

Navy STP Technology Guide



2021-22 Navy STP Cohort

The information included in this guide is publicly available.

What is the SBIR/STTR Program?



The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, also known as America's Seed Fund, are among the largest sources of early-stage capital for technology commercialization in the United States. These programs are coordinated by the Small Business Administration (SBA), intended to help select small businesses conduct research and development. Funding takes the form of contracts within the Navy and has three phases of funding. The recipient projects must have the potential for commercialization and must meet specific U.S. government R&D needs. The Navy has participated since the inception of both programs.

What is the DoN SBIR/STTR Transition Program?

For over 20 years, Department of Navy SBIR/STTR Transition Program (Navy STP) has been a vehicle for connecting SBIR/STTR-funded technologies with warfighters, government acquisition and technical personnel, prime contractors, system integrators, and other potential partners and collaborators. The program takes a holistic approach to assisting selected small businesses to transition their technologies through business mentoring, training, marketing material creation, and business development activities and promotion.







What are the Navy's Forum for SBIR/STTR Transition (Navy FST) focused Technology events?

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The Navy's Forum for SBIR/STTR Transition (NavyFST) focused technology events promote companies participating in the Navy STP. Navy FST connects these small businesses with government and industry personnel through Tech Talks and Meet the Experts one-on-one meetings, and an enhanced online presence via the Virtual Transition Marketplace (VTM).

For the current Navy STP cohort projects there will be four Navy FST focused technology events:

 San Diego, CA 16-18 February 2022	WEST 2022 Focus on Navy STP SBIR technologies displaying leading edge technologies supporting Air Platforms, Autonomy, C4I, Cyber, Electronic Warfare, Energy & Power Technologies, Ground and Sea Platforms, Human Systems, Modeling and Simulation Technology, Sensors, Space, and Sustainment. Visit us at booth 1709. Learn more about West 2021 at: https://www.westconference.org
 Washington Navy Yard 2-3 March 2022	NAVSEA FST DAYS Focus on Navy STP technologies advancing maritime systems and warfighting capabilities in the areas of Advanced Electronics, Autonomy, Battlespace Environments, C4I, Cyber, Energy & Power Technologies, Ground and Sea Platforms, Human Systems, Materials & Manufacturing Processes, Modeling and Simulation Technology, and Sensors. * Invite only, requires security pre-screen
 Patuxent River, MD 22-23 March 2022	NAVAIR FST DAYS Focus on Navy STP SBIR technologies advancing all things aviation, including Air Platforms, Autonomy, C4I, Electronic Warfare, Energy & Power Technologies, Ground and Sea Platforms, Materials & Manufacturing Processes, Sensors, and Sustainment. * Invite only, requires security pre-screen
 National Harbor, MD 2-4 April 2022	SEA AIR SPACE CONFERENCE AND EXHIBITION Focus on Navy STP SBIR technologies advancing maritime systems and warfighting capabilities in the areas of Autonomy, Battlespace Environments, Biomedical, C4I, Cyber, Electronic Warfare, Engineered Resilient Systems, Ground and Sea Platforms, Human Systems, Materials & Manufacturing Processes, Modeling and Simulation Technology, Sensors, and Sustainment. Visit us at booth 537. Learn more about Sea Air and Space at: https://seairspace.org/

** Contact navyfst@atsicorp.com if you are interested in receiving an invitation to a SYSCOM FST event.*

Benefits of Utilizing SBIR/STTRs

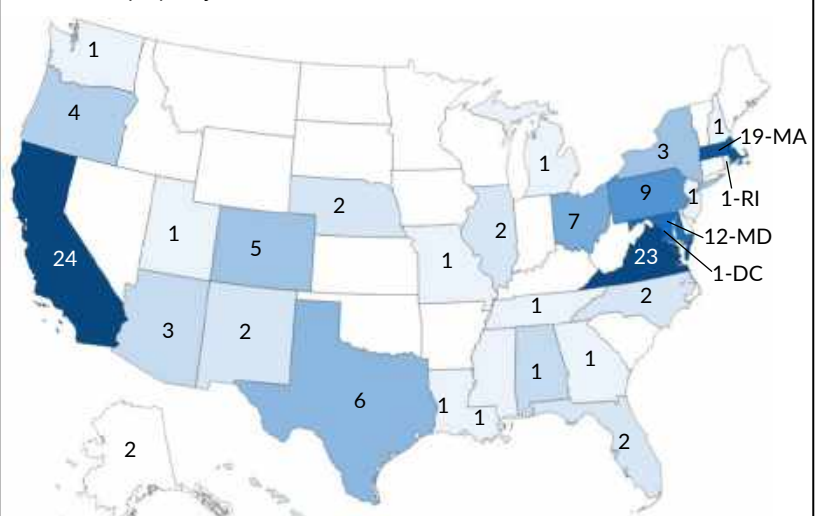
Since the topics are selected and funded by the Navy and Marine Corps Systems Commands, SBIR/STTR projects are an indicator of the voice of the customer, providing awareness of emerging technologies important to the Navy and indicating strong potential partners, teammates and suppliers. Consider Navy SBIR/STTR investments when choosing topics for internal research and development focus; leveraging SBIR/STTR projects can be an advantage when communicating with the customer. Companies that have been awarded SBIR/STTR phase II contracts have been vetted for compliance with DoD contracting systems and make excellent teammates.

Information on the current Navy STP cohort projects follows, starting on page 4, arranged by the technology category to make it easy to choose which small business technologies match your R&D interests and where you can meet them. Contact information is provided for each project.

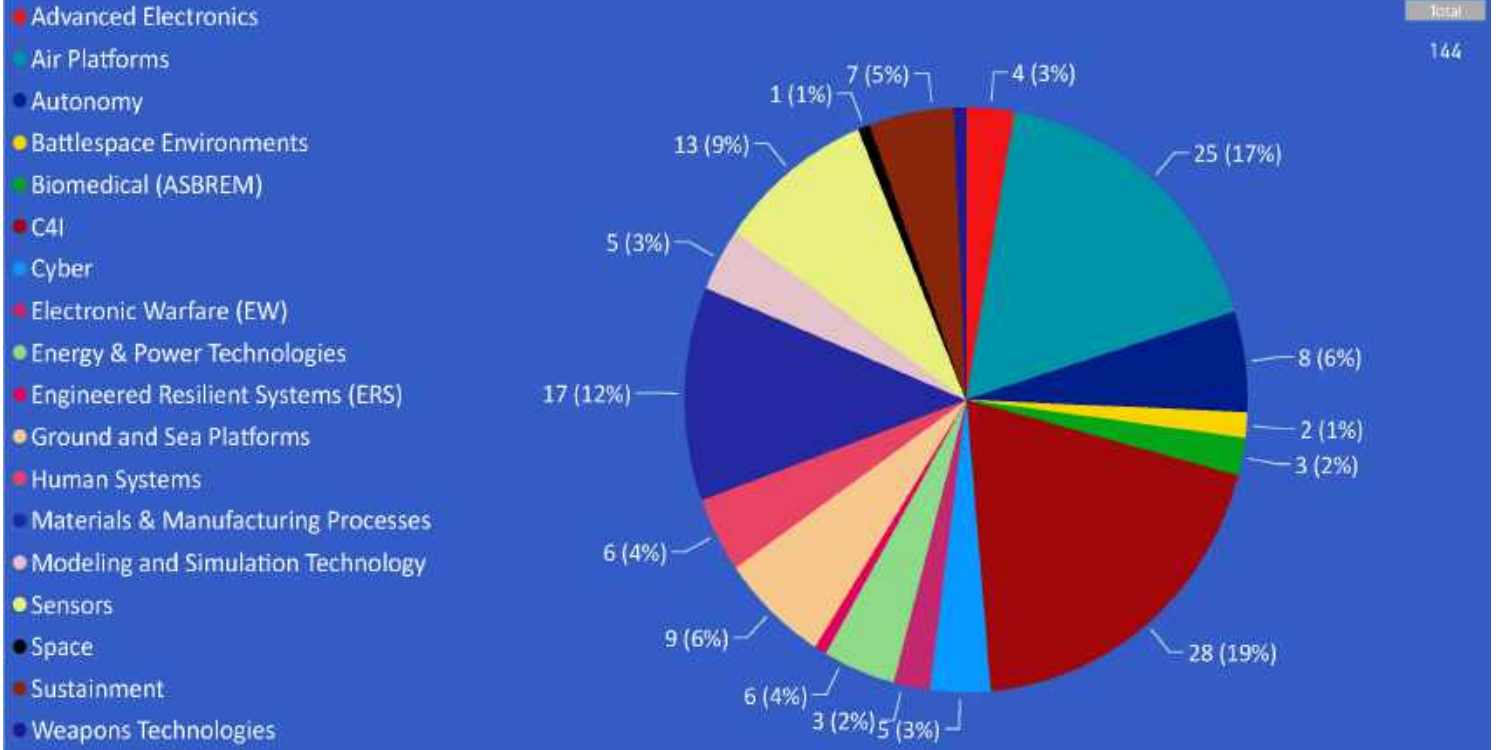
2021-2022 Projects

STATE/PROJECTS		STATE/PROJECTS		STATE/PROJECTS	
AL	3	MD	12	NC	2
AZ	3	MA	19	OH	7
CA	24	MI	1	OR	4
CO	5	MS	1	PA	9
DC	1	MO	1	RI	1
FL	2	NE	2	TN	1
GA	1	NH	1	TX	6
HI	2	NJ	1	UT	1
IL	2	NM	2	VA	23
LA	1	NY	5	WA	1
GRAND TOTAL				30	144

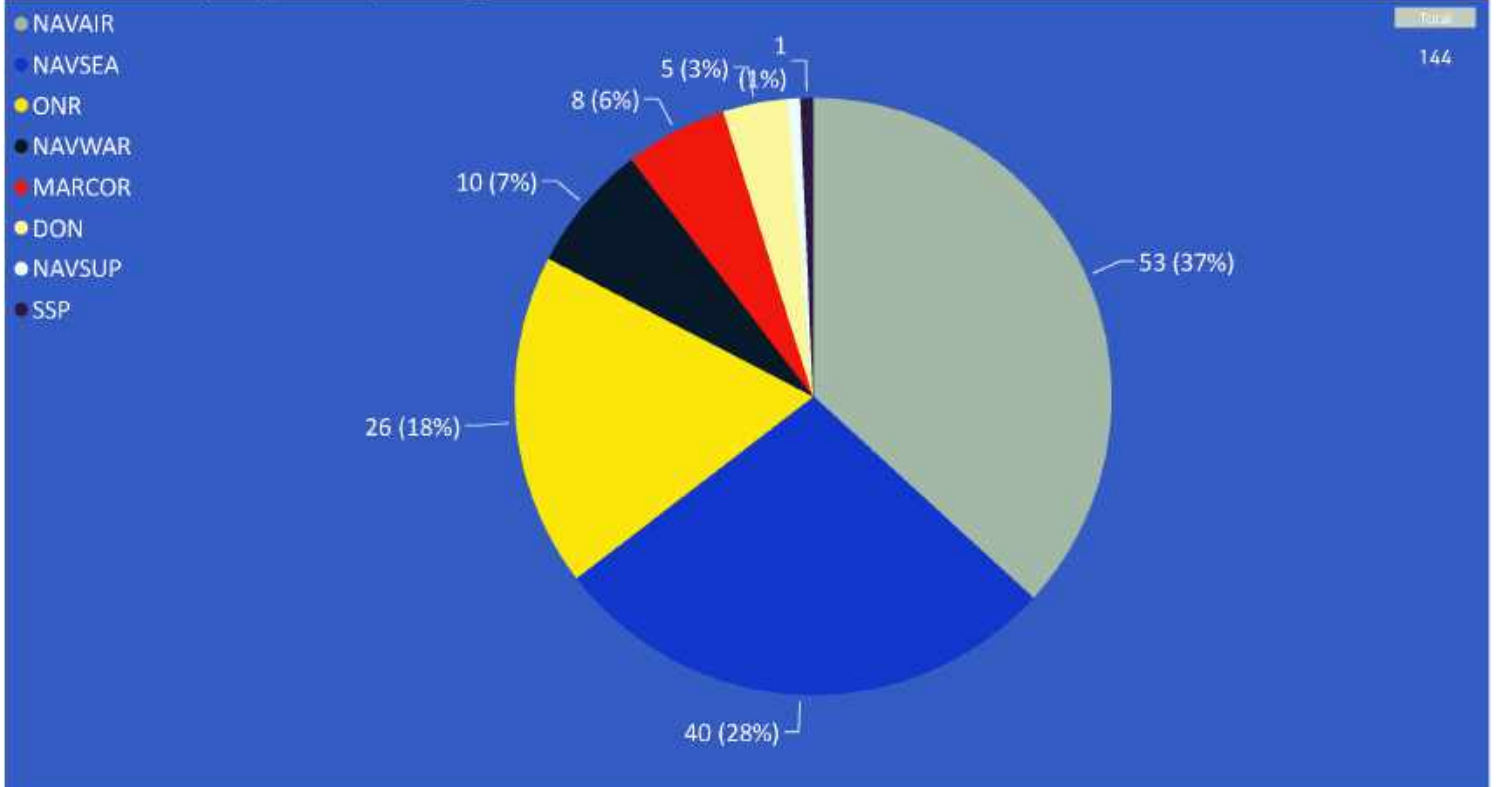
US State Map by Project



2021-2022 Navy STP Projects by Technology Category Breakdown



2021-2022 STP Projects by SYSCOM



ADVANCED ELECTRONICS

Company: Figure Engineering Inc.

Location: Lorton, VA

Topic: N192-119

Tech Category: Advanced Electronics

Phase II Proposal Title: Collective Protection System Variable Speed Drive Expansion

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: Figure Engineering will develop a Collective Protection System (CPS) Variable Speed Drive (VSD) Expansion technology that will modernize the U.S. Department of Navy's (DoN) shipboard CPS, which is responsible for protecting the crew from chemical, biological, and radiological (CBR) threats. CPS VSD Expansion will provide accurate and current data from sensors and provide additional sensor information as necessary to facilitate higher situational awareness and preventative maintenance. This will lead to approximately 60% reduction in CPS energy consumption and prolong component life, therefore reducing lifecycle cost for the Navy and improving fleet readiness.

Keywords: LPD17, Variable Speed Drive (VSD), Chemical Biological Radiological (CBR), Collective Protection (CPS), Modernization, Readiness, Amphibious

POC: Alex Mazzotta, alexander.mazzotta@figureengineering.com

NAICS: 541712



Company: Physical Sciences Inc.

Location: Andover, MA

Topic: N192-126

Tech Category: Advanced Electronics

Phase II Proposal Title: A Chip-based Orbital Angular Momentum Receiver for Underwater Optical Communications

SYSCOM: ONR

FST Event: NAVSEA

Abstract: Physical Sciences Inc. (PSI) and Professor Eric. G. Johnson (Clemson University) will develop an integrated optical transceiver for underwater communication using orbital angular momentum (OAM) on a silicon-nitride photonics platform. A high-bandwidth underwater optical link is a critical need for underwater communications. An ideal underwater communications link should be compact and robust, capable of high bandwidths with low error-rates and crosstalk to establish a secure link over long distances. This effort will focus on developing an OAM transceiver head that can be incorporated into a optical communication link for multiplexing OAM states and transmitting them over distances >150 m.

Keywords: High-bandwidth Networks, Integrated Optics, Silicon Nitride, Transceivers, Silicon Photonics, Underwater Communications, Orbital Angular Momentum, Receivers

POC: Chris Evan, cevans@psicorp.com

NAICS: 541720, 541711, 541712



Company: Vision Engineering Solutions, LLC

Location: Merritt Island, FL

Topic: AF191-D001

Tech Category: Advanced Electronics

Phase II Proposal Title: Low Cost Laser Communication Ground Terminal Network

SYSCOM: NAVWAR

FST Event: Sea-Air-Space

Abstract: Vision Engineering Solutions (Vision) proposes to deliver two Optical Ground Stations (OGS) to NIWC, as part of this Direct to Phase II SBIR program to support laser communication. One OGS will be part of a fixed site, and the other will be a transportable design. Both systems will be capable of day and night operations, communicating with satellites across Low Earth Orbit (LEO) and Geostationary Orbit (GEO), and compensating for atmospheric turbulence. The top-level components of each OGS are the Pointing and Tracking System and the Optical Platform. These components will be controlled from a common rack mount computer system, designated the Sensor Control Computer. Vision's development approach takes into account technical, schedule, and cost risks.

Keywords: Communication Network, On-off Keying, Optical Communication, Laser Communication, Fast Steering Mirror, Optical Wireless, Optical Ground Station, Lasercom

POC: Kenneth J. Evans Jr., kevans@vision.engineering

NAICS: N/A



Company: Voss Scientific, LLC

Location: Albuquerque, NM

Topic: N171-085

Tech Category: Advanced Electronics

Phase II Proposal Title: Implementation and Demonstration of LUCS, a Live, Ultra-Compact Multispectral USPL Characterization System

SYSCOM: ONR

FST Event: NAVSEA

Abstract: Phase II work will integrate the individual diagnostics selected in Phase I into a compact man-portable system designed for the near and short-wave infrared bands of 600-1700-nm, with a 3-5-m band system developed in the option. In addition, the single shot phase characterization technique will be realized in an extremely compact geometry, which will be insensitive to both alignment and beam profile, simultaneously providing detailed temporal and phase profiles. Advanced data reduction algorithms and system architectures will be implemented and a single graphical user interface (GUI) will display user selectable, processed, laser parameters including live tracking of statistical variations in figures-of-merit.

Keywords: LASER, Integrated Diagnostics, Ultra-short Pulse, Comprehensive Pulse Characterization, Ultra-Compact, Spectrum Measurement, Phase Extraction, Transportable

POC: Don Voss, donv@vosssci.com

NAICS: 541712, 334119, 541511, 334513



AIR PLATFORMS

Company: ATA Engineering, Inc.

Location: San Diego, CA

Topic: N18B-T029

Tech Category: Air Platforms

Phase II Proposal Title: Optimization of Fatigue Test Signal Compression Using The Wavelet Transform

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: ATA Engineering has developed a wavelet-based damage squeezing methodology for generating optimally compressed fatigue test signals that produce an equivalent amount of fatigue damage in a predictably reduced amount of time compared to the baseline (uncompressed) signals. Fatigue-critical signal characteristics (e.g., magnitude, phase, frequency, and sequencing relationships) are identified in the time-scale domain and preserved during signal compression such that the resulting signals produce characteristic responses and failure modes during test.

Keywords: Full-scale Fatigue Testing, Accelerated Fatigue Testing, Spectrum Editing, Signal Editing, Component-level Fatigue Testing, Damage Equivalence, Wavelet Transformation, Signal Compression

POC: Heather Wilken, heather.wilkens@ata-e.com

NAICS: 541330, 541712, 332312



Company: AVNIK Defense Solutions, Inc.

