STP
NAVY SBIR TRANSITION PROGRAM

Technology Guide
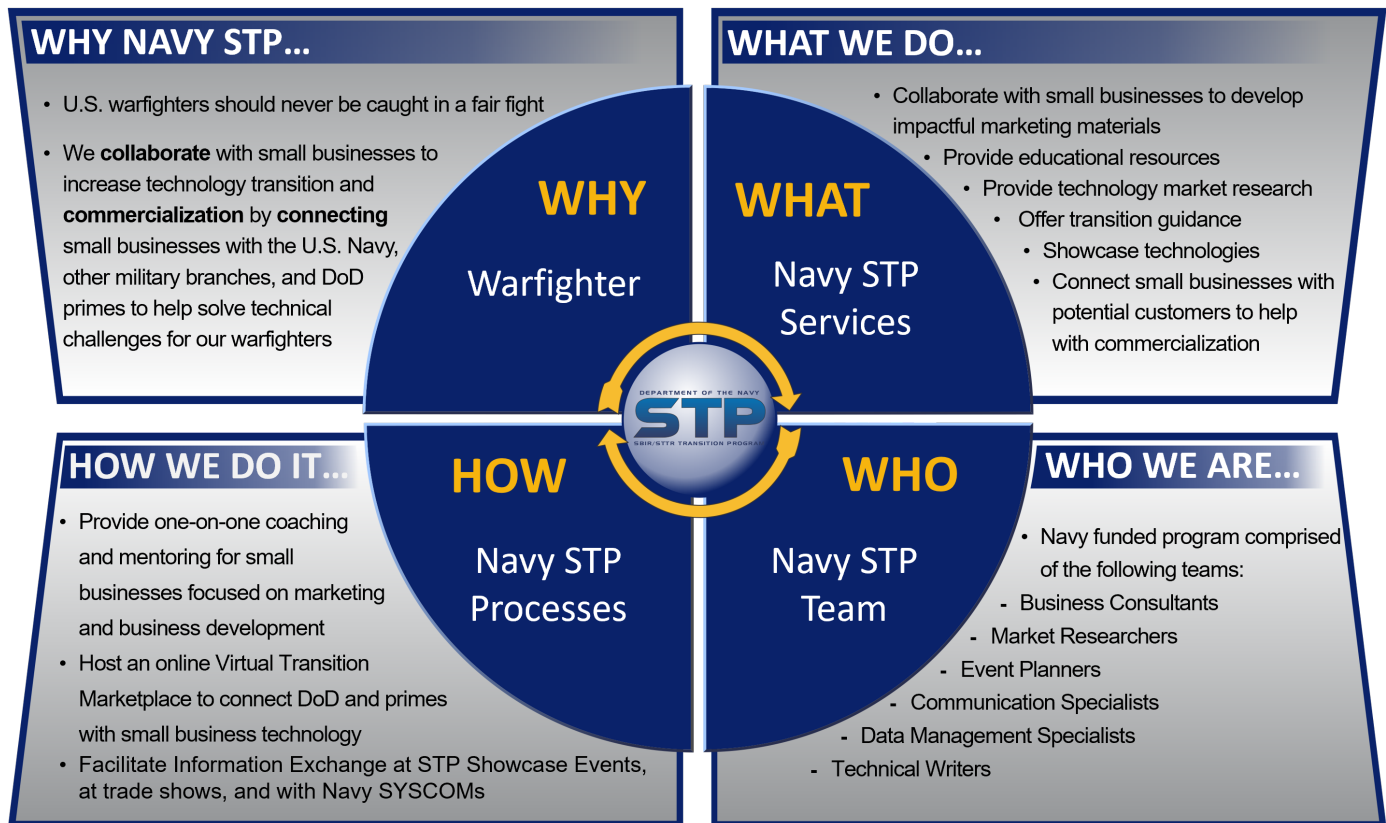# 2023-24 Cohort

CONTENTS

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) and are intended to help select small businesses conduct research and development. This funding has three phases and comes in the form of contracts or grants. 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. The Navy SBIR/STTR programs are managed out of the Office of Naval Research's NavalX Accelerator Department.

What is the Department of Navy SBIR/STTR Transition Program?

For over 23 years, the Department of Navy SBIR/STTR Transition Program (Navy STP) has been a vehicle for connecting Navy SBIR/STTR-funded technologies with warfighters, government acquisition and technical personnel, industry prime contractors, system integrators, and other potential partners and collaborators. The program takes a holistic approach to assisting these small businesses to transition their technologies through business mentoring, training, marketing material creation, business development activities, and promotion.

WHY NAVY STP...

- U.S. warfighters should never be caught in a fair fight
- We **collaborate** with small businesses to increase technology transition and **commercialization** by **connecting** small businesses with the U.S. Navy, other military branches, and DoD primes to help solve technical challenges for our warfighters

WHY — Warfighter

WHAT WE DO...

- Collaborate with small businesses to develop impactful marketing materials
- Provide educational resources
- Provide technology market research
- Offer transition guidance
- Showcase technologies
- Connect small businesses with potential customers to help with commercialization

WHAT — Navy STP Services

HOW WE DO IT...

- Provide one-on-one coaching and mentoring for small businesses focused on marketing and business development
- Host an online Virtual Transition Marketplace to connect DoD and primes with small business technology
- Facilitate Information Exchange at STP Showcase Events, at trade shows, and with Navy SYSCOMs

HOW — Navy STP Processes

WHO WE ARE...

- Navy funded program comprised of the following teams:
  - Business Consultants
  - Market Researchers
  - Event Planners
  - Communication Specialists
  - Data Management Specialists
  - Technical Writers

WHO — Navy STP Team

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

Navy STP Showcase Events promote companies participating in the Navy STP. The Showcase Events connect these small businesses with government and industry personnel through on-demand technology presentations, "Meet the Expert" one-on-one meetings, and an enhanced online presence via the Virtual Transition Marketplace (VTM).

For the current Navy STP cohort, there will be three STP Showcase Events:

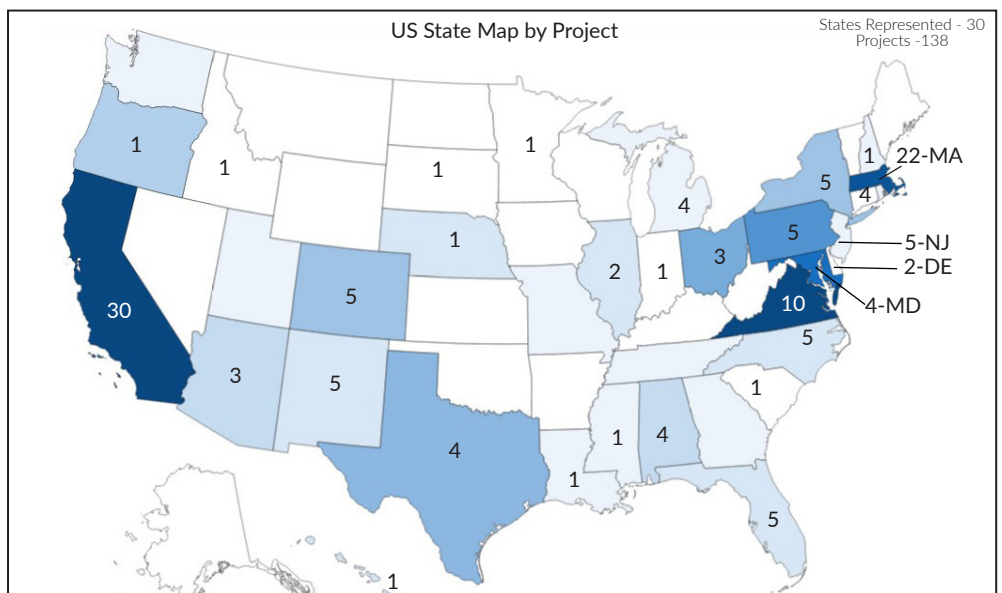|	
WEST 2024 San Diego, CA *13-15 FEB 2024*	**WEST 2024** Visit our showcase booth focusing on Navy STP cohort members with innovative technologies supporting Advanced Electronics, Autonomy, Battlespace Environments, C4I, Electronic Warfare, Ground and Sea Platforms, Human Systems, Materials & Manufacturing Processes, Sensors, Sustainment, and Weapons Technologies. Visit us at booth 1709. Learn more about West 2024 at: https://www.westconference.org
NAVSEA NAVAL SEA SYSTEMS COMMAND **Washington Navy Yard** *12-13 March 2024*	**NAVAIR & NAVSEA Technical Information Exchange** The Technical Information Exchange will focus on Navy STP cohort members with innovative technologies supporting Advanced Electronics, Air Platforms, Autonomy, Biomedical, C4I, Cyber, Electronic Warfare (EW), Energy & Power Technologies, Engineered Resilient Systems, Ground and Sea Platforms, Human Systems, Materials & Manufacturing Processes, Modeling and Simulation Technology, Sensors, Sustainment, and Weapons Technologies Contact navystp@atsicorp.com with subj: "STP Showcase Events" if you would like notification once registration opens.
SeaAirSpace The Navy League's Global Maritime Exposition **National Harbor, MD** *8-10 April 2024*	**Sea Air Space Conference and Exhibition** Visit our showcase booth focusing on Navy STP cohort members with innovative technologies supporting Advanced Electronics, Air Platforms, Autonomy, Biomedical, C4I, Electronic Warfare, Energy & Power Technologies, Ground and Sea Platforms, Human Systems, Materials & Manufacturing Processes, Modeling and Simulation Technology, Sensors, Sustainment, Weapons Technologies. Visit us at booth 537. Learn more about Sea Air and Space at: https://seaairspace.org/

Benefits of Utilizing SBIR/STTRs

In fiscal year 2022, the DoN awarded over one-billion dollars in Phase III funding; an impressive return on investment for SBIR/STTR projects. Projects contained within this guide were selected and funded by the DoN Systems Commands showing that these emerging technologies are a DoN priority. Consider DoN SBIR/STTR investments of up to $1.7M for a Phase II award when choosing projects for internal research and development focus. Leveraging SBIR/STTR projects can be an advantage when communicating with the customer. Being awarded a SBIR/STTR phase II contract shows that the small business is a qualified government contractor with DoD compliant contracting systems and make excellent teammates.

Information on the current Navy STP small business cohort 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 company.
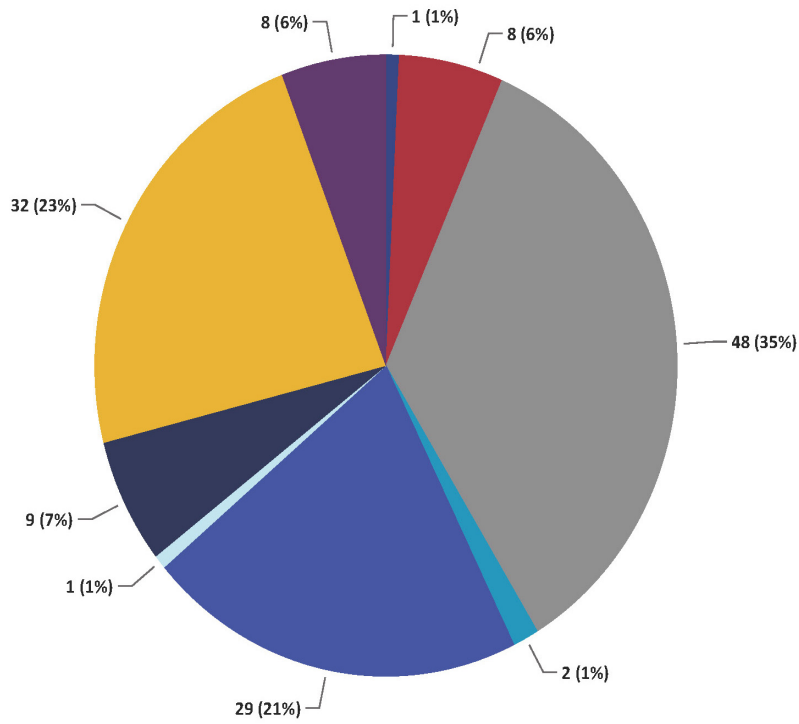
2022-2023 Projects

STATE/ PROJECTS		STATE/ PROJECTS		STATE/ PROJECTS	
AL	4	IN	2	NY	5
AZ	3	LA	1	OH	3
CA	30	MA	22	OR	1
CO	5	MD	3	PA	4
CT	4	MI	4	SC	1
DE	2	NC	5	SD	1
FL	5	NE	1	TX	4
HI	1	NH	1	UT	2
ID	1	NJ	5	VA	10
IL	2	NM	5	WI	1
GRAND TOTAL			**30**	**138**

US State Map by Project — States Represented - 30, Projects -138

2022-2023 Navy STP Projects by SYSCOM

- DON
- MARCOR
- NAVAIR
- NAVFAC
- NAVSEA
- NAVSUP
- NAVWAR
- ONR
- SSP

Total
138

- 1 (1%)
- 8 (6%)
- 8 (6%)
- 32 (23%)
- 48 (35%)
- 9 (7%)
- 1 (1%)
- 2 (1%)
- 29 (21%)

2022-2023 STP Projects by Technology Category

Total
138

Technology Category	Count
Advanced Electronics	9
Air Platforms	12
Autonomy	9
Battlespace Environments	3
Command, Control, Communications, Computers, & Intelligence (C4I)	21
Cyber	4
Electronic Warfare (EW)	7
Energy & Power Technologies	5
Ground and Sea Platforms	10
Human Systems	9
Materials & Manufacturing Processes	11
Modeling and Simulation Technology	11
Sensors	10
Sustainment	6
Weapons Technologies	11

ADVANCED ELECTRONICS

Company: AOSense, Inc. / Fremont, CA

Topic: N211-067

Phase II Proposal Title: Atomic Inertial Sensor as an Alternate Position Source

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: AOSense proposes to develop an IMU based on atom-interferometric quantum sensors for inertial navigation of U.S Navy platforms in the absence of GPS that will achieve strategic-grade performance in a field demonstration on a marine platform. This effort will leverage AOSenses broad expertise and history of innovation in atom interferometry to significantly advance the state of the art for deployed quantum inertial sensors.

POC: Igor Teper, iteper@aosense.com

NAICS: 541710

Company: Bascom Hunter Technologies / Advanced Electronics Baton Rouge, LA

Topic: N202-099

Phase II Proposal Title: EImplementing Neural Network Algorithms on Neuromorphic Processors

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Bascom Hunter has demonstrated the superior performance of photonic based neurons within Continuous Neuromorphic Computing architectures in both electronic and hybrid-photonic hardware. We are extending that work to create designs for a Neuromorphic Toolbox of solutions providing Electronic, Spiking Electronic and Hybrid Photonic hardware for Neural Network topologies. These designs are focused on the Specific Emitter Identification use case. We will also include the development of a VPX Neuromorphic Hardware that is HOST compatible. Future upgrades may include optimizing solutions for the Navy and creating deployable Neuromorphic Hardware

POC: Samuel Subbarao, subbarao@bascomhunter.com

NAICS: 541712

Company: Chiral Photonics, Inc. / Pine Brook, NJ

Topic: N182-102

Phase II Proposal Title: Multicore Fiber Optic Connector for Wideband Digital and Analog Photonic Links

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Chiral Photonics is designing and building a military grade multicore fiber (MCF) connector that will lead to a mil-spec for the MCF connector. This spec will influence MCF connector standards for commercial applications, such as fiber optic sensors, data centers and network applications. There is no specification for MCF connectors today and this new specification for the MCF connector will address physical connection (PC), angled physical connection (APC) and expanded beam versions of the connector design. The new MCF connector is expected to provide low insertion loss, low inter-channel crosstalk and low return loss operating at the 1000 nm and 1550 nm RFoF wavelength bands.

POC: Dan Neugroschl, dann@chiralphotonics.com

NAICS: N/A

Company: Critical Frequency Design, LLC / Melbourne, FL

Topic: N202-135

Phase II Proposal Title: Model Based Systems Engineering for Tactical Data Link Systems

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: The US Navy, after deployment of Multi-Functional Information Distribution System (MIDS) and Joint Tactical Radio System (JTRS), is seeking a digital twin system model for the tactical data link system. The digital twin system MIDS JTRS model will be developed using Model Based Systems Engineering (MBSE). The model will characterize behavior parameters that further refine trades in future MIDS developments or other tactical data link systems. A MBSE approach to system design provides enhanced team communications, reduced development risk, improved quality, single-source configuration management, and better knowledge transfer compared to traditional document-based design approaches.

POC: Dave Wood, dave.wood@criticalfrequency.com

NAICS: N/A

ADVANCED ELECTRONICS (CONTINUED)

Company: Intellisense Systems, Inc. / Torrance, CA

Topic: N192-079

Phase II Proposal Title: Unmanned Airborne Reconfigurable Naval Communications Network

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Intellisense Systems, Inc. (Intellisense) proposes to continue advancing its Airborne, Long-Range, Multi-Beam Optical Network Device (ALMOND). Successfully developed and proven feasible, the ALMOND system is based on a multi-aperture transceiver that supports multiple full-duplex links simultaneously and covers a 360 deg x 180 deg field of view (FOV) without using a gimbal. ALMOND performs autonomous beam acquisition and tracking without relying on radio frequency communications or GPS support, and can provide high pointing accuracy. Furthermore, it can achieve data rates >1 Gbps at ranges longer than 25 km through its transmitter design and detector sensitivity.

POC: Marc SeGall, msegall@intellisenseinc.com

NAICS: N/A

Company: MaXentric Technologies LLC / Fort Lee, NJ

Topic: N211-086

Phase II Proposal Title: N-Polar Gallium Nitride High Electron Mobility Transistor in Low-Cost Process Technology for mm-wave Transceiver Applications

SYSCOM: ONR

Showcase: WEST 2024

Abstract: DON is seeking to evolve the complex logistical support needs of a system that could be made remote and inaccessible by external events (e.g. health emergency, natural disasters, wartime). Ryalinks is a startup focused on utilizing Machine Learning towards solving highly complex verticalized problems. We work closely with UCLA and UCI and their respective Data Science and Ultra Low Power labs. Prior to Navy engagement, Ryalinks had developed a highly resilient ML driven mesh network solution designed to operate in remote and fragile environments. This platform was a good fit for the DON requirements of a robust logistical support network, operating in remote and fragile environments.

