Naval Sea Systems Command
Small Business Innovation Research Program

SEA AIR SPACE

Strategic Innovation Panel

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Agenda

• About NAVSEA SBIR Program
• How SBIR Benefits NAVSEA and Small Businesses
• Who You Need to Know
NAVSEA SBIR Objectives

NAVSEA SBIR Program

• Seeks small business participation & technological innovation in support of NAVSEA R&D

• Selects SBIR efforts that contribute to filling critical NAVSEA technology gaps & Warfare Enterprise needs

• Seeks to implement SBIR products into NAVSEA weapons, platforms, & systems via transition to an acquisition program or through commercialization

Core Objective – Phase III Transitions
NAVSEA Needs

- Ship or Platform Production, Operation, Maintenance, and Disposal Costs
- Naval Affordability, Capability, and Commonality
- Improved Maintenance and Material Management to Maximize Warfighter Effectiveness
- Design Tools and Systems for Performance, Capability, and Commonality
- Cybersecurity Products and Processes
SBIR Supports the Full System Life Cycle

SBIR helps small businesses insert technology throughout the system life cycle

- Materiel Solution Analysis
- Technology Development
- Engineering and Manufacturing Development
- Production and Deployment
- Operations and Support

Materiel Development Decision
PDR
Post-PDR
CDR
LRIP IOT&E
FRP Decision Review
Pre-Systems Acquisition
Systems Acquisition
Sustainment
“The Power of SBIR!”

**Technology Insertion and Modernization Budgets**
- Develop once use many places
- Instant market for SBIR products/processes

**CCSM**
- Darlington
  - SCS C4I & IM&M Technology
  - Combined Operations Wide Area Network
- **Planning Systems**
  - GCCS Development & COTS Applications

**DSR**
- Advanced Information Systems
- Software Migration Legacy Trainer
- Photonics Mast Workstation

**MSI**
- Acoustics Sensors
**RITE-Solutions**
- Advanced Software

**Trident Systems**
- Mobile Computing for Submarine Applications
**TCN**
- OA Concepts

**Acquisition Coverage**
- Blanket coverage by Major Ship programs
- Local coverage by PMOs

**Leadership Commitment**
- PEO leadership recognizes value
- SBIR is centerpiece of SB program in TSUB

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**VIRGINIA Class Submarine**

**STERNE/PROPULSION**
- **CSC**
  - Array Improvement

**PRESSURE HULL**
- **Compudrive**
  - Electromechanical Actuator and COMT

**WEAPON LAUNCH, STOWAGE & HANDLING**
- **Progeny**
  - Tools for VME Interactive Acoustic Analysis Process
  - Multi Tube Weapon Simulator
  - Common Weapon Launcher

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PEO LCS SBIR Technologies

SHIP CREW SUPPORT

MISSION PACKAGES
- ASW Mission Planning
- MCM COBRA
- MCM Object Categorization
- MCM RMMV Effectiveness

UNMANNED VEHICLE COORDINATION
- USV Situational Awareness
- Ship/UxV Secure Comms

SHIP SYSTEMS
- Autonomous Shipboard Cleaning
- Mission Package Handling Systems
SBIR Technologies for DDG 51 Class Ships

- LED Lighting
- Advanced Bridge Windows
- Corrosion Preventative Coverings
- Flight Deck Safety Nets
- Energy Dashboard Fuel Management Decision Aid
- Bulkhead Shaft Seal
- On-line Wireless Vibration Monitoring
- Flight Deck Lighting Controls
- High Temperature Superconducting Degaussing
- LED Lighting
- Advanced Bridge Windows
- Corrosion Preventative Coverings
- Flight Deck Safety Nets
- Energy Dashboard Fuel Management Decision Aid
- Bulkhead Shaft Seal
- On-line Wireless Vibration Monitoring
- Flight Deck Lighting Controls
- High Temperature Superconducting Degaussing
SBIR Success
AT-SEA SSTD TEST

Small Businesses Involved
PEI Anti-Torpedo Torpedo (ATT) Launcher
SEACORP Launcher Mechanism
In-Depth Engineering Software Algorithms
3 Phoenix Detection and Targeting System

SBIR Success story – Supporting Real World Need for ATT
NAVSEA SBIR Benefits Small Businesses

• Small Business is Integral to NAVSEA Business Plan
  – SBIR/STTR Program is Centerpiece at $60M-$65M each Year
  – NAVSEA has a History of over $3B in Phase III Transitions

• Average of 1 win per 8 proposals in Phase I

• Average of 15 proposals per topic in Phase I

• 50% chance of Phase 2 award

• Transition Assistance Program Participation
Focuses on the design, construction, and delivery, and life-cycle support of all aircraft carriers and the integration of systems into aircraft carriers.

Manages surface ship and submarine combat technologies and systems, and coordinates Navy Open Architecture across ship platforms.

Responsible for acquiring and maintaining the littoral mission capabilities of the LCS class ship.

Manages acquisition and complete life-cycle support for all U.S. Navy non-nuclear surface ships.

Focuses on the design, construction, delivery, and conversion of submarines and advanced undersea and anti-submarine systems.

Focuses on the design, construction, delivery, and engineering needs for SEA05, EOD and Divers.
Next Opportunity to Participate

• 15.2 Solicitation

  – Pre-Release 24 April 2015
  – Open 22 May 2015
  – Close 24 June 2015

http://www.dodsbir.net/
BACKUP
Ship or Platform Production, Operation, Maintenance, and Disposal Costs

Need Description
NAVSEA must consider creative and innovative approaches to reduce TOC. Improved shipboard maintenance and workflow would provide reduced costs and predictable execution of maintenance availabilities. Shipboard Preventive Maintenance is critical to ensure ships remain operational to and beyond their expected service life. At the end of their service life, disposal and recycling must be efficient and low cost. The challenge is to fully align requirements, policies, skills, tools, and execution to improve technical expertise, safety, and equipment reliability; and to provide capability and capacity for production, operation, maintenance, repairs, and disposal as needed.