Location: Huntsville, AL

Topic: N182-100

Tech Category: Air Platforms

Phase II Proposal Title: Data Analytics for Navy Aircraft Component Fatigue Life Management

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: AVNIK Defense Solutions, Inc. is leading this NAVAIR SBIR project to develop new automated methods for managing fatigue life of aircraft components, considering the actual usage and historical field experience, to reduce maintenance, reduce cost, and improve fleet readiness. Our innovative concept is a software automated analysis toolset system (SAATS) that consists of a resilient intelligent network incorporating cooperative intelligent agents to autonomously acquire usage and maintenance data from original data sources and manage statistical analysis of the data to support maintenance and operations planning. We apply recent technological advances in data analytics to discriminate between useful information and inconsistencies in the acquired data.

Keywords: Diagnostics, Data Fusion, Regime Recognition, Intelligent Agent, Machine Learning, Models, Fatigue Life Management, Prognostics.

POC: Michele Platt, michele.platt@avnikdefense.com

NAICS: 541613, 541712, 541330, 541611



Company: Barron Associates, Inc.

Location: Charlottesville, VA

Topic: N181-017

Tech Category: Air Platforms

Phase II Proposal Title: Onboard Turbulence Recognition System for Improved UAS Operator Situational Awareness

SYSCOM: Air Platforms

FST Event: Sea-Air-Space

Abstract: Aircraft routinely encounter turbulence and pilots must respond appropriately to turbulence to maintain safe aircraft operation within the prescribed operating limits, and to effectively accomplish missions. Operators of unmanned aircraft cannot rely on the physical sensations that onboard pilots do to assess turbulence levels, and automated systems are needed onboard the aircraft to identify the turbulence level. Phase I successfully produced a proof-of-concept Turbulence Recognition and Decision Support System for UAS. Phase II will continue development of this system, including development of a real-time implementation. Phase II experiments will combine flight tests and ground-based atmospheric measurements to validate the approach.

Keywords: Decision Support, UAS, Turbulence Modeling, Unmanned Air Systems, Turbulence Estimation, Situational Awareness, Eddy Dissipation Rate

POC: Alec Bateman, bateman@bainet.com

NAICS: 541710, 541330, 541712



Company: BCO Inc

Location: Billerica, MA

Topic: N171-029

Tech Category: Autonomy

Phase II Proposal Title: Accurate Sensing of Low Speed Vehicle Motion Relative to a Moving Platform

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The first goal is to develop and validate GPU-based static and moving versions of Cascade's large eddy simulation (LES) software CharLES that would fully leverage existing (and future) GPU-accelerated systems accessible by NAVAIR and other DoD agencies. For the current project, the targeted capabilities are high-speed flows with shocks and wall modeling on both static and moving solvers. The application of interest is open rotors and realistic rotorcraft configurations. These choices were made to address key applications of interest to NAVAIR. The second goal is to develop modeling capabilities in the GPU-based solvers targeted towards efficient predictions of aerodynamics in realistic open rotors. In particular, the focus will be on actuator disk modeling to speed up simulation (when possible) and wall model closure with rotational effects to better capture the flow physics near rotor blades.

Keywords: Wall Modeling, Rotorcraft Predictions, GPU-accelerated Systems, Large-eddy Simulation, CFD, Moving-mesh Compressible Flow Solver

POC: Martin Schrage, mschrage@bco-inc.com

NAICS: 334515, 541511, 541219, 541330



AIR PLATFORMS (CONTINUED)

Company: Cascade Technologies Incorporated

Location: Palo Alto, CA

Topic: N14A-T005

Tech Category: NAVAIR

Phase II Proposal Title: Software Developments for Large-eddy Simulations on GPU-accelerated Systems

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: The first goal is to develop and validate GPU-based static and moving versions of Cascade's large eddy simulation (LES) software CharLES that would fully leverage existing (and future) GPU-accelerated systems accessible by NAVAIR and other DoD agencies. For the current project, the targeted capabilities are high-speed flows with shocks and wall modeling on both static and moving solvers. The application of interest is open rotors and realistic rotorcraft configurations. These choices were made to address key applications of interest to NAVAIR. The second goal is to develop modeling capabilities in the GPU-based solvers targeted towards efficient predictions of aerodynamics in realistic open rotors. In particular, the focus will be on actuator disk modeling to speed up simulation (when possible) and wall model closure with rotational effects to better capture the flow physics near rotor blades.

Keywords: Wall Modeling, Rotorcraft Predictions, GPU-accelerated Systems, Large-eddy Simulation, CFD, Moving-mesh Compressible Flow Solver

POC: Guillaume Bres, gbres@cascadetechnologies.com

NAICS: 541330, 541712



Company: CFD Research Corporation

Location: Huntsville, AL

Topic: N181-017

Tech Category: Air Platforms

Phase II Proposal Title: Physics-based Computationally Efficient Spray Combustion Models for LES of Multiphase Reacting Flows

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The team of CFDRC and Stanford University propose to develop physics-based computationally efficient models for multiphase combustion. The models will incorporate most of the key physics of spray atomization that controls the combustion phenomena post injection. In Phase I, a mixture-fraction based combustion model was demonstrated for Navy-relevant aviation fuels. In Phase II the spray combustion models will be advanced to include other key physical processes such as interaction with turbulence, preferential evaporation, and the coupling with other CFD codes. At the end of Phase II a well-validated multiphase combustion model will be available to the Navy and its contractors.

Keywords: Evaporation Models, LES, Flamelet Progress Variable Models, Multicomponent Fuels, Spray Combustion

POC: Timothy Dawson, tim.dawson@cfdrc.com

NAICS: 54171



Company: Continental Controls and Design, Inc.

Location: Huntington Beach, CA

Topic: N171-028

Tech Category: Air Platforms

Phase II Proposal Title: Lightweight Self-Start System for T56 Engine Driven Aircraft

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: We propose to design, build and test a PMDC based electric starter for the T56 gas turbine engine. Phase I results suggest that with new magnet and power electronic technology and our innovative formed winding, the motor and controller will fit in the space allocated for the current ATS and a lithium battery power pack will sit in the fuselage.

Keywords: E-2D, Self-Start, T-56, Small, Remote, Lightweight

POC: James Hynes, jim.hynes@continentalctrls.com

NAICS: 541710



Company: Cornerstone Research Group, Inc.

Location: Miamisburg, OH

Topic: N192-052

Tech Category: Air Platforms

Phase II Proposal Title: Electrical Load Management System (ELMS)

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: CRG is developing an advanced Electrical Load Management System (ELMS) for V-22 aircraft to more fully utilize the existing aircraft electric power source capacity. CRG's solution utilizes solid state power controllers (SSPCs) which provides improvements to power distribution, load control, fault recognition/isolation, and protection and automation.

Keywords: Digital Circuit Breaker, Electrical Load Management, Silicon Carbide, Predictive Maintenance, Load Shedding, Power Management, Load Prioritization

POC: Aacob Monat, monatja@crgrp.com

NAICS: 541712, 541690, 541330, 541380



AIR PLATFORMS (CONTINUED)

Company: Data Fusion & Neural Networks, LLC

Location: Arvada, CO

Topic: N193-A01

Tech Category: Air Platforms

Phase II Proposal Title: Navy Artificial Intelligence Maintenance System (AIMS)

SYSCOM: NAVAIR

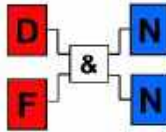
FST Event: NAVAIR

Abstract: The DF&NN team proposes to further develop the AIMS prototype developed and tested under Phase I to perform predictive maintenance on Naval aircraft. Technical efforts will include improved machine learning performance, all-data source input from Navy sources, customized Navy maintenance personnel user interface and additional trust scoring of predictions. We plan to apply the AIMS Deep Multi-Start Residual Training (D-MSRT) NNs, Smoking Gun, and maintenance condition categorization D-MSRT NNs capabilities for as many aviation systems as available. We will train D-MSRT abnormality detection NNs to learn the labeled repair conditions that were used for each categorization NN to provide a categorization NN result trust score to the user.

Keywords: REpresentational State Transfer (REST), Goal-Driven Condition-Based Predictive Maintenance (GCPM), Artificial Intelligence Maintenance System (AIMS), Condition-based Maintenance (CBM), Deep Multi-Start Residual Training (D-MSRT) Neural Networks

POC: Christopher Bowman, cbowman@df-nn.com

NAICS: 541712, 541710, 541510



Company: Hydronalix, Inc.

Location: Green Valley, AZ

Topic: N201-X01

Tech Category: Air Platforms

Phase II Proposal Title: 3D Printed Manufacturing Robots for Disaster Response

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: The purpose of this program is to develop and demonstrate rapid, distributed, on-demand, small-scaled, domestic manufacturing of unmanned systems capable of supporting multiple payloads depending on the situation. The proposed system should be capable of meeting multiple focus areas including (1) Agile manufacturing Unmanned Systems (UxS) products, (2) Control systems for unmanned platforms, and, (3) Notional payload concepts based on using commercial-off-the-shelf (COTS) technologies. Hydronalix will manufacture and demonstrate UxS for various applications. We will demonstrate these prototype systems with Navy Fleet operators for preliminary evaluation.

Keywords: COTS, Control Systems, Robots, Unmanned Systems, 3D Printing

POC: Jaime Lara, jaime.lara@hydronalix.com

NAICS: 336413, 541330, 336612



Company: International Mezzo Technologies, Inc.

Location: Baton Rouge, LA

Topic: N102-110

Tech Category: Air Platforms

Phase II Proposal Title: Cooling/Thermal Management System Development for Active Denial Technology (ADT) and High-Power Radio-Frequency vehicle Stopper (RF) Systems

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The heat exchanger in the Nacelle of the V-22 Osprey cools gearbox oils and hydraulic oil. In operation, the current heat exchanger becomes clogged with sand and dust and the engine overheats. Also, the current unit is very difficult to clean. A micro tube heat exchanger with large air passages offers the potential to alleviate this problem. In this program, Mezzo will design and manufacture and test a drop in replacement micro tube heat exchanger that will meet thermal performance targets while being far less susceptible to the adverse effects of sand and dust ingestion. The program will also complete fundamental structural tests (shock and vibration, etc.) to demonstrate that the unit, while providing benefits in terms of anti-fouling characteristics, is also rugged.

Keywords: Micro Tube Heat Exchanger, Nacelle Heat Exchanger

POC: Charles Becnel, becnel@mezzotech.com

NAICS: 334410



Company: Knowledge Based Systems, Inc.

Location: Charlottesville, VA

Topic: N193-A01

Tech Category: Air Platforms

Phase II Proposal Title: EVReadi

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The objective of the EVReadi effort is to develop, demonstrate, and transition an advanced predictive capability to systematically increase military aircraft readiness by: (i) increasing the accuracy of Class IX (spare parts) demand forecasts, (ii) quantifying the stock-out risk (or service-level) tradeoff implications of different provisioning strategies; and (iii) characterizing the readiness implications of the chosen provisioning strategy with respect to planned military operations.

Keywords: Readiness, Data Mining, Artificial Intelligence, Machine Learning, Demand Forecasting

POC: Mike Painter, mpainter@kbsi.com

NAICS: 541512, 511210



AIR PLATFORMS (CONTINUED)

Company: Luna Innovations Incorporated

Location: Baton Rouge, LA

Topic: N191-015

Tech Category: Air Platforms

Phase II Proposal Title: ACES: Aircrew Endurance System

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Musculoskeletal pain and discomfort are prevalent issues for naval pilots and aircrew, particularly within the rotary wing community where a combination of poor seat ergonomics and cockpit design result in airframes that actively promote poor posture and induce high rates of musculoskeletal fatigue. There is a critical need for a functional solution that can be rapidly implemented to reduce the incidence and severity of this pain. Therefore, Luna is developing a low-cost, low-profile, wearable aircrew endurance system designed to mitigate pain and fatigue common to aviators. Through the use of computational modeling, the design is specifically targeted to reduce musculoskeletal load and pain for helicopter pilots and aircrew.

Keywords: Aircrew, Musculoskeletal Pain, Biomechanics, Posture

POC: Kelley Virgilio, virgiliok@lunainc.com

NAICS: 541711, 334519, 541330, 541712



Company: Materials Research & Design

Location: Wayne, PA

Topic: N191-043

Tech Category: Air Platforms

Phase II Proposal Title: Analytical Design of Surface Porosity in 2D C/C to Delay Boundary Layer Transition for Hypersonic Aeroshell Applications

SYSCOM: ONR

FST Event: WEST 2022

Abstract: Under the Phase I effort, Materials, Research & Design, Inc. (MR&D) successfully demonstrated the ability to fabricate a standard 2D C-C material with prescribed surface porosity perpendicular to the outer ply of the material. The Phase II program aims to expand upon this effort and raise the TRL of this technology by validating the component in a relevant environment and demonstrating a subsystem prototype. The main objective for the Phase II effort is to design, fabricate, and wind tunnel test a C/C aeroshell material with prescribed surface porosity that is capable of delaying boundary layer transition due to the second mode instability under relevant hypersonic boost-glide conditions.

Keywords: Surface Porosity, Ultrasonic Absorption, Hypersonic Vehicle, Boundary Layer Transition, Second Mode Instability, Stability Analysis, C-C Aeroshell

POC: Kerry Howren, kerry.howren@m-r-d.com

NAICS: 541712



Company: Northwest UAV

Location: McMinnville, OR

Topic: N10A-T001

Tech Category: Air Platforms

Phase II Proposal Title: Fuel Cell UAV Powerplant System Developments

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: This program seeks to develop Hydrogen fuel cell technology developed by NRL into a system that will operate on a Tactical Unmanned Aircraft System (TUAS). Compressed Hydrogen fuel cells are the best technology that will fill the propulsion capability gap between batteries and internal combustion systems. For the commercial product this offers the low cost and long life while still offering the long endurance resulting in the highest value per flight hour. NWUAV will develop the product through design, development, documentation, and testing to a state where it can be flight tested. NWUAV will create operational and maintenance documentation towards a fieldable system.

Keywords: Advanced Materials, UAV Heavy Fuel Engine Manufacturing, High Power to Weight Ratio, Lightweight UAV Engine Design, Ceramic Engine Components, Innovative Heavy Fuel Atomizer

POC: Jeffrey Ratcliffe, jeff.ratcliffe@nwuav.com

NAICS: 336412



Company: Oceanit Laboratories, Inc.

Location: Honolulu, HI

Topic: N16A-T008

Tech Category: Air Platforms

Phase II Proposal Title: Novel Separator Materials for Achieving High Energy/Power Density, Safe, Long-Lasting Lithium-ion Batteries for Navy Aircraft

ApplicationsSYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: Oceanit proposes to develop and demonstrate novel, tailored, designer separator materials with optimized properties to maximize lithium-ion cell/battery performance, life, safety and reliability.

Keywords: Separator, High Energy Density, Li-ion Battery, Dendrites, Safety System, High Power Density

POC: Bryce Davis, bdavis@oceanit.com

NAICS: 541330



AIR PLATFORMS (CONTINUED)

Company: OptiNav, Inc.

Location: Bellevue, WA

Topic: N102-128

Tech Category: Air Platforms

Phase II Proposal Title: Predictions of the Acoustic Nearfield on a Carrier Deck

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: This SBIR effort will develop the OptiNav Functional Beamforming tool to make noise source characterizations of aircraft/engines simpler, faster, and cheaper. The work under this project will be to further develop the OptiNav, Inc. FB capability to handle jet plumes. Once this enhancement is successfully demonstrated during the first year of this project, the tool will be specialized to carry out two functions that were not previously available.

Keywords: Air Taxi, Community Noise, Static Engine Test, Jet Noise, Sound Sphere, Beamforming, Noise Sphere, Urban Air Mobility

POC: Robert P. Dougherty, rpd@optinav.com

NAICS: 541710



Company: SA Photonics, Inc.

Location: Los Gatos, CA

Topic: N10B-T049

Tech Category: Air Platforms

Phase II Proposal Title: Expanding Helicopter Pilots' Field of View with a Wide Field of View Night Vision System (WNVS)

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: SA Photonics has developed a Wide Field of View Night Vision System. A wide field of view digital night vision system will improve the safety and situational awareness of helicopter pilots through its increased capability. New digital night vision devices allow for better image processing than current night vision tubes. Intevac has implemented a scintillation-reduction algorithm that virtually eliminates speckle or scintillation in a tube. In addition, image processing can provide contrast and edge enhancement, sensor fusion, and video compression and recording.

Keywords: Wide Field of View, Night Vision, Degraded Visual Environment (DVE), Digital Night Vision, Head Mounted Display, DVE Mitigation

POC: David Cushman, d.cushman@saphotonics.com

NAICS: 541712, 927110, 541512



Company: SA Photonics, Inc.

Location: Los Gatos, CA

Topic: N181-027

Tech Category: Air Platforms

Phase II Proposal Title: AgileBeam RF Denied Free-Space Optical Communication System

SYSCOM: NAVAIR

FST Event: West 2022

Abstract: SA Photonics has developed innovative techniques that provide robust and reliable communication through a wide variety of atmospheric conditions, while maintaining a simple and low-cost system architecture. There are currently no FSO systems in use today on airborne platforms, mainly due to the need to use large and expensive stabilized gimbals. SA Photonics AgileBeam FSO system includes internal optical beam stabilization that allows the terminal to be directly attached to the aircraft, greatly reducing the cost to deploy and allowing use even on small UAVs. With the resulting compact size and robust and reliable performance, AgileBeam promises to enable widespread transition to the warfighter.

Keywords: Free Space Optical, FSO, LPI/LPD, Airborne Communications, RF Denied, Optical Beam Stabilization

POC: David Cushman, d.cushman@saphotonics.com

NAICS: 541712, 927110, 541512



Company: SA Photonics, Inc.

Location: Los Gatos, CA

Topic: N182-132

Tech Category: Air Platforms

Phase II Proposal Title: EagleEye Multi-Aperture Airborne FSO Communication System

SYSCOM: ONR

FST Event: West 2022

Abstract: SA Photonics is developing our EagleEye airborne FSO communication system. The EagleEye system is an airborne version of our shipboard MultiEye system which is being developed under an ONR Phase II SBIR program. EagleEye has an identical architecture to MultiEye, but includes additional functionality to support operation on airborne platforms including a fully stabilized optical head, a dedicated Wide-Field-of-View (WFOV) acquisition sensor, and dedicated acquisition beacon. The combination of these features allows operation on airborne platforms and supports rapid, autonomous acquisition. EagleEye is compatible with MultiEye, and will enable a wide variety of ship-to-air communications needs to be met.

Keywords: Communications, LPD, RF Denied, Lasercom, Free Space Optical, FSO, LPI

POC: David Cushman, d.cushman@saphotonics.com

NAICS: 541712, 927110, 541512



AIR PLATFORMS (CONTINUED)

Company: SAFE, Inc.

Location: Tempe, AZ

Topic: N171-026

Tech Category: Air Platforms

Phase II Proposal Title: Aircrew-Mounted Self-Adjusting Tether System

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The proposed program includes the development of a lightweight aircrew-mounted tether system that addresses these deficiencies of manually-adjusted tethers by: taking up tether slack, either automatically or upon user initiation; reduces nuisance locking by incorporating an inertia lock that is insensitive to aircraft influences; and, locates user control points at readily accessible locations on the aircrews endurance survival vest. Safe's proposed program utilizes several prototype build phases for hands-on assessment of functionality of the system.