POC: Hooman Honary, hooman.honary@gmail.com

NAICS: N/A

Company: Maxxen Group LLC / Herdon, VA

Topic: N20A-T021

Tech Category: Advanced Electronics

Phase II Proposal Title: Hybrid Packaging of Cryogenic Electronics and Photonic Technologies

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Systems Visions LLC (dba SYVI) and its partners Auburn University and the University of California, Los Angeles (UCLA) propose Hybrid Integration of Photonics and Cryogenic Electronics with Magnetic Shielding (HIPCEMS), an effort to develop a scalable heterogeneous packaging plan that results in extreme energy efficiency information transfer at high data rates and low bit error rate of digital data between superconducting and photonic technologies in a 4 K environment. HIPCEMS will feature a integrated magnetic shielding in a mechanically robust package that withstands thermal cycling from 300 K without performance degradation.

POC: Mark Adams, mark@sysvis.com

NAICS: N/A

Company: TPL, Inc. / Albuquerque, NM

Topic: N204-A04

Phase II Proposal Title: Rapid Reconstitution of Communications and Compact Hardware Solutions

SYSCOM: NAVWAR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Triton proposes to continue development of a compact retractable antenna for medium-sized Unmanned Undersea Vehicles (UUV). The Retractable Antenna for Improved Communications in Sea Environments (RAISE) is a modular UUV backpack antenna that provides high frequency (HF) through L-band frequency coverage within Razorback torpedo tube launch & recovery (TTLR) constraints. RAISE employs a robust and reliable retraction and deployment mechanism, housed within a hydrodynamically streamlined neutrally buoyant volume. The solution enables a well-behaved vehicle when the antenna is fully deployed, enabling secure communications in sea surface environmental conditions up to sea state 2.

POC: Angelica Cardona, acardona@tritonsys.com

NAICS: 541712

ADVANCED ELECTRONICS (CONTINUED)

AIR PLATFORMS

Company: XL Scientific, LLC dba Verus Research / Albuquerque, NM

Topic: N201-023

Tech Category: Air Platforms

Phase II Proposal Title: Alternate Sled Track Braking Mechanism

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: The objective of this project is to develop a replacement sled braking mechanism for Supersonic Naval Ordnance Research Tracking (SNORT) that requires less setup time, and does not have the associated regulatory compliance and recurring cost issues as the existing SNORT water brake system.

POC: Jordan Morris, jmorris@american-maglev.com

NAICS: N/A

Company: Advanced Ceramic Fibers, LLC / Idaho Falls, ID

Topic: N202-128

Phase II Proposal Title: Innovative Approaches in Design and Fabrication of 3D Braided Ceramic Matrix Composites (CMC) Fasteners

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Advanced Ceramic Fibers proposes an innovative solution to the design and fabrication of 3-Dimensional Ceramic Matrix Composite fasteners for mechanically attaching composite propulsion and structural components to metals, both on, and within, the aerostructure body. This solution is focused on 3D-braided ceramic matrix composite fasteners which will exhibit increased mechanical strength properties, resistance to crack-propagation, engineered thermal conductivity and a potential for long-service duty performance at ultra-high temperatures.

POC: John Garnier, jgarnier@acfibers.com

NAICS: 335991, 335991

Company: Avatar Partners, Inc / Irvine, CA

Topic: N201-008

Phase II Proposal Title: Augmented Reality and Aircraft Wiring

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Team AVATAR will provide a tangible, resilient, and validated prototype solution to the original topic resulting in a working solution that leverages AI and AR to resolve critical issues in wiring harness inspection & maintenance. SIA QA will empower maintainers & inspectors to wear an AR headset, approach a specific V-22 wiring harness, and get both contextually relevant information about the status & state of the wires, as well as on-the-job support. SIA QA integrates two components: (1) an offline process & technology that captures Should-be data and makes it exploitable by (2) an online process & technology that quickly compares, in real-time, Should-be data to As-is data.

POC: Scott Topple, Stoppel@avatarspartner.com

NAICS: N/A

Company: AVNIK Defense Solutions, Inc / Huntsville, AL

Topic: N192-065

Phase II Proposal Title: Artificially Intelligent Object with Virtual Presentation of Engineering and Logistics Data

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: AVNIK Defense Solutions, Inc. proposes, with our subcontract team members Engenix, EPS, and Instrumental Sciences, Inc. (ISI), a Concurrent Engineering Logistics Layered Structure called CELLS concept. CELLS will employ a network of autonomous cooperative intelligent agents, to extract engineering and field data from disparate sources, including JEDMICS, IETMS, and TMAPS, and provide the data to multiple users, with eXtended Reality 3D views. Objectives of the research are to 1) Develop a web-enabled CELLS prototype toolset to identify and retrieve data; 2) Develop the means to display and retrieve the information above; and 3) Test and demonstrate the CELLS prototype toolset

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

NAICS: 541613, 541712, 541330, 541611

4 (CONTINUED)

Company: Candent Technologies Incorporated / Greenfield, IN

Topic: N21A-T017

Phase II Proposal Title: Reusable MATPAC Packaging System for Expeditionary Airfields

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Candent Technologies will finalize the system design, fabricate prototypes, conduct development testing to verify, validate, and refine the final system design of an advanced technology, electric driven air compressor for an aircraft Active Flow Control (AFC) system. The Candent Team, utilizing its extensive turbomachinery design and development experience, along with their Academic partner, has completed an in-depth, extensive preliminary design that can meet all the program requirements.

POC: Emanuel Papandreas, mannyp@candent-technologies.com

NAICS: 336412, 33361

Company: Engin LLC / Charleston, SC

Topic: N191-009

Phase II Proposal Title: Flexible Integrated Intelligent Network (FIIN) for Prognostics Health Management (PHM) Systems

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Engin's effort consists of the prototype, limited production, and test/evaluation of a reusable MATPAC system for multiple configurations. Efforts to commercialize the reusable MATPAC solution will build upon evaluation consistent with manufacturing, usability, environmental, and cost requirements. Validation will take place through multiple Low Rate Initial Production (LRIP) runs and Field User Evaluations (FUE). Engin will mature the manufacturing plan and technical data package to include sufficient Product Manufacturing Information (PMI) so that it can be competitively bid permitting Engin to identify alternate supply chain sources.

POC: Jef Haas, jeff.haas@enginllc.com

NAICS: N/A

Company: Engineering and Scientific Innovations, Inc. / Fairfield, OH

Topic: N20A-T022

Phase II Proposal Title: Measurements of Wall-Shear-Stress Distribution in Hypersonic Flows

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Accurate prediction of the state of the boundary layers and regions of separated flows is of fundamental importance in the design of hypersonic vehicles. One methodology that has the ability to provide 2-dimensional surface shear stress data and is non-intrusive is the use of Shear Stress Sensitive Liquid Crystals. Such crystals will change in colour with changes in the local surface shear stress and have been used relatively successfully in low speed flows and some specifically targeted high speed flows. This effort is concerned with developing a system for measuring surface shear stress in Hypersonic flow facilities.

POC: Laura Waters, laura@esi-solutionsinc.com

NAICS: 541330

Company: (ES3) Engineering & Software System Solution, Inc. / San Diego, CA

Topic: N121-043

Phase II Proposal Title: Landing Gear Structural Health Prognostic/Diagnostic System

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: This effort will expand the data collection capability developed for the P-8A Diagnostic Of Landing gear Fatigue In-service Nexus (DOLFIN) system in order to develop an On-Board Weight & Balance System (OBWBS) for the MQ-4C Triton Unmanned Air Vehicle (UAV). The overarching objective of this SBIR topic is development of innovative approaches for prognostic/diagnostic systems that can be utilized to monitor and assess the structural health of landing gear.

POC: Chad Forrest, chad.forrest@es3inc.com

NAICS: 541712, 541330

AIR PLATFORMS (CONTINUED)

Company: GreenSight / Boston, MA

Topic: N211-D01

Phase II Proposal Title: DIRECT TO PHASE II Size/Weight Optimized Compact-Prime Power Generator (CPPG) Technologies

SYSCOM: MARCOR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: OsmoGenset is an ultra high density power generator system that combines established designs with a number of advanced technology approaches to reach extremely high levels of efficiency with long MTBF, low noise. A four stroke, spark ignition, piston engine is utilized as the prime power generator in the system. An Atkinson cycle with mechanical over expansion is utilized to maximize thermal efficiency. A modular crankcase design that can be configured with cylinder counts between 1 and 6 for modular configurations from 5kW to 30kW. A radial configuration is used to maximize cylinder density and minimize size/weight, as well as optimize cooling.

POC: Benjamin Boulch, bboulch@greensightag.com

NAICS: N/A

Company: HF Designworks, inc. / Boulder, CO

Topic: N202-112

Phase II Proposal Title: Multi-Domain Data Fusion Instructional Strategies and Methods for Pilot Training

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: : HF Designworks has created a Learning Management System (LMS) introducing Artificial Intelligence (AI) and Multi-Domain Data-Fusion (MDDF) technologies that help pilots to maintain Situational Awareness (SA). Our LMS combines our backgrounds in human performance modeling, User Experience (UX) design, technology integration, LMS architecture/systems, and Artificial Intelligence (AI) to build a training tool for pilots. Our current effort is development of an LMS that provides preparation - and pilot performance measurement - throughout all phases of the mission and pilot training.

POC: Scott Scheff, scottscheff@hfdesignworks.com

NAICS: 541990, 541511, 541330

Company: Precision Combustion, Inc. / North Haven, CT

Topic: N212-127

Phase II Proposal Title: High-Temperature Fuel Coking Mitigation Frangible Coatings for Fuel Nozzles and Screens

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Increasing heat loads projected for advanced aircraft of the near future will lead to higher fuel system temperatures. Fuel deposit issues currently prevent long-term fuel system operation at temperatures over ~300-400 F. Thermal fuel decomposition is expected to have the highest negative impact in the vicinity of the fuel injectors, which are wetted by fuel with the highest time-at-temperature exposure.

POC: Codruta Loebick, cloebick@precision-combustion.com

NAICS: 541715, 541330, 335999, 333611, 541713

Company: SealandAire Technologies, Inc. / Jackson, MI

Topic: N08-023

Phase II Proposal Title: Precision High Alitude Sonobuoy Emplacement (PHASE)

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: This PHASE technology enables the P-8A to conduct ASW operations at higher than traditional altitudes. Operational capabilities are improved when deploying PHASE sonobuoys in Global Positioning System (GPS) denied environments. The primary benefit of deploying the SSQ-53 and SSQ-62 PHASE modified sonobuoys include more precise sonobuoy placement and improved time-to-fall during P-8A ASW operations during critical target localization, track, and attack kill chain phases.   The primary goal for this effort is to mature the PHASE design and provide sufficient PHASE-modified sonobuoys to support in-flight assessments of PHASE effectiveness in an operationally relevant ASW environment.

POC: Wynn Curry, wcurry@sealandaire.com

NAICS:

AIR PLATFORMS (CONTINUED)

Company: Systems & Processes Engineering Corporation (SPEC) / Austin, TX

Topic: N202-107

Phase II Proposal Title: Radio Communication with Hypersonic Aerial Vehicle

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Systems & Processes Engineering Corporation (SPEC) demonstrated, through modeling, the potential to significantly increase transmission through a hypersonic plasma layer by utilizing a combination of novel approaches. Current drones use large 24 to 30 inch high gain Ku band antennas, which cannot be used on hypersonic vehicles. The proposed technical effort builds upon the comprehensive modeling, analysis and trades studies to experimentally demonstrate prototype performance of our proposed baseline antenna design uses a phased arrayin a high enthalpy hypersonic environment.

POC: Brad Sallee, sallee@spec.com

NAICS: 541710

Company: Black River Systems Company, Inc. / Utica, NY

BLACK RIVER SYSTEMS

Topic: N191-036

Phase II Proposal Title: Big Data Tools for High-speed Threat Detection and Classification

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Sonar operators can distinguish signals of interest (SOIs) such as torpedoes and rogue surface craft from clutter in beam-level displays, but this manual search leads to high operator workloads and long detect-to-engage (DTE) timelines. Black River Systems will develop FRONT ROW; Fast Recognition Of Naval Threats for Reducing Operator Workload to be used for Navy undersea warfare systems. FRONT ROW will utilize a deep-learning approach to automatically detect and classify torpedo-like threats present in passive sonar data as an operator aid that displays beam-level data of interest. The approach will use Machine Learning (ML) techniques to maximize the use of limited tactical training data.

POC: Jonathan Soli, soli@brsc.com

NAICS: 541330, 54171, 541511, 541512

AUTONOMY

Company: Aptima, Inc. / Woburn, MA

APTIMA
Human-Centered Engineering®

Topic: N193-145

Phase II Proposal Title: Defensive Coordinator for Autonomous Countermeasure Systems

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchang

Abstract: The ALICE solution will initially be developed to address military needs. In the world of UASs and autonomous vehicles, agents must be able make intelligent decisions not only when acting to achieve their own goals, but when interpreting the goals of others to inform their own actions. A UAS that could learn to read the adversary or oncoming vehicle and take decisive defensive actions in response would enhance survivability, increased mission success, and increase ituational awareness. If a UAS or vehicle could prompt action revealing information about goals or capabilities, that information could be used to build up a reservoir of experience to further enhance agent learning.

POC: Georgiy Levchuk, georgiy@aptima.com

NAICS: 541712

Company: ChromoLogic LLC / Monrovia, CA

ChromoLogic

Topic: N202-108

Phase II Proposal Title: Modeling Neuromorphic and Advanced Computing Architectures

SYSCOM: NAVAIR

Showcase:: WEST 2024

Abstract: To meet the Navys need for a spiking neural network testing platform, ChromoLogic proposes to develop a Spiking Neural Network Modeler (SpiNNMo) capable of simulating a variety of neuromorphic hardware platforms. SpiNNMo is able to extract relevant performance parameters from a neuromorphic chip and then predict the chips performance on new networks and data. In this way SpiNNMo can predict accuracy, latency and energy usage for a wide variety of hardware platforms on a given neural network and dataset. This will allow the Navy to test the performance of new spiking neural network architectures and chipsets before the chips are widely available and therefore speed neuromorphic adoption.

POC: Matthew Brehove, mbrehove@chromologic.com

NAICS: 339112, 334510, 541711, 541712

AUTONOMY (CONTINUED)

Company: Daniel H. Wagner, Associates, Incorporated / Exton, PA

Topic: N201-027

Phase II Proposal Title: Artificial Intelligence Software-Based Autonomous Battle-space Monitoring Agent for a Distributed Common Operational Picture Software Subsystem

SYSCOM: NAVSEA

Showcase: Sea-Air-Space 2024

Abstract: Understanding battle space is fundamental to success and a Distributed Common Operational Picture (DCOP) is only the beginning of the required understanding. In this project we will produce a system called Artificial Intelligence Monitoring for Battle Space Understanding (AIM4BSU) to monitor the DCOP. It will provide customized alerts and prioritized lists of targets. AIM4BSU will use reinforcement learning from adversarial self-play to train AI agentsand will monitor moves the AI agent would make in the situation represented by the real-world DCOP. Watch standers will be alerted when the agent would make a significant move.

POC: Brian Ray, brian.ray@va.wagner.com

NAICS: N/A

Company: Probus Test Systems Inc. / Lincroft, NJ

Topic: N221-D02

Phase II Proposal Title: DIRECT TO PHASE II - Flight Operations Planning Decision Aid Tool for Strike Operations Aboard Aircraft Carriers

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Creating Air Plans and Load Plans in support of aircraft carrier operations is challenging and time consuming. Multiple stakeholders address tactical requirements, determine the availability of needed resources, consider logistics, airwing training requirements, and ship operations. The Air and Load Plan Scheduler Multi-Agent System (ALPSMAS) project seeks to provide workload relief and expedite the availability of air plans and load plans by the use of intelligent software agents capable of analyzing mission, airwing, and ship requirements. The Air and Load Plan Scheduler Multi-Agent System (ALPSMAS) project objective is to research and prototype a decision aid for carrier strike plans.

POC: Manuel Fuentes, mfc@probussys.com

NAICS: 541511, 541512, 541990, 334513

Company: Scientific Systems Company, Inc. / Woburn, MA

Topic: N07-096

Phase II Proposal Title: Autonomous, Cooperative Behavior Amongst Unmanned Surface Vehicles

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: The Navy is developing and fielding a large number of unmanned systems, including Large and Medium Unmanned Surface Vessels (USVs). Autonomous platform effectiveness is directly related to the autonomy software that controls the actions of the USVs. Complex missions involving a human adversary require advanced levels of autonomy, enabling USVs to anticipate and respond intelligently to adversary actions without intervention by a human operator. A key enabler of this capability is the use of game-theoretic approaches that not only optimize the actions of individual vessels, but provide the ability to reason over adversary actions, and operate effectively as part of a team.

POC: Gavin Strunk, gavin.strunk@ssci.com

NAICS: 541330, 541710, 541512, 541511

Company: UtopiaCompression, Corporation / Los Angeles, CA

Topic: N151-026

Phase II Proposal Title: Small Non-Cooperative Collision Avoidance Systems Suited to Small Tactical Unmanned Systems

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Unmanned surface vessels (USVs) are anticipated to be vital components of the Navy fleet in the coming decade, taking over responsibilities from conventional manned vessels for many missions. Fundamental for successful deployment is an automated perception and situational awareness system which provides an understanding of the vessel's surroundings, enabling safe guidance and navigation. The Multisensor Perception and Situational Awareness (MPSA) system provides tracking data for surface objects by employing a novel suite of sensors including: multiple radars, an IR sensor, and a pan-tilt-zoom EO sensor.

POC: Riten Gupta, riten@utopiacompression.com

NAICS: 541511, 541712, 541720

AUTONOMY (CONTINUED)

Company: UtopiaCompression, Corporation / Los Angeles, CA

UTOPIACOMPRESSION

Topic: N193-A02

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

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: The future of Naval surface warfare will involve a large fleet of airborne, surface, and subsurface unmanned vehicles. Unmanned surface vehicles (USV) must autonomously navigate safely through congested waters, avoiding obstacles. USVs must also be able to autonomously process their sensor data in real-time for situational awareness. UtopiaCompressions (UC) Maritime Visual Analytics (MVA) technologies enable both military and civilian users to process visual data. In this SBIR project, UC will build on MVA to create a deep learning surface object classifier providing USVs with instant situational awareness of the objects in their vicinity as well as the unfolding events.

