Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for Release. Distribution is unlimited.

Topic # N092-128

Expert System Simulation Capability for Recoverability Modeling

Test & Evaluation Solutions, LLC

WHO

SYSCOM: NAVSEA

Sponsoring Program: Team Ships, PMS 501

Transition Target: LCS Ships, Freedom Class and Independence Class

TPOC:
(202) 781-3872

Other transition opportunities:
NSWC Carderock Code 61
NAVSEA 05P
DDG 51 Flight III Program

http://www.navy.mil/view_single.asp?id=97033

WHAT

Operational Need and Improvement: Increased reliance on ship system automation, remote sensors, and reduced manning concepts have increased the sensitivity of crew response and survivability of installed control systems in recoverability analysis. Analysis supporting realistic survivability testing as required by Title 10 U.S. Code 2366 must incorporate crew responses. Crew responses are largely driven by the development situational awareness. Current recoverability simulations do not emulate the development of situational awareness and miss design vulnerabilities associated with installed sensors and limited crew resources. While testing captures these elements, it is expensive, occurs late in the program and often can only address limited test cases.

Specifications Required: Software package (IRM) that can be used in any future Navy ship acquisition program to consider ship design characteristics and manpower in evaluating shipboard recoverability and damage control capability.

Technology Developed: Develop technology that improves Navy's ability to conduct Live Fire Test and Evaluation (LFT&E) analysis. Will be achieved by improving the technical maturity of the prototype software created under the original SBIR Phase II and demonstrating that the software can be used to support and improve Total Ship Survivability Trial (TSST) planning, scenario development, and post-trial analysis.

Warfighter Value: This product will lead to more survivable ship designs by providing impact analysis and risk reduction related to manpower and system design decisions. When integrated into the design cycle, this product will reduce costs for Live Fire Test and Evaluation (LFT&E) analysis.

WHEN

Contract Number: N00024-14-C-4097 **Ending on:** March 18, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Develop Proof of Concept demonstration	Med	Agent communication and decision making observed	3	May 2010
Integrate Agent Software with Integrated Recoverability Model	Med	Successful component integration testing	5	August 2011
Software requirements demonstration	Med	Demonstration of basic system requirements	6	February 2012
Total Ship Survivability Trial	Med	Validation using Test Data	7	March 2016
Accreditation	Med	Accreditation Letter Signed by Program office	8	May 2017

HOW

Projected Business Model: The software will be licensed to the Navy at no cost, with revenue generated by training, technical support, analysis support, and software feature enhancement.

Company Objectives: A Navy ship acquisition program develops recoverability and manpower related damage control requirements and assesses them using this tool. Shipbuilders use this tool to assess design concepts and support cost/benefit analysis. An LFT&E program uses this tool to select test scenarios, develop drill guides, and perform analysis using TSST results.

Potential Commercial Applications: Training - This software would make an excellent training tool for decision makers in the Navy's damage control organization. Interactive training scenarios could be developed that provide realistic information flow generated by "agent" investigators and feedback of consequences for poor decisions. Non-Navy and private sector - There are potential applications within the Department of Homeland Security for assessment of power plants and refineries with a focus on the ability of emergency personnel to contain environmental hazards and adequate design of safety and redundant systems.

Contact: Derek Skahen, Principal Investigator
dskahen@tnesolutions.com 703-966-5319