Keywords: Inertia Reel, Mobile Aircrew, Fall Protection, Tether, Fall Arrest, Automatic, Gunners Belt, Restraint

POC: Jim Schroeder, jim.schroeder@safeinc.us

NAICS: 541710



Company: Systems Technology, Inc.

Location: Hawthorne, CA

Topic: NASA16-A105

Tech Category: Air Platforms

Phase II Proposal Title: Defining Handling Qualities of Unmanned Aerial Systems

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: A myriad of issues continues to slow the development of verification, validation, and certification methods. The how to of safely integrating UAS in naval operations where they will operate with manned aircraft raises many questions with limited answers. This Phase II program does not propose to tame the entire verification, validation, and certification problem, but instead the important need to define UAS handling qualities in piloted, pilot monitoring, and autonomous operations via a mission-oriented approach. The end product will be the UAS Handling Qualities Assessment software toolbox (UAS-HQ) and corresponding specification that will guide Navy stakeholders through a systematic evaluation process.

Keywords: Mission Task Element, Handling Qualities, Specification Requirements, Unmanned Aerial Systems

POC: David H. Klyde, dklyde@systemstech.com

NAICS: 541710



Company: TDA Research, Inc.

Location: Wheat Ridge, CO

Topic: N19B-T032

Tech Category: Air Platforms

Phase II Proposal Title: Strength Loss Indicator for Webbing

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Webbing is strong, woven material that is used to secure cargo as well as for safety equipment such as seat belts, harnesses, and parachute rigging. Due to its extensive use in military applications, the strength of the webbing is a key component of equipment design, especially in the case of safety gear that protects soldiers, as lives may be dependent on the strength and proper performance of the webbing. To help with webbing inspection, in this project TDA will develop a portable, non-destructive analysis device for inspecting webbing and for the determination of its mechanical properties.

Keywords: Harnesses, Mechanical Properties, Webbing, Tensile Strength, Parachutes, Textiles, Elongation, Non-destructive

POC: Brady Clapsaddle, bclapsaddle@tda.com

NAICS: N/A



Company: Texas High Energy Materials, LLC.

Location: Austin, TX

Topic: N151-008

Tech Category: Air Platforms

Phase II Proposal Title: Innovative, Low Cost, Highly Durable Fuel Bladder for Naval Applications

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: A proven, cost effective, highly automated, consistent, and predictable manufacturing process with rapid production rates will be implemented to manufacture high quality, self-sealing aviation fuel bladders. Our unique manufacturing process and our associated polymer technology will introduce a bladder that effectively alleviates fuel leakage potentials, through a material that is highly resistant to fuel, chemicals, puncture, abrasion and ballistic penetrations. Our technology will provide the U.S. Navy with significant reductions to battle damage hazards and loss of assets. With our fuel bladder technology, mission-critical assets, damaged in battle, will remain in service without compromising safety or performance of the aircraft.

Keywords: Fuel Tank, Durability, Puncture, Bladder, Jet Fuel, Fuel Cell, Leakage, Self-sealing

POC: Aaron Collins, aaroncollins428@gmail.com

NAICS: 541712



AIR PLATFORMS (CONTINUED)

Company: Texas High Energy Materials, LLC.

Location: Austin, TX

Topic: N151-008

Tech Category: Air Platforms

Phase II Proposal Title: Innovative Material (and Application Method) for a Hydrophobic/Oleophobic Coating to an Aluminum-Bodied Heat Exchanger TxHiEnergy

SYSCOM: NAVAIR

FST Event: WEST 2020

Abstract: The overall objective of the proposed Phase II Base work is to demonstrate the capabilities of a full-size coated heat exchanger in a high-fidelity simulated operational environment. The test data from Phase II is intended to be sufficient for approval of flight qualifications. Specifically, the coating application method will be demonstrated on a full-size heat exchanger assembly; and the heat transfer, erosion, and fouling resistance will be demonstrated on one of the heat exchanger cores from the full assembly across the entire operating temperature range. The fouling deposition protocol will involve an oil mist or vapor designed to closely simulate the fouling mechanisms encountered in an operational environment.

Keywords: Heat Exchanger, Hydrophobic, Oleophobic, Aluminum, Debris, Self-cleaning Coating, Particulate Accumulation

POC: Liano Perez lianoperez93@gmail.com

NAICS: 541712



Company: Dynamic Dimension Technologies

Location: Westminster, MD

Topic: N181-077

Tech Category: Autonomy

Phase II Proposal Title: Surf Zone Simulation for Autonomous Amphibious Vehicles

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: Dynamic Dimension Technologies (DDT) is proposing the Water incorporated, Autonomy enabled Virtual vehicle testing Environment (WAVE) designed to accurately represent the multi-domain environmental states which influences amphibious vehicle motions. WAVE allows autonomy developers to evaluate perception sensors, vehicle control, obstacle avoidance, and path planning algorithms, vehicle designer to conduct trade-off studies and system testers to assess vehicle and autonomy system performance and safe operations.

Keywords: Amphibious, Surf, Perception, Autonomy, Simulation, Littoral, Landing Craft

POC: Karl Leodler kloedler@dynamicdimensiontechnologies.com

NAICS: 541330, 541511, 541712

AUTONOMY

Company: Compass Systems Inc.

Location: Lexington Park, MD

Topic: N204-A01

Tech Category: Autonomy

Phase II Proposal Title: Miniaturized End Effectors (Microelectronics)

SYSCOM: ONR

FST Event: NAVSEA

Abstract: Compass systems Inc. and its team possess the intellectual knowledge base and have sufficient expertise in robotic systems to develop miniaturized end effectors capable of performing maintenance and inspection operations. By leveraging our expertise in research and development, we plan to design a miniaturized end effector for a robotic maintenance platform that will integrate several tasks. The developed end effectors will be designed to automate the current manual labor intensive maintenance processes. Upon completion of our design and development efforts, we will be able to provide a feasibility comparison for the robotic maintenance platform and mini-end effectors for existing naval maintenance processes.

Keywords: Miniaturized End Effectors, Corrosion Protection and Prevention, Modular End Effectors, Non-Destruction Inspection, Robotic Maintenance Platform, Mobile Autonomous System

POC: Darrel Tenney, Darrel.Tenney@compass-sys-inc.com

NAICS: N/A



Company: GMATEK, Inc.

Location: Annapolis, MD

Topic: N193-A02

Tech Category: Autonomy

Phase II Proposal Title: Multisensor Fusion and Analytics for Detection of Sensor Degradation

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The proposed Phase II technical effort provides a means to detect sensor degradation resulting from natural phenomena, adversarial action as well as internal vehicle failures. It also provides new ways to make adjustments needed to mitigate and compensate for reduced and degraded, corrupted and perplexing sensor inputs to accomplish mission objectives and facilitate mission success. Our approach involves sensor signal analytics through correlation in three different perspectives representing the distribution of signal characteristics across the frequency spectrum at any point in time, changes that take place in the signal over time and, where applicable, processed sensor signals as represented in imagery created from Frequency and Time domain signal data.

Keywords: N/A

POC: Glenn R. Wright, glenn@gmatek.com

NAICS: 541512

AUTONOMY (CONTINUED)

Company: Hydronalix, Inc.

Location: Green Valley, AZ

Topic: N102-182

Tech Category: Autonomy

Phase II Proposal Title: MGB II

SYSCOM: NAVSEA

FST Event: NAVAIR

Abstract: This statement of work (SOW) defines the effort to be executed by the contractor in support of the NAVSEA PMS408 and Naval Information Warfare Center Pacific (NIWC-PAC), to expand the capabilities of a micro-unmanned surface vessel (micro-USV) originally developed under previous Small Business Innovation Research (SBIR) Phase II, II.5 and III efforts to create small unmanned systems known as the Mobile Gateway Buoy (MGB) platform. Tasks identified include but are not limited to fabrication of two MGB2 research and development platforms, integration of SATCOM using Navy System with external access, acoustic modem integration, autopilot control software Integration, as well as incorporation of a robust RF communications suite.

Keywords: Unmanned Systems, Mobile Gateway Buoy, Hydronalix, Unmanned surface vessel, USV, micro-USV, MGB2, MGB

POC: Jaime Lara, jaime.lara@hydronalix.com

NAICS: 336413, 541330, 336612



Company: Quantum Ventura Inc.

Location: San Jose, CA

Topic: N193-A01

Tech Category: Autonomy

Phase II Proposal Title: Certificate of Robustness and Safety for AI (CORSI)

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: By leveraging open-source tools and frameworks, we propose to build CORSI - a suite of AI verification & validation tools of different types of neural networks operating under different circumstances. By utilizing our Risk Framework, Assumption and Safety Violation framework, CORSI will generate a Certificate of Robustness (COR) as the final outcome. Our tools will have 3 components: DNN Toolkit, Bayesian Uncertainty Modeling and Probabilistic Verifier covering CNN. CORSI will identify areas of concern, exceptions, red flags & vulnerable areas and provide remedial action. Once the AI system goes into production, CORSI's Intelligent Run-time Agent (IRA) will provide 24 x7 monitoring to evaluate the production system and provide protective measures and insights.

Keywords: Verification, AI Certification, Blackbox Attacks, AI Safety, Trusted Systems, V&V

POC: Srini Vasani, srini@quantumventura.com

NAICS: N/A



Company: Service Robotics & Technologies, Inc.

Location: Springfield, VA

Topic: N201-X02

Tech Category: Autonomy

Phase II Proposal Title: Adapting SR&T's M1 Hardware Portal for Navy Facility Health Monitoring and Prioritization

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: Service Robotics & Technologies (SRT) has developed the M1 Hardware Portal (TRL 8), a patent-pending, cloud-based software framework with standardized communication protocols, allowing connected hardware (robots, sensors, and other IoT/IloT devices) from different manufacturers to operate in the same software ecosystem. This product was developed to address commercial market opportunities in the facility management and custodial services industries, creating a single platform for managing and automating a facility's connected devices. The primary objective of this Phase II proposal is to expand the technical capabilities of SRT's M1 Hardware Portal (M1) to address Navy-specific facility and machine health monitoring requirements.

Keywords: Robotics, Machine Monitoring, IOT, Software Integration, Machine Learning, Building Automation Systems, Smart Buildings, Facility Management

POC: Jessica Bryan, jessica@srtlabs.com

NAICS: N/A



Company: The Innovation Laboratory, Inc.

Location: Portland, OR

Topic: N193-A01

Tech Category: Autonomy

Phase II Proposal Title: Aircraft Intent Inference based on Real-Time ADS-B Data Processing

SYSCOM: NAVSEA

FST Event: WEST 2022

Abstract: The Innovation Laboratory, Inc. (TIL) proposes to deliver Artificial Intelligence (AI)/Machine Learning (ML) capabilities to autonomously characterize aircraft intent based on real-time Automatic Dependent Surveillance Broadcast (ADS-B) data. In Phase I, dozens of AI behavior models are developed to characterize nominal and anomalous behaviors for piloted aircraft. The behavior models and data will be used to (1) identify apparent air corridors and (2) detect anomalous behavior in support of determining aircraft intent.

Keywords: ADS-B Data, Machine Learning, Artificial Intelligence, Real-time Aircraft Monitoring, Aircraft Intent

POC: Jimmy Krozel, jimmy.krozel@gmail.com

NAICS: 541512, 541511, 541330, 541430



AUTONOMY (CONTINUED)

Company: Trident Systems Incorporated

Location: Fairfax Station, VA

Topic: N193-A02

Tech Category: Autonomy

Phase II Proposal Title: Unmanned Surface Vehicle (USV) and Unmanned Underwater Vehicle (UUV) Autonomous Behavior Development

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Research is proposed to research and design a novel Unmanned Vessel Health Monitoring System (UVHMS), providing an onboard diagnostics and prognostics system for USV and UUV, supporting the identification of active and imminent platform faults. Using onboard sensors and data processing, multi-sensor cross-correlation, pattern recognition and anomaly detection, the UVHMS will essentially replace the human sensors aboard a manned vessel, allowing the USV/UUV to autonomously make data-driven health decisions, while also adding the capability to periodically provide real-time and predictive vessel health data back to remote stakeholders.

Keywords: UUV, Diagnostics, USV, Artificial Intelligence, Health Monitoring, Condition-based Maintenance, Prognostics, Automated Anomaly Detection

POC: David Braddy, david.braddy@tridsys.com

NAICS: 541519, 541511, 541512, 541712

TRIDENT

BATTLESPACE ENVIRONMENT

Company: Applied Ocean Sciences

Location: Fairfax Station, VA

Topic: N19A-T022

Phase II Proposal Title: Local Stochastic Prediction for UUV/USV Environmental Awareness

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: DZYNE Technologies proposes to extend the Smart Caching of Imagery for Carry On System (SCICOS) with the Image Validation Service (IVS) that will leverage state-of-the-art Deep Learning algorithms to detect and localize changes in input imagery against a reference image. The proposed Phase II effort will leverage existing change detection algorithms funded by the DARPA Cloud Analytics for Satellite Imagery (CASI) program. The Phase II IVS system will automatically detect and notify image analyst of changes in image content such as buildings, roads, vegetation and water.

Keywords: Change Detection, Navigation-aid, Deep Learning, Mission Planning

POC: Dr. Emanuel Coelho, emanuel.coelho@appliedoceansciences.com

NAICS: N/A



Company: DZYNE Technologies Incorporated

Location: Fairfax Station, VA

Topic: SB162-009

Phase II Proposal Title: Cloud Analytics of Satellite Imagery (CASI) for Tomahawk Mission Planning

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: This project delivers a compact system to assess and reduce local uncertainties that impact routing and sensor operation decisions while tracking the evolution of the maritime environment around unmanned platforms at sea (UUV/USV). The system runs both at control centers and on-board the UUV/USVs, subject to different network bandwidth and computing environments Size, Weight and Power (SWaP) constraints. The system uses the Navy ocean forecasts for initial environmental guesses and outlooks for up to 2 weeks (or more in future generations) and then implements Reduced Order Models (ROM) to update the original forecast fields, along with a local uncertainty picture (for the next 24-48 hours).

Keywords: Autonomous Vehicles Path Optimization, Dynamically Orthogonal Solutions, Stochastic Environmental Forecasting, UXV Environmental Adaptation, Reduced Order Ocean Modeling, Data Assimilation

POC: Paul Brewer, pbrewer@dyznetech.com

NAICS: 541330, 541360, 541690, 541511



BIOMEDICAL (ASBREM)

Company: Physical Sciences Inc.



Location: Andover, MD

Topic: N142-089

Tech Category: Biomedical (ASBREM)

Phase II Proposal Title: Folding High-G Resistant Patient Litter Follow-On

SYSCOM: MCSC

FST Event: Sea-Air-Space

Abstract: Physical Sciences Inc. (PSI) will provide the USMC with a lightweight, compact, deployable litter to meet the challenges of emergency evacuation and transport of injured Marines. The Phase II Follow-on effort will improve on the litter design by improving durability, reducing cost, and addressing other aspects of the litter function, such as ease of use and decontamination. In addition, the team will address the manufacturability of the litter system, reducing cost while maintaining performance. The output of the Phase II program will be a production-ready design with prototype units delivered for government testing.

Keywords: Lightweight, Stretcher, High Strength, Litter, Folding, Compact

POC: Alex Moerlein, amoerlein@psicorp.com

NAICS: 541720, 541711, 541712

Company: Technology Holding, LLC.



Location: West Valley City, UT

Topic: N182-096

Tech Category: Portable Ruggedized Energy Efficient Medical Sterilizer for Field Use

Phase II Proposal Title: Folding High-G Resistant Patient Litter Follow-On

SYSCOM: MCSC

FST Event: Sea-Air-Space

Abstract: The current steam based sterilizers of U.S. military has a number of shortcomings including lack of portability and high use of water. It is highly desirable to develop a high portable, efficient and water independent sterilizer for Navy applications. The proposing team will develop a field-ruggedized medical device for providing field sterilization of surgical instruments, tools, trays, and other reusable medical devices that come into contact with patients. The sterilizer will be developed for optimum performance and high likelihood of FDA 510K approval. The sterilizer will have military as well as civilian market applications.

Keywords: 510K, Sterilization, Efficient, Rugged, Portable

POC: Mukund Karanjikar, mukund@tekholding.com

NAICS: 541712

Company: Vivonics, Inc.



Location: Bedford, MA

Topic: N171-002

Tech Category: Phase II: Intranasal Cooling for Encephalopathy Prevention in Combat Casualties (ICEPICC)

Phase II Proposal Title: Folding High-G Resistant Patient Litter Follow-On

SYSCOM: MCSC

FST Event: Sea-Air-Space

Abstract: DoD personnel are at increased risk of traumatic brain injury (TBI) in both wartime and peacetime training incidents. Post-injury swelling (edema) is a common physiological complication of TBI which can result in added physical damage to the brain, increasing the risk of mortality, chronic encephalopathy (brain damage), and long term disability in personnel suffering TBI. Vivonics is proposing to develop ICEPICC (Intranasal Cooler for Encephalopathy Prevention In Combat Casualties), an intranasal cooling system based on forced cold-air convection, which is simple and well suited to the military environment because it is easily operated and supported in a wide range of settings and has shown to provide effective cooling.

Keywords: Traumatic Brain Injury (TBI), Neurotrauma, Cryogenic Therapy, Nasopharyngeal Cooling, Encephalopathy, Prophylactic Hypothermia, Therapeutic Normothermia, Intracranial Edema

POC: Ryan Myers, rmyers@vivonics.com

NAICS: 541720, 541711, 541712

COMMAND CONTROL COMMUNICATIONS COMPUTERS & INTELLIGENCE (C4I)

Company: 4S - Silversword Software and Services, LLC

Location: Catonsville, MD

Topic: N192-082

Tech Category: (C4I)

Phase II Proposal Title: Mobile Phased Array Antenna using Through the Air Link Optical Component (TALOC) Technology

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Silversword Software and Services, LLC (4S) is developing a novel, robust, Free Space Optical (FSO) communications technology entitled Through the Air Link Optical Component (TALOC), applicable for use on military aircraft, both manned and unmanned. During Phase 2, we will perform a detailed design and build of a laboratory demonstration system using Commercial Off-the-Shelf (COTS) and custom components. Demonstration hardware will include optical, electronic and software elements. Two demonstration stages are envisioned. For stage 1, the number of test articles is limited and the mechanical structures are at breadboard level. For stage 2, optics, electronics, and software will be improved based on stage 1 findings.

Keywords: Mesh Network, Time of Flight, Modeling and Simulation, 3D map, UAV swarm, free space optical, retro-reflector, Phase array antenna

POC: Ronald Smith, smith@4s-llc.com

NAICS: N/A



Company: Adaptive Dynamics, Inc.