POC: Riten Gupta, riten@utopiacompression.com

NAICS: 541511, 541712, 541720

Company: XAnalytix Systems / Clarence Center, NY

X Analytix Systems

Topic: N201-060

Phase II Proposal Title: Unmanned Passive Navigation without GPS

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: An unmanned, passive, and free of GNSS or similar external reference aides, sensing system is proposed for navigation of mobile vehicles. The sensor involves a new low-cost, accurate gravimeter that provides micro-gravity measurements. Although navigation using gravimeters has been studied in the past, no such system exists that can offer the advantages of the proposed technology in terms of cost, accuracy and size. A new derived robust relative nonlinear filter, called the geometric extended Kalman filter, provides physically consistent estimates, unlike all existing filter formulations, while also providing faster convergence rates than currently used linearized filters.

POC: Steven Szklany, steven.szklany@xanalytixsystems.com

NAICS: N/A

BATTLESPACE ENVIRONMENT

Company: Adtech Photonics, Inc. / City of Industry, CA

ADTECH PHOTONICS

Topic: N20B-T029

Phase II Proposal Title: Accelerated Burn-In Process for High Power Quantum Cascade Lasers to Reduce Total Cost of Ownership

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: One of the hurdles holding QCLs back from large volume manufacturing is the cost of testing and packaging. Early screening of defective devices by improved burn-in procedures will reduce costs. A long burn-in procedure reduces the rate of rejection of QCLs by the customer. Reducing the burn-in time for the devices most likely to fail, will unlock a great cost reduction. In this project we took an approach of training machine learning (ML) algorithms to classify device characteristics based on the BI degradation results and build a predictive tool for future device behavior that can identify faulty devices. This reduces the need for a long burn-in to screen out defective devices.

POC: Shashank Jatar, shashank.jatar@atphotonics.com

NAICS: 334413

Company: Arete Associates / Northridge, CA

Areté DISCOVER. DEVELOP. DELIVER.

Topic: N192-120

Phase II Proposal Title: Small-Scale Velocity Turbulence Sensors for Undersea Platforms

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Hanna is an electromagnetic turbulent velocity sensor developed by Aret. It combines a small form factor (nominally 25 mm diameter, 250 mm long) with a robust, low-noise measurement principle to produce high sample rate, accurate fluctuation velocity measurements for three orthogonal components. The Phase II work will turn the prototype design Aret developed in Phase I into a functional prototype sensor with validated performance from comparison to a ground truth turbulence measurement technique (particle image velocimetery, PIV) and a field deployment on a medium sized autonomous underwater vehicle.

POC: Peter Rusello, prusello@arete.com

NAICS: 541712

BATTLESPACE ENVIRONMENT (*continued*)

COMMAND CONTROL COMMUNICATIONS COMPUTERS & INTELLIGENCE *(C4I)*

Company: ObjectSecurity LLC / San Diego, CA

Topic: N212-122

Phase II Proposal Title: Characterizing 5G vulnerabilities in an expeditionary environment

SYSCOM: ONR

Showcase: WEST 2024

Abstract: The Navy needs a lightweight and reliable system that can perform characterization, integrity checks, vulnerability discovery/detection and verification upon entry into 5G networks in an expeditionary setting (vehicle-mounted), so that users can use these networks safely. It is possible to develop a portable, automated, efficient device that automatically finds/analyzes 5G networks and provides a simple, actional report. We present a long-term solution to characterization of 5G networks with deployment potential. Our solution is based on available COTS components combined with advancements to the state-of-the-art in signal detection, acquisition, storage, processing, and analysis.

POC: Ulrich Lang, ulrich.lang@objectsecurity.com

NAICS: 541511, 611420, 541519, 511210

Company: Advanced Cooling Technologies, Inc. / Lancaster, PA

Topic: N172-137

Phase II Proposal Title: Advanced Cooling Technologies for Multifunctional Information Distribution System (MIDS) Terminals

SYSCOM: NAVWAR

Showcase: WEST 2024

Abstract: With increasing capabilities for MIDS-JTRS, there is a need to dissipate resulting heat. Current thermal management schemes of MIDS are inadequate in meeting the needs of next-generation MIDS-JTRS terminals. Advanced Cooling Technologies, Inc. (ACT) proposed this program to develop multiple thermal technologies for MIDS platform and integrate them in new and innovative schemes that greatly enhance the heat transfer in the terminals and provide significant cooling capacity while maintaining Size Weight, and Power (SWaP) of the system. The program will focus on further developmental effort, optimization of heat transfer schemes, fabrication of prototypes, thermal testing and qualification.

POC: Jens Weyant, Jens.Weyant@1-act.com

NAICS: 541690, 541710, 541330, 927110

Company: Aptima, Inc. / Woburn, MA

Topic: N191-017

Phase II Proposal Title: Enhanced Visualization for Situational Understanding

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Decision superiority can be the difference between successful and disastrous Naval mission execution. The Navy seeks an automated Course of Action (COA) capability that improves situational understanding through the use of visualization. 5D-IVIS leverages a three-dimensional (3D) planning interface supporting rapid, intuitive sketching, refinement, and annotation of multi-domain COAs. Next, the system's unified temporal visual analytics link disparate courses of action into a common spatiotemporal frame of reference. Finally, 5D-IVISs data fusion architectures provide commanders with an efficient comparison of assessment criteria of predicted red-force activities.

POC: Chad Weiss, cweiss@aptima.com

NAICS: 541712

Company: Boston Fusion Corp. / Lexington, MA

Topic: N201-085

Phase II Proposal Title: Machine Learning-Based Data Analysis

SYSCOM: SSP

Showcase: WEST 2024

Abstract: Inertial Navigation System Inspection and Detection of Evolving Roles (INSIDER) is an automated inertial navigation system (INS) performance normalcy monitor and fault detector and predictor. INSIDER monitors the performance of the INS unit by reasoning over the entire normalcy graph and entire alert graphs, but it can also monitor INS subsystems by focusing on corresponding subgraphs. Finally, INSIDER can predict faults or abnormal trends by observing degradations in system-wide normalcy as well as in the normalcy of individual sensors and subsystems.

POC: Robert Ceres, robert.ceres@bostonfusion.com

NAICS: 541712

C4I (continued)

Company: Daniel H. Wagner, Associates, Incorporated / Exton, PA

Topic: N201-043

Phase II Proposal Title: Holistic Integration of Air Anti-Submarine Warfare Capability for Effective Theater Undersea Warfare

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Daniel H. Wagner Associates, Inc. (DHWA) will develop innovative approaches, techniques, algorithms, and software, referred to in this proposal as Artificial Intelligence (AI) Techniques and Recommendations for Exploitation of USW Synergies (ATREUS). ATREUS will automatically, efficiently, and effectively support the exchange of relevant TUSW data and information among TUSW air platforms, TUSW aircraft Command and Control (C2) nodes, and TUSW C2 systems; jointly optimize all aircraft and non-aircraft TUSW search operations, and accurately account for aircraft TUSW operations when evaluating overall TUSW search effectiveness.

POC: Reynolds Monach, reynolds@va.wagner.com

NAICS: N/A

Company: FoVI 3D / Austin, TX

Topic: N19B-T036

Phase II Proposal Title: Three Dimensional Field of Light Display

SYSCOM: NAVSEA

Showcase: Sea-Air-Space 2024

Abstract: The pace of todays battlespace requires military leaders to build strategies and make decisions in a much shorter timeframe. Emerging field of light display (FoLD) technology provides a glasses-free 3D aerial image with all the depth cues expected by the human visual system. FoVI3D will develop a Common Operational Picture (COP) Workstation. 2D touch panels provide task specific interaction for individual users while the central 3D visualization provides a COP for collaboration. A 3D wand system will enable users the ability to interact with the 3D information. The work performed is a required step for the future technical insertion of a FoLD central to the AEGIS combat information.

POC: Amy Lesner, aelessner@fovi3d.com

NAICS: N/A

Company: Fuse Integration, Inc. / San Diego, CA

Topic: N181-007

Phase II Proposal Title: Robust Communications Relay with Distributed Airborne Reliable Wide-Area Interoperable Network (DARWIN) for Manned-Unmanned Teaming in a Spectrum Denied Environment

SYSCOM: NAVWAR

Showcase: Sea-Air-Space 2024

Abstract: To support reliable, deterministic, timely, survivable, secure IP communications in the Tactical Environment we have developed a novel algorithm which is compatible with existing Navy networks. The Tactical Communications Management Program (TCMP) algorithm consists of utilizing multiple physical links to provide the service level required by a particular application using the networking features available in Automated Digital Network System (ADNS) multicast group routing under tight SLA management. Fuse will develop networking software to implement the TCMP algorithm and validate it in a test scenario with multiple platforms including DDG ships, Navy MOCs and possibly airplanes.

POC: Dell Kronewitter, dell.kronewitter@fuseintegration.com

NAICS: 541511, 541330, 541412, 541712

Company: Galois, Inc. / Portland, OR

Topic: N211-083

Phase II Proposal Title: Automated Formal Verification of Software Defined Network Implementations

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: 5G mobile networks are poised to dramatically enhance communication capabilities for DoD missions, such as those that require high mobility, and/or seamless connectivity between Navy vessels and UAV/USV/UUV/UGVs, each with rapidly changing positions. In the 5G SDN Tools for Automated and Reliable Security (5STARS) project we focus on securing data/user plane within the 5G Mobile Core and slice isolation case studies. We are developing a network verification tool that is fully automated, scalable, general, and high assurance.

POC: David Darais, darais@galois.com

NAICS: 541519, 541511, 541512, 541690

C4I *(continued)*

Company: GIRD Systems, Inc. / Cincinnati, OH

Topic: N211-080

Phase II Proposal Title: Wideband Interference Suppression for Dynamic-range OptiMization (WISDOM)

SYSCOM: NAVWAR

Showcase: Sea-Air-Space 2024

Abstract: The proposed effort matures the design of and implements a prototype of WISDOM. Implemented as a collection of microservices within a Service Oriented Architecture (SOA), WISDOMs software architecture flexibly supports a variety of different platforms, readily extends to manage novel interference excision systems (IES), federates across networks when available, and disaggregates and customizes so that WISDOM can be deployed in part or in whole and scaled according to platform resources. The effort extends and update algorithms, adds spectral awareness capabilities, prototypes WISDOM in hardware and software, extends the WISDOM testbed, and introduces networked and federated services.

POC: James Caffery, jcaffery@girdsystems.com

NAICS: 541690, 541511, 541712, 541330

Company: Innovative Defense Technologies, Arlington, VA

Topic: N201-050

Phase II Proposal Title: Real-time Insights for Combat System Integration and Testing

SYSCOM: NAVWAR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: A key challenge to the Navy is the time and cost associated with integrating complex systems of systems. The Interface Traffic Monitoring and Evaluation (IT-ME) software application is an enhanced interface testing tool built on Innovative Defense Technologies' (IDT) automated testing technologies. IT-ME monitors, prepares, and assesses message data in real-time using deep-packet inspection to detect interface and message-level errors. IDT extended the development to include a real-time performance dashboard that contains an Alert View with real-time message data assessment artifacts, including warnings and informational messages, to an operator.

POC: Brandon Hogge, bhogge@idtus.com

NAICS: N/A

Company: Intraband LLC / Madison, WI

Topic: N211-015

Phase II Proposal Title: Long-Wave Infrared Transceivers for High Speed Free Space Optical Communications in Adverse Weather Conditions
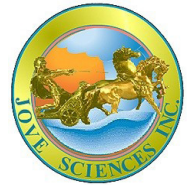
SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Given the ever-growing need for high-data rate, low-latency, secure, wireless communications, free-space optical (FSO) communication links operating outside of the regulated and crowded radio-frequency (RF) bands are increasingly in demand. We propose to develop quantum cascade laser (QCL) - based transmitter (Tx) and resonant cavity infrared detector (RCID) - based receiver (Rx) components that will enable communication over a FSO communication link to maximize the spectral efficiency and data throughput of a limited-bandwidth free-space link that will enable software-defined-radio methods to maximize the data throughput based on the available optical channel.

POC: Robert Marsland, rmarsland@intraband.net

NAICS: 334413

Company: Jove Sciences, Inc. / San Clemente, CA

Topic: N132-135

Phase II Proposal Title: Fusion in a Cloud

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: This effort enhances the real time, Multi INT data fusion processor called the Advanced Correlator Navy (ACOR-N), and especially some of the threat classification and identification applications developed. ACOR-N applications will be integrated into the Minotaur Family of Services (MFoS): Global ELINT Tracker Enhanced (GETe), ELNOT Radar Filter (AREF), Best Fit Algorithm (BFA), Pattern of Life Processor (PoLP).

POC: James Wilson, jwilson@jovesci.com

NAICS: 541513, 443120

C4I *(continued)*

Company: Machina Cognita Technologies, Inc. / San Marcos, CA

Topic: N211-079

Phase II Proposal Title: Enhanced Situational Awareness Through Smart Geospatial Comparative Analysis

SYSCOM: NAVWAR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: For a Maritime Operations Center (MOC), the Common Operational Picture (COP) is the visual representation of the collective situational awareness. As the Navy develops the Maritime Tactical Command and Control (MTC2) system, it is paramount that the data management and analytics can leverage multi-modal geospatial and non-geospatial data. The Machina Cognita Technologies (MCT) team proposes to develop the Multi-modal Evidential Deduction for Upgraded Situational Awareness (MEDUSA) engine. The system will streamline the data management pipeline, leverage Machine Learning (ML) algorithms, and create and integrate enhanced data layers and geospatial visualizations.

POC: Jonathan Day, jonathan.day@machinacognita.com

NAICS: 541511, 541330, 541512

Company: MaXentric Technologies LLC / Fort Lee, NJ

Topic: N192-091

Phase II Proposal Title: Line-of-Sight (LOS) Low Probability of Detection/Intercept (LPD/LPI) Millimeter Wave Communication

SYSCOM: NAVWAR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: There is a demand for agile, millimeter-wave (mmW) technologies that provide high-capacity communication links while maintaining low probability of detection/intercept (LPD/LPI). MaXentric is proposing a mm-wave beamforming system codenamed MAX-BEAMS. MaXentric will leverage its experience developing a variety of beamforming, millimeter-wave, and high bandwidth communication systems. This effort will culminate in a detailed prototype blueprint and will be complimented with a hardware demonstration. MAX-BEAMS will provide the Navy with a flexible, high-capacity communication solution that meets future airborne communication needs.

POC: Brian Woods, bwoods@maxentric.com

NAICS: N/A

Company: Phase Sensitive Innovations, Inc. / Newark, DE

Topic: N203-149

Phase II Proposal Title: Advanced Radio Frequency (RF) Photonic Integrated Circuit (PIC)

SYSCOM: NAVWAR

Showcase: Sea-Air-Space 2024

Abstract: PSI will build and demonstrate photonic integrated circuits (PICs) to support optical processing of RF signals in multi-channel transmit and receive phased array systems. The PICs will be incorporated into demonstrations of receiving phased arrays that can process a wide range of RF frequencies (up to at least 40 GHz) with wide instantaneous bandwidths (up to 10 GHz). Emphasis will be to ensure that modern PIC systems also account for legacy systems, i.e., they must work in the low region of the spectrum, while simultaneously operating in the high region of the spectrum. PSI has developed a range of RF-Photonic technologies on both the device and systems level.

POC: Tim Creazzo, creazzo@phasesensitiveinc.com

NAICS: 541330, 541710

Company: Phase Sensitive Innovations, Inc. / Newark, DE

Topic: N203-149

Phase II Proposal Title: Hybrid and Heterogeneous Integration of PICs for RF Photonic Imaging Systems

SYSCOM: NAVWAR

Showcase: Sea-Air-Space 2024

Abstract: At present there is no scalable RF technology that can offer millimeter-wave (mmW) region operational bandwidth while maintaining compatibility with legacy systems. This effort will establish a paradigm for design, development, and application of broadband RF phased array antenna systems whose performance is based on spatial perception (i.e., imaging), to enable software defined multi-function operation. This proposal seeks to pioneer co-packaged optics in RF Photonic applications, through hybrid and heterogeneous integration. Consolidating the source, modulator, and routing PICs all into one system will drastically reduce SWAP-C in state-of-the-art RF communications and imaging systems.

POC: Chase Stine, stine@phasesensitiveinc.com

NAICS: 541330, 541710

C4I *(continued)*

Company: PW Communications / Rockville, MD

Topic: AF191-005

Phase II Proposal Title: Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions with a Clear Air Force Stakeholder Need

SYSCOM: DON

Showcase: Sea-Air-Space 2024

Abstract: The U.S. government (USG) invests billions of dollars to meet the needs and challenges facing warfighters today. Military stakeholders and commercial communities need visibility into the capabilities within this portfolio and the ability to leverage these capabilities quickly and securely. SHELDON links large-scale, publicly-available data sets and applies a bottom-up computational approach to generate insights related to USG spending, national security, and supply chain/portfolio management for federal and commercial customers. SHELDON will produce a suite of outputs and tools that enable stakeholders to access USG supply chain and insights to facilitate more coordinated decision making.

POC: Amanda Bresler, abresler@pwcommunications.com

NAICS: N/A

Company: Scientific Toolworks, Inc (d.b.a. Scoring Technologies) / Hurricane, UT

Topic: N193-A03

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

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: This extends the success of the Joint Marksmanship Assessment Package (JMAP) system support USMC enterprise level marksmanship measurement and to also commercialize JMAP so that it can continue to support USMC and DoD marksmanship. The primary entry points for the expansion are: USMC Infantry Marine Training, Introduction of concurrent, non-acoustic timing for the Infantry Marksmanship Assessments (IMA), as well as analytics, data cleaning, and measurement quality support, Assessment dashboard/cards for the individual, instructor, Squad, Platoon, and Company.

POC: Kenneth Nelson, ken@scoringtech.com

NAICS: N/A

Company: Scientific Toolworks, Inc (d.b.a. Scoring Technologies) / Hurricane, UT

Topic: N201-081

Phase II Proposal Title: Automatic Coding Standards Validation Tool

SYSCOM: SSP

Showcase: WEST 2024

Abstract: This project will focus heavily on adding checks for hundreds of new standards to Understand, including the Software Engineering Institute Computer Emergency Response Team (SEI CERT) security and safety standards. We will be increasing the underlying parser functionality so we can add new kinds of checks and improving how we display those checks to the engineers, both inside and outside of the Understand GUI. We will also be integrating tightly with Jenkins to enhance the DevOps process and adding several new features to help with code navigation and exploration.