Objectives
- Enhancements and innovation to improve and streamline production process compliance
- Enhanced and innovative techniques, methods, and tools to stabilize schedule performance
- Innovation and enhancement to improve workflow
- Insert new technologies into ship maintenance
- Enhanced and innovative methods and tools to develop and refine Class Maintenance and Modernization Plans for all ships and submarines
- Enhanced and innovative techniques, methods, and tools to collect and analyze productivity results to optimize the warfighting capability, fleet operational availability, and expected service life of Navy’s ships and submarines
- Enhanced and innovative techniques, tools, and methods for workforce training to ensure trade and technical excellence
- Innovative equipment, tools, and alternatives to reduce energy consumption and costs
- Enhancements and innovation to improve Condition Based Maintenance Plus
- Innovative equipment, tools, and alternatives using Additive Manufacturing solutions to solve technical and operational issues
- Innovative equipment, tools, and alternatives to enhance safety
Naval Affordability, Capability, and Commonality

Need Description
Evolving threats require improvements to enhance warfighting capabilities, operator effectiveness, and efficient operations that are affordable and, where practicable, common across platforms. The processes and tools needed to enhance the strategic planning, operational analysis, and adaptive mission system technology base require optimized and affordable innovation. These considerations are particularly important as ships and forces are forward deployed to the rebalancing called for by the Pivot to the Asia-Pacific region, and employed in ever-challenging environments such as polar regions and littorals.

Objectives
• Advancements to improve self-defense and information protection capabilities
• Innovation and enhancements to improve combat system and associated warfare element capabilities
• Technology and methods to improve human systems integration/interoperability and improve safety
• Tools and techniques to improve and enhance engineering services
• Innovative tools for automated test and analysis capabilities
• Innovative equipment and tools to provide polar operational capabilities
• Innovation and advancements to enhance and improve cargo and fuel transfer at sea systems technologies safely
• Innovation and enhancements to improve Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) to Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) capabilities.
• Innovation and advancements to improve optical and infrared signatures technology
• Innovation to provide low-cost night vision technologies
• Advancements to improve Combat Systems resiliency in Anti-Access Area-Denial (A2AD) environments
• Innovation and enhancements to improve Integrated Power and Energy Systems that accommodate a multitude of diverse high energy systems
• Innovation and enhancements to improve power conditioning and control to accommodate a multitude of diverse high energy systems
• Develop an energy storage system with sufficient energy and power density to support extended (on order of 30 days on station) UUV operations with substantially improved safety characteristics compared with current solutions
Improved Maintenance and Material Management to Maximize Warfighter Effectiveness

Need Description
NAVSEA must optimize Sailor maintenance work time and minimize administrative tasks to improve technical expertise while improving their efficiency.

Objectives
- Enhanced and innovative tools to analyze Maintenance and Material Management process requirements
- Advanced and innovative techniques, methods, and tools to improve Maintenance Requirement Cards (MRC)
- Enhanced and innovative tools for the Planned Maintenance System tools and training to improve sailor effectiveness
- Advanced and innovative tools to collect and analyze information to measure performance, progress, and results
- Enhanced and innovative training to improve and streamline information management
- Enhanced and innovative tools to improve efficiencies in NAVSEA business systems
**Need Description**

It is important to consider the severity and consequence of vulnerabilities and risks as well as the probability of their occurrence to determine the best value to the Navy in the performance versus cost tradeoff. NAVSEA needs to adopt a comprehensive view of system performance and potential tradeoffs, rather than assessing each technical and business performance parameter in isolation. This will assure NAVSEA continues to design, build, deliver, and maintain operationally relevant ships and systems within resource constraints.

**Objectives**

- Advanced and innovative tools to challenge and/or validate requirements, specifically during program of record formulation and to improve business and modernization planning and in-service maintenance.
- Enhanced and innovative methods, tools, and systems to quantify costs and identify performance margins above operational need.
- Advanced and innovative tools to assist stakeholders in shaping future ship and system characteristics and requirements to reduce cost while maintaining performance and reliability.
- Advanced and innovative tools and systems to maximize cost efficiency and commonality across Navy platforms and systems.
Cybersecurity Products and Processes

Need Description
Information and tools used to design, procure, operate, and maintain Navy ships must be safeguarded. Cyberspace defenses to protect, detect, characterize, counter, and mitigate unauthorized activity and vulnerabilities on NAVSEA information networks need to be incorporated in all systems and platforms. Processes for implementing Cybersecurity are needed to create consistency and to allow for rapid changes and adaptations as new threats and methods are identified. Applicable DoD and DoN requirements and instructions will form the foundational cybersecurity architectures. The resultant systems and features will continually assess, check, probe and adapt to threats.

Objectives
- Advanced and innovative techniques, tools, and systems to identify and detect internal and external threats (such as social engineering and phishing)
- Advanced and innovative techniques, tools and systems to counter identified threats for both ashore and afloat environments to prevent, anticipate, or mitigate potential damage and information leaks
- Advanced and innovative cybersecurity techniques, tools, and systems to set boundaries, detect intrusions, and prevent system access by using hardware and software Cybersecurity solutions at key points in systems.
- Advanced and innovative techniques, tools, and systems to inject Cybersecurity into software and hardware development, configuration, and specifications for both ships systems and critical shore systems to counter cyber threats
- Advanced and innovative techniques, tools, and systems to develop an affordable cybersecurity platform architecture
- Advanced and innovative techniques and tools for system vulnerability assessment