Location: Catonsville, MD

Topic: NOAA161-844D

Tech Category: (C4I)

Phase II Proposal Title: RF IM Filter

SYSCOM: NAVWAR

FST Event: WEST 2022

Abstract: In the Base period Adaptive Dynamics Inc. (ADI) proposes to implement its advanced 2nd generation Multiple Adaptive Generalized Interference Canceller (MAGIC) Integrated Massively Parallel Structure (IMPS) Radio Frequency Interference Mitigation (RF IM) filter on NAVAIR PEO(T) avionics hardware. ADI will be supported in this effort by Prime Vendor #1 for the MAGIC IMPS filter integration and Prime Vendor #2 for the RF IM filter performance testing. The testing will include a wide range of operationally relevant interference cases. In the Option period, ADI will develop and architect the VHDL hardware design for the 3rd generation MAGIC WISE IMPS filter which supports additional mission critical capabilities.

Keywords: Wireless, Interference Mitigation, digital signal processing, RFI, radio, MAGIC Filter, IMPS, anti-jamming

POC: Dr. James Zeidler, jrz@adaptive-dynamics.com

NAICS: 541710, 541690, 541511, 541330



Company: ARiA

Location: Washington, DC

Topic: N19B-T035

Tech Category: (C4I)

Phase II Proposal Title: Universal Sensor Application Programming Interface (API) for Undersea Data

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The Universal Sensor Definition Schema is designed to consider and address modern communication needs in challenging environments, be those A) sensor-to-ship, B) ship-to-ship, C) ship-to-sat, or D) ship-to-shore/sat-to-shore. To improve the capacity to request, retrieve, and process information across the wider operational sensor systems including legacy sensor arrays and/or new sensor payloads, the project team will leverage their complimentary areas of expertise to develop and demonstrate the Universal Sensor Definition Schema (USDS) as a suite of API definitions and messaging algorithms to meet the long-term solution of unifying the sensor request interfaces.

Keywords: Open Geospatial Consortium, Universal Interface, Standardization of Sensors, Open-source, USW-DSS AN/UYQ-10, Technology Stack

POC: Craig Einstein, craig.einstein@ariaacoustics.com

NAICS: 541720, 541690, 541712, 541511



Company: ASSETT, Incorporated

Location: Manassas, VA

Topic: N093-192

Tech Category: (C4I)

Phase II Proposal Title: Real-time Decision Aid for Enhancing Ships Self-defense

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Providing tactical cueing information to support accelerated situational understanding as an aid for the platform watch team, is the objective of this Phase II SBIR. With the greater availability of information from advanced sensors, third party information, and autonomous vehicles, the watch team can become overloaded and either miss or not properly assimilate the data available at any given point in time. Using a mission driven and decision centered design process, our research and associated innovative experimentation will temporally identify and properly characterize the watch team information needs.

Keywords: Real-time Decision Aid for Enhancing Ships Self-defense

POC: James Shannon, james.shannon@assett.net

NAICS: 541712, 541330



C4I (continued)

Company: Carley Technologies, Inc.**Location:** Sewickley, PA**Topic:** N19A-T024**Tech Category:** (C4I)**Phase II Proposal Title:** CUES: Cyber-mediated Usable Emotional Sensors**SYSCOM:** NAVSEA**FST Event:** NAVSEA

Abstract: This proposal is to develop, test, and make operational a scientifically sound approach for assessing information influence campaigns and their impact in ways that take account of the emotional state projected by the influencer and the consequent emotional state of those being influenced. A set of cyber-mediated usable emotional sensors (CUES), will be operationalized and used to improve the assessment of information maneuvers in social media both identification and impact assessment. Social, cognitive and psychological principles are used to lay the groundwork for new metrics and technologies that employ a combination of dynamic network analytics, machine learning, and natural language processing techniques applied to social media data in which the emotional content has been assessed using these CUES.

Keywords: social media analysis, dynamic network analysis, dynamics, influence campaigns, Emotion

POC: Rick Carley, rick.carley@carleytech.com

NAICS: 151712, 541618, 541690, 541511

CarleyTech**Company:** Carley Technologies, Inc.**Location:** Sewickley, PA**Topic:** N192-129**Tech Category:** (C4I)**Phase II Proposal Title:** Detecting Adversarial BENDs in the Information Environment**SYSCOM:** ONR**FST Event:** WEST 2022

Abstract: Our objective is to assess the feasibility of detecting adversarial information campaigns by using a blend of stance assessment, and bot/troll/cyborg/meme detection techniques for automated classification of BEND actors and maneuvers. BEND includes 16 social media information maneuvers used in information campaigns for influencing topic groups through content or social network manipulation. We propose a three step early detection approach.

Keywords: stance, stance, social media, Artificial Intelligence, Information operations, sentiment, topic analysis, community detection, network science

POC: Rick Carley, rick.carley@carleytech.com

NAICS: 151712, 541618, 541690, 541511

CarleyTech**Company:** CesiumAstro, Inc.**Location:** Austin, TX**Topic:** N181-090**Tech Category:** (C4I)**Phase II Proposal Title:** Rapidly Integrated Tactical Communications Payload**SYSCOM:** NAVWAR**FST Event:** WEST 2022

Abstract: The major challenge in constellation-wide deployment of tactical payloads in low-Earth orbit (LEO) lies in achieving the performance requirements that are imposed by constellation dynamics while maintaining a design simplicity that is compatible with large-scale production, along with typical constraints on size, mass, and power consumption. Cesiums proposed solution is a small reconfigurable payload. This approach offers the right balance between performance, size, weight, and power consumption.

Keywords: communication, phased array, LEO

POC: Chris Pappas, trey@cesiumastro.com

NAICS: N/A

CESIUM**Company:** Clear Science, Inc.**Location:** Keystone Heights, FL**Topic:** N142-121**Tech Category:** (C4I)**Phase II Proposal Title:** The Advanced Climate Analysis and Forecasting System - Decision Support System**SYSCOM:** ONR**FST Event:** Sea-Air-Space

Abstract: We propose 16 objectives based specific requirements requested by key stakeholders. These objectives reflect the increased use of the ACAF's current capabilities coupled with a growing appreciation of the power of the emerging ACAF-DSS as a planning and research tool. With a functioning Phase II prototype context, we feel our technical objectives for Subsequent Phase II can be specific and focused on areas we and other stakeholders understand are of priority as the ACAF-DSS moves forward toward eventual transition.

Keywords: N/A

POC: Bruce Ford, bruce@clearscienceinc.com

NAICS: N/A

**Clear Science, Inc.**

C4I (continued)

Company: Colvin Run Networks, Inc.**Location:** Leesburg, VA**Topic:** N191-013**Tech Category:** (C4I)**Phase II Proposal Title:** Phase II: Maritime Agile Intelligent Data Exploitation Network (MAIDEN)**SYSCOM:** NAVAIR**FST Event:** NAVAIR

Abstract: Colvin Run Networks will build a prototype of the Maritime Agile Intelligent Data Exploitation Network (MAIDEN) for the large volumes of P-8A data, focusing on post-mission product (PMP) use cases at the ground station, and then extending those capabilities to classified environments including onboard the P-8A aircraft. MAIDEN is built on a scalable and highly flexible analytics architecture supplemented with proven iterative data mining techniques to unlock the potential from large volumes of disparate data. This Phase II effort delivers a comprehensive justification of investing in the P-8A analytics infrastructure. Modeling focus areas include supervised machine learning and anomaly detection.

Keywords: N/A**POC:** Nikhil Shenoy, nikhil@colvinrun.net**NAICS:** N/A**Company:** Daniel H. Wagner, Associates, Incorporated**Location:** Hampton, VA**Topic:** N102-154**Tech Category:** (C4I)**Phase II Proposal Title:** Intelligent Maritime Planning and execution Services (IMPS)**SYSCOM:** ONR**FST Event:** NAVAIR

Abstract: In this project, Daniel H. Wagner Associates, Inc. (DHWA) will develop artificial intelligence (AI) and machine learning (ML) based target location estimation and mission effectiveness evaluation and optimization services that (1) Utilize the most accurate environmental information available and (2) effectively support U.S. Navy undersea warfare (USW), surface warfare (SUW), and Air Warfare (AW) planners and operators (including Integrated Undersea Surveillance System (IUSS) personnel), and (3) significantly improve command and control (C2), planning, and execution systems such as Undersea Warfare Decision Support System (USW-DSS) and Maritime Tactical C2 (MTC2).

Keywords: USW, Target Location Estimation, SUW, Artificial Intelligence (AI), Machine Learning (ML), Mission Effectiveness Evaluation & Optimization, AW

POC: Reynolds Monach, reynolds@va.wagner.com**NAICS:** N/A**Company:** Daniel H. Wagner, Associates, Incorporated**Location:** Hampton, VA**Topic:** N192-093**Tech Category:** (C4I)**Phase II Proposal Title:** Theater Anti-Submarine Warfare (TASW) Multi-Objective Threat Prioritization (TMTP)**SYSCOM:** NAVSEA**FST Event:** WEST 2022

Abstract: In this SBIR project, Daniel H. Wagner Associates (DHWA) will develop a TUSW Multi-Objective Threat Prioritization (TMTP) Decision Aid that will automatically produce threat prioritizations that account for the ability of threat submarines to adversely affect probability of friendly mission success, for example by detecting and/or (in wartime) attacking friendly assets. TMTP will meet the previously delineated challenges and offer significant operational benefits to the TUSW Commanders and Watch Standers. TMTP will incorporate high-fidelity risk models in order to rank threat contacts across multiple objectives. DHWA will develop the risk analytics framework that is necessary in order to combine commanders intent and current threat contacts to produce a probabilistic risk assessment.

Keywords: Threat Prioritization for Submarines, Anti-Submarine Warfare, Situational Awareness for Watch Standers, Undersea Warfare, CTF Command Center, theater ASW

POC: Reynolds Monach, reynolds@va.wagner.com**NAICS:** N/A**Company:** Dirac Solutions Inc.**Location:** Pleasanton, CA**Topic:** DOE16-030**Tech Category:** (C4I)**Phase II Proposal Title:** Wireless Inter-Communications System**SYSCOM:** NAVAIR**FST Event:** NAVSEA

Abstract: In this project, Daniel H. Wagner Associates, Inc. (DHWA) will develop artificial intelligence (AI) and machine learning (ML) based target location estimation and mission effectiveness evaluation and optimization services that (1) Utilize the most accurate environmental information available and (2) effectively support U.S. Navy undersea warfare (USW), surface warfare (SUW), and Air Warfare (AW) planners and operators (including Integrated Undersea Surveillance System (IUSS) personnel), and (3) significantly improve command and control (C2), planning, and execution systems such as Undersea Warfare Decision Support System (USW-DSS) and Maritime Tactical C2 (MTC2).

Keywords: harsh electromagnetic environments, V-22 Osprey, Wireless Communications, Ultra-Wideband Communications

POC: Faranak Nekoogar, faranak@diracsolutions.com**NAICS:** N/A

C4I (continued)

Company: DZYNE Technologies Incorporated.

Location: Fairfax, VA

Topic: N172-112

Tech Category: (C4I)

Phase II Proposal Title: Smart Caching of Imagery for Carry-On System (SCICOS)

SYSCOM: NAVAIR

FST Event: NAVSEA

Abstract: DZYNE Technologies proposes to extend the Smart Caching of Imagery for Carry On System (SCICOS) that leverages our experience in data management and image and metadata content extraction to provide a scalable imagery management system. We propose a data retention strategy (imagery caching) that leverages the users query and persistence rules to rank imagery priority. The Phase II SCICOS system maintains imagery retention automatically based on users interaction and configuration of the persistence rule set, which allows the user to focus on their mission operations.

Keywords: Scalable Data Caching, imagery retrieval, Image Management Algorithm, Metadata and Content Extraction

POC: Paul Brewer, pbrewer@dyznetech.com

NAICS: 541330, 541360, 541690, 541511



Company: Holochip Corporation

Location: Torrance, CA

Topic: N171-076

Tech Category: (C4I)

Phase II Proposal Title: A Holographic and Light-field Processor for Extreme Multi-View Displays

SYSCOM: NAVSEA

FST Event: West 2022

Abstract: Extreme multiview lightfield displays (FoLDs) are needed to enhance the warfighter's ability to operate in today's information filled battlefield, while giving the warfighter the needed information to quickly assess the battlespace thereby making faster, more informed decisions. Using conventional rendering techniques, the number of render passes needed to generate the radiance images is on the order of the number of hogels in the FoLD. To solve the rendering problem, Holochip invented a new paradigm of lightfield processor, i.e., the method by which the lightfield radiance image is computed. To solve the FoLD problem, Holochip developed a novel extreme multiview 3D display based on novel low-cost hogels and the mature SLM technology used in consumer electronics.

Keywords: Hogel, diffractive optical element, lightfield display, plenoptic display, Holographic display, 3D display, Holographic Optical Element, Hologram

POC: Robert Batchko, rgb@holochip.com

NAICS: N/A



Company: Intelligent Automation, Inc.

Location: Rockville, MD

Topic: N191-034

Tech Category: (C4I)

Phase II Proposal Title: ACT: An Artificial Intelligence based Course of Action Tool

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: It is necessary to develop a mission planner decision aid that enables Automated Decision Support (ADS) utilizing Artificial Intelligence (AI) and Machine Learning (ML) to provide timely and effective employment of maritime resources. To address this need, Intelligent Automation, Inc. (IAI) proposes to design and develop an AEGIS weapon system-compliant AI-based COA software tool to improve the Navys 3-phase mission planning capability. ACT will provide automated situational awareness analysis, deep learning-trained COA decision making, and adversarial reasoning-based COA evaluation as key enablers for near real-time antifragile mission planning.

Keywords: Artificial Intelligence Decision Support, Automated Decision Support, Mission Planning Tactical Decision Aids, Tactical Employment Optimization, Tactical Decision Aid Metrics Generation and Comparative Analysis

POC: Bryan Stewart, xwang@i-a-i.com

NAICS: N/A



Company: Intelligent Automation, Inc.

Location: Rockville, MD

Topic: N181-089

Tech Category: (C4I)

Phase II Proposal Title: LAKE: Large-Scale DATA Storage for Knowledge Discovery

SYSCOM: NAVAIR

FST Event: WEST 2021

Abstract: DCGS-N Inc 2 is the essential follow-on for the DCGS-N Inc 1 program that permits the Navy to leverage the robust sensor investments by the Intelligence Community (IC) and Military Services to significantly improve Battlespace Awareness and decision making. It is critical that information agility is achieved at all echelons so that decision-makers receive the right information at the right time. To address the critical need of Multi-Domain Data Management (MDDM), Intelligent Automation, Inc. along with Cubic propose to develop a Large-Scale Data Storage for Knowledge Discovery (LAKE) architecture. The key innovation of this proposal is the development of a large data warehousing and analysis tool that is secure, scalable, resilient, and built using state of the art open source tools.

Keywords: Data Governance, Lambda Architecture, fusion, Multi-domain, parsing, tagging, Big Data, Risk Management Framework

POC: Bryan Stewart, bstewart@i-a-i.com

NAICS: N/A



C4I (continued)

Company: Jove Sciences, Inc. Incorporated.

Location: San Clemente, CA

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: Machine Learning (ML) to Develop Capabilities to Track AIS Ships Worldwide and Detect Anomalous Behavior to Impact Mission Success

SYSCOM: NAVSEA

FST Event: WEST 2022

Abstract: Jove Sciences Inc. has been developing and testing the multi-INT near real time Advanced Correlator-Navy (ACOR-N) data fusion processor since 2004 to Detect, Track, Classify, and Identify (DTC&I) any contact of interest worldwide, especially those exhibiting Anomalous Behavior (AB). The two tasks proposed here will address 8 - Integration of Automatic Identification System (AIS) Data through AI/ML Applications.

Keywords: AIS ship tracks, AIS ship tracks, data fusion, knowledge Based Inductive Learning Trusted Agent, C4ISR, Multi Sensor

POC: James Wilson jwilson@jovesci.com

NAICS: 541513, 443120, 541519, 541512



Company: Knexus Research Corp.

Location: National Harbor, MD

Topic: N181-079

Tech Category: (C4I)

Phase II Proposal Title: Continuous Interactive Learners for Mission Planning (CILEMP)

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: In this effort, we will address the planning domain knowledge acquisition problem and capability gap by researching and developing CILEMP, a software system for Continuous Interactive Learners for Mission Planning. Our objective is to develop and deliver a robust and innovative software solution at technology readiness level (TRL) 6 at the conclusion of the Phase II Option period. Our deliverable software system shall enable MCM Commanders to interactively acquire and learn domain models for hierarchical planning in continuous, temporal, uncertain, and adversarial environments.

Keywords: Hierarchical Planning, Asset Performance and Tactics Learning, automated mission planning, Domain Model Learning, Parameter Learning, Structure Learning

POC: RKalyan Moy Gupta, kalyan.gupta@knexusresearch.com

NAICS: 547120, 541712, 541512



Company: Mosaic ATM, Inc.

Location: Leesburg, VA

Topic: N191-032

Tech Category: (C4I)

Phase II Proposal Title: ACT: Artificial Intelligence Real-Time Track Modeling and Simulation for Combat Systems

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Ships operate in an environment with a large number of air and surface tracks, where surveillance data may experience gaps in coverage for many reasons. This proposed effort will develop enhancements to be integrated into both current and future shipboard combat systems to provide more operationally useful and realistic predictions of track behavior and location using machine learning (ML) and artificial intelligence (AI) techniques. The proposed system will also provide a risk characterization for each track. Situational awareness will be significantly enhanced through AI-based computer automation that detects new or unusual characteristics or threatening behaviors of tracks, and then highlights those tracks as contacts of interest (COI).

Keywords: Modeling and simulation (M&S), Modeling and simulation (M&S), real-time trajectory modeling, Artificial Intelligence (AI), combat identification, Behavior Prediction, AEGIS Combat System.

POC: Jim Gardner, jgardner@mosaicatm.com

NAICS: 541511, 541690, 541712, 541330



Company: North Point Defense, Inc.

Location: Rome, NY

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: WiseOwl

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The large volume of Automatic Dependent Surveillance-Broadcast (ADS-B) data that is produced can overwhelm analysts, motivating development of automated processing. The proposed WiseOwl aircraft modeling and behavior analysis tool will leverage artificial intelligence and machine learning to discover behavior patterns and detect anomalies of using ADS-B data. The proposed investigation will draw upon the latest work in DNN-based learning, using a hybrid autoencoder and long short-term memory approach to detect anomalous behavior as well as performing a flavor of specific emitter identification to discover potential message spoofing. The WiseOwl system will augment human analysis for enhanced real-time situational awareness and intelligence production.

Keywords: Machine Learning, Machine Learning, Neural network, anomaly detection, automatic dependent surveillance broadcast, autoencoder, Deep Learning

POC: Benjamin Pokines, bpokines@northpointdefense.com

NAICS: N/A



C4I (continued)

Company: Perceptronic Solutions, Inc.