POC: Kevin Groke, groke@scitools.com

NAICS: N/A

Company: Soar Technology, Inc. / Ann Arbor, MI

Topic: N202-126

Phase II Proposal Title: Scenario Development and Enhancement for Military Exercises

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: SoarTech proposes to develop a platform that enables intelligence and information operations analysts to practice and rehearse training operations in a simulated environment. Students will rehearse in a synthetic media environment that incorporates elements of long-form media (e.g., news stories, blog posts) and social media (e.g., Facebook, Twitter, Reddit) conversations that surround these media injects. Tools will be developed that allow instructors and simulation operators the ability to shape and control this synthetic media environment while using machine learning and artificial intelligence to reduce the human labor required to conduct these exercise.

POC: Charles Newton, charles.newton@soartech.com

NAICS: 541715, 541519, 541330, 541990, 541512

C4I *(continued)*

Company: Sonalysts, Inc. / Waterford, CT SONALYSTS

Topic: N211-046

Phase II Proposal Title: Undersea Warfare Decision Support System Coalition Data Parser & Advanced Display

SYSCOM: NAVSEA

Showcase: Sea-Air-Space 2024

Abstract: Sonalysts, Inc. proposes the Data Aggregation & Display (DAD) solution to create a new way to filter data and efficiently display the data to an operator in four dimensions (4D). The data filter technology will support deleting data from message streams to allow releasability of the resulting data to coalition partners or lower classification systems. The solution also creates a data storage architecture including algorithms to predict the future locations of all data elements. This data storage drives a new 4D, time-based plus three dimensional, display format to enable operators to view the past and future operational picture. Operators can also enter changes to friendly or enemy asset courses and speeds to allow experimentation to determine the best future courses of action.

POC: Matthew Ferrier, mferrier@sonalysts.com

NAICS: 334220, 511140, 541710, 334613

Company: VR Rehab, Inc. (VRR) / Clermont, FL VRR

Topic: N202-090

Phase II Proposal Title: Single Amphibious Integrated Precision Augmented Reality Navigation (SAIPAN) System

SYSCOM: MARCOR

Showcase: WEST 2024

Abstract: VRRs existing HoloWarrior: SAIPAN (formerly Fused Augmented Realities User Interface (FAR-UI)) has evolved to fulfill the feasibility for the single amphibious integrated precision augmented-reality navigation system (SAIPAN) requirements. VRR will provide Situational Awareness Enhancements for faster and better decision making through VRRs Mixed Reality (MR) visualization innovations of MiniMaps with Gaze Guidance Lines. Additional MR visualization innovations include: Instant SA solving AR graphic problems; Sea/Land Mine 3D Conformal Threat Zones; new classes of pulsed graphics that exploit limitations in human visual perception; and enabling 360 degree birds-eye view of ownship.

POC: Peter Crane, pcrane@virtualrealityrehab.com

NAICS: 611420, 541512, 541511

CYBER

Company: AVIRTEK, INC / Tucson, AZ AVIRTEK Autonomic Cyber Security

Topic: N211-058

Phase II Proposal Title: Automated Unmanned Systems (UxS) Boundary Protection Capability

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: This project will develop Self-protection capabilities for Unmanned Maritime Vehicles (UMV) against Denial of Service (DoS) attacks, Man-in-the-Middle (MITM), and unauthorized data exfiltration from internal and external attackers.   The UMV-AP platform will provide the following capabilities: Behavior Analysis Units (BAUs) of UMV Services, Autonomic Incident Response System, UMV Management Interface (UMI), User Interface (UI), Honeywell CyberChip (HC2), and Honeywell Embedded Anomaly Detection (HEAD).

POC: Youssif Al-Nashif, youssif.alnashif@avirtek.com

NAICS: N/A

Company: BlueRISC Inc. / Amherst, MA BlueRISC

Topic: N201-076

Phase II Proposal Title: At-Scale Detection of Hardware Trojans on Chip Circuits

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: The proposed solution takes the form of an automated toolkit that utilizes contactless, side-channel measurements to drive an AI pipeline that has been designed to detect the presence of HW Trojans. The solution does not require a golden value for the design-under test. It operates on fully packaged chips and can even automatically scan an entire PCB.

POC: Kristopher Carver, kris@bluerisc.com

NAICS: N/A

CYBER (continued)

Company: Dignitas Technologies, LLC / Orlando, FL

Topic: N211-088

Phase II Proposal Title: Live, Virtual, and Constructive Cyber Battle Damage Assessment for Training

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Naval strike groups may contain space-based, airborne, surface, and subsurface platforms, and include numerous ground- and ship-based systems for sensor data collection and analysis. Competitors' SIGINT teams are focusing on disruption of ISR capabilities. Battle staffs need training that considers cyberspace effects, in line with traditional kinetic and non-kinetic effects. Existing live, virtual, constructive, and gaming (LVC&G) systems are not developed to incorporate offensive and defensive cyberspace operations. We will investigate shipboard C4I systems and their interfaces; research, design, and develop intelligent cyber sensors; develop a toolset, termed CyberSTRIKE.

POC: Theresa Tamash, ttamash@dignitastechnologies.com

NAICS: 541712, 541330

Company: P&J Robinson Corporation / Boerne, TX

Topic: N192-095

Phase II Proposal Title: Multi-Instruction Set Architecture (ISA) Processing with a Peripheral Component Interconnect express (PCIe)

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: Multiple Instruction Set Architecture (Multi-ISA) computing platforms provide significant enhancements to performance, power consumption, and security. The CCOTS marketplace has not developed such a platform where differing ISA processors exist as co-processors. Hardware should be developed to realize Multi-ISA processing's demonstrated benefits. PJR Corporation will develop such a processing platform where an Advanced Reduced Instruction Computer (RISC) Machine (ARM) coprocessor is built on an Enterprise and Datacenter SSD (EDSSD) 1U form factor board.

POC: Pete Robinson, probinson@pjrcorp.com

NAICS: 541511, 541330, 541712, 541512

ELECTRONIC WARFARE

Company: Indiana Microelectronics LLC / West Lafayette, IN

Topic: N11A-T016

Phase II Proposal Title: Tunable Bandstop Filters for Suppression of Co-site Interference and Jamming Sources

SYSCOM: NAVWAR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: This project focuses on the development of high-Q tunable bandpass filters based upon magnetically tuned thin film YIG resonators. Both printed circuit board integrated and all thin film-based devices will be developed. The filters will be integrated into GPS and SATCOM systems to demonstrate system resiliency in the presence of RF interference. The effort will focus on the deposition and characterization of the thin films using pulsed laser deposition. After material characterization, tunable resonators will be fabricated and characterized. The last portion the base effort will then focus on the design, fabrication, and analysis of low loss filters for GPS applications.

POC: Mike McPheters, MMcPheters@IndianaMicro.com

NAICS: N/A

Company: Integrated Solutions for Systems / Huntsville, AL

Topic: N201-010

Phase II Proposal Title: Compact Source for Focused and Tunable Narrowband Radio Frequency

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: The development of High-Power Radio Frequency (HPRF) EW/DEW has advanced significantly in recent years. However, systems are not developed to a point that they maybe fielded on smaller more versatile aircraft and lower lift rotary wing platforms. A HPM capability that bridges the gap between traditional EW and jamming if integrated on a multi-mission capable aircraft would be a transformational capability. Integrated Solutions For Systems (IS4S)in concert with Metamagnetics (MTMGX) developed a compact HPM EW/DEW source suitable for integration into a format compatible with a traditional aircraft underwing pod.

POC: Zac Shotts, zac.shotts@is4s.com

NAICS: 541330

ELECTRONIC WARFARE *(continued)*

Company: NP Photonics, Inc. / Tucson, AZ

Topic: N191-010

Phase II Proposal Title: Miniature Diode-Pumped Solid State Laser for Military and Aerospace Environments

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Compact and robust fiber pigtailed high power diode-pumped solid-state lasers are in great demand for wideband radio-frequency photonics applications. NP Photonics proposes to develop miniature high power high stability single-frequency fiber lasers by using our proprietary fiber laser technology and compact packaging capability. We will demonstrate the feasibility of developing a diode-pumped single-frequency fiber laser oscillator at 1.55 microns with output power > 400 mW and improved packaging. Final version will be compact and robust fiber lasers at 1.06 microns and 1.55 microns meeting or exceeding the requirements of the Navys applications will be developed in Phase II.

POC: Xiushan Zhu, XZhu@npphotonics.com

NAICS: 335921

Company: Vadum / Raleigh, NC

Topic: N202-121

Phase II Proposal Title: Identifying and Characterizing Cognitive Sensor Systems in Tactical Environments

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Vadum will explore the technical capabilities and tactical implementations of the Adversary Logic Exploitation System (ALES) algorithms. Vadum has demonstrated the utility of the ALES concept of modeling adversary decision logic to exploit that logic to support electronic protection decisions. This program will extend this work to improve and characterize the two critical components of the ALES system (Decision Logic Characterization and Radar Waveform Selection) and to evaluate potential implementation impacts of the ALES system. The result will be a comprehensive set of tested jammer emitter decision logic characterization algorithms driving blue force electronic protection decisions.

POC: Laura Tolliver, laura.tolliver@vaduminc.com

NAICS: 541715

Company: Intellisense Systems, Inc. / Torrance, CA

Topic: N211-009

Phase II Proposal Title: Cyber Protection for Physical Avionics Data Inputs to Navy Platforms

SYSCOM: NAVAIR

Showcase: Sea-Air_Space 2024

Abstract: Intellisense Systems, Inc. proposes to continue the development of the Persistent Avionics Threat Chain Hardening (PATCH) system. The PATCH system is an innovative end-to-end cyber protection framework on aeronautical data through integration of computer/network security procedures and data protection software to ensure that the integrity of the data is maintained without causing unnecessary burden on the aircrew or mission planning staff.

POC: Wenjian Wang, wwang@intellisenseinc.com

NAICS: N/A

Company: MagiQ Technologies, Inc. / Somerville, MA

Topic: N211-080

Phase II Proposal Title: Wideband Interference Suppression for Dynamic-range OptiMization (WISDOM)

SYSCOM: NAVWAR

Showcase: WEST 2024

Abstract: MagiQ Technologies is positioned to develop a system to cancel the co-site transmissions the Navy experiences at HF frequencies (2-30MHz). In order to maximize transmission of data and generally promote multidirectional connectivity between many points there is an urgent need to receive weak signals at frequencies that are interspersed closely in frequency between active powerful transmitters on the ship. Unfortunately, the receive antennas pick up these transmissions and they tend to overwhelm the receive chains and their analog-to-digital converters. MagiQ Technologies has executed programs to cancel signal both with and without a tapped reference.

POC: Mark Lucas, mark.lucas@magiqtech.com

NAICS: N/A

EW *(continued)*

Company: Scientific Applications & Research Assoc., Inc. / Cypress, CA

Topic: N211-087

Phase II Proposal Title: DSolid State High Voltage Power Module Development and Packaging for High Power Microwave Drivers

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: High power microwave (HPM) sources have conventionally been driven by gas-switched pulsed power generators due to high voltage, high current, and fast rise-time requirements. Solid-state technologies make possible a new generation of pulsed power drivers with wide-ranging pulse widths, fast repetition rates, and a high degree of waveform agility particularly well-suited for HPM applications. A solid-state alternative to traditional HPM drivers was developed by packaging silicon carbide (SiC) die into large pulsed power systems, and SotA SiC devices. A next-generation pulsed power modulator leveraging SotA semiconductor devices and advanced system architecture will be designed.

POC: Landon Collier, LCollier@sara.com

NAICS: 34511, 541330, 541712

Company: Hepburn and Sons LLC / Manassas, VA

Phase II Proposal Title: Compact, Hatchable Transformer Rectifier

SYSCOM: NAVAIR

Showcase :Sea-Air-Space 2024

Abstract: Hepburn and Sons LLC proposes to prototype a hatchable solid state transformer rectifier design based off the neutral point clamped converter topology, achieving modularized power capacity in a line replaceable unit (LRU) architecture featuring fully parallel MVAC inputs and DC outputs. The design converts AC to DC with modular LRUs that are compact and lightweight such that personnel may quickly replace a hatchable, failed unit. The design improves maintainability, reduces costly access cuts, and improves system availability with potential at-sea replacements using onboard LRU replacements.

POC: Ben Ford, ben.ford@hepburnandsons.com

NAICS: 541330, 336611, 221122, 541990

ENERGY & POWER TECHNOLOGIES (E&PT)

Company: Energy to Power Solutions / Tallahassee, FL

Topic: N19A-T016

Phase II Proposal Title: Quench Monitoring and Control System for High-Temperature Superconducting Coils

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Energy to Power Solutions (e2P) has teamed with quench detection (QD) experts to design, fabricate, and test a robust, reliable, and low cost QD system. e2Ps proposed system is a quench avoidance system that will provide multiple levels of noise cancellation, thus providing it with a QD threshold sensitivity beyond what is possible using uncompensated systems, acoustic emissions, or optical techniques. e2Ps proprietary system is a quench AVOIDANCE system that is insensitive to mechanical vibrations and extremely low cost, making it technically and economically suitable for rapid implementation on the Navys unmanned HTS MS platform.

POC: Chris Rey, cmrey@e2pco.com

NAICS: N/A

Company: Luna Labs USA, LLC / Charlottesville, VA

Topic: N202-132

Phase II Proposal Title: Novel Methods to Mitigate Heat Exchanger Fouling

SYSCOM: ONR

Showcase: WEST 2024

Abstract: There is a critical need to mitigate fouling formation on seawater-based titanium heat exchangers used in US Navy vessels. Fouling will form while ocean water circulates through the heat exchanger tubes or plates, decreasing the heat transfer efficiency and increasing fluid resistance. Further fouling eventually results in the consumption of more energy and a decrease in heat exchanger service life. Luna will improve the antifouling and fouling release coatings that are developed to be excellent candidates for heat exchanger application. In addition to biofouling prevention, Lunas solution will eliminate the need for expensive chlorination systems and increase maintenance intervals.

POC: Fernando Valencia, FarelasF@lunainc.com

NAICS: 541711, 334519, 541330, 541712

E&PT (continued)

Company: Physical Sciences Inc. / Andover, MA

Physical Sciences Inc.

Topic: NN152-093

Phase II Proposal Title: Advanced Non-Electrochemical Energy Storage

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Imperia Batteries, a division of Physical Sciences Inc. (PSI), will design, fabricate, demonstrate, and deliver a high performance Tactical Battery that exceeds the functional, performance, and form factor requirements of the Barracuda Mine Neutralizer system. Performance, safety, and storage testing will demonstrate that the battery is ready for transition to Phase III acquisition for use in the Barracuda program. The battery will utilize Imperias unique lithium metal cell design, patented high active (HA) coated materials, and nonflammable electrolyte to produce safer cells with enhanced energy and power density.

POC: Christopher Lang, lang@psicorp.com

NAICS: 541720, 541711, 541712

Company: Wecoso LLC / Huntington Beach, CA

west coast solutions

Topic: N153-129

Phase II Proposal Title: Ultra-lightweight and Compact Hybrid System

SYSCOM: MARCOR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: West Coast Solutions (WCS) is developing a modular 1 to 5 kW class expeditionary solar-lithium battery power system architected for the lightest practical weight and maximum operational robustness. Each individual module is itself a standalone system supporting up to 2 kW input and a minimum 1 kW output while containing 3.0 kWh of energy storage. The Ultra-Lightweight Expeditionary Power System (U-LEPS) provides a 50% reduction in the battery and support electronics weight relative to presently-fielded systems, with additional weight reduction at the system level enabled by the WCS dual voltage bus 0x9D electronics and the elimination of battery cables.

POC: Carl Kirkconnell, carlk@wecoso.com

NAICS: 541330

GROUND AND SEA PLATFORMS

Company: Diversified Technologies, Inc. / Bedford, MA

DIVERSIFIED TECHNOLOGIES, INC.

Topic: N162-119

Phase II Proposal Title: SiC-Based High Voltage Capacitor Charging Innovations

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: The primary goal of our Phase II effort will be to develop, deliver, and install one fully functional, 1.2 MW prototype capacitor charging converter to ONR, capable of continuously charging eighteen 325 kJ capacitor loads at up to ten charges per minute. In addition, aspects related to the manufacturing, costing and environmental qualification of future production converters must be understood and addressed to ensure successful transition to Phase III.

POC: Tony Abbate, aabbate@divtecs.com

NAICS: 334419, 335999

Company: Diversified Technologies, Inc. / Bedford, MA

DIVERSIFIED TECHNOLOGIES, INC.

Topic: N201-039

Phase II Proposal Title: Power Dense Single Core Three-Phase Transformer

SYSCOM: NAVWAR

Showcase: WEST 2023

Abstract: Diversified Technologies Inc. (DTI) proposes to develop a compact, 60 Hz, 440 Vrms, 150 kVA, militarized, 1:1 galvanic isolation transformer, meeting and exceeding the required power level. The objective is to reduce the size and weight of militarized single-core three-phase transformers for use within shipboard power distribution systems. DTI will fabricate and electrically demonstrate four transformers, and prepare the units for qualification testing. DTI is one of the highest-rated firms in the country with respect to SBIR commercialization success.

POC: Tony Abbate, aabbate@divtecs.com

NAICS: 334419, 335999

GROUND AND SEA PLATFORMS *(continued)*

Company: Fairlead Integrated, LLC / Portsmouth, VA

Topic: N201-061

Tech Category: Mine Countermeasures Unmanned Surface Vehicle Common Deploy and Retrieve System

Phase II Proposal Title: Compact High Speed Signal Processor

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Fairlead's design allows a system to the launch and recover the Northrop Grumman Corporation (NGC) AN/AQS24B and the Raytheon AN/AQS20A sonar bodies. Fairlead will refine the LARS modifications and develop a Technical Data Package (TDP) to support the construction of a prototype. Previously it was noted that the design needs to incorporate a method to align the tow cable to the Capture Boom. Fairlead intends to use the original Capture Boom designs alignment feature to modify the concept design. This will help expedite the final design and analysis before the TDP is created. Lessons learned from prior LARS development will be incorporated into the final product.

POC: Richard Bayley, richard.bayley@coloradoengineering.com

NAICS: 334511

Company: NAVSYS Corporation / Colorado Springs, CO

Topic: AF141-253

Phase II Proposal Title: Disruptive Military Navigation Architectures

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: A back-up navigation alternative is needed to continue to provide PVT data when GPS is denied. Navigation solutions can be enhanced by using existing networked communications in the absence of GPS using Signals of Opportunity (SoOP). These observations can be used to provide aiding to inertial and clock devices through the use of an integrated Software defined Radio (SDR). The MUDLAN is a JCTD of a resilient communications relay capability. We will integrate a System-of-systems Open Architecture PNT (SOAP) Software Defined Radio (SDR) with the Dragonfly unit to provide aiding in a GPS denied environment using signals of opportunity.

