATS is purposely designed and built to seamlessly adapt and interface with any automatic test system. This should be attractive to test instrument manufacturers, either DoD or Commercial, including the automotive and aircraft industries; as well as space applications including ground stations and satellite systems. Our ATS will provide a low lifecycle cost test capability in any market where high-speed digital bus testing is required.

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