Location: Sherman Oaks, CA

Topic: N192-131

Tech Category: (C4I)

Phase II Proposal Title: Persistent AI based Threat Detection (PAIT)

SYSCOM: ONR

FST Event: WEST 2022

Abstract: This SBIR Phase II proposal is for continued development of the Persistent AI based Threat Detection (PAIT) system that uses the power of artificial intelligence and machine learning capabilities to detect emerging human-generated threats by monitoring open source, dark web, and security-related data sets. PAITs innovative approach includes analyzing potentially threatening individuals and groups of individuals in the context of their overall networks of relationships across disparate data sources, using advanced artificial intelligence methods to learn to automatically detect patterns of threatening behavior in the data, and alerting military analysts to identified threats with supporting evidence and analysis that is designed to facilitate immediate action to address the threat.

Keywords: Latent-Risks, Noisy Data, Behavior, Trend, Artificial Intelligence, Intent, Machine Learning, sentiment

POC: Frank Pietryka, frank.pietryka@pacific-defense.com

NAICS: 541511

Company: R-DEX Systems, Inc.

Location: Marietta, GA

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: Validation of Artificial Intelligence Technologies (VAIT)

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: As artificial intelligence (AI) becomes more ubiquitous in society and the DoD enterprise, trust in the results provided by AI is of paramount importance. To that end, R-DEX Systems introduces VAIT (Validation of Artificial Intelligence Technologies), a processing suite for assessing AI algorithms for validation, trust in the decision-making process, and robustness against adversarial attack. VAIT performs a number of functions to improve the trust in data interpretation and decision process. Methods incorporated into VAIT include classic white box and black box adversarial attacks, adversarial training, complementary single and cross-domain AI classifiers, and meta-reasoning networks for consistency assessment and adversarial input identification.

Keywords: Machine Learning (ML), Machine Learning (ML), Meta-Reasoning Networks, Adversarial Attack, Convolutional Neural Networks (CNN), Artificial Intelligence (AI), Neural networks, Complementary Classifiers

POC: Robert Bock, robert@r-dex.com

NAICS: N/A



Company: Reservoir Labs, Inc.



Location: New York, NY

Topic: DOE19-02B

Tech Category: (C4I)

Phase II Proposal Title: Flow Ordering and Hierarchical Bottleneck Identification for High Speed Data Networks

SYSCOM: NAVWAR

FST Event: WEST 2022

Abstract: The proposed effort will implement a flow and bottleneck optimization platform for the Navy's Consolidated Afloat Networks and Enterprise Services (CANES) to deliver higher system performance.

Keywords: ADNS, bottleneck structure, QoS, Communications, Network Performance, CANES

POC: Jordi Ros-Giralt, Giralt@Reservoir.com

NAICS: 541710, 541511, 541512, 541690

Company: Stottler Henke Associates, Inc.



Smarter Software Solutions

Location: San Mateo, CA

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: Business Operations Streamlining System (BOSS)

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: The objective of the Business Operations Streamlining System (BOSS) project is to leverage artificial intelligence (AI) and machine learning (ML) techniques to help Navy program managers (PMs) keep complex programs on schedule and on budget. Specifically, BOSS will monitor and interpret internal and external documents to track program progress, using knowledge about schedules, budgets, technologies, and contractors to recognize potential problems early and help frame effective responses swiftly.

Keywords: Automated Data Analysis, Program Management, Intelligent Scheduling, acquisition, Artificial Intelligence (AI), Natural Language Processing (NLP), Machine Learning (ML), Collaboration

POC: Eric Domeshek, domeshek@stottlerhenke.com

NAICS: 541511

C4I (continued)

Company: TeamWorx Security, LLC

Location: Columbia, MD

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: Improving Acquisition Processes through Machine Learning and Automation

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: TeamWorx's intelligent automation platform, Hive-IQ, is an enterprise-ready, intelligent workflow, automation, and collaborative platform. Powered by our unique blend of analytics, we can reduce contracting personnel's manual analysis of solicitation documents by integrating intuitive learning and delivering easy-to-use, smart visualizations.

Keywords: Natural Language Processing, Natural Language Processing, Integration, Analytics, Machine Learning, visualizations, Collaboration, Automation

POC: Ken Holliday, ken@teamworxsecurity.com

NAICS: 541511



Company: Virtualitics

Location: Pasadena, CA

Topic: N193-A03-3

Tech Category: (C4I)

Phase II Proposal Title: Data Enabled Photogrammetry

SYSCOM: ONR

FST Event: WEST 2022

Abstract: Our commercial solution, VIP - Virtualitics Immersive Platform, is an AI-driven data analytics and advanced visualization software product that empowers users, regardless of their background, to quickly find insights from complex multisource data. The technical objective of this Phase II is to extend machine learning data analytic layers directly onto photogrammetry models in desktop 3D and VR. The goal is to achieve more effective and realistic mission planning, execution, and training by creating the ability to conduct advanced analysis in desktop and also in a collaborative, immersive Virtual Reality environment.

Keywords: data visualization, 3D models, data fusion, Virtual Reality, Photogrammetry, Machine Learning, data analysis

POC: Matthew Gratias, matt.g@virtualitics.com

NAICS: N/A

VIRTUALITICS

Company: Vulcan Wireless Inc.

Location: Carlsbad, CA

Topic: N181-003

Tech Category: (C4I)

Phase II Proposal Title: USMC Ground Radio LPI/LPD Interference Mitigation Active Communication Antenna

SYSCOM: MARCOR

FST Event: Sea-Air-Space

Abstract: To provide significantly improved LPI/LPD (Low-probability of Interference/Low-probability of detection) we propose an add-on MIMO module that connects to the antenna port of the existing tactical radio, specifically the AN/PRC-117G. Control of the tactical radio is done via Ethernet to coordinate the tactical radio and add-on module for setup to insure proper configuration, such as carrier frequency and waveform selection. The add-on MIMO module is completely autonomous in operation of the modem and thus does not violate RED/BLACK isolation requirements imposed within the tactical radio.

Keywords: MIMO Antennas, LPI/LPD Add-on, interference cancellation, Spread Spectrum, Tactical UHF, beamforming

POC: Kevin Lynaugh, klynaugh@vulcanwireless.com

NAICS: 541712



Company: Vy Corporation

Location: Malvern, PA

Topic: N193-A01

Tech Category: (C4I)

Phase II Proposal Title: N193-A02 Unmanned Surface Vehicle (USV) and Unmanned Underwater Vehicle (UUV) Autonomous Behavior Development

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The objective of this program is to provide an automated system that will allow UUVs (Unmanned Underwater Vehicle's) the ability to detect and avoid mines and other hazardous objects, with accuracy comparable to a modern manned surface or submersible craft. In Phase I, we successfully demonstrated that Vys novel SBMS technology can be applied to detect mines and subsurface obstacles in an automated way that is compatible with Navy standards such as COIN (Common Operator Interface) and UMAA (Unmanned Maritime Autonomy Architecture). Our shape detection technology is well suited to the challenges of object detection and collision avoidance under harsh conditions where many sources of noise and distortion are present.

Keywords: Autonomous Decisions, Unmanned Maritime Autonomy Architecture, UUV, collision avoidance, object detection, USV, Artificial Intelligence, pattern recognition

POC: John Freyhof, john.freyhof@vycorporation.com

NAICS: 541511



VY CORPORATION

CYBER

Company: D-Tech, LLC**Location:** Herndon, VA**Topic:** N193-A01**Tech Category:** CYBER**Phase II Proposal Title:** Advanced Threat Detection and Analysis Using Multi-Dimensional ML for Industrial Control Systems (ICS)**SYSCOM:** NAVAIR**FST Event:** NAVSEA

Abstract: To help maximize the cyber defense agility and responsiveness of Navy platform systems, we propose an innovative software tool called Cynalytics that provides enhanced threat identification and risk analysis functions using a multi-dimensional machine learning (ML) model. Based on unsupervised learning techniques, Cynalytics will integrate various IT/OT and platform sensor data for APT detection, and derive quantitative threat severity scores based on anomaly pattern recognition and probability-driven algorithms. Cynalytics will be a web-based, cloud-enabled application capable of ingesting real-time data at different levels and providing actionable, risk-informed decision support, augmenting the Risk Management Framework based CYBERSAFE functions.

Keywords: Advanced Persistent Threat (APT), Industrial Control Systems (ICS), Cyber Threat Detection and Analysis, Risk Management Framework (RMF), Multi-dimensional Machine Learning

POC: Nick Duan, nduan@dtechspace.com**NAICS:** 541513, 541511, 541519, 541512**Company:** Mission Secure, Inc.**Location:** Charlottesville, VA**Topic:** N181-035**Tech Category:** CYBER**Phase II Proposal Title:** Cybersecurity for Industrial Control Systems**SYSCOM:** NAVSEA**FST Event:** NAVSEA

Abstract: The MSi EagleEye Platform is a patented, commercially available industrial control system (ICS) security solution that provides unprecedented operator visibility from the HMI/engineering workstation to the specific control devices (meters, sensors, actuators). The Platform conducts comparative analysis and change detection on the raw signals of an ICS, which enables the Platform to monitor ICS networks and identify traffic that identifies anomalous activity both on the ICS network and at the specific control.

Keywords: data visualization, 3D models, data fusion, Virtual Reality, Photogrammetry, Machine Learning, data analysis

POC: Dennis Freedman, DFreedman@MissionSecure.com**NAICS:** N/A**Company:** P&J Robinson Corporation**Location:** Boerne, TX**Topic:** N18A-T018**Tech Category:** CYBER**Phase II Proposal Title:** Protocol Feature Identification and Removal**SYSCOM:** ONR**FST Event:** Sea-Air-Space

Abstract: A successful Phase II will produce a proof-of-concept application to demonstrate that: a) it is feasible to develop a product that will associate protocol features to its implementation/code within the protocol software and perform code transformation to remove undesired features; and b) mature demonstrated Phase I concepts into more hardened product ready for use by the Navy and others. Phase II will also provide the foundation for developing a fully functioning software toolset for identifying and tagging protocol features, allowing power users to selectively remove unwanted features and their corresponding code.

Keywords: Software Feature Identification, Protocol Vulnerability, Communications Protocol, Binary Static Analysis, Feature removal

POC: Pete Robinson, probinson@pjrcorp.com**NAICS:** 541511, 541330, 541712, 541512**Company:** Redwall Technologies LLC**Location:** Beavercreek, OH**Topic:** N172-105**Tech Category:** CYBER**Phase II Proposal Title:** Data Integrity and Confidentiality Resilient Operating System Environment for Multi-Level Security**SYSCOM:** MARCOR**FST Event:** WEST 2022

Abstract: RwM Resilient takes Redwall Technologies commercially-available multi-level mobile security solution, Redwall Mobile (RwM), to a new level by layering resilience into its operation. RwM represents the best in class protection for operating systems like Android and provides our patent pending method of combining cryptographic and temporal separation, which may be the only certain way to securely separate different classifications on a single device. As such, RwMs existing design will provide the basic protection architecture for all interconnected multi-level security processors targeted by this solicitation.

Keywords: Cyber-Resilience, Multi-level Security, mobile device security

POC: John Rosenstengel, john.rosenstengel@redwall.us**NAICS:** N/A

CYBER (continued)

Company: Secmation, LLC**Location:** Raleigh, NC**Topic:** N191-037**Tech Category:** CYBER**Phase II Proposal Title:** SecMUAS - Secure Modular Unmanned Aerial Systems**SYSCOM:** ONR**FST Event:** Sea-Air-Space

Abstract: Secmation began development of SecMUAS, Secure Modular Unmanned Aerial Systems, as a cyber-secure solution for modular unmanned systems to address this operational need. During the proposed Phase II Base program, the SecMUAS solution will be developed and demonstrated. SecMUAS will be used to develop a Group I UAS containing a cyber-secure backbone baking in security into the design. The UAV will be both flight and security tested. During the Base program, two SecMUAS software development spirals will be implemented each resulting in a version release which will be made available to ONR for evaluation.

Keywords: autonomous underwater vehicle, Information Security, cyber-physical, Drone, Rapid prototyping, Unmanned Aerial Systems, Unmanned Systems, cybersecurity, UAS

POC: Hal Aldridge, hal@secmation.com**NAICS:** N/A

ELECTRONIC WARFARE (EW)

Company: Great Lakes Sound & Vibration, Inc.**Location:** Houghton, MI**Topic:** N191-023**Tech Category:** Electronic Warfare**Phase II Proposal Title:** Efficient 3-inch Acoustic Device Countermeasure (ADC) Depth Control System Technology**SYSCOM:** NAVSEA**FST Event:** Sea-Air-Space

Abstract: GLSV Inc. will develop a robust and innovative autonomous depth control mechanism that will integrate into current and future ADCs which will enable greater power budgets for increased acoustic performance and/or operational range. The content of this proposal outlines GLSV's engineering approach and past SBIR/Phase I experience that will be used to successfully meet the technical objectives of this topic. The delivered technical package will be at a Technical Readiness Level (TRL) of 6 by the end of Phase II.

Keywords: data visualization, 3D models, data fusion, Virtual Reality, Photogrammetry, Machine Learning, data analysis

POC: Sam Hanson, SamH@glsv.com**NAICS:** 326291, 541690, 541712, 541330**Company:** Intelligent Fusion Technology, Inc.**Location:** Germantown, MD**Topic:** N182-138**Tech Category:** Electronic Warfare**Phase II Proposal Title:** A Metadata Management and Visualization System for Radio Frequency Activity Modeling and Pattern Recognition**SYSCOM:** NAVWAR**FST Event:** WEST 2022

Abstract: The main objective of this effort is to develop technical underpinnings and methodologies, as well as a workable prototype, for RF activity modeling and pattern recognition to address the challenging problems in the dynamic and dense RF environments.

Keywords: Emitter Localization, Data Visualization, Machine Learning, RF Activity Modeling, Metadata Analytics, Situation Awareness, Anomaly Detection, Pattern Recognition

POC: Genshe Chen, gchen@intfusiontech.com**NAICS:** 541712**Company:** Pendar Technologies, LLC**Location:** Cambridge, MA**Topic:** N181-016**Tech Category:** Electronic Warfare**Phase II Proposal Title:** Two-Dimensional Surface Emitting Mid-Wave Infrared (MWIR) Quantum Cascade Laser Arrays for High-Power Applications**SYSCOM:** NAVAIR**FST Event:** NAVAIR

Abstract: Mid-wave Infrared, Spectral Beam Combining, Quantum Cascade Laser, Surface Emission, Infrared Countermeasure

Keywords: Autonomous Decisions, Unmanned Maritime Autonomy Architecture, UUV, collision avoidance, object detection, USV, Artificial Intelligence, pattern recognition

POC: Christian Pfluegl, pfluegl@pendar.com**NAICS:** N/A

PENDAR

EW (continued)

Company: Tau Technologies LLC**Location:** Albuquerque, NM**Topic:** N172-118**Tech Category:** Electronic Warfare

SECATION

Phase II Proposal Title: Laser Target and Analysis Board Development**SYSCOM:** NAVAIR**FST Event:** NAVAIR

Abstract: Tau Technologies has developed a modular, adaptable laser target and analysis board (LTAB) design concept that can provide precision laser measurement and characterization for these critical systems. Tau Technologies' LTAB provides high bandwidth spatial and temporal measurement of propagated laser beam irradiance. Its data resolves laser waveforms and variances due to high frequency disturbances, such as jitter and atmospheric turbulence. Tau's beam propagation expertise, algorithms and processes extract the information needed to attribute the laser disturbances to their source.

Keywords: Photo Detector, Beam Control, Target Board, Directed Energy, Laser Beam Measurement, LASER, Tracker, Anti-aircraft Missile Countermeasure

POC: Gary Freeland, gary.freeland@tautechnologies.com**NAICS:** 541330, 541712

ENERGY & POWER TECHNOLOGIES

Company: Advanced Cooling Technologies, Inc.**Location:** Lancaster, PA**Topic:** N191-044**Tech Category:** Energy & Power Technologies**Phase II Proposal Title:** Undersea Energy Harvesting from Benthic Gas Seeps and Hydrates**SYSCOM:** ONR**FST Event:** NAVSEA

Abstract: Advanced Cooling Technologies, Inc. (ACT) proposes a novel methane harvesting system to utilize the sea floor cold seeps to extend the endurance of undersea activities. The technology aims to collect and convert abundant chemical energy in the methane seeps into electricity. The proposed technology has effective thermal and chemical integrated design to minimize the size and weight requirement. The system proposed by ACT is self-sustained and able to provide kilowatt-scale electrical output for 2 years without any maintenance and logistic requirement.

Keywords: Swiss-roll, Heat Pipe, KO2, Methane Hydrate, Solid Oxide Fuel Cell, Methane Seep

POC: Chien-Hua Chen Chen, chien-hua.chen@1-act.com**NAICS:** 541690, 541710, 541330, 927110**Company:** Continuous Solutions LLC**Location:** Portland, OR**Topic:** N19A-T007**Tech Category:** Energy & Power Technologies**Phase II Proposal Title:** Power-Dense Electrical Rotating Machines for Propulsion and Power Generation**SYSCOM:** NAVSEA**FST Event:** WEST 2022

Abstract: Under a Phase II effort, CS and Purdue will improve and validate the Asymmetric Permanent Magnet Synchronous Machine (APMSM) and Trapped Flux Coreless Machine (TFCM) design concepts developed in Phase I through development, fabrication, and testing of a hardware prototype of both technologies. The CS laboratory in Portland, Oregon and the Purdue University laboratories in West Lafayette, Indiana have capabilities for electromagnetic component (motors and inductors) fabrication, printed circuit board fabrication, and 4-quadrant dynamometer testing up to 130kW.

Keywords: Electric Drive, Electric Ship, High Energy Density, Next Generation Integrated Power System (NGIPS), Rotating Machine, High Power Density

POC: Nyah Zarate, nyahzarate@continuousolutions.com**NAICS:** 541990, 541330**Company:** Luna Innovations**Location:** Roanoke, VA**Topic:** N161-047**Tech Category:** Energy & Power Technologies**Phase II Proposal Title:** Universal Non-Intrusive Battery Monitoring and Failure Prediction System**SYSCOM:** NAVSEA**FST Event:** WEST 2022

Abstract: Luna and the University of Texas - Arlington is proposing to continue developing a miniaturized, low power system that detects imminent battery failure based on High Definition Fiber Optic Sensing (HD-FOS) technology. This system is designed to identify thermal runaways caused by internal faults that initiate an uncontrolled feedback loop resulting in overheating, fire, or explosion. During Phase II, Luna will optimize the sensor placement and triggering algorithms, develop a prototype that satisfies the size, weight, and power envelope, and demonstrate accurate fault detection with repeated actual battery charge-discharge schemes.

Keywords: Failure Indication, Early Warning, Diagnostic Algorithms, Sensor Suite, Early Detection, Fiber Optic Sensing, Battery Health Monitoring System

POC: Matthew Davis, davism@lunainc.com**NAICS:** 541711, 334519, 541330, 541712

ENERGY & POWER TECHNOLOGIES (continued)

Company: Mantel Technologies

Location: Tacoma, WA

Topic: N19A-T013

Tech Category: Energy & Power Technologies

Phase II Proposal Title: Power Dense Turbo-Compression Cooling Driven by Waste Heat

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The U.S. Navy seeks methods to improve the fuel economy of marine diesel engines through utilization of waste heat. Low temperature engine jacket water, lubrication oil, and aftercooler air are largely untapped streams of thermal energy on these ships, but their utilization circumvents many operation challenges associated with exhaust gases. In this Phase II STTR, Mantel and CSU will continue to develop a turbo-compression cooling system capable of meeting U.S. Navy requirements for SSDG efficiency improvement, size/weight, and shipworthiness.