POC: Alison Brown, abrown@navsys.com

NAICS: N/A

Company: Oceanic Imaging Consultants, Inc. / Honolulu, HI

Topic: N211-036

Phase II Proposal Title: Innovative Simultaneous Localization and Mapping Techniques for Unmanned Underwater Vehicles

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: This effort seeks to improve off-GPS navigation performance for underwater vehicles, both manned and unmanned, including UUVs, AUVs, ROVs and manned subs, with automatic, real-time feature-based navigation known as SLAM - Simultaneous Localization and Mapping. SLAM navigation aiding uses matching of terrain features to prove corrections that reduce the drift in the vehicles Inertial Navigation System (INS). Development will be based on Oceanic Imaging Consultants' (OIC's) product that performs manual feature matching for sidescan and swath bathymetry data using a SLAM algorithm in post-acquisition mode.

POC: Andrew Resnick, rez@oicinc.com

NAICS: N/A

Company: Pacific Engineering, Inc. / Roc0, NE

Topic: N102-144

Phase II Proposal Title: Hazardous Material Satellite Storage Lockers

SYSCOM: SSP

Showcase: Sea-Air-Space 2024

Abstract: Navy ships require the use of hazardous materials (HM) such as hydraulic fluid, paint, acids, corrosives, etc. for daily operations. Navy safety regulations and HM management procedures require designated HM storerooms for bulk storage of flammable and corrosive liquids. The objective of this effort is to develop satellite storage lockers for the stowage of HM to meet the needs of the Fleet. Such lockers will be designed to satisfy all specified safety and operational requirements for storage lockers. Pacific Engineering Inc. (PEI) has a history of producing fire resistance composite components for Naval ships and submarines.

POC: Dale Tiller, dale.tiller@pacificengineeringinc.com

NAICS: N/A

GROUND AND SEA PLATFORMS *(continued)*

Company: Physical Sciences Inc. / Andover, MA

Topic: N192-098

Phase II Proposal Title: Non-Explosive Wire Rope and Cable Cutter

SYSCOM: MARCOR

Showcase: Sea-Air-Space 2024

Abstract: The Navy Combat Logistics Force (CLF) has identified a need for an emergency crew-portable device capable of cutting a suspended 1-inch or greater steel cable at cargo transfer stations during Connected Underway Replenishment (CONREP). PSI will develop the Hydraulic Pneumatic Hybrid Emergency (HYPHE) Cutter. This device uses a three-stage force application system to reliably and safely cut 1 inch to 1.5 inch steel cable in under 1 second. The HYPHE Cutter is a completely self-contained system that does not rely on the ships utilities (e.g. hydraulics, electricity) to operate. The system is light weight and simple to use, only requiring a single crew member with minimal training to operate.

POC: Alex Moerlein, amoerlein@psicorp.com

NAICS: 541720, 541711, 541712

Company: TRITON SYSTEMS, INC. / Chelmsford, MA

Topic: N192-107

Phase II Proposal Title: Quiet Launch for 6-Inch Externally Stowed Devices

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Triton Systems, Inc. proposes to develop a quiet launcher system for 6-inch externally stowed devices that will reduce launch energy by a minimum of 20% and radiated noise by a minimum of 30%. The modified design will fit within the existing form factors of the launcher and will provide maximum payload volume. The launch system will adjust the energy associated with launch to best match the operating depth of the platform and ensure a smooth acceleration during the launch. Internal modifications to materials within the launch tube will also reduce radiated noise.

POC: Jeff Gilbert, jgilbert@tritonsys.com

NAICS: 541712

Company: TRITON SYSTEMS, INC. / Chelmsford, MA

Topic: N193-148

Phase II Proposal Title: Unmanned Underwater Vehicle (UUV) Technology to Enable Readiness of Navy Ranges

SYSCOM: NAVFAC

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Triton is developing the Directional Cetacean Acoustic Recording (DICAR) system to detect and localize marine mammal signals of interest on autonomous platforms. This technology uses multi-element acoustic arrays to determine the direction of incoming marine mammal signals. The system will include real-time marine mammal detection and classifier algorithms. The DICAR system has been designed for low power consumption to increase endurance. DICAR is vehicle agnostic and can be easily integrated into any UUV.

POC: Jeff Gilbert, jgilbert@tritonsys.com

NAICS: 541712

Company: TRITON SYSTEMS, INC. / Chelmsford, MA

Topic: N201-004

Phase II Proposal Title: Small High-Speed Amphibious Role-Variant Craft (S.H.A.R.C.)

SYSCOM: MARCOR

Showcase: Sea-Air-Space 2024

Abstract: Triton Systems and partners who are deep area experts will continue to develop a contemporary Higgins boat that can serve as littoral transport for personnel, manned vehicles, and unmanned autonomous systems. The contemporary Higgins boat will support expeditionary advanced base operations with flexible and modular mission packages. This role variant vehicle will allow manned operation, remote operation, and autonomous operation. A versatile cargo deck enables attachment of modular mission packages that will allow the vehicle to deliver any mission set up to its maximum cargo load.

POC: Jeff Gilbert, jgilbert@tritonsys.com

NAICS: 541712

HUMAN SYSTEMS

Company: CFD Research Corporation / Huntsville, AL

Topic: N201-011

Phase II Proposal Title: Minimization of Chronic Neck Pain in Military Aircrew and Vehicle Occupants

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Neck pain experienced by military pilots and aircrew is a distracting and potentially future debilitating problem that diminishes mission performance and quality of life both during and after service. CFD's neck model will be optimized on a component and fully cervical spine level. OpenSim integration will be expanded to the full crewstation level and the finalized cervical model integrated into a whole-body model.   The whole-body model will be evaluated for ability to predict subject response in a human subject experiment that reproduces the head and neck motions of helicopter pilot flying tasks while seated and wearing head supported mass.

POC: Phillip Whitley, phil.whitley@cfdrc.com

NAICS: 541712, 541330

Company: Charles River Analytics Inc. / Cambridge, MA

Topic: N192-132

Phase II Proposal Title: Accelerating Knowledge Acquisition for Close Combat Warriors

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Marines, Sailors, and other Warfighters obtain knowledge by using rote learning techniques to master subject matter. Learning is most effective when the training is adapted to an individual student's needs and current level of understanding. The Navy and Marines have encountered significant barriers to the adoption of adaptive training systems, including difficulties with implementation by non-specialists and proprietary products that do not interface with the eLearning software tools in use. MASTERY addresses these gaps to enable Marine Corps instructors to bring adaptive training and principles of learning science to their courses.

POC: Spencer Lynn, slynn@cra.com

NAICS: 541712

Company: Clearsens Inc. / Raleigh, NC

Topic: N21A-T013

Phase II Proposal Title: Real-time Monitoring for Decompression Sickness

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Decompression sickness (DCS) is a major health risk for scuba divers. DCS is caused by intravascular or extravascular bubbles as a result of tissue supersaturation in inert gases during decompression. The risk of DCS is mitigated through probabilistic decompression models. These effectively limit the supersaturation rate by slowing the ascent of the diver but cannot personalize decompression schedules to individual diver physiology. Detection of microbubbles in real time during diving could potentially provide the information needed to personalize decompression schedules and lower individual DCS risk.

POC: Feysel Yalcin Yamaner, yalcin@clearsens.com

NAICS: N/A

Company: Concepts Beyond, LLC / Bowie, MD

Topic: N211-010

Phase II Proposal Title: Cloud Based Air Traffic Control Training System

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Concepts Beyond will develop ACTER Air traffic Cloud-based TrainER; a tablet-based gaming platform with multiple mini games designed to provide Sailors with practice skills they would find in a professional environment, with cloud-integrated features to allow use from anywhere in the world. We will develop the Assisted Guidance Engine, a machine learning-based algorithm used for generating missions utilized by ACTERs various mini games. These missions will be tuned to the Sailors individual learning progress to maximize their education. Each mini game is tied to an Air Traffic Control (ATC) specific activity to provide practice in both the fundamentals as well as outlier scenarios.

POC: Alex Nguyen, anguyen@conceptsbeyond.com

NAICS: N/A

HUMAN SYSTEMS (CONTINUED)

Company: Corvid Technologies, LLC / Mooresville, NC

Topic: N20A-T001

Phase II Proposal Title: Optimized Energy-Attenuating Seat Design for Ground Vehicles

SYSCOM: MARCOR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Corvid will continue to develop the CAVEMAN model as a tool to improve injury assessment of warfighters exposed to underbody blast loading events. To ensure proper performance of energy-attenuating (EA) seat safety for warfighters, these systems must be designed to function across a range of anthropometry and seated postures. The model is capable of predicting differences in pelvis injury trends resulting from changes in seated posture. We will continue to focus on the modeling of seated posture influence with an increased focus on lumbar spine injury risk as well as anthropometry induced injury changes. The model will be utilized to evaluate and optimize an example military EA seat design.

POC: Kevin Lister, kevin.lister@corvidtec.com

NAICS: N/A

Company: Intelligent Optical Systems, Inc. / Torrance, CA

Topic: N182-114

Phase II Proposal Title: Real-Time, Effective Measurement of Dehydration Levels in Naval Aircrew

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: One of the most treatable physiological events is dehydration, which can lead to fatigue, increased susceptibility to physical stressors, emotional alterations, and impaired judgment. Intelligent Optical Systems will develop a wearable real-time hydration monitor, specifically designed for military aircrews. A novel luminescent microsensor will monitor electrolyte levels and skin biochemistry to accurately track hydration. This sensor platform will be compatible with other aircrew physiology monitoring sensors (for oxygen, carbon dioxide, lactate, stress biomarkers).

POC: Kyle Brubaker, kyleb@intopsys.com

NAICS: N/A

Company: Intelligent Optical Systems, Inc. / Torrance ,CA

Topic: N181-086

Phase II Proposal Title: Cross-Domain Goggles with an Integrated, Illuminated Display

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Intellisense Systems, Inc. (ISI) proposes to advance the development of the new Transition Wide-Angle Goggles with Integrated Illuminated Display, (TWIGIID), which were proven feasible for use by special operations skydivers and underwater divers. The novel TWIGIID uniquely integrates an ellipsoidal visor with narrowband reflective coating and a high-resolution miniature picoprojector that provides wide field-of-view (FOV) distortion-free imagery.

POC: Alexander Parfenov, eos@intellisenseinc.com

NAICS: N/A

Company: MARi, LLC / Alexandria, VA

Topic: N21A-T016

Phase II Proposal Title: Peer-to-Peer Knowledge Sharing: Curation Automation Engine

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: The increasing complexity of aircraft and achieving enhanced skill sets faster and at a lower cost, create significant challenges that must be factored to achieve aircraft uptime requirements. MARi LLC will combine multimedia content tagging algorithms together with granular levels of task and analytics. We will build out the RKS UI/UX (user interface/experience) and AI/ML design into a fully functional knowledge sharing platform. The benefits of our solution, are 1) ease of system maintenance and relevancy; 2) accuracy of tagging and routing using advanced classification and entity analysis; 3) personalized KO recommendations that push content; and 4) access to Navy SMEs.

POC: John Carney, john.carney@mari.com

NAICS: 541720, 541519, 541990, 541512

HUMAN SYSTEMS (CONTINUED)

Company: Xiphos Partners, LLC / Dartmouth, MA

Topic: N193-A03

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

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Program research and development includes the practical application of VR/XR (Virtual Reality/Extended Reality) in complex military fires training, including the integration of Digitally Aided Close Air Support (DACAS) networking in the simulate environment, user stimulated equipment integration, and evolution of the JTAC Virtual Trainer (JVT) and Fire Virtual Trainer (FVT) gaming based training systems, as well as operational test and demonstration with end users.

POC: Matthew Sedgwick, msedgwick@xiphos.partners

NAICS: N/A

Company: Creare LLC / Hanover, NH

Topic: N202-117

Phase II Proposal Title: Optimized Subtractive Manufacturing - Right Parts, Right Time, Every Time

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Currently across the DoD and commercial sector, a part optimized for strength, stiffness, and weight is achieved using a tedious, multi-step process. Typically, optimization is conducted through a series of iterative design/engineering analyses, yet in some instances topology optimization is used. What the existing FEA software lacks is the ability to enforce constraints associated with subtractive manufacturing, which are primarily tool access and tool path among others. Creares Topological Optimization Software (TOS) package will interface with existing FEA software, enforce the necessary subtractive manufacturing constraints, and output CAM ready CAD files for CNC machining.

POC: Paul Movizzo, pgmovizzo@creare.com

NAICS: N/A

MATERIALS & MANUFACTURING PROCESSES

Company: (ES3) Engineering & Software System Solution, Inc. / San Diego, CA

Topic: AF172-002

Phase II Proposal Title: Demonstration and Validation of Brush LHE Alkaline Zn-Ni as a Brush Cadmium (Cd) Alternative

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: Low Hydrogen Embrittlement Alkaline Zinc-Nickel (LHE alkaline Zn-Ni) tank plating has been demonstrated as a superior alternative to Cd from a performance, environmental, and occupational health perspective; resulting in implementation of immersion-based LHE alkaline Zn-Ni across the USAF and Navy. There are some applications where it is necessary to perform brush plating of alkaline Zn-Ni rather than immersion. ES3 has developed two brush Zn-Ni chemistries. This effort will optimize the chemistries and the processing technique, determine their reusability limits, and down-select the top performing method utilizing typical quality, adhesion, corrosion, and hydrogen embrittlement testing.

POC: Jay Randolph, jay.randolph@es3inc.com

NAICS: 541712, 541330

Company: Elementum 3D Inc. / Erie, CO

Topic: N211-085

Phase II Proposal Title: Developing Alloy Compositions Conducive to Additive Manufacturing

SYSCOM: ONR

Showcase: **N**AVAIR and NAVSEA Technical Information Exchange

Abstract: Additive manufacturing (AM) of metals is a recent advancement with benefits for production of complex components and for performance and cost improvements. A relatively small number of alloys have been adapted for AM processes. Fusion based AM processes introduce extreme thermal gradients and cooling rates and alloys designed for wrought processing suffer from cracking and other defects when printed. We propose to use integrated computational materials engineering (ICME) framework to create new alloys that offer improved printability, performance, and reliability. We will improve models for predicting as-printed grain size, post- heat treatment microstructure development, and creep behavior.

POC: David Klyded. klyde@systemstech.com

NAICS: N/A

MATERIALS & MANUFACTURING PROCESSES (continued)

Company: Goodman Technologies LLC / Albuquerque, NM

Goodman Technologies, LLC

Topic: N201-072

Phase II Proposal Title: Aligned Nanotube Reinforcement of Polymer-matrix Laminates

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Goodman Technologies (GT) demonstrated 2 aligned carbon nanotube (ACNT) approaches (Nanoforest I and Nanoforest III) which provided improvements in the fracture toughness of commercially available polyimide systems, and in Carbon/Epoxy. GTs breakthrough ACNT enhancements of PMCs and CMCs will provide improvements in laminate orthogonal properties at high-temperatures required for engine compressor and nozzle structures. GT's composites increase toughness and strength, improve EMI/EMP shielding, reduce weight and radar cross section, and improve dimensional tolerances, and flame retardance. Improvements in fracture toughness can equate to reductions in scrap, rework and repair hours.

POC: Bill Goodman, bgoodman@goodmantechnologies.com

NAICS: N/A

Company: HygraTek LLC / Ann Arbor, MI

hygratek
surfacing innovations

Topic: N182-115

Phase II Proposal Title: Passive Cooling for Aircraft Carrier Jet Blast Deflectors (JBD)

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Goodman Technologies (GT) demonstrated 2 aligned carbon nanotube (ACNT) approaches (Nanoforest I and Nanoforest III) which provided improvements in the fracture toughness of commercially available polyimide systems, and in Carbon/Epoxy. GTs breakthrough ACNT enhancements of PMCs and CMCs will provide improvements in laminate orthogonal properties at high-temperatures required for engine compressor and nozzle structures. GT's composites increase toughness and strength, improve EMI/EMP shielding, reduce weight and radar cross section, and improve dimensional tolerances, and flame retardance. Improvements in fracture toughness can equate to reductions in scrap, rework and repair hours.

POC: Michael Gurin, mgurin@hygratek.com

NAICS: N/A

Company: MolyWorks Materials Corporation / Los Gatos, CA

MOLYWORKS
MATERIALS CORPORATION

Topic: N212-107

Phase II Proposal Title: Novel Feedstock Production System for Metallic Additive Manufactured Structural Parts and Repairs

SYSCOM: NAVAIR

Showcase:NAVAIR and NAVSEA Technical Information Exchange

Abstract: MolyWorks will build a novel low-cost, high-yield metallic-powder production system capable of rapidly producing small batches of feedstock for Additive Manufactured (AM) structural parts, and repairs. The NAMU system operates within a 128 cubic foot footprint and is capable of deployment in a modified joint intermodal container. The NAMU produces powder particles for Laser Beam Melted (LBM)/Powder Bed Fusion (PBF) process; for Electron Beaming Melting (EBM)/PBF; and for Directed Energy Deposition (DED)/Laser Engineered Net Shaping (LENS). The NAMU is capable of producing traditional metallic powders, and specialty designed alloys.

POC: Andrew LaTour, andrewvlatour@gmail.com

NAICS: 325211, 325510

Company: Peak Nano / Valley View, OH

peak nano

Topic: N121-095

Phase II Proposal Title: Development and Processing of Dielectric Films for Application in Large Wound Capacitors

SYSCOM: ONR

Showcase: WEST 2024

Abstract: Development of nanolayer polymer films demonstrated a new class of dielectric film materials for high energy density and high temperature capacitor applications. Current biaxially oriented polypropylene (BOPP) dielectric films are limited by low dielectric constant, low energy density and deteriorated high temperature performance. Multilayer film technology offers nanolayer dielectric films with high temperature performance, high dielectric constant, high breakdown strength and low tan delta losses. Further work to improve film quality, metallization efficiency and fabrication of capacitors toward specific applications are keys to advancing this technology.