Keywords: Turbomachinery, Chiller, Shipboard Cooling, Energy Efficiency, SSDG

POC: Michael Cushman, mc@manteltechnologies.com

NAICS: 5541712



Company: Omnitek Partners, LLC

Location: Ronkonkoma, NY

Topic: N151-060

Tech Category: Energy & Power Technologies

Phase II Proposal Title: Power Technologies for Navy Conventional Ammunition Fuzes

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The objective of this project is to develop novel thermal battery based reserve power source solutions for the Navy Conventional Ammunition Fuzes that would meet current and future Naval ammunitions fuzing requirements. The proposed novel power source concepts are expected to provide the means to address the indicated rise time, run time and volume and power requirements. The proposed novel power sources provide the means of generating the required starting low power very rapidly to satisfy the indicated rise time and a novel thermal management technology which allows the power source to run over 200 seconds.

Keywords: Thermal Batteries, Munitions Powering, Battery Run Time, Energy Harvesters, Power Sources, Reserve Power Sources, Reserve Batteries, Battery Rise Time

POC: Thomas Spinelli, tspinelli@omnitekpartners.com

NAICS: N/A



Company: Physical Sciences Inc.

Location: Andover, MA

Topic: N18A-T008

Tech Category: Energy & Power Technologies

Phase II Proposal Title: Additive Manufacturing for Li-Ion Batteries (Phase II)

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Physical Sciences Inc. (PSI) will construct and demonstrate Li-ion cells for Naval aviation applications using solvent free additive manufacturing techniques. Lithium-ion batteries simultaneously offering high energy and power density will be demonstrated using novel solvent-free electrode feedstocks. PSI will work with the Complex Fluids Lab (CFL) at the University of Connecticut to optimize the rheology of the feedstock and to manufacture electrodes using extrusion based additive manufacturing.

Keywords: Electrode Feedstocks, 3D Printing, Lithium-ion, Additive Manufacturing, High Energy, High Power

POC: Christopher Lang, lang@psicorp.com

NAICS: 541720, 541711, 541712



Company: Premier Solutions Hi, LLC Incorporated

Location: Honolulu, HI

Topic: N182-122

Tech Category: Energy & Power Technologies

Phase II Proposal Title: Fleet Material Locator Information System (FMLIS)

SYSCOM: NAVSUP

FST Event: Sea-Air-Space

Abstract: Premier Solutions HI, LLC (PSHI) will work closely with the U.S. fleets and NAVSUP to develop and pilot a material orders, transit, and inventory visibility (MOTIV) system for improved logistics situational awareness and decision making. The MOTIV system will combine multiple sources of data into a set of tailored dashboards, reports, maps, and alerts for users at different operational levels including logistics directors, analysts, expeditors, and parts managers.

Keywords: Material Transit, Control Tower, Trending and Analysis, Dashboards and Alerts, Logistics Visualization, Commercial Artificial Intelligence, Logistics Situational Awareness

POC: Steve Brennan, steveb@premiersolutionshi.com

NAICS: N/A



GROUND AND SEA PLATFORMS

Company: Atmospheric Plasma Solutions

Location: Cary, NC

Topic: N151-022

Phase II Proposal Title: Method for Removal of Airfield Paint Markings and Aircraft Tire Rubber Build-up from Installed AM2 Mat Surfaces

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: Atmospheric Plasma Solutions, Inc. (APS) has developed a proprietary atmospheric plasma coating removal (APCR) technology that requires only compressed air and electricity to operate. The output of the APCR system is a concentrated, low-temperature, air-plasma beam that has been shown to be highly effective at removing organic coatings, paint, and sealants.

Keywords: Worker and Environmentally Safe Paint Removal, Sustainment of Ships Carriers Submarines Littoral and IMF Structures

POC: Glenn Astolfi, admin@aplasmasolution.com

NAICS: 335311, 335999, 541712, 333295



Company: Boston Engineering Corporation

Location: Waltham, MA

Topic: N141-042

Phase II Proposal Title: Autonomous or Remotely-Operated Maintenance of Ships Tanks

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The U.S. Navy uses human operators to inspect and maintain tanks due to the lack of systems that can perform all (or even most) of the tasks required with the dexterity, control, and ability to access tight areas. Boston Engineering proposes to leverage our extensive experience and existing technology in this area to provide a robust mobile base within a modular and versatile solution onto which rapid integration of the various and wide-ranging tools required is possible, time-saving, and easy to operate for expediting remediation tasks.

Keywords: Ship, Remote, Robotic, Climber, Crawler, Tank Remediation, Mobility, Autonomy

POC: David Shane, dshane@boston-engineering.com

NAICS: 541710, 541511, 541330



Company: Boston Engineering Corporation

Location: Waltham, MA

Topic: N191-024

Phase II Proposal Title: CONEXUS: Comms and Operation Node for Expeditionary Underwater Systems

Tech Category: Human Systems

SYSCOM: NAVSEA

FST Event: WEST 2022

Abstract: Boston Engineering had developed the Communications and Operation Node for Expeditionary Underwater Systems (CONEXUS), an integration kit that provides 3-5kyds of standoff between expeditionary EOD teams the ROVs used to interrogate mines. CONEXUS consists of a floating surface system, a station keeping clump device, and interfaces for currently used ROVs. The floating surface system includes inflatable supports to maintain deployment ease and ensure vertical positioning of the communications antennas.

Keywords: N/A

David Shane, dshane@boston-engineering.com

NAICS: 541710, 541511, 541330



Company: Cornerstone Research Group, Inc.

Location: Miamisburg, OH

Topic: N18A-T012

Phase II Proposal Title: Power and Propulsion System Optimization

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: Cornerstone Research Group Inc. (CRG) and the University of Cincinnati (UC) propose to design power and propulsion systems for UUVs optimized to enable more demanding missions. The design approaches used will enable the tradeoffs between multiple performance to be visualized and optimized according to specific mission needs. The teams approach will enable highly efficient systems that improve the capabilities of the Navy's UUVs.

Keywords: Geometry Generation, Hybrid, Propeller, Optimization, Multi-Objective, Unmanned Underwater Vehicle, Power System

POC: Mitchell Bauer, bauermd@crgroup.com

NAICS: 541712, 541690, 541330, 541380



GROUND AND SEA PLATFORMS (continued)

Company: Intelligent Automation, Inc.

Location: Rockville, MD

Topic: N18A-T011

Phase II Proposal Title: Nondestructive Evaluator for Polymer Ablatives (NEPAL)

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: Missile launch systems integrated with a ship structures, such as the Mk 41 vertical launch system (VLS), need the rocket exhaust to be diverted vertically upwards through the plenum and the uptake. These sections are lined with ablative polymers of varying thicknesses to protect the structure from intense heat from rocket exhaust. The erosion of the ablative panels determines the life of the module structure. A new non-destructive examination technique is needed for in situ determination of the remaining useful life of ablative lining.

Keywords: Polymer Ablatives, Automated NDE of Ablatives, NDE of TPS, Remaining Useful Life of Polymer Ablatives, NDE of Ablative Materials

POC: Banibrata Poddar, bpoddar@i-a-i.com

NAICS: N/A



Company: Materials Sciences LLC

Location: Horsham, PA

Topic: N192-115

Phase II Proposal Title: Durable Foreign Object Debris (FOD) Screens for Air Cushion Vehicles - MSC P4579

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: MSC has assembled a team of material specialists and structural engineers and composites fabricators to develop lightweight, advanced material solutions that result in a Form-Fit-Function drop-in replacement FOD screen for the LCAC100. The proposed Phase II program builds on the Phase I feasibility demonstration to design, manufacture and test a prototype FOD screen to demonstrate performance for representative loading environments and establish a production process to facilitate accelerated transition to LCAC 1000 and future ACV platforms.

Keywords: N/A

POC: Michael Orlet, orlet@materials-sciences.com

NAICS: N/A



Company: Physical Sciences Inc.

Location: Andover, MA

Topic: MDA12-T001

Phase II Proposal Title: Mine Target Reacquisition for Next Generation Mine Neutralization Systems (Sonar SLAM)

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The U.S. Navy is moving toward a Single Sortie Detect to Engage (SSDTE) paradigm to implement in-stride minehunting and mine prosecution. Recent advances in Sonar SLAM algorithms have demonstrated both the ability to derive georeferenced sea-bed features from the sonar imagery and to improve navigation estimates relative to these sea-bed features. A multi-phase program is described to develop Sonar SLAM algorithms to close the mine target reacquisition capability gap, following a build-test-build-test design spiral methodology, leading to a Sonar SLAM laboratory demonstration.

Keywords: Barracuda, AN/AQS20B/C, Mine Hunting, AN/AQS24B/C, Simultaneous Localization and Mapping (SLAM), Sonar

POC: Elizabeth Schundler, eschundler@psicorp.com

NAICS: 541720, 541711, 541712



Company: Progeny Systems Corporation

Location: Manassas, VA

Topic: N171-071

Phase II Proposal Title: Plug-and-play Analytical Framework for Distributed Structured and Unstructured Data Sets for Condition Based Maintenance Plus (CBM+)

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Progeny's N171-071 solution is a plug-and-play software framework for collecting, transforming, and storing both structured and unstructured datasets for CBM+ analysis. Our solution, named the Data Retrieval, Repository, and Readiness Technology (DART), is built upon the Elastic technology stack which provides the necessary infrastructure for transformation and indexing data.

Keywords: Big Data Framework, CBM+, Elastic, Hadoop Cluster, Analytics, PHM, Combat Systems

POC: Sante Simms, sante.simms@progeny.net

NAICS: N/A



GROUND AND SEA PLATFORMS (continued)

Company: Technical Data Analysis, Inc.

Location: Marietta, GA

Topic: N08-006

Phase II Proposal Title: P-8A IAT Fleet Metrics Functionality for Structural Life Management

Tech Category: Ground and Sea Platforms

SYSCOM: NAVSEA

FST Event: NAVAIR

Abstract: The proposed effort will extend Fleet Metrics and ACTS (the latter originally developed for the Navy's H-60 Multi-Mission Helicopter fleet) in support of PMA-290, NAVAIR, to establish a fleet-wide IAT-based data management system for all P-8A Poseidon aircraft. Acquisition and support of the innovative system for tracking the structural life of the P-8A aircraft are critical to the success of PMA-290 mission. Successful completion of this work will result in increased safety and reduced operating costs of the P-8A aircraft.

Keywords: Fatigue Life Management, Data architecture, Post-Flight Analysis, Flight Visualization Analysis, Mission Planning and Prognostics

POC: Chance McColl, cmccoll@tda-i.com

NAICS: N/A



HUMAN SYSTEMS

Company: Avatar Partners, Inc.

Location: Irvine, CA

Topic: N193-D01

Phase II Proposal Title: On Demand Training Solutions for Maintenance Technicians

Tech Category: Human Systems

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: Team AVATAR will develop the Simplified, Intelligent Augmented Reality (SIA) prototype, an integrated training system with performance assessment that complies with RMF guidelines.

Keywords: N/A

POC: Scott Toppel, stoppel@avatarpartners.com

NAICS: N/A



Company: D'Angelo Technologies, LLC

Location: Beavercreek, OH

Topic: N18A-T014

Phase II Proposal Title: Advanced Ship-handling Simulators

Tech Category: Human Systems

SYSCOM: Human Systems

FST Event: Sea-Air-Space

Abstract: COVE was developed as a state-of-the-art navigation and ship handling training system for all Surface Officers. Over the years, scenarios (ports) have been added, environments have been improved for more realistic feedback, and newer technology has been integrated but the system is still lacking the capability to provide autonomous performance assessment and varying degrees of complex tasks and feedback. D5T will use an iterative optimization process which progressively matures the development of algorithms and integration of adaptive coaching and easy to understand AARs into the COVE/COVE-ITS system.

Keywords: Improved Training, Machine Learning Optimized System, Reduced Mishaps, Positive Carry Over of Learning

POC: Maurissa D'Angelo, maurissa@dangelotechnologies.com

NAICS: 541330, 611430, 541712, 611420



Company: Intelligent Automation, Inc.

Location: Rockville, MD

Topic: N193-A03-2

Phase II Proposal Title: Training-Assessment-Feedback Loop to Empower the Information Warfighter

Tech Category: Human Systems

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: The proposed system (FLOW, a feedback loop for operational workflows) is a web-based application that operates in parallel with the operational social media data analytics tool Scraawl (www.scraawl.com) to support both training and operations. FLOW offers instructional courses with interactive lessons to teach analysts important information-operation workflows. Using carefully curated social media datasets in Scraawl, analysts explore and analyze the information environment to identify, track, and evaluate bot-driven information campaigns.

Keywords: After Action Review, Performance Assessment, Information Operations, Bot Detection, Learning Science, Feedback

POC: Lisa Holt, lholt@i-a-i.com

NAICS: N/A



HUMAN SYSTEMS (continued)

Company: Learntowin, Inc.

Location: Nashville, TN

Topic: AF192-D001

Phase II Proposal Title: Mobile Training Content Delivery Platform

Tech Category: Ground and Sea Platforms

SYSCOM: NAVWAR

FST Event: WEST 2022

Abstract: Learn2Win (L2W) proposes utilizing SBIR funding to provide the United States Navy with a highly functional and accessible tool to modernize training content and delivery. By leveraging a mature solution with proven commercial success, L2W seeks to use this opportunity to tailor its mobile, micro-learning platform to the needs of Navy users. SBIR funding will allow L2W to both build out a prototype for NavalX and PEO EIS that demonstrates how the platform can support Navy requirements and test usage to garner actionable feedback from Navy users.

Keywords: Training Analytics Suite, Next Generation Training, Tactics Training Tool, Learning Gamification, Learning Platform, Micro-learning, Tailored Navy Learning Tool

POC: Van East, van@learntowin.us

NAICS: N/A



Company: Li Creative Technologies, Inc. (LCT)



Location: Florham Park, NJ

Topic: N182-133

Phase II Proposal Title: Advanced Battlefield Communications System in Operations and Training

Tech Category: Human Systems

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: We proposed a novel and unique headset based on advanced digital signal processing and other new technologies as the next-generation military headset. The headset with the proposed technologies fulfills all the objectives of this SBIR topic in terms of hearing protection, enhanced situational awareness, clear two-way communication, speech intelligibility, battery life, and costs. The new headset will significantly enhance the performance of military personal in combat and reduce training time. It will also improve personal safety through novel situational awareness.

Keywords: DSP, Noise Dosimetry, Talk-through Circuitry, Localization, Communication System, Hearing Protection, Artificial Intelligence

POC: Qi "Peter" Li, li@licreativetech.com

NAICS: 541712

Company: Noise Control Engineering LLC

Location: North Bellerica, MA

Topic: N172-134

Phase II Proposal Title: Abrasive Blasting Nozzle Noise Reduction

Tech Category: Human Systems

SYSCOM: ONR

FST Event: NAVSEA

Abstract: The purpose of the proposed project is to produce a commercial abrasive blasting nozzle which is more efficient and quieter than a typical commercially-available nozzle. The nozzle will decrease labor hours needed for blasting processes in shipbuilding, decrease workers compensation claims due to hearing loss, and relieve environmental noise restrictions on blasting at shipyards. All of this will contribute toward producing and repairing ships more quickly and efficiently.

Keywords: Abrasive Blasting, Abrasive Blasting Nozzle Noise Reduction, Blasting Nozzle Efficiency, Shipyard Noise, Hearing Loss

POC: Jeffrey Komrower, jeffk@noise-control.com

NAICS: N/A



MATERIALS & MANUFACTURING PROCESSES (continued)

Company: (ES3) Engineering & Software System Solution, Inc.



Location: San Diego, CA

Topic: N201-X02

Phase II Proposal Title: Focus Area 9 Cold Spray Sustainment and Modernization for Naval Depots

Tech Category: Materials & Manufacturing Processes

SYSCOM: ONR

FST Event: Sea-Air-Space

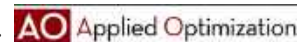
Abstract: Aircraft and ground support equipment typically requires restoration of structure and components damaged by corrosion, wear, and other damage. This effort will focus on the development and testing of cold spray coatings on various alloys for both dimensional and structural restoration with multiple powder coatings for various application requirements. This will include cold spray coating testing, processing and integration efforts of multiple cold spray systems with pure and mixed carrier gases, both handheld and robotic, in order to develop required technical data for general authorization for sustainment.

Keywords: Dimensional and Structural Restoration, Coatings, Repair, Cold Spray

POC: Fred Laguines, fred.laguines@es3inc.com

NAICS: 541712, 541330

Company: Applied Optimization, Inc.



Location: Fairborn, OH

Topic: N181-085

Phase II Proposal Title: Feed-Forward Controls for Laser Powder Bed Fusion Based Metal Additive Manufacturing

Tech Category: Materials & Manufacturing Processes

SYSCOM: ONR

FST Event: NAVAIR

Abstract: The research objective of the proposed work is to demonstrate a prototype of a feed-forward control (FFC) system for the laser powder bed process to produce higher quality AM builds. The FFC will compensate for the systemic variability arising from the statistics of the additive layer, powder bed, and thermal phenomena. The compensation will be performed in near-real time on a full set of laser processing parameters. The proposed work will implement FFC as three subsystems to correct for the layer, powder bed, and thermal variability, respectively.

Keywords: 3D Laser Scanner, Data Fusion, Recoat Thickness, Multi-scale ICME, Spatter and Ejecta, Multi-dimensional Parameter Compensation, Visual and IR Imaging, Surface Roughness

POC: Anil Chaudhary, anil@appliedo.com

NAICS: 541511, 541690, 541710, 541330

Company: CFD Research Corporation

Location: Huntsville, AL

Topic: N19A-T020

Phase II Proposal Title: Data Analytics and Machine Learning Toolkit to Accelerate Materials Design and Processing Development

Tech Category: Materials & Manufacturing Processes

SYSCOM: ONR

FST Event: NAVAIR

Abstract: The U.S. Navy has identified refractory high entropy alloys (RHEAs) and metal additive manufacturing (AM) as enabling technologies to meet performance and sustainability targets for shipboard and aircraft systems. In Phase II, we will further develop robust ML models for prediction of mechanical properties, classify phases, and derive design rules for screening materials, thereby accelerating their development. We will also generate and utilize laser powder bed fusion AM data to develop process-property correlations. We will develop and deliver a user-friendly tool-kit incorporating the ML models to facilitate material property predictions in support of RHEA and metal AM process development.

Keywords: Additive Manufacturing, Machine Learning, Material Discovery, Database, Refractory High Entropy Alloy, Inverse Design, Process Optimization

POC: Debasis Sengupta, debasis.sengupta@cf-d-research.com

NAICS: N/A



Company: Creare LLC

Location: Hanover, NH

Topic: N182-103

Phase II Proposal Title: Carbon Nanotube Windshield Heater

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Creare is developing a heater utilizing carbon nanotubes (CNTs) that have high temperature uniformity and high optical transmission with low glare. We are creating a system capable of varying the effective sheet resistance across the windshield. The system produces a robust heater layer that can be flexed and easily scaled up to a production environment. During Phase II, we plan to transition from flat coupons to larger complex surfaces. At the end of the Phase II Base and Options, we will produce scaled heater laminate that represents the overall size and shape of the V-22 windshield.

Keywords: Optically Transparent Heater, CNT Heater, Carbon Nanotubes, Transparent Heater

POC: Michael Swanwick, mxs@creare.com

NAICS: N/A



MATERIALS & MANUFACTURING PROCESSES (continued)

Company: HighRI Optics, Inc.

Location: Oakland, CA

Topic: N171-045

Phase II Proposal Title: Hydrophobic and Wide-angle Anti-reflecting Nanostructured Coatings on Hemispherical Domes and Windows; Including High-refractive Index Surfaces

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The goal of this proposal is to develop the technology to produce hydrophobic, broadband, and wide-angle random nanostructured antireflection (RAR) coatings that will diminish sun glint down to 0.05% over the flat and curved dome/window surfaces. The main technical goal is to develop a robust process to uniformly coat RAR nanostructures over the curved window/dome surfaces using a simple molding technique; nanoimprint lithography. RAR surface will be covered with a durable thin-layer coating for lasting durability and water-repellency.

Keywords: Nanoimprint, Hydrophobic Nanostructure, Adiabatic Gradient Index Nanostructures, Anti-reflective

POC: Keiko Munechika, km@highrioptics.com

NAICS: N/A



HighRI Optics, Inc

Company: Hy-Tek Manufacturing Co. Inc.

Location: Sugar Grove, IL

Topic: N192-106

Phase II Proposal Title: Rolling Door Seal (RDS)

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: NAVAIR

Abstract: HMC's Rolling Door Seal (RDS) is comprised of a hollow elastomer boot having a geometry that allows it to roll into place beneath the helo-bay door to form a wide and reliable liquid seal without the application of excessive compressive or bending stress and subsequent mechanical strain related damage and failure. During its Phase II work, HMC will perform Rolling Door Seal (RDS) mechanical and materials engineering, RDS prototype fabrication, RDS prototype testing and performance analysis, and RDS design and materials optimization.

Keywords: DDG Helicopter Bay Door Seal, RDS, DDG Helo-bay Door Seal, Rolling Door Seal, DDG Helo-bay Door Seal Failure, Rolling Boot Door Seal

POC: Chris Bastian, Cbastian@hytekmfg.com

NAICS: 332313, 334310, 333911, 332710



Company: Intelligent Automation, Inc.

Location: Rockville, MD

Topic: N18A-T013

Phase II Proposal Title: Rapid Identification of Effects of Defects within Metal Additive Manufacturing (RIED-AM)

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Additive manufacturing (AM) bring revolutionary capabilities and is very attractive to various commercial and military applications. However, metal AM often results in components with various defects, which may have decisive impact on their mechanical properties. To address this critical concern of AM quality, in this research, Intelligent Automation, Inc. (IAI) will develop and implement a material qualification system for rapid identification of effect of defects in AM.

Keywords: Quality Control, Additive Manufacturing, Nondestructive Evaluation, Empirical Database, Resonant Ultrasound Spectroscopy

POC: George Zhao, xzhao@i-a-i.com

NAICS: N/A



Company: Metis Design Corporation

Location: Boston, MA

Topic: N19A-T003

Phase II Proposal Title: Interlaminar Reinforcement of Composites via Tailored CNT Nanomorphologies

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: When laminates taper from a thicker to thinner cross section, the termination of plies locally create resin pockets that can reduce the life of a part due to the lower strength of the resin compared to the fibers, local stress concentrations, and the propensity for voids in these resin rich areas. Thus, Metis Design Corporation (MDC) and MIT have collaborated to demonstrate the use of Carbon Nanotubes (CNT) to solve this problem. The goal of the Phase II effort is to mature the NANOengineered InterLaminar Scaffolding (NAILS) technique such that it can be adopted commercially, with a focus on demonstrating a Navy component, specifically a flex-beam.

Keywords: Ply Drop-Off, Damage Tolerant, Interfacial Reinforcement, CNT, Flex Beam, Composite Manufacturing, Composite Design, Carbon Nanotubes

POC: Dr. Seth Kessler, skessler@metisdesign.com

NAICS: 541710, 541330, 541690, 541380



MATERIALS & MANUFACTURING PROCESSES (continued)

Company: Mira Labs

Location: Los Angeles, CA

Topic: N161-049

Phase II Proposal Title: Joint Tactical Radio System (JTRS) Compliant Anti-Jam Waveform for Littoral Combat Ship (LCS) Unmanned Vehicle Beyond Line of Sight

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Among key outputs of this effort is maturation of the relay capable GIRDs AJ LOS/BLOS Data Link and a reduction in the complexity and cost of the existing MVCS system. The revised system architecture design will be finalized and supporting material will be generated to facilitate future incorporation of GIRDs AJ LOS solution within the MVCS program. One key architecture update will be integration of the BAC/RAC functionality within the GDR. Additionally, the hardware design of the GIRD-funded GDR will be revised to better support the needs of the MVCS program.

Keywords: Anti-jam, Software Defined Radio, Transceiver, Jamming, Interference, SDR, Waveform, Multiple Vehicle Communication System

POC: Paul Sells, paul.sells@miralabs.io

NAICS: 541690, 541511, 541712, 541330



Company: MRL Materials Resources LLC

Location: Beavercreek, OH

Topic: N162-091

Phase II Proposal Title: Design Tool for Topological Optimization of Air-Platform Structural Components Made by Additive Manufacturing

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: NAVAIR

Abstract: Additive manufacturing (AM) has provided unprecedented freedom for manufacturing components with tailored geometry and properties and has created the potential for production of designs that were infeasible given conventional manufacturing techniques. MRL's proposed Topology Optimization for Additive Manufacturing (TOAM) will encompass material and process agnostic optimization for structural design to minimize weight and maximize static and dynamic performance by leveraging the unique capabilities of metallic AM under a variety of applied and aerodynamic loading conditions.

Keywords: Titanium, Additive Manufacturing, Topology Optimization, Penalization, SIMP, Laser Powder Bed Fusion, Microstructure Informatics

POC: Maria Brausch, maria.brausch@icmrl.net

NAICS: 5541380, 541690, 541712, 541511



Company: Pacific Engineering, Inc.

Location: Roca, NE

Topic: N162-079

Phase II Proposal Title: Advanced Composite Materials for Energy Regeneration for Improved Vehicle Efficiency

Tech Category: Materials, Resin, Light Weight, Vehicle, Carbon Fiber, Composites, Glass Fiber, Ruggedized

SYSCOM: MCSC

FST Event: NAVSEA

Abstract: During the base period, PEI will evaluate the Marine Corps Ground Based Air Defense (GBAD) system to identify structural components that can be designed and manufactured using high strength, composite materials that do not corrode, reduce weight, lower the systems center of gravity, and allow additional payloads to be integrated into the system. The GBAD is mounted on the Joint Light Tactical Vehicle (JLTV) as well as the L-MADIS version which is mounted on an Ultra Light Weight Tactical Vehicle.

Keywords: Anti-jam, Software Defined Radio, Transceiver, Jamming, Interference, SDR, Waveform, Multiple Vehicle Communication System

POC: Natalie Combs, natalie.combs@pacificengineeringinc.com

NAICS: N/A



Company: Pacific Engineering, Inc.

Location: Roca, NE

Topic: N192-108

Phase II Proposal Title: Composite Structures for Missile Systems

Tech Category: High Temperature, Materials, Composites, Launchers, Hatches

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The objective of this Phase II task is to develop materials and an uptake hatch for use in topside missile launch systems that will reduce costs and increase ship availability. In this project, PEI will develop a new missile cell hatch using composite materials that will reduce life cycle costs while meeting all performance requirements. The hatch panel design will utilize state-of-the-art materials that are corrosion resistant, heat resistant, durable and low maintenance. The design, analysis, fabrication and evaluation of the uptake hatch will meet ship structural components and environmental requirements.

Keywords: Anti-jam, Software Defined Radio, Transceiver, Jamming, Interference, SDR, Waveform, Multiple Vehicle Communication System

POC: Natalie Combs, natalie.combs@pacificengineeringinc.com

NAICS: N/A



MATERIALS & MANUFACTURING PROCESSES (continued)

Company: Product Innovation and Engineering, LLC

Location: St. James, MO

Topic: N18A-T005

Phase II Proposal Title: Innovative Processing Techniques for Additive Manufacture of 7000 Series Aluminum Alloy Components

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVAIR

FST Event: Sea-Air-Space

Abstract: By using a combination of a highly Gaussian laser beam source, wavelength beam combining and multiple laser beam energy (MBE) PINE and Missouri S&T have successfully demonstrated the ability to create and stabilize Meltpools on all aluminum alloys investigated in Phase I. Phase II will involve the construction of a MBE DED system that will process aluminum alloys with minimal defects. ASTM E8, and microstructural characterization will demonstrate the performance of the as-deposited alloys and post process heat treatments will improve them.

Keywords: Dynamic Beam Shaping, Directed Energy Deposition, Laser Micro-machining, High Strength, Process Modeling, Material Blending, Aluminum Alloys, Multi-Beam Energy

POC: Tim Comerford, tmc@fidmail.com

NAICS: 5541712, 541711



Company: SciGenesis, LLC

Location: Baltimore, MD

Topic: N181-004

Phase II Proposal Title: Application of a Low-Cost, Flame-Resistant Treatment to the Marine Corps Combat Utility Uniform that Provides Durable, Flame-Resistant Properties

Tech Category: Materials & Manufacturing Processes

SYSCOM: MCSC

FST Event: Sea-Air-Space

Abstract: In this Phase II proposal, SciGenesis will optimize our FR solution for cut and sewn military garments to reduce weight gain, improve air permeability and tear strength. Additionally, we will demonstrate its scalability and provide uniforms for field testing. With our proposed formulations, permanent press and FR treatments will be combined into a single finishing step to improve cost/benefit and uniform performance. With our ability to maintain FR properties for up to 100 wash cycles, commercial opportunities in the work wear fields becomes attractive.

Keywords: Flame Retardant, MARPAT, MCCUU, NYCO, Fire

POC: Kelli Booth, kelli.booth@scigenesis.com

NAICS: 541710



Company: Texas Research Institute Austin, Inc..

Location: Austin, TX

Topic: N19A-T011

Phase II Proposal Title: Remotely Operated Vehicle (ROV) Deployed Underwater Attachment

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: TRI Austin and Florida Institute of Technology in the Phase II effort will implement the use of a revolutionary new class of adhesives to attach C4 to underwater mines. The goal is to complete the design and verification of the underwater adhesive, Charge Delivery System (CDS), and biofoul removal tool, and integrate the system onto the VR Remotely Operated Vehicle (ROV). Tank testing will be used to demonstrate the ability of the adhesive to bond the CDS with an ROV and to stay adhered when subjected to 10-14 m/s currents.

Keywords: Naval Mine Warfare, Underwater Adhesive, Explosive Ordnance Disposal (EOD) in a Marine Environment, Undersea Remotely Operated Vehicle (ROV)

POC: Vince Newton, vnewton@tri-austin.com

NAICS: 541712



Company: Triton Systems, Inc.

Location: Chelmsford, MA

Topic: N18A-T024

Phase II Proposal Title: Hybrid Ceramic Matrix Composite/Polymer Matrix Composite (CMC-PMC) Skin Materials

Tech Category: Materials & Manufacturing Processes

SYSCOM: ONR

FST Event: Sea-Air-Space

Abstract: Triton Systems, Inc. proposes to develop an affordable, lightweight and durable hybrid composite system for next generation structural frame composites that will survive both short- and long-term thermal and chemical exposure and abrasive conditions. The team will develop a hybrid materials system that is an improvement on traditional carbon fiber reinforced polymer (CFRP) systems in performance and environmental stability. The Triton team will validate the new materials system through coupon testing of physical, electrical, and environmental stability testing followed by scaling-up of the system.

Keywords: Composite, Hybrid, Skin Material, Environmental Stability, EMI Shielding, Carbon Fiber Reinforced Polymer

POC: Arthur Gavrin, nagavrin@tritonsystems.com

NAICS: N/A



MATERIALS & MANUFACTURING PROCESSES (continued)

Company: TrueNano, Inc.

Location: Westminster, CO

Topic: N18A-T004

Phase II Proposal Title: Hot Filament CVD Technology for Disruptive, High Throughput SiC Epitaxial Growth Reactors

Tech Category: Materials & Manufacturing Processes

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: TrueNano, Inc. will in collaboration with the University of Colorado and industry partners, produce a novel single wafer, high throughput, cold wall Hot Filament CVD (HF-CVD) reactor prototype for the growth of high-quality silicon carbide (SiC) epitaxial layers, suitable for the next generation of power electronic devices and systems. This includes the design and simulation of the reactor chamber, the modification of existing CVD reactor designs to include suitable filaments and to demonstrate high growth rate, high throughput, and low cost of ownership of our HFCVD technology.

Keywords: Scaling, Epitaxial Growth, Silicon Carbide, Hot Filament, CVD

POC: David Bobela, davidb@truenano.com

NAICS: N/A



MODELING AND SIMULATION TECHNOLOGY

Company: Marine Acoustics, Inc.

Location: Middletown, RI

Topic: N192-117

Phase II Proposal Title: Undersea

Acoustic Risk Analysis Decision Aid for Theater Anti-Submarine Warfare (TASW) Mission Planning Properties

Tech Category: Modeling and Simulation Technology

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The Phase II Technical Objectives are designed to ultimately to provide a low risk Phase III transition path schedule, to include a Transition Readiness Level (TRL) 6 Seminal Transition Event (STE) at the end of Phase II Base Period as well as a TRL 7 System of Systems Demo at the end of the Phase II Option 1 period (ideally at a CTF shore site instantiation). Target transition will be USW-DSS Build 3 (TASW Build) via scheduled FY23 Capability Drops (CD 23).

Keywords: Theater Anti Submarine Warfare, TASW, ASW, Planning Tool, Mission Planning, Risk Mitigation, Risk analysis, USW

POC: Steve Psaras, steve.psaras@marineacoustics.com

NAICS: 541990, 541712, 541620, 541330



MARINE ACOUSTICS, INC.

Company: OptTek Systems, Inc.

Location: Boulder, CO

Topic: N181-031

Phase II Proposal Title: AEGIS Combat

System Optimization through Advanced Modeling of Software-Only Changes

Tech Category: Modeling and Simulation Technology

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: OptTek proposes to research and design strategies for a highly effective simulation optimization and analysis concept that can execute large numbers of parallel simulation runs, identify optimal software-only changes to anti-air warfare components, represent explicit performance metric improvements, and integrate with the AEGIS Combat System Test Bed (CSTB) environment. OptTek will extend and enhance its existing OptDef simulation optimization and analysis toolkit to provide a proof of concept CSTB optimizer for anti-ship cruise missile (ASCM) analysis and demonstrate it on sample optimization scenarios.

Keywords: Software-only Changes, Anti-Air Warfare, Simulation Optimization, Anti-ship Cruise Missiles, Simulation Analysis, AEGIS Combat System, Multi-objective Optimization

POC: Shane Hall, hall@opttek.com

NAICS: 541511, 511210



Company: Scalable Network Technologies Inc.

Location: Culver City, CA

Topic: N08-225

Phase II Proposal Title: Airborne Networking Live/Virtual/Constructive (LVC) Environment Model Enhancements

Tech Category: Modeling and Simulation Technology

SYSCOM: NAVWAR

FST Event: WEST 2022

Abstract: In this Phase II effort, we will enhance the current airborne networking LVC environment model by incorporating performance optimizations and enhancements, including scenario-specific partitioning, StatsDB redesign and refactoring, and a Non-IP Ethernet Frame interface. We will also develop interface models for the external time control object and add support for multiple MAC models on a single physical interface to enable implementation of Multiple Independent Levels of Security (MILS). These enhancements will enable more efficient and comprehensive future airborne network modeling, simulation and emulation.

Keywords: FSimulation and Emulation, Network and Application Performance Analysis, Multiple Independent Levels of Security (MILS), Airborne Networks, Statistics Database, Tactical Applications, Simulation Performance Optimization

POC: Jeremy Smith, jsmith@scalable-networks.com

NAICS: N/A



MODELING AND SIMULATION TECHNOLOGY (CONTINUED)

Company: Tagup, Inc.

Location: Somerville, MA

Topic: N193-A01

Phase II Proposal Title: LAV25 Logistics Optimization Using Machine Learning

Tech Category: Modeling and Simulation Technology

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: Tagup is proposing to build and validate risk-based asset survival models on key LAV25 maintenance and supply data. Survival models will be used to estimate probability of failure and model time to event as a function of maintenance status (e.g. deadlined, operational degraded, etc.,) cost and failure mode. Potential savings will be identified as a result of model accuracy (as a function of increased asset availability) with a plan to validate model outputs on live streaming data across target USMC functions/users (Phase II).

Keywords: Asset Management, Asset Management, Data Science, Failure Prediction, Machine Learning, Data Analytics, Survival Analysis, Internet of Things

POC: Jon Garrity, Jon@tagup.io

NAICS: N/A



Company: Xiphos Partners, LLC

Location: Dartmouth, MA

Topic: N193-A03-3

Phase II Proposal Title: Xiphos CallforFire Gaming Simulation NAVY TECHNOLOGY ACCELERATION - Advanced Technologies (including AR/VR) for Manpower, Personnel, Training, and Education

Tech Category: Modeling and Simulation Technology

SYSCOM: ONR

FST Event: WEST 2022

Abstract: This research and development project will advance the military application of commercial gaming software based Virtual Reality (VR) to maximize overall simulator training value as measured by quality of student learning experience, instructor facilitation capability, Game Based Learning (GBL), and cost. The project will focus on the Joint Fires Observer (JFO)/Call for Fire (CFF) warfighting function by conducting research to determine requirements and alternatives in the creation of a technical plan for a prototype stand alone CFF VR simulation kit. This simulator will be capable of integration into and targeted for the Combined Arms/Fire Support Team (FiST) training environment.

Keywords: Commercial Gaming Software, Simulation, Game Based Learning (GBL), Call for Fire, Virtual Reality, Assessment, JFO

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NAICS: N/A



SENSORS

Company: Hood Technology Corporation

Location: Hood River, OR

Topic: SB052-028

Phase II Proposal Title: Development of DSTS: a Digital Static Tracking System

Tech Category: Sensors

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: The Proposed System Concept: Digital Static Tracking System (DSTS): The system would deploy several multi-Mpixel imagers, each: Firmly affixed to the ground (not articulating) with known position (to a few cm) and attitude (to 100urad) with wide-angle lenses, about 60 degrees HFOV, with pre-measured lens distortion, imaging from a different aspect the test volume of sky, about a cubic km. Capturing images with time synchronization, the above system would be built and tested in nine tasks.