POC: Michael Ponting, mponting@peaknano.com

NAICS: N/A

MATERIALS & MANUFACTURING PROCESSES *(continued)*

Company: Peregrine Falcon Corporation / Pleasanton, CA

Topic: N192-100

Phase II Proposal Title: Passive Cooling for Aircraft Carrier Jet Blast Deflectors (JBD)

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: This proposal takes an analytical approach anchored with empirical results to yield a passive JBD with induced draft (air) cooling. This new passive JBD utilizes seawater corrosion resistant titanium materials to produce a high performance, low maintenance, and high reliability system without the need for active seawater cooling. The improved design is a MLMI design with induced draft channels to passively cool exhaust thermal loads. The combination of heat resistant materials, an insulative MLMI design with innovative induced draft features, and an exterior surface design/coating that provides heat reflectance and further insulation provides a passively cooled JBD.

POC: Robert Hardesty, rhardesty@peregrinecorp.com

NAICS: 541710, 541712

Company: R3 Digital Sciences, Inc. / Blacksburg, VA

Topic: N20A-T018

Phase II Proposal Title: Intelligent Additive Manufacturing - Metals

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: The Navy desires an Intelligent Additive Manufacturing (IAM) system for metal Laser Powder Bed Fusion (LPBF) that can incorporate AI to provide real-time adaptive monitoring and control of the LPBF process and produce defect-free parts while maintaining or reducing part build times. To provide this, our team will develop Open-IAM. The concept will consist of a controllable open architecture LPBF AM system, melt-pool temperature sensors, auxiliary process sensors, and an unsupervised learning algorithm to control the LPBF process.

POC: Brent Roeder, brent.roeder@r3-ds.com

NAICS: N/A

Company: SciMax Technologies / Long Beach, NY

Topic: N142-103

Tech Category: Innovative CH-53K Cargo Floor System

Phase II Proposal Title: High Efficiency Propeller for Small Unmanned X Systems (UxS)

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: The use of light Composite structures in air-vehicles improve range, payload and fuel consumption. Today most new aircraft airframe design consists of 50% to 70% composite structure by weight. Highly loaded areas remain the domain of metallic design. SciMax has developed and demonstrated Thermoplastic prepreg materials in design configuration to withstand static and dynamic loads and impact resistance that will allow its use in cargo-floor applications. SciMax will complete the development of a full-scale simulated cargo floor panel made from Carbon/PEEK and Glass PEEK (PEEK=Polyetheretherketone) to Validate its weight savings and integrity via static, endurance & impact loading tests.

POC: Joseph Bruno, jbruno@simaxtech.com

NAICS: N/A

Company: VRC Metal Systems, LLC / Box Elder, SD

Topic: N192-085

Phase II Proposal Title: Rapid Repair of Corroded Fastener Holes

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: The objective of this project is to develop optimized process parameters for the cold spray process to test the fatigue life of a 5/16 inch through hole coupon and a divot coupon. A combination of finite element analysis (FEA) modeling and lab testing will be conducted to determine the loads necessary to achieve 10,000 cycles to failure for load ratios of R= -1 and R= 0.1, for both test coupon configurations. Where load ratio R is defined as the ratio of the minimum and maximum loads during the fatigue loading.

POC: Rose Roy, Rose.Roy@vrcmetalsystems.com

NAICS: 333511, 333515, 333517, 333514

MODELING AND SIMULATION TECHNOLOGY

Company: Arete Associates / Northridge, CA

Topic: N192-064

Phase II Proposal Title: Real-Time Mapping from Over-Water Imagery

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: Under this Phase 2 effort, Arete will deliver HydroSIM, a Real-Time Subsea Sensor Simulator for ROVs and UUVs. HydroSIM will allow creation of synthetic subsea scenes utilizing physics-based models including video, sonar, and target-environment-illumination interactions. A physics based simulator allowing insertion of targets, variations of backgrounds and environmental conditions provides Mine Warfare (MiW) programs an always available, low-cost real-time scene generation solution.

POC: David Hamrick, dhamrick@arete.com

NAICS: 541712

Company: AURA Technologies, LLC / Carrboro, NC

Topic: N211-003

Phase II Proposal Title: Real-Time Detection, Location, and Isolation of High-Resistance, Wye Power System Ground Faults

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Navy aircraft carriers have a problem detecting ground faults in the high voltage/high-current launch system wiring. This proposal provides a hardware and intelligent software solution for fault detection and isolation based on technology developed in prior DoD funding.

POC: Eric Strong, estrong@aura-tech.us

NAICS: 541712, 541990, 541690, 541720

Company: BioMojo LLC / Cary, NC

Topic: N201-009

Phase II Proposal Title: Software Framework for Integrated Human Modeling

 Evaluation of MELD

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Our approach is based on systems integrating each of the Digital Representation of People (DROP) components using a modular abstraction layer. This layer will form the core of our SDK data fusion framework. The resulting software architecture is proofed for ingesting and exporting data to/from future human modeling software. The API will include precise conversion factors so that data from other software packages can be injested into DROP. The modular abstraction layer will ensure that the rest of the application will stay independent of the multi-parameterized digital human data implementation and will enable the user to easily swap out to a different implementation or not use one at all.

POC: Brandon Conover, brandon@biomojo.com

NAICS: N/A

Company: CFD Research Corporation / Huntsville, AL

Topic: N211-097

Phase II Proposal Title: Radar Seeker Model for Hypersonic Weapon Full Life Cycle Support

SYSCOM: SSP

Showcase: Sea-Air-Space 2024

Abstract: To achieve precision guidance for hypersonic vehicles, improved radar guidance systems are needed; but design and evaluation of these radar systems is complicated by the harsh operating conditions associated with hypersonic weapons. This effort is development of a digital engineering-based framework integrating engineering and engagement modeling and simulation (M&S) tools for configurable evaluation of radar seekers in hypersonic environments. We focus on; consideration of environmental effects; integration with engagement-level simulation; integration with data analytics and optimization tools; extensive technology validation; and insertion into Navy radar concept evaluation workflow.

POC: Andrew Kamisky, andrew.kaminsky@cfdrc.com

NAICS: 54171

MODELING AND SIMULATION TECHNOLOGY *(continued)*

Company: Continuum Dynamics, Inc. / Ewing NJ

Topic: N172-109

Tech Category: Materials & Manufacturing Processes

Phase II Proposal Title: Nondestructive Characterization of Microstructure and Grain Orientation on Large, Complex Parts

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Rotorcraft flight simulation provides a cost effective resource for handling qualities evaluation and pilot training. Simulation fidelity is enhanced when motion and body force cues are provided to the pilot. The proposed program will continue development and validation of the motion/body force cueing algorithm framework. Simulation testing will evaluate multiple levels of cueing fidelity, in addition to the modeling framework used to develop and implement cueing strategies given available hardware constraints. Successful completion of the project will provide a suitably mature technology baseline system that can be transitioned to fleet trainers for naval helicopter and tiltrotor aircraft.

POC: Jeffrey Keller, jeff@continuum-dynamics.com

NAICS: N/A

Company: Dignitas Technologies, LLC / Orlando, FL

Topic: N141-006

Phase II Proposal Title: Distributed Synthetic Environment Correlation Assessment Architecture and Metrics

SYSCOM: NAVAIR

Showcase: West 2024

Abstract: Flight simulators are used in isolation; however, there are requirements for distributed networked simulation, such as those included in the Aviation Distributed Virtual Training Environment (ADVTE). Interoperability of distributed systems is achieved when the perception of the same events and models by different systems is similar. Dignitas describes a process to carry forward successful work on the Validate toolset and include iterations on Validate to improve and refine testing capabilities, on-site testing of ADVTE system components to better understand test effectiveness, establishment of a geospatial correlation testbed, and capture of key interoperability issues.

POC: Theresa Tamash, ttamash@dignitastechnologies.com

NAICS: 541712, 541330

Company: IllinoisRocstar LLC / Champaign, IL

Topic: N20A-T004

Phase II Proposal Title: Hexahedral Dominant Auto-Mesh Generator

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: Illinois Rocstar LLC (IR) will develop a robust methodology and software for automated domain decomposition and hexahedral mesh generation to address modeling and simulation (M&S) needs. The proposed automated hex meshing tool, named Auto-Hex, will be offered as an extension module to the Sandia National Laboratories CUBIT software. Auto-Hex will support meshing of solid objects with user required types of input and output formats, and cross-OS functionality. Currently the way to hex mesh a complex geometry is to manually decompose it partitions. Auto-Hex functionality will form an IR in-house, cross-OS functional, automated hex(-dominant) mesh generation software.

POC: Akash Patel, apatel@illinoisrocstar.com

NAICS: 541512, 541511

Company: Lone Star Analysis / California, MD

Topic: NN211-D02

Tech Category: DIRECT TO PHASE II - Cartridge Actuated Devices/Propellant Actuated Devices Digital Twin

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Naval aviation continues to experience issues with Cartridge Activated Device/ Propellant Activated Device (CAD/PAD) shortages, obsolescence, lot failures, Diminishing Manufacturing Sources and Material Shortages (DMSMS) and production and shipping delays. Lone Star Analysis will establish a non-intrusive system of automated analysis tools (digital twins) that deliver near real-time performance/ useful life projections and associated maintenance intervention metrics for the entire CAD/PAD inventory. The effort leverages work already conducted and focuses on operationalizing the capability through delivery of a secure, web based, enhanced Condition Based Maintenance (CBM) capability.

POC: Randy Allen, rallen@lone-star.com

NAICS: N/A

MODELING AND SIMULATION TECHNOLOGY *(continued)*

Company: Metron, Inc. / Reston, VA

Topic: N181-082

Phase II Proposal Title: Multi-Dimensional Ambient Noise Model

SYSCOM: ONR

Showcase: WEST 2024

Abstract: The proposed effort centers on the continued development of tools for forecasting ocean ambient noise. A prototype of the Multi-Dimensional Ambient Noise Model (MDANM) has been delivered to the Oceanographic and Atmospheric Master Library. The final product will enhance and expand the existing sensor performance modeling capabilities. The target platforms are the Common Tactical Decision Aid (CTDA), AWESIM, and other oceanographic tactical decision aids maintained by NAVAIR and CNMOC. This effort creates new opportunities to use rapid prototyping to demonstrate additional capabilities beyond the core feature set for the CTDA transition target.

POC: John Gebbie, gebbie@metsci.com

NAICS: 541511, 541712, 541330, 541710

Company: OptTek Systems, Inc. / Boulder, CO

Topic: N202-139

Phase II Proposal Title: Probability of Kill Modeling for Hypersonic Vehicle Missions

SYSCOM: SSP

Showcase: WEST 2024

Abstract: As the U.S. Navy works to rapidly develop and field hypersonic weapons, a robust Modeling and Simulation (M&S) capability is necessary to measure the effectiveness of these new systems. The number of potential variations of new hypersonic system performance and design choices and the number of potential scenarios is immense. Combining M&S with an automated optimization and sensitivity analysis capability will enable effective investigation of the nearly unbounded set of possibilities in a limited timeframe. OptTek and Infoscitex will develop, extend, and demonstrate configurable simulation models for hypersonic systems that automates optimization of key system performance measures.

POC: Shane Hall, hall@opttek.com

NAICS: 541511, 511210

Company: Tau Technologies LLC / Albuquerque, NM

Topic: N192-051

Phase II Proposal Title: Wargaming Event Design, Scenario Development, and Execution Software Suite for Modeling and Simulation (M&S) Tool Automation

SYSCOM: MARCOR

Showcase: Sea-Air-Space 2024

Abstract: The proposed effort will continue to develop an end-to-end wargaming tool in support of the USMC. The objective of the effort is: Deliver a functional prototype wargaming toolset that provides a user-friendly and intuitive process. In order to realize the overall objective, we will focus on the Advance Framework for Simulation, Integration, and Modeling (AFSIM) as the Modeling and Simulation (M&S) framework and the option period will focus on a USMC priority M&S framework. Tau will execute this effort following an agile software development approach. This approach will allow the team to maintain velocity while also mitigating schedule and technical challenges and risks.

POC: Stephen Sieck, Stephen.sieck@tautechnologies.com

NAICS: 541330, 541712

SENSORS

Company: Axalume Inc. / La Jolla, CA

Topic: N202-131

Tech Category: Materials & Manufacturing Processes

Phase II Proposal Title: Intelligent Laser System for CBM+ of Naval Platforms

SYSCOM: ONR

Showcase: WEST 2024

Abstract: Axalumes Phase II technical effort will define, develop, and validate a concept for integrated, intelligent, scalable, tunable multi-wavelength lasers and an acoustic emission detection system operating in a standard infrared communication band for powering, sensing, and communicating between a central command location and up to one 24 fiber-Bragg grating sensors distributed along a single-mode optical fiber. The integrated lasers and fiber monitoring system will enable the detection of low amplitude, high frequency, low duration, ultrasonic bursts of energy generated by growing defects.

POC: Ashok Krishnamoorthy, ashok@axalume.com

NAICS: N/A

SENSORS (continued)

Company: Cortana Corporation / Falls Church, VA

Topic: N211-018

Phase II Proposal Title: Non-Traditional Airborne Anti-Submarine Warfare (ASW) System

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: This project will develop an advanced technology electric field sensor system for airborne use. The sensor system is intended for detection of transient electroacoustic signals in the atmosphere. Project will include tasks to (1) obtain accurate measurements of ambient electrical noise using the newly developed sensor system, and (2) develop an optimum signal processing scheme that takes account of modeled signal characteristics, measured noise characteristics and measured properties of the sensor system. Field tests of the system under realistic flight conditions will be performed.

POC: Andre Basovich, abasovich@cortana.com

NAICS: N/A

Company: Fenix Research Corporation / Palo Alto, CA

Topic: N201-017

Phase II Proposal Title: Modernization of the Laser Event Recorder

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: We will deliver a set of field-deployable laser event recorders. The device detects and records detailed temporal, spectral and spatial information on the laser source. The device will record, wavelength, power, pulse width and repetition rate, and the location of the aircraft and the laser source. The device will allow mounting on aircraft or aircrew. A user interface will be optimized for use during flight as well as for use in post-flight evaluations. The user interface integrates visual warnings compatible with night vision goggles.

POC: Jin Lee, yjlee@fenixr.com

NAICS: N/A

Company: Lookin, Inc. / Los Angeles, CA

Topic: N202-125

Phase II Proposal Title: Broadband Photoconductive Terahertz Focal Plane Arrays

SYSCOM: ONR

Showcase: WEST 2024

Abstract: Terahertz time-domain spectroscopy (THz-TDS) and imaging systems offer unique functionalities for material characterization, non-destructive quality control (QC), chemical detection, and biomedical imaging. Developing a broadband terahertz focal plane array (THz-FPA) can address this problem. The plasmonic nanoantenna technology developed by the co-founders of Lookin, Inc. provides a unique solution for developing THz-FPAs. Lookin, Inc. intends to further extend this technology during THz-FPAs consisting of 256256 pixels with large field-of-view (FOV) and image acquisition rates up to 10 Hz.

POC: Nezih Yardimci, tolga.yardimci89@gmail.com

NAICS: 541715, 541713, 541714

Company: MSI Transducers Corp. / Littleton, MA

Topic: N211-077

Phase II Proposal Title: Non-towed Broadband Acoustic Source

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: A non-towed low frequency broadband acoustic source is presented that is capable of replacing the current towed system. The design reflects the goal of being integrated with an 11 meter unmanned surface vehicle and producing the desired output in the band of interest. It will provide reduced drag and be easier to implement than the legacy approach.

POC: Eric Abercrombie, eabercrombie@msitransducers.com

NAICS:

SENSORS (continued)

Company: Opto-Knowledge Systems, Inc. (OKSI) / Torrance, CA

Topic: N191-016

Phase II Proposal Title: Improved Infrared Imaging with Variable Resolution Achieved via Post-Processing

SYSCOM: NAVSEA

Showcase: Sea-Air-Space 2024

Abstract: This effort will develop a Modular Open Systems Approach (MOSA) compliant prototype of the single frame super resolution (SUPREME) capability for the Shipboard Panoramic Electro-Optical Infrared (SPEIR) program with enhancements specific to automatic target detection (ATD), automatic target recognition (ATR), and target tracking. We will quantify the benefits of SUPREME empirically for ATD, ATR, and multitarget tracking. The end deliverable will be an enhanced SUPREME prototype that is demonstrated to TRL 6 for several applications required by the SPEIR system.

POC: Tait Pottebaum, tait.pottebaum@optoknowledge.com

NAICS: 541380, 541712, 541360, 541990

Company: Physical Sciences Inc. / Andover, MA

Topic: N19A-T023

Phase II Proposal Title: Photonic-Integrated-Circuit Spectrometer

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Physical Sciences Inc. (PSI) will team with the Georgia Institute of Technology to develop a photonic integrated circuit (PIC) spectrometer that can simultaneously achieve high-resolution over wide-bandwidths using a scalable and foundry-ready approach. A PIC-based spectrometer is a key component for on-chip Raman, fluorescence, and absorption spectroscopy, and a tool for PIC designers when available within a foundrys process-design kit (PDK). Our approach cascades two complimentary devices: a first-stage wide-bandwidth coarse spectrometer feeding a series of second-stage high-resolution (10%) that are fully compatible with low temperature operation (40C).

POC: Christopher Evans, cevans@psicorp.com

NAICS: 541720, 541711, 541712

Company: Physical Sciences Inc. / Andover, MA

Topic: N201-082

Phase II Proposal Title: Visible to Near-Infrared Integrated Photonics Development for Quantum Inertial Sensing

SYSCOM: SSP

Showcase: Sea-Air-Space 2024

Abstract: Quantum inertial measurements of accelerations and rotations can provide the sensitivity and accuracy required for the highest performance inertial navigation applications; however, the complexity of the associated optical systems dominates the size, weight, and power (SWaP) of instruments that exceed a practical limit for use in portable applications. PSIs Photonic Integrated Circuits for Compact Atomic-Raman Devices (PICCARD) platform will provide an integrated photonic platform to provide orders of magnitude reduction in the SWaP of the optical systems while meeting the strict optical frequency, phase, and power required for the quantum measurements.

POC: Christopher Evans, cevans@psicorp.com

NAICS: 541720, 541711, 541712

Company: Senseeker Engineering Inc / Santa Barbara, CA

Topic: N211-061

Phase II Proposal Title: Fast and Efficient Read-Out for Staring Focal Plane Arrays

SYSCOM: NAVSEA

Showcase: WEST 2024

Abstract: Senseeker Engineering will develop a high dynamic range (HDR) large format digital readout integrated circuit (DROIC) that significantly improves the detection and tracking of distant dim targets and small fast-moving targets. Senseeker's solution for wide field of view MWIR sensors isoptimized for HDR search and track by providing unique multi-windowing capabilities and operating modes. Senseeker will develop a 10 m pitch, 2k x 2k solution that will be compatible with an existing MWIR detector array.

POC: Nishant Dhawan, nishant@senseeker.com

NAICS: 334413

SENSORS (continued)

Company: Snake Creek Lasers, LLC d/b/a Advanced Photonics Sciences / Friendsville, PA

Topic: N201-073

hase II Proposal Title: Low Phase Noise Laser for Radio Frequency (RF) Photonics

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Snake Creek will refine the development of a Yb,Er:Glass 1535 nm diode-pumped single-longitudinal and transverse mode ultra-narrowband miniature solid-state laser with low intensity and phase noise, and output powers > 400 mW, in a custom package with a volume of 100 mW from a single-mode polarization-maintaining fiber. We will scale the fiber-coupled output power to 400 mW, by utilizing heatsinking advances and by increasing materials joining technology. We will demonstrate complete integrated compact laser packages that incorporate our Yb,Er:Glass lasers with single-mode polarization-maintaining output fibers, and a laser control board for providing laser diode current and TEC control.

POC: David Brown, DBrown@snakecreeklasers.com

NAICS : 334413

Company: BHTechnology, LLC / Pomona, NY

Topic: N211-033

Phase II Proposal Title: Wireless Sensing to Improve Submarine Machinery Health Monitoring

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Current practice on submarine platforms is to manually monitor machine performance. An autonomous wireless monitoring solution is needed that uses strategically positioned sensors that periodically send data to an access point for analysis. By autonomously gathering periodic, reliable, and accurate data, not only is the impact of the monitoring tasks on personnel drastically reduced but digital twins of the monitored machines can be developed to allow for Condition Based Maintenance. Our effort builds on the demonstrated autonomous wireless network of sensors that are self-powered and non-invasively measure vibration, temperature, current, and voltages of the monitored equipment.

POC: Aron Kain, akain@bhtechnologyllc.com

NAICS:

SUSTAINMENT

Company: Beacon Interactive Systems / Waltham, MA

Topic: N193-A01

Phase II Proposal Title: NAVY TECHNOLOGY ACCELERATION - Machine Learning (ML) and Artificial Intelligence (AI) to Develop Capabilities and Impact Mission Success

SYSCOM: NAVSEA

Showcase: Sea-Air-Space 2024

Abstract: Beacon will create a cloud-based Digital Infrastructure Sustainment Platform for the Surface Combat Systems Center, with a goal of providing real-time visibility into system capabilities and readiness and event planning. It will be capable of integration with all standard Navy Systems that manage and sustain the SCSC. Current manual entry slows information flow, increases the probability of errors, and requires time that could be spent resolving customer challenges. Built into the platform are process workflows that ensure proper execution of business rules and work. The architecture is based upon containerization and micro services, enabling a modular approach to build and delivery.

POC: Mike MacEwen, mike.macewen@beaconinteractive.com

NAICS: 541330, 541712, 541614, 541511

Company: Lynntech, Inc. / College Station, TX

Topic: N202-100

Phase II Proposal Title: Preload Indicating Hardware for Bolted Joints

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: Hardware on Naval helicopters undergo regular torque checks based on number of days between maintenance cycles and flight hours. Completing the torque check burns a significant amount of time and resources. Lynntech will develop the PRESS (Passive RFID Embedded Stress Sensor) system. The PRESS system will be in the form factor of a washer and will have an embedded strain sensor that will detect the load applied by the bolt. The preload value can be calculated into a torque value to ensure the hardware is within the original equipment manufacturers (OEM) specification. PRESS will have an integrated passive RFID tag which will communicate with an RFID reader when it is placed within range.

POC: Jady Stevens, jady.stevens@lynntech.com

NAICS: N/A

SUSTAINMENT *(continued)*

Company: Pax Scientific Inc. / San Rafael, CA

Topic: N202-123

Phase II Proposal Title: Generation of Hydrogen from Seawater, Powered by Solar PV, Leading to Cogeneration of Electricity and Potable Water

SYSCOM: NAVFAC

Showcase: WEST 2024

Abstract: PAX Scientific (PAX) has developed a low-temperature process to purify water and provide for its reuse. Our technology is mobile, modular and easily scalable. The purification system can use secondary energy sources, such as low-grade heat and solar thermal, and remove multiple water contaminants in one step, including minerals, salts, hydrocarbons, suspended solids, metals, microplastics, etc. PAX has simulated the combination of its distillation technology with a solar photovoltaic-powered hydrogen electrolyzer, to co-produce hydrogen and water from seawater. PAX purified seawater into potable water in a prototype unit that met requirements.

POC: Jayden Harman, jharman@paxscientific.com

NAICS: N/A

Company: Qualtech Systems, Inc. / Rocky Hill, CT

Topic: N192-124

Tech Category: Sensors

Phase II Proposal Title: Digital Twin Technology for Naval Maintenance Training and Operations

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Qualtech Systems, Inc. (QSI), Aptima, Inc., Huntington Ingalls Industries (HII) and the Hess PHM Group have partnered, with QSI as the prime, to address the key objectives of this solicitation and provide MAINTOR, a robust, intuitive, versatile and flexible digital twin-driven maintenance training tool that include a rich, immersive and learning-science enabled user experience. MAINTOR is leveraging key technologies from QSIs proven TEAMS toolset for Guided Troubleshooting, Aptimas expertise in human centered engineering design and human performance assessment, and HIIs subject matter expertise as the builder of the CVN-78 and CVN-79. QSI is developing MAINTOR as an add-on module to TEAMS.

POC: Sudipto Ghoshal, sudipto@teamqsi.com

NAICS: 541511, 541712

Company: Sonalysts, Inc. / Waterford, CT　SONALYSTS

Topic: N182-123

Phase II Proposal Title: Clearinghouse for Subsistence Ordering & Receipt (CSOR)

SYSCOM: NAVSUP

Showcase: WEST 2024

Abstract: Systems used by the Navy for Subsistence Ordering and Receipt do not support operational needs, create substantial Sailor rework when items are not in stock, and have inter-system disconnects that have led to poor Financial Improvement and Audit Readiness (FIAR) performance. Sonalysts has developed a proof-of-concept for the Electronic Clearinghouse for Subsistence Order and Receipt Transactions (eCSORT). eCSORT will provide Subsistence Total Order and Receipt Electronic System (STORES) operators and Combat Logistics Officers (CLOs) with a FIAR-compliant clearinghouse for food subsistence orders that validates and updates subsistence requisition orders prior to entering orders into STORES.

POC: Steven Juskiewicz, sjuskiewicz@sonalysts.com

NAICS: 334220, 511140, 541710, 334613

WEAPONS TECHNOLOGIES

Company: Advanced Global Services / Orchard Park, NY

Topic: AF06-350

Phase II Proposal Title: Medium Caliber Gun Barrel Bore Coatings

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Patented EPVD process has been bench-marked as a fit substitute for Chrome plating. The proposed work will continue the investigation and development of the technology to improve application quality and consistency with the goal of achieving higher throughput when coating medium caliber gun barrels. New surface quality control techniques will be developed and optimized; coating application parameters will be tested; a new coating deposition algorithm will be developed; coating deposition rate will be improved, optimized, tested, and implemented on EPVD coating prototype , leading to application of refractory coating alloys to medium caliber gun barrels and their fire-testing.

POC: Gennady Yumshtyk,

gyumshtyk@advancedglobaservices.com

NAICS: N/A

WEAPONS TECHNOLOGIES *(continued)*

Company: AMERICAN ENERGY TECHNOLOGIES CO / Arlington Heights, IL

Topic: N211-006

Phase II Proposal Title: Improving Performance of Solid Rocket Fuel through Advancements in Materials Science

SYSCOM: NAVAIR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: American Energy Technologies Company will conduct the modeling, development and prototyping of specialized carbon-based ram jet nozzle inserts aimed at maximizing the combustion performance of new-generation solid rocket fuels. The primary objective will be to prevent condensation of oxide phase on the nozzle. Simulation work will be supported by advanced in-house manufacturing, which will result in the fabrication of several candidate carbon composite materials uniquely suited for new formulations of solid rocket fuel. Work will include advanced materials characterization to determine thermal and mechanical properties of the newly proposed composite materials.

POC: Igor Barsukov, ibarsukov@usaenergytech.com

NAICS: 541690, 541712

Company: ASR Corporation / Albuquerque, NM

Topic: A16-123

Phase II Proposal Title: Miniaturization of high average power, high peak power, wide bandwidth antennas

SYSCOM: ONR

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: From Topic A16-123, the DoD has programs that require very compact electrically small antennas (ESAs) that are capable of handling the electrical and thermal stresses of high power microwave (HPM) sources at high pulse repetition rate (PRR). The type of HPM sources of particular interest are based on drift step recovery diodes (DSRD). ASR proposes an aggressive SBIR effort to develop both ESAs and the DSRDs necessary to test them to the desired specifications. ASR will take the lead on ESAs while subcontractor SPT will concentrate on the advancement of DSRD fabrication technology.

POC: Michael Abdalla, mda@asrcorporation.com

NAICS: N/A

Company: CoAspire, LLC / Fairfax, VA

Topic: J201-CSO1

Phase II Proposal Title: Fiber Optic Pressure Sensing for Military Aircraft (MIL-Aero) Environments

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: CoAspire will integrate a GPS-aided INS/IMU to the BDU-59B/B Laser Guided Training Round to provide a Guided Training RoundTM (GTR) for fighter aircraft, and UAVs. The GTR software and hardware guidance package will replicate the performance of current Dual-Mode (GPS/INS and Semi-Active-Laser) guided weapons at a fraction of the cost. This technical activity will incorporate Digital Engineering and Weapons Open Systems Architecture principles to provide Semi-Active Laser (SAL), and GPS-guided training munition components. Technical activities in this proposed Phase II SBIR will focus on developing hardware and software to demonstrate GTRs effectiveness.

POC: Doug Denneny, ceo@coaspire.com

NAICS: N/A

Company: Great Lakes Sound & Vibration, Inc. / Houghton, MI

Topic: N202-089

Tech Category: Sensors

Phase II Proposal Title: Focused Enhanced Acoustic-Driver Technologies (FEAT) for Long Range Non-Lethal Hail and Warn Capabilities

SYSCOM: MARCOR

Showcase: WEST 2024

Abstract: Commercial off-the-shelf acoustic hailing devices use high sensitivity horn and driver combinations that are capable of producing sound in the range of 109 dB in an anechoic environment. These devices are not as loud as desired, and are significantly heavier (>350 lbs.), and more expensive (>$100k) than the proposed solution. An array of 8 custom driver and horn pairs is proposed to be integrated into an acoustic array which will incorporate adaptive beamforming and atmospheric compensation. The objective is to develop prototype units, developing the manufacturability of the design, and maturing the manufacturing process to be able to produce the desired quantities.

POC: Kevin Nelson, kevinn@glsv.com

NAICS: 326291, 541690, 541712, 541330

WEAPONS TECHNOLOGIES *(continued)*

Company: Intellisense Systems, Inc. / Torrance, CA

Topic: N182-111

Phase II Proposal Title: Compact Long-Wave Infrared Hyperspectral Imager with Monolithically Integrated Tunable Optical Filter

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: Intellisense Systems, Inc. (ISI) proposes to advance the new Propellant Health Monitoring (PHEM) system. The PHEM system is based on the novel integration of piezoelectric transducers for propellant health inspection with ultralow-power components and electronic design. Specifically, this unique integration of ultrasonic propellant-monitoring sensor enables PHEM to detect cracks; the implemented data transfer link allows transferring the status data through the metal walls of the sealed rocket motor case. The PHEM system will provide reliable, long-term monitoring for the propellant-actuated devices (PADs) and cartridge-actuated devices (CADs) on military aircraft.

POC: Oleg Galkin, ogalkin@intellisenseinc.com

NAICS: N/A

Company: Intellisense Systems, Inc. / Torrance, CA

Topic: N192-137

Phase II Proposal Title: Propulsion Monitoring for Use in Missile Space Applications

SYSCOM: NAVAIR

Showcase: WEST 2024

Abstract: Intellisense Systems, Inc. (Intellisense) proposes to continue development of the Rocket Motor Acoustic Tomographic Inspection (ROMATI) system based upon new nondestructive evaluation (NDE) techniques. Specifically, the innovations in fusion of acoustic multi-modal near-field and far-field phased array focusing, packaged in a small form factor to fit into confined spaces. ROMATI is designed to detect of missile system rocket motor propellant slumping and insulation gaps in bonds.

POC: Oleg Galkin, ogalkin@intellisenseinc.com

NAICS: N/A

Company: NP Photonics, Inc. / Tucson, AZ

Topic: N191-028

Phase II Proposal Title: Stimulated Brillouin Scattering (SBS) and Other Nonlinear Suppression for High Power Fiber Delivery System for Navy Platform High Energy Laser (HEL)

SYSCOM: NAVSEA

Showcase: NAVAIR and NAVSEA Technical Information Exchange

Abstract: Optical fibers with suppressed stimulated Brillouin scattering and other nonlinear effects are in great demand for high energy laser transmission over long distances in the DoDs high energy laser systems. NP Photonics, in collaboration with Olkin Optics, proposes to design and fabricate anti-resonant hollow-core negative curvature fibers (NCFs) with ultra-low nonlinearity that can be used for high energy laser delivery.

POC: Xiushan Zhu, XZhu@npphotonics.com

NAICS: 335921

Company: Physical Sciences Inc / Andover, MA

Topic: N211-084

Phase II Proposal Title: Low Cost, Single Use Precision Aiming Device for Explosive Ordnance Disposal Disrupters and Tools

SYSCOM: ONR

Showcase: Sea-Air-Space 2024

Abstract: Physical Sciences Inc. (PSI) proposes to continue the development of a low-cost, single use, precision aiming device for explosive ordnance disposal (EOD) disrupters and tools. This unique low-cost aiming device will ensure the Navy has tools to improve EOD personnel safety by increasing standoff distance without sacrificing performance. PSI's aiming device performance was quantified for visibility and accuracy at distances up to 50 feet in daylight conditions. Further prototype aiming devices will be produced and tested in land and underwater to confirm the performance of the aiming device achieves the metrics deemed critical by the Navy.

POC: Athanasios Moshos, amoshos@psicorp.com

NAICS: 541720, 541711, 541712

WEAPONS TECHNOLOGIES *(continued)*

Company: Physical Sciences Inc. / Andover, MA

Topic: N201-002

Phase II Proposal Title: Focused Directed Energy Antenna System (FoDEAS) for Long-Range Vehicle/Vessel Stopping with reduced overall system size, weight, power consumption, thermal cooling, and system cost (SWAP/C2)

SYSCOM: MARCOR

Showcase: WEST 20234

Abstract: The Navy needs a high power microwave (HPM) directed energy weapon (DEW) capable of stopping vehicle and vessel engines from a range of up to 250 m. The Navy needs a smaller, lighter and lower cost broadband HPM antenna system with capability to avoid key friendly frequencies. PSI showed the feasibility of fabricating an antenna system that is SWAP-C minimized, wideband, and highly directional. The key innovation is extremely compact and broadband antenna elements with frequency carve-outs inherent in their physical resonating structures. The designed system is capable of inducing an electric field that meets the minimum requirement for damaging electronics on commercial vehicles.

POC: Sean Torrez, storrez@psicorp.com

NAICS: 541720, 541711, 541712

Company: TDA Research, Inc. / Wheat Ridge, CO

Topic: N151-025

Phase II Proposal Title: Ignition Composition with Low Moisture Susceptibility

SYSCOM: NAVAIR

Showcase: Sea-Air-Space 2024

Abstract: Airborne Expendable Infrared Countermeasures (AEIRCMs) are deployed to alter the trajectory of infrared guided missiles that pose a threat to aircraft. Many AEIRCMs are ignited using a Safe-and-Arm (S&A) igniter assembly that ignites a Magnesium/ Teflon/Viton (MTV) pellet. MTV degrades quickly in the presence of moisture and the reaction forms hydrogen gas, which is potentially dangerous upon ignition. Also, the degradation of the MTV igniter pellet can result in non-ignitions, putting personnel in danger when protection is needed. TDA will finalize and qualify a drop-in replacement for the current MTV ignition composition that is more stable in the presence of moisture.