Keywords: Flare Tracking, Digital Static Tracking, Trajectory Tracking

POC: Andreas Flotow, Andreas@hoodtech.com

NAICS: N/A



Company: Innoveering, LLC

Location: Bohemia, NY

Topic: AF171-020

Phase II Proposal Title: Yttria-stabilized Zirconia Environment Sensing (YES) System for Hypersonic Glide Bodies

Tech Category: Sensors

SYSCOM: SSP

FST Event: NAVAIR

Abstract: The Innoveering team is proposing to address the U.S. Navy Crane (and entire hypersonics community) needs with a ceramic thin film sensor approach that we call the YSZ Environment Sensing (YES). The YES sensor technology is based on very high temperature solid state sensing capability of YSZ in an oxygen environment of varying concentrations. Based on the proposed sensing principles and sensor configuration, the YES sensor will permit temperature sensing capability up to enthalpies corresponding to Mach 8 (2500C) for applications such as boost glide vehicles.

Keywords: Oxygen Sensor, Carbon Carbon Sensor, CO/CO2 Sensor, YSZ, Harsh Environment Temperature Sensor, Ablating Surface Temperature

POC: Dr. George Papadopoulos, george.papadopoulos@innoveering.net

NAICS: 541712



Company: Innoveering, LLC

Location: Bohemia, NY

Topic: N162-105

Phase II Proposal Title: Real Time Gas Turbine Engine Particulate Ingestion Sensor for Particle Size and Composition

Tech Category: NAVAIR

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Currently, there are no aircraft/engine sensors that can provide the information needed to understand the specific composition, size and concentration of ingested reactive material, which is a key factor in determining if reactive media is being ingested into the engine. In response to this need, Innoveering is developing a novel sensor system that that can measure the composition, size and concentration of particles being ingested by a gas turbine in flight.

Keywords: Gas Turbine Engine Health Monitoring, Volcanic Ash, Concentration and Composition, Particle Ingestion, Particle Size, Reactive Media

POC: Dr. George Papadopoulos, george.papadopoulos@innoveering.net

NAICS: 541712



Company: Luna Innovations Incorporated

Location: Roanoke, VA

Topic: N19B-T032

Phase II Proposal Title: Multi-Input Strength Loss Sensors for Webbing Structures

Tech Category: Sensors

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: Webbing textiles are critical to many personnel safety systems in U.S. Navy aircraft; however, there are presently no viable non-destructive techniques to detect when the load strength has degraded to an unsafe level. Luna is continuing development of a multi-input approach to address this need by combining the advantages of mechanochromic dyes with embedded fiber optic sensors. Mechanochromic dyes will irreversibly record the high-watermark of strain experienced by a webbing under high levels of elongation.

Keywords: Aircraft, Structural Health Monitoring, Strength Loss, Sensors, Mechanochromic, Webbing, Fiber Optic, Rotorcraft

POC: John Ohanian, ohanianj@lunainc.com

NAICS: 541711, 334519, 541330, 541712



SENSORS (CONTINUED)

Company: Luna Innovations Incorporated Corporation



Location: Roanoke, VA

Topic: N18A-T010

Phase II Proposal Title: Multi-Modal

Sensing of Sensitization and Stress Corrosion Cracking Susceptibility in AA5xxx Alloys

Tech Category: Sensors

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: High magnesium AA5xxx series alloys provide a high strength to weight ratio and excellent corrosion resistance, but suffer from sensitization as anodic precipitates (Al₃Mg₂) form along grain boundaries due to a combination of elevated temperature and time. To reduce the risk of the use of AA5xxx alloys in marine environments, Luna proposes to develop a multi-modal measurement system that combines electromagnetic, ultrasonic, and x-ray diffraction techniques to provide a rich data set on the materials microstructure that can be used in predictive models to determine the rate of progression of sensitization and stress corrosion cracking processes.

Keywords: AA5xxx, Aluminum, Sensitization, Stress Corrosion Cracking

POC: Matthew Webster, websterm@lunainc.com

NAICS: 541711, 334519, 541330, 541712

Company: MSI Transducers Corp. Corporation

Location: Littleton, MA

Topic: N182-136

Phase II Proposal Title: Compact Low Noise Acoustic Sensors for Sonobuoys

Tech Category: Sensors

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Through this effort, the team of MSI Transducers and QorTek will develop a compact, low-cost, low-noise acoustic sensor for sonobuoys. The MSI concept fully utilizes its expertise in the design, development, and fabrication of transducers, combined with QorTek's expertise in power electronics, underwater amplifiers and next generation piezoelectric materials, to develop a compact low-noise system.

Keywords: Hydrophone, Low-noise Sensor, Preamplifier, Transducer, Acoustic Sensor, Sonobuoy

POC: Timothy Mudarri, tmudarri@msitransducers.com

NAICS: N/A



Company: Physical Sciences Inc. Corporation



Location: Andover, MA

Topic: AF08-T008

Phase II Proposal Title: Shallow Water and Surf Zone Minehunting (MAD SWARM)

Tech Category: Sensors

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: The program objective is to demonstrate the search rate, probability of detection, false alarm reduction, and localization advantages of swarming small Unmanned Air Systems (sUAS) equipped with integral Magnetic Anomaly Detection (MAD) sensors for autonomous shallow water and surf zone minehunting. The key innovations of the MAD SWARM program are the integration of high performance magnetometers, low-cost quad-rotor drones, and swarm communications and collaborative controls to sense, share, and locate magnetic anomaly sites for subsequent prosecution.

Keywords: Magnetic Anomaly Detection, Magnetometer, Particle Swarm Optimization, Unmanned Air Vehicle

POC: Mark Merritt, merritt@psicorp.com

NAICS: 541720, 541711, 541712

Company: SA Photonics, Inc. Corporation



Location: Los Gatos, CA

Topic: N181-022

Phase II Proposal Title: Laser Periscope Detection

Tech Category: Sensors

SYSCOM: NAVAIR

FST Event: WEST 2022

Abstract: Detection of small objects on the ocean surface as a part of ASW at long stand-off distances is an ongoing need of the Navy. To address this need, SA Photonics proposes the development of our HawkEye LIDAR system. HawkEye utilizes Master Oscillator Power Amplifier (MOPA) fiber-based, wide band supercontinuum laser system that enables high probability of detection, discrimination from the surface return and the ability to scan a larger region of interest. The HawkEye system is a complete LIDAR detection system with built-in beam scanning, gimbal control capabilities and high sensitivity digital receiver. The HawkEye system has low SWaP and is compatible with typical turrets deployed on MH-60 and P8.

Keywords: Fiber Amplifier, MOPA, Surface Object Detection, Periscope Detection, Radar, LIDAR

POC: David Cushman, d.cushman@saphotonics.com

NAICS: 541712, 927110, 541512

SENSORS (CONTINUED)

Company: SA Photonics, Inc.
Corporation



Location: Los Gatos, CA

Topic: N18A-T021

Phase II Proposal Title: Triton: Active Imaging through Fog

Tech Category: Sensors

SYSCOM: ONR

FST Event: WEST 2022

Abstract: SA Photonics is taking advantage of new eyesafe, hybrid fiber-bulk laser technology capable of high pulse energy at high repetition rate to develop a scanning imaging lidar system capable of enhanced range in fog. In addition, this Triton lidar system will be capable of operation in the midwave infrared spectral region by frequency conversion of the laser using new nonlinear materials, allowing the system to operate at wavelengths with reduced scattering by fog. Operation of the system will be field-tested and performance for both transmitter wavelength ranges compared and optimized.

Keywords: High Scattering, Nonlinear Frequency Conversion, Midwave Infrared, Imaging, LIDAR, Fog, LADAR

POC: David Cushman, d.cushman@saphotonics.com

NAICS: 541712, 927110, 541512

Company: Skyward, Ltd. Corporation



Location: Dayton, OH

Topic: N193-A01

Phase II Proposal Title: Integration of Automatic Dependent Surveillance

Tech Category: Sensors

SYSCOM: NAVSEA

FST Event: Sea-Air-Space

Abstract: Extracting patterns from Automatic Dependent Surveillance-Broadcast (ADS-B) data to identify air corridors and detect anomalous behaviors could provide crucial information for both commercial and military applications. A method of machine learning known as online learning updates a neural net model in real time by continuously incorporating new data. This is essential for spatiotemporal data, which has confounding variables that alter patterns over time. Since flight routing is constantly changing due to temporal variables such as weather, identifying air corridors and detecting anomalous aircraft behavior requires an online approach that takes into account such variables.

Keywords: Machine Learning (ML), Flexible Scalable Portable Cost Effective Anomaly Detection, Automatic Identification System (AIS), Pattern-of-Life, Pattern Recognition, Raspberry Pi, Automatic Dependent Surveillance-Broadcast (ADS-B), Artificial Intelligence (AI)

POC: Jason R. Woodall, JWoodall@SKYWARDLTD.COM

NAICS: 541330, 541611, 541712, 541690

Company: Technology Service Corporation
Corporation

Location: Arlington, VA

Topic: AF141-253

Phase II Proposal Title: LIFTS and ISR for Maritime Operations

Tech Category: NAVAIR

SYSCOM: NAVAIR

FST Event: Sea-Air-Space



Abstract: There is a growing need for intelligence, surveillance, and reconnaissance (ISR), Maritime Domain Awareness (MDA) and airborne support missions in maritime and remote regions where it is probable to experience adverse weather conditions, non-ideal landing areas, degraded GPS, and Anti-Access/Area Denial (A2AD) environments while requiring several hours of flight time over open seas. TSC's Location, Identification and Flight Tracking System (LIFTS) and low cost MDA surveillance platform provide solutions to these needs.

Keywords: Maritime Domain Awareness, Navigation, GPS Denied, ISR, Surveillance, Airborne, PNT

POC: Brandon Wolfson, brandon.wolfson@tsc.com

NAICS: N/A

Company: The Probitas Project, Inc.
Corporation



Location: Vienna, VA

Topic: N191-029

Phase II Proposal Title: Adaptive Radar Algorithms for Next Generation Surface Search Radar

Tech Category: Sensors

SYSCOM: NAVSEA

FST Event: NAVSEA

Abstract: The Probitas Project, Inc. proposes to implement a coherent set of fully adaptive processors that exploit the NGSSR's flexible, open architecture design and software-defined nature to significantly enhance system performance and provide a framework for delivering future capabilities through algorithmic insertion to combat new threats such as drone warfare, low-cost programmable electromagnetic jamming, and environmentally adaptive processing.

Keywords: Cognitive Radar, Software-Defined Radar (SDR), Automatic Radar Periscope Detection and Discrimination (ARPDD), Next Generation Surface Search Radar (NGSSR), Navigation Radar, Fully Adaptive Radar (FAR), Machine Learning

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NAICS: N/A

SPACE

Company: SA Photonics, Inc.
Corporation



Location: Los Gatos, CA

Topic: N122-146

Phase II Proposal Title: SkyLight Free-Space Optical Terminal for Cubesats

Tech Category: SPACE

SYSCOM: NAVWAR

FST Event: WEST 2022

Abstract: SA Photonics has developed our Skylight FSO terminal for cubesat and small-sat applications. Skylight is a fully integrated FSO system including all data processing, optical transmitters and receivers, and integrated beamsteering in a 1.5U form-factor meeting the SWaP of cubesat applications. In this Phase II program, we will upgrade the Skylight system based on new and improved design concepts, and develop and deliver two flight units to the Navy. This upgraded Skylight system has a unique architecture that is very robust to shock and vibration. SA Photonics will support satellite integration and support on-orbit operation of the FSO terminals.

Keywords: Communications, Free-space Optical, Crosslink, Satellite Communications, FSO, Cubesat, LEO

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NAICS: 541712, 927110, 541512

Company: Intelligent Fusion Technology, Inc.

Location: Germantown, MD

Topic: N193-A01

Phase II Proposal Title: Condition-Based Predictive Maintenance for Mission Critical Systems with Probabilistic Knowledge Graph and Deep Learning

Tech Category: Sustainment

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: New tools and technologies are needed for modern U.S. Navy surface and aviation fleets to augment current onboard condition monitoring and maintenance processes and help improve mission-critical systems availability, increase operational readiness, and reduce life cycle costs. The proposed cognitive-based decision support system is to support the operator to combine data, identify potential failures rapidly, and provide timely recommended proactive maintenance actions with increased efficiency in logistics and supply chain. This is particularly important for mission-critical systems to support sustained combat operations and readiness with minimum costs and unplanned downtime.

Keywords: Machine Learning, Physics-based Model, Knowledge Graph, Predictive Analytics, Condition-based Maintenance

POC: Genshe Chen, gchen@intfusiontech.com

NAICS: 541712



SUSTAINMENT

Company: Hy-Tek Manufacturing Co. Inc.
Corporation



Location: Sugar Grove, IL

Topic: N181-021

Phase II Proposal Title: Enhanced Clamp Cushion

Tech Category: Sustainment

SYSCOM: NAVSEA

FST Event: WEST 2022

Abstract: During its proposed Phase II ECC development work, HMC plans to continue its approach of conducting engineered ECC clamp core and cushion design separately, but concurrently, with the development of elastomeric and/or hybrid elastomer cushion materials that contain high strength fibers such as carbon fiber or Kevlar fiber. HMC's Phase II goal is to design, develop, fabricate, test, optimize, and deliver to U.S. Navy an ECC that satisfies or exceeds each of U.S. Navy's performance and material requirements.

Keywords: ECC, Improved Aircraft Line Clamp Cushion, Improved Aircraft Line Clamp, Enhanced Clamp Cushion, Elastomer Hybrid Clamp Cushion

POC: Chris Bastian, cbastian@hytekmfg.com

NAICS: 332313, 334310, 333911, 332710

Company: Luna Innovations Incorporated



Location: Roanoke, VA

Topic: N204-A01

Phase II Proposal Title: HD Shape Tether for Autonomous Non-Destructive Inspection Tools

Tech Category: Sustainment

SYSCOM: ONR

FST Event: NAVAIR

Abstract: Non-destructive testing and evaluation methods on complex structures for U.S. Naval applications are challenging and labor intensive. Luna Innovations, teaming with the Electric Power Research Institute (EPRI) and Robotic Technologies of Tennessee (RTT), will develop a 3D position and orientation measurement system using Luna's unique fiber optic HD-Shape technology for autonomous inspection tools. During Phase II, Luna will continue developing the system for integration into a robotic inspection system with longer lengths up to 50 m. The completed system will be tested in relevant and operational environments.

Keywords: Autonomous, Tether, NDT, Non Destructive, NDE, Fiberoptic, Shape, Position

POC: Dr. Andrew Boulanger, boulanger@lunainc.com

NAICS: 541711, 334519, 541330, 541712

SUSTAINMENT (continued)

Company: Metis Design Corporation

Location: Boston, MA

Topic: N12A-T007

Phase II Proposal Title: Ultrasonic Measurement Tools and Models for Gearbox Components

Tech Category: Sustainment

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: Metis Design Corporation developed an ultrasonic washer that couples with embedded data acquisition hardware to detect fatigue cracks in the output bevel gear splines. Further, this system can operate on the ground, so the inspection can take place without disassembly of the TGB or the noise of a flight environment. The same sensors can be used to measure bolt-load. This effort will aim to update the prototype hardware developed in the original Phase II effort, as well as seek to quantify performance and validate results.

Keywords: Modeling, HUMS, Bolt Pre-load, Ultrasonic, Fatigue Crack, SHM, Fretting, Gearbox

POC: Dr. Seth Kessler, skessler@metisdesign.com

NAICS: 541710, 541330, 541690, 541380



Company: Mosaic ATM, Inc.

Location: Leesburg, VA

Topic: N191-007

Phase II Proposal Title: Data Analytics Tools for the Automated Logistics Environment (ALE)

Tech Category: Sustainment

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The ALE Analytics Application (ALE AA) is a tool enabling high-end analytics using thousands of hours of in-flight performance data to predict and prevent failures before they happen. We are coordinating with KBRwyle to apply machine learning techniques using the Hawkeye Flight E-2D Integrated Analytics tool. Mosaic will capture requirements through stakeholder engagement, prioritize use cases, define data format, design an application, and demonstrate value.

Keywords: Aviation Maintenance and Logistics, Automated Logistics Environment (ALE), Deep Learning, Artificial Intelligence (AI), Predictive Maintenance, Advanced Analytics, Data Science, Machine Learning (ML)

POC: Jim Gardner, jgardner@mosaicatm.com

NAICS: 541511, 541690, 541712, 541330



Company: Mosaic ATM, Inc.

Location: Houston, TX

Topic: DHP163-002

Phase II Proposal Title: Development of Visualization Models and AR/VR Software Tools for Model Based Enterprise

Tech Category: Sustainment

SYSCOM: NAVAIR

FST Event: NAVAIR

Abstract: The purpose of this effort is to develop a process for creating visualization models and AR/VR software tools for training and work instructions, which include 1) A hardware kit with a 3D scanner/computer with accessories for capturing colors and textures; 2) A Tablet and AR/VR headsets A software package with tools for creating and decimating models from CAD files, 3D scanners, and photogrammetry; 3) A training package with online tutorials, on-site classroom training with hands-on sessions; 4) Services and support to FRC team for model creation and dissemination.

Keywords: Training, Augmented Reality, Virtual Reality, Work Instructions, Model-Based Enterprise

POC: Jim Gardner, jgardner@mosaicatm.com

NAICS: N/A



Company: Triton Systems, Inc.

Location: Chelmsford, CA

Topic: N153-127

Phase II Proposal Title: Low Power Water Purification System

Tech Category: Sustainment

SYSCOM: MCSC

FST Event: Sea-Air-Space

Abstract: Triton Systems has developed a high-output, manually operated, low-power reverse osmosis (RO) water purification system to provide potable water from brackish water for far-forward deployed Marines. The Triton Team developed key innovations that overcome the limitations of existing portable RO systems. Specifically, an advanced membrane surface coating reduces fouling while increasing water permeability, and an energy recovery pump reduces the required energy input.

Keywords: Reverse Osmosis, Membrane Coating, Brackish Water, Water Purification, Human Powered, Energy Recovery

POC: Brady Krass, bkrass@tritonsystems.com

NAICS: 541712



WEAPONS TECHNOLOGIES

Company: Photonwares Corporation

Location: Woburn, MA

Topic: N181-080

Phase II Proposal Title: High Power Fiber Optic Isolator With Improved Performance

Tech Category: Weapons Technologies

SYSCOM: ONR

FST Event: N/A

Abstract: Photonwares Inc. proposes to develop a new fiber optic isolator configuration with improved performance in forward and backward optical power handling exceeding 50W and reduced size/weight. The new design incorporates several novel technologies that leverage the company's production experience and understanding of the high power properties in fiber components by fundamentally addressing key aspects of high power damage risks inside fiberoptic isolators.

Keywords: High Power Fiber Collimator, High Power Fiber Isolator, High Power Fiber Laser, Cladding Light Stripping, Fiber End Cap, Beam Expander Techniques

POC: Jim Zhao, djzhao@photonwares.com

NAICS: N/A



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