POC: Girish Srinivas, gsrinivas@tda.com

NAICS: N/A

Index by Tech Category

Navy STP Cohort
2023-24

INDEX by Tech Category

FIRM and PROJECT TITLE	FST	PAGE
ADVANCED ELECTRONICS		
AOSense, Inc. Atomic Inertial Sensor as an Alternate Position Source	WEST	4
Bascom Hunter Technologies Implementing Neural Network Algorithms on Neuromorphic Processors	S-A-S	4
Chiral Photonics, Inc. Multicore Fiber Optic Connector for Wideband Digital and Analog Photonic Links	S-A-S	4
Critical Frequency Design, LLC Model Based Systems Engineering for Tactical Data Link Systems	S-A-S	4
Intellisense Systems, Inc. Unmanned Airborne Reconfigurable Naval Communications Network	S-A-S	5
MaXentric Technologies LLC N-Polar Gallium Nitride High Electron Mobility Transistor in Low-Cost Process Technology for mm-wave Transceiver Applications	WEST	5
Maxxen Group LLC Quantum Optical Semiconductor Chip and its Application to Quantum Communication	NAVAIR/ NAVSEA TIE	5
TPL, Inc Electrical Capacitors for High-Temperature Power Conversion	NAVAIR/ NAVSEA TIE	5
XL Scientific, LLC dba Verus Research Plasma Switches and Antennas for Contested Electromagnetic Environments	NAVAIR/ NAVSEA TIE	6
AIR PLATFORMS		
Advanced Ceramic Fibers, LLC Innovative Approaches in Design and Fabrication of 3D Braided Ceramic Matrix Composites (CMC) Fasteners	S-A-S	6
Avatar Partners, Inc Augmented Reality and Aircraft Wiring	S-A-S	6
AVNIK Defense Solutions, Inc Artificially Intelligent Object with Virtual Presentation of Engineering and Logistics Data	NAVAIR/ NAVSEA TIE	6
Candent Technologies Incorporated Compact Electric Compressors for Aerospace Applications	NAVAIR/ NAVSEA TIE	7
Engin LLC Reusable MATPAC Packaging System for Expeditionary Airfields	NAVAIR/ NAVSEA TIE	7
Engineering and Scientific Innovations, Inc. Measurements of Wall-Shear-Stress Distribution in Hypersonic Flows	S-A-S	7
(ES3) Engineering & Software System Solution, Inc. Landing Gear Structural Health Prognostic/Diagnostic System	S-A-S	7
GreenSight DIRECT TO PHASE II Size/Weight Optimized Compact-Prime Power Generator (CPPG) Technologies	NAVAIR/ NAVSEA TIE	8
HF Designworks, inc. Multi-Domain Data Fusion Instructional Strategies and Methods for Pilot Training	WEST	8
Precision Combustion, Inc. High-Temperature Fuel Coking Mitigation Frangible Coatings for Fuel Nozzles and Screens	S-A-S	8
SEALANDAIRE TECHNOLOGIES, INC. Precision High Alitude Sonobuoy Emplacement (PHASE)	S-A-S	8

FIRM and PROJECT TITLE	FST	PAGE
Systems & Processes Engineering Corporation (SPEC) **Radio Communication with Hypersonic Aerial Vehicle**	NAVAIR/ NAVSEA TIE	9
AUTOMOMY		
Aptima, Inc. **Defensive Coordinator for Autonomous Countermeasure Systems**	NAVAIR/ NAVSEA TIE	9
Black River Systems Company, Inc. **Big Data Tools for High-speed Threat Detection and Classification**	NAVAIR/ NAVSEA TIE	9
ChromoLogic LLC **Modeling Neuromorphic and Advanced Computing Architectures**	WEST	9
Daniel H. Wagner, Associates, Incorporated **Artificial Intelligence Software-Based Autonomous Battle-space Monitoring Agent for a Distributed Common Operational Picture Software Subsystem**	S-A-S	10
Probus Test Systems Inc. **DIRECT TO PHASE II - Flight Operations Planning Decision Aid Tool for Strike Operations Aboard Aircraft Carriers**	S-A-S	10
Scientific Systems Company, Inc. **Autonomous, Cooperative Behavior Amongst Unmanned Surface Vehicles**	S-A-S	10
UtopiaCompression, Corporation **Small Non-Cooperative Collision Avoidance Systems Suited to Small Tactical Unmanned Systems**	NAVAIR/ NAVSEA TIE	10
UtopiaCompression, Corporation **NAVY TECHNOLOGY ACCELERATION - Unmanned Surface Vehicle (USV) and Unmanned Underwater Vehicle (UUV) Autonomous Behavior Development**	NAVAIR/ NAVSEA TIE	11
XAnalytix Systems **Unmanned Passive Navigation without GPS**	NAVAIR/ NAVSEA TIE	11
BATTLESPACE ENVIRONMENTS		
adtech photonics, Inc. **Accelerated Burn-In Process for High Power Quantum Cascade Lasers to Reduce Total Cost of Ownership**	WEST	11
Arete Associates **Small-Scale Velocity Turbulence Sensors for Undersea Platforms**	NAVAIR/ NAVSEA TIE	11
ObjectSecurity LLC **Characterizing 5G vulnerabilities in an expeditionary environment**	WEST	12
C4I		
Advanced Cooling Technologies, Inc. **Advanced Cooling Technologies for Multifunctional Information Distribution System (MIDS) Terminals**	WEST	12
Aptima, Inc. **Enhanced Visualization for Situational Understanding**	NAVAIR/ NAVSEA TIE	12
Boston Fusion Corp. **Machine Learning-Based Data Analysis**	WEST	12
Daniel H. Wagner, Associates, Incorporated **Holistic Integration of Air Anti-Submarine Warfare Capability for Effective Theater Undersea Warfare**	NAVAIR/ NAVSEA TIE	13
FoVI 3D **Three Dimensional Field of Light Display**	S-A-S	13

FIRM and PROJECT TITLE	FST	PAGE
Fuse Integration, Inc. Robust Communications Relay with Distributed Airborne Reliable Wide-Area Interoperable Network (DARWIN) for Manned-Unmanned Teaming in a Spectrum Denied Environment	S-A-S	
Galois, Inc. Automated Formal Verification of Software Defined Network Implementations	S-A-S	
GIRD Systems, Inc. Wideband Interference Suppression for Dynamic-range OptiMization (WISDOM)	S-A-S	
Innovative Defense Technologies Real-time Insights for Combat System Integration and Testing	NAVAIR/ NAVSEA TIE	
Intraband LLC Long-Wave Infrared Transceivers for High Speed Free Space Optical Communications in Adverse Weather Conditions	S-A-S	
Jove Sciences, Inc. Fusion in a Cloud	WEST	
Machina Cognita Technologies, Inc. Enhanced Situational Awareness Through Smart Geospatial Comparative Analysis	NAVAIR/ NAVSEA TIE	
MaXentric Technologies LLC Line-of-Sight (LOS) Low Probability of Detection/Intercept (LPD/LPI) Millimeter Wave Communication	NAVAIR/ NAVSEA TIE	
Phase Sensitive Innovations, Inc. / Advanced Radio Frequency (RF) Photonic Integrated Circuit (PIC)	S-A-S	
Phase Sensitive Innovations, Inc. Hybrid and Heterogeneous Integration of PICs for RF Photonic Imaging Systems	S-A-S	
PW Communications Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions with a Clear Air Force Stakeholder Need	S-A-S	
Scientific Toolworks, Inc (d.b.a. Scoring Technologies) NAVY TECHNOLOGY ACCELERATION - Advanced Technologies (including AR/VR) for Manpower, Personnel, Training, and Education	NAVAIR/ NAVSEA TIE	
Scientific Toolworks, Inc (d.b.a. Scoring Technologies) Automatic Coding Standards Validation Tool	WEST	
Soar Technology, Inc. Scenario Development and Enhancement for Military Exercises	S-A-S	
Sonalysts, Inc. Undersea Warfare Decision Support System Coalition Data Parser & Advanced Display	S-A-S	
VR Rehab, Inc. (VRR) Single Amphibious Integrated Precision Augmented Reality Navigation (SAIPAN) System	WEST	
CYBER		
AVIRTEK, INC Automated Unmanned Systems (UxS) Boundary Protection Capability	WEST	
BlueRISC Inc. At-Scale Detection of Hardware Trojans on Chip Circuits	S-A-S	
Dignitas Technologies, LLC Live, Virtual, and Constructive Cyber Battle Damage Assessment for Training	S-A-S	
P&J Robinson Corporation Multi-Instruction Set Architecture (ISA) Processing with a Peripheral Component Interconnect express (PCIe)	WEST	

FIRM and PROJECT TITLE	FST	PAGE
ELECTRONIC WARFARE (EW)		
Indiana Microelectronics LLC Tunable Bandstop Filters for Suppression of Co-site Interference and Jamming Sources	NAVAIR/ NAVSEA TIE	18
Integrated Solutions for Systems Compact Source for Focused and Tunable Narrowband Radio Frequency	WEST	18
NP Photonics, Inc. Miniature Diode-Pumped Solid State Laser for Military and Aerospace Environments	S-A-S	19
Vadum Identifying and Characterizing Cognitive Sensor Systems in Tactical Environments	NAVAIR/ NAVSEA TIE	19
Intellisense Systems, Inc. Cyber Protection for Physical Avionics Data Inputs to Navy Platforms	S-A-S	19
MagiQ Technologies, Inc. Wideband Interference Suppression for Dynamic-range OptiMization (WISDOM)	WEST	19
Scientific Applications & Research Assoc., Inc. Solid State High Voltage Power Module Development and Packaging for High Power Microwave Drivers	NAVAIR/ NAVSEA TIE	20
ENERGY & POWER TECHNOLOGIES		
Energy to Power Solutions Quench Monitoring and Control System for High-Temperature Superconducting Coils	NAVAIR/ NAVSEA TIE	20
Hepburn and Sons LLC Compact, Hatchable Transformer Rectifier	S-A-S	20
Luna Labs USA, LLC / Novel Methods to Mitigate Heat Exchanger Fouling	WEST	20
Physical Sciences Inc. Innovative, High-Energy, High Power, Light-Weight Battery Storage Systems Based on Li-air, Li-sulfur (Li-S) chemistries	NAVAIR/ NAVSEA TIE	21
Wecoso LLC Ultra-lightweight and Compact Hybrid System	NAVAIR/ NAVSEA TIE	21
GROUND AND SEA PLATFORMS		
Diversified Technologies, Inc. SiC-Based High Voltage Capacitor Charging Innovations	NAVAIR/ NAVSEA TIE	21
Diversified Technologies, Inc. Power Dense Single Core Three-Phase Transformer	NAVAIR/ NAVSEA TIE	21
Fairlead Integrated, LLC Mine Countermeasures Unmanned Surface Vehicle Common Deploy and Retrieve System	NAVAIR/ NAVSEA TIE	22
NAVSYS Corporation Disruptive Military Navigation Architectures	WEST	22
Oceanic Imaging Consultants, Inc. Innovative Simultaneous Localization and Mapping Techniques for Unmanned Underwater Vehicles	NAVAIR/ NAVSEA TIE	22
Pacific Engineering, Inc. Hazardous Material Satellite Storage Lockers	S-A-S	22
Physical Sciences Inc. Non-Explosive Wire Rope and Cable Cutter	S-A-S	23
TRITON SYSTEMS, INC. Quiet Launch for 6-Inch Externally Stowed Devices	NAVAIR/ NAVSEA TIE	23

| FIRM and PROJECT TITLE	FST	PAGE
TRITON SYSTEMS, INC. Unmanned Underwater Vehicle (UUV) Technology to Enable Readiness of Navy Ranges	NAVAIR/ NAVSEA TIE	23
TRITON SYSTEMS, INC. Small High-Speed Amphibious Role-Variant Craft (S.H.A.R.C.)	S-A-S	23
HUMAN SYSTEMS		
CFD Research Corporation Minimization of Chronic Neck Pain in Military Aircrew and Vehicle Occupants	NAVAIR/ NAVSEA TIE	24
Charles River Analytics Inc. Accelerating Knowledge Acquisition for Close Combat Warriors	NAVAIR/ NAVSEA TIE	24
Clearsens Inc. Real-time Monitoring for Decompression Sickness	NAVAIR/ NAVSEA TIE	24
Concepts Beyond, LLC Cloud Based Air Traffic Control Training System	S-A-S	24
Corvid Technologies, LLC Optimized Energy-Attenuating Seat Design for Ground Vehicles	NAVAIR/ NAVSEA TIE	25
Intelligent Optical Systems, Inc. Real-Time, Effective Measurement of Dehydration Levels in Naval Aircrew	NAVAIR/ NAVSEA TIE	25
Intellisense Systems, Inc. Cross-Domain Goggles with an Integrated, Illuminated Display	S-A-S	25
MARi, LLC Peer-to-Peer Knowledge Sharing: Curation Automation Engine	S-A-S	25
Xiphos Partners, LLC NAVY TECHNOLOGY ACCELERATION - Advanced Technologies (including AR/VR) for Manpower, Personnel, Training, and Education	NAVAIR/ NAVSEA TIE	26
MATERIALS & MANUFACTURING PROCESSES		
(ES3) Engineering & Software System Solution, Inc. Demonstration and Validation of Brush LHE Alkaline Zn-Ni as a Brush Cadmium (Cd) Alternative	WEST	26
Creare LLC Optimized Subtractive Manufacturing - Right Parts, Right Time, Every Time	NAVAIR/ NAVSEA TIE	26
Elementum 3D Inc. Developing Alloy Compositions Conducive to Additive Manufacturing	NAVAIR/ NAVSEA TIE	26
Goodman Technologies LLC Aligned Nanotube Reinforcement of Polymer-matrix Laminates	S-A-S	27
HygraTek LLC Icephobic Coatings or Surface Treatments for Turbomachinery Ice Protection Applications	S-A-S	27
MolyWorks Materials Corporation Novel Feedstock Production System for Metallic Additive Manufactured Structural Parts and Repairs	NAVAIR/ NAVSEA TIE	27
Peak Nano Development and Processing of Dielectric Films for Application in Large Wound Capacitors	WEST	27
Peregrine Falcon Corporation Passive Cooling for Aircraft Carrier Jet Blast Deflectors (JBD)	WEST	28
R3 Digital Sciences, Inc. Intelligent Additive Manufacturing - Metals	NAVAIR/ NAVSEA TIE	28
SciMax Technologies Innovative CH-53K Cargo Floor System	S-A-S	28
VRC Metal Systems, LLC Rapid Repair of Corroded Fastener Holes	NAVAIR/ NAVSEA TIE	28

FIRM and PROJECT TITLE	FST	PAGE
MODELING AND SIMULATION TECHNOLOGY		
Arete Associates **Real-Time Mapping from Over-Water Imagery**	WEST	29
AURA Technologies, LLC **Real-Time Detection, Location, and Isolation of High-Resistance, Wye Power System Ground Faults**	NAVAIR/ NAVSEA TIE	29
BioMojo LLC **Software Framework for Integrated Human Modeling**	S-A-S	29
CFD Research Corporation **Radar Seeker Model for Hypersonic Weapon Full Life Cycle Support**	S-A-S	29
Continuum Dynamics, Inc. **Advanced Body Force Cueing for Dynamic Interface Simulation**	NAVAIR/ NAVSEA TIE	30
Dignitas Technologies, LLC **Distributed Synthetic Environment Correlation Assessment Architecture and Metrics**	WEST	30
IllinoisRocstar LLC **Hexahedral Dominant Auto-Mesh Generator**	WEST	30
Lone Star Analysis **DIRECT TO PHASE II - Cartridge Actuated Devices/Propellant Actuated Devices Digital Twin**	S-A-S	30
Metron, Inc. **Multi-Dimensional Ambient Noise Model**	WEST	31
OptTek Systems, Inc. **Probability of Kill Modeling for Hypersonic Vehicle Missions**	WEST	31
Tau Technologies LLC **Wargaming Event Design, Scenario Development, and Execution Software Suite for Modeling and Simulation (M&S) Tool Automation**	S-A-S	31
SENSORS		
Axalume Inc. **Intelligent Laser System for CBM+ of Naval Platforms**	WEST	31
Cortana Corporation Non-Traditional Airborne Anti-Submarine Warfare (ASW) System	NAVAIR/ NAVSEA TIE	32
Fenix Research Corporation **Modernization of the Laser Event Recorder**	NAVAIR/ NAVSEA TIE	32
Lookin, Inc. **Broadband Photoconductive Terahertz Focal Plane Arrays**	WEST	32
MSI Transducers Corp. **Non-towed Broadband Acoustic Source**	NAVAIR/ NAVSEA TIE	32
Opto-Knowledge Systems, Inc. (OKSI) / **mproved Infrared Imaging with Variable Resolution Achieved via Post-Processing**	S-A-S	33
Physical Sciences Inc. **Photonic-Integrated-Circuit Spectrometer**	S-A-S	33
Physical Sciences Inc. **Visible to Near-Infrared Integrated Photonics Development for Quantum Inertial Sensing**	S-A-S	33
Senseeker Engineering Inc. **Fast and Efficient Read-Out for Staring Focal Plane Arrays**	WEST	33
Snake Creek Lasers, LLC d/b/a Advanced Photonics Sciences **Low Phase Noise Laser for Radio Frequency (RF) Photonics**	S-A-S	34

FIRM and PROJECT TITLE	FST	PAGE
SUSTAINMENT		
Beacon Interactive Systems NAVY TECHNOLOGY ACCELERATION - Machine Learning (ML) and Artificial Intelligence (AI) to Develop Capabilities and Impact Mission Success	S-A-S	34
BHTechnology, LLC Wireless Sensing to Improve Submarine Machinery Health Monitoring	NAVAIR/ NAVSEA TIE	34
Lynntech, Inc. Preload Indicating Hardware for Bolted Joints	WEST	34
Pax Scientific Inc. Generation of Hydrogen from Seawater, Powered by Solar PV, Leading to Cogeneration of Electricity and Potable Water	WEST	35
Qualtech Systems, Inc. Digital Twin Technology for Naval Maintenance Training and Operations	S-A-S	35
Sonalysts, Inc. Clearinghouse for Subsistence Ordering & Receipt (CSOR)	WEST	35
WEAPONS TECHNOLOGIES		
Advanced Global Services Medium Caliber Gun Barrel Bore Coatings	ITS	35
AMERICAN ENERGY TECHNOLOGIES CO / mproving Performance of Solid Rocket Fuel through Advancements in Materials Science	ITS	36
ASR Corporation Miniaturization of high average power, high peak power, wide bandwidth antennas	ITS	36
CoAspire, LLC Open Call for Innovative Clear Defense-Related Dual-Purpose Technologies/Solutions with a Clear Air Force Stakeholder Need	S-A-S	36
Great Lakes Sound & Vibration, Inc. Focused Enhanced Acoustic-Driver Technologies (FEAT) for Long Range Non-Lethal Hail and Warn Capabilities	WEST	36
Intellisense Systems, Inc. Propellant Grain Cracks Detection System	WEST	37
Intellisense Systems, Inc. Propulsion Monitoring for Use in Missile Space Applications	WEST	37
NP Photonics, Inc. Stimulated Brillouin Scattering (SBS) and Other Nonlinear Suppression for High Power Fiber Delivery System for Navy Platform High Energy Laser (HEL)	ITS	37
Physical Sciences Inc. Low Cost, Single Use Precision Aiming Device for Explosive Ordnance Disposal Disrupters and Tools	S-A-S	37
Physical Sciences Inc. Focused Directed Energy Antenna System (FoDEAS) for Long-Range Vehicle/Vessel Stopping with reduced overall system size, weight, power consumption, thermal cooling, and system cost (SWAP/C2)	WEST	38
TDA Research, Inc. Ignition Composition with Low Moisture Susceptibility	S-A-S	38

EXPLORE THE NAVY'S PREMIER SMALL BUSINESS TECHNOLOGY SHOW CASE

NAVY STP VIRTUAL TRANSITION MARKETPLACE

The Virtual Transition Marketplace (VTM) is the Department of the Navy's premier small business technology showcase to find information on over 800 Navy SBIR and STTR sponsored innovative, transition-ready, technologies. Be sure to visit the VTM to view quad charts, Tech Talks, capability brochures, and more from the small businesses that developed these technologies.

STP
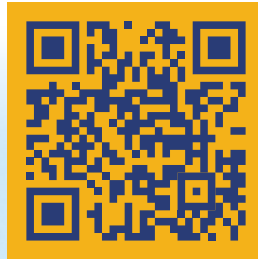
NAVY SBIR TRANSITION PROGRAM

NavySTP.com

Follow us on Social Media

@NAVYFST

www.youtube.com/c/NavyFST

@NAVYFST