SBIR 101: Program Overview

SBIR Overview

The *Small Business Innovation Research* program:

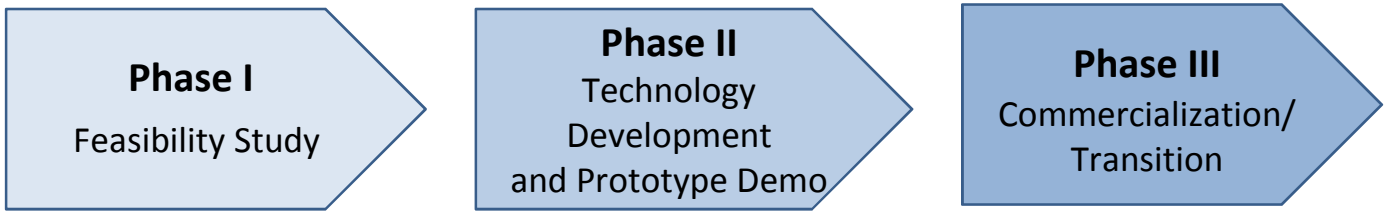
- Established in 1982 (P.L. 97-219) & reauthorized 4 times
- Requires each federal agency with an extramural for R&D over **>$100M** to set-aside **3.2%** for SBIR in FY17 and beyond
- Funds R&D at small businesses (500 employees or less)
- Program goals:
  - Stimulate technological innovation
  - Increase small business participation in federally funded R&D
  - Foster participation by socially and economically disadvantaged firms in technological innovation
  - Increase private sector commercialization of federal R&D
- 11 Federal agencies and 13 DoD components participate

STTR Overview

The *Small Business Technology Transfer program*:

- Established in 1992 (P.L. 102-564) & reauthorized 3 times
- Requires each federal agency with an extramural for R&D over **>$1B** to set-aside **0.45%** for STTR in FY17 and beyond
- Funds cooperative R&D between small businesses and research institutions
- Program goals: Create vehicles for moving ideas from research institutions to market
  - Enable researchers to pursue commercial application of technologies
  - Bridge funding gap between basic research and commercial product
- 5 Federal agencies and 7 DoD components participate

3 Phase Structure of Programs



Phase I - feasibility study to determine the scientific or technical merit of an idea or technology.

Phase II - all Phase I awardees may compete for Phase II funding. Phase II is typically a technology development and demonstration phase in which prototypes are built and tested.

Phase III - ultimate goal of SBIR/STTR projects. Phase III is non-SBIR/STTR funding that comes from the government and/or private sector to transition a company's SBIR/STTR effort into products, tools or services. Phase III awards can be awarded via a competitive or statutorily authorized non-competitive process.

DON SBIR/STTR by the Numbers

as of 09 SEP 2018

		FY14	FY15	FY16	FY17
SBIR	Funding ($M)	$243	$259	$305	$311
	Topics	129	132	139	145
	Phase I Awards (FY Solicitations)	362	360	397	369
	New Phase II Awards	212	198	133	187
STTR	Funding ($M)	$35	$35	$48	$44
	Topics	25	23	26	35
	Phase I Awards (FY Solicitations)	61	60	69	89
	New Phase II Awards	23	28	28	31
SBIR/ STTR	Phase I Proposals (FY Solicitations)	2,321	1,859	2,099	1,799
	Avg. time to award Phase I (mos.)	4.3	4.3	4.5	4.6
	Phase III Awards	142	140	151	147
	Phase III Awards ($M)	$520	$394	$507	$407

DoN Award Amounts & Periods of Performance

- The following are general guidelines however deviations in base and option amounts may exist by SYSCOM and topic.
- Generally only one award per topic per firm is allowed for Phase I.
- Phase II awards are limited to two awards per topic per firm for topics in or after the 13.1/A solicitation. SBIR/STTR funding is limited in Phase I and II unless a waiver is obtained in advance from the SBA.
- There is no limit on the amount of non-SBIR/STTR (matching funds in Phase II. There is no funding limit or limit on the number of awards in Phase III.

	Phase I	Phase II	Phase III
Funding			
Base	$125K	$500K-$1M	Non-SBIR/STTR
Option	$100K	$1.5M balance	Unlimited
Period of Performance			
Base	6 months	12-24 months	Government – 5 years
Option	6 months	6-12 months	Industry – No limit

Evaluation Criteria

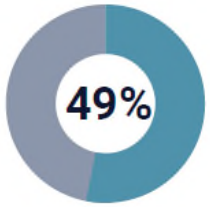
- The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.
- The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.
- The potential for commercial (Government or private sector) application and the benefits expected to accrue from this commercialization.

Transition Programs & Support

- SBIR/STTR Transition Program (STP)
- Forum for SBIR/STTR Transition (FST)
- Primes Initiative
- Commercialization Readiness Program (CRP)
- Phase III Guidebook
- SBIR/STTR Search Tool
- “Reachback” Strategy
- Sustainment and Operations Cost Reductions (SOCR) Pilot

DoN SBIR/STTR Economic Impact

SUPPORT FOR THE WARFIGHTER



Of the technology created from

2000–2013

49% of the goods and services sold went **to supporting our armed forces**

Nearly **$7 BILLION DOLLARS**

in new, advanced products went **to Naval platforms**

19:1 RETURN ON INVESTMENT

$44.3 billion in economic output from a $2.3 billion investment from 2000-2013 for the DON SBIR/STTR program

Important Websites

- navysbir.com – the Navy SBIR/STTR website is the first site for firms to find information on the DON SBIR/STTR programs including solicitations, topics, selections, program specifics, success stories, related links, and points of contact.
- navysbirsearch.com – the Navy SBIR/STTR search database uses IDOL© licensed software to perform contextual searches on all DON SBIR/STTR awards.
- https://sbir.defensebusiness.org – the official DoD SBIR/STTR Home Page with information on these programs, links to the current and past BAAs, other DoD and Federal SBIR/STTR websites, and other related links.

DON SBIR/STTR Points of Contact

Bob Smith
Director, Department of Navy SBIR/STTR Programs
robert.l.smith6@navy.mil

DON/ONR STTR Program Manager	Steve Sullivan	steven.sullivan@navy.mil
DON Commercialization Manager	Lee Ann Boyer	leeann.boyer@navy.mil
Naval Sea Systems Command (NAVSEA)	Dean Putnam	dean.r.putnam@navy.mil
Naval Air Systems Command (NAVAIR)	Donna Attick	donna.moore@navy.mil
Office of Naval Research (ONR)	Lore-Anne Ponirakis	loreanne.ponirakis@navy.mil
Space & Warfare Systems Command (SPAWAR)	Shadi Azoum	shadi.azoum@navy.mil
Marine Corps Systems Command (MARCOR)	Jeff Kent	jeffrey.a.kent@usmc.mil
Naval Supply Systems Command (NAVSUP)	Esteban Diaz	esteban.l.diaz1@navy.mil
Naval Facilities Engineering Command (NAVFAC)	Tim Petro	timonthy.petro@navy.mil
Strategic Systems Program (SSP)	Mark Hrbacek	mark.hrbacek@ssp.navy.mil

Richard McNamara – Headquarters and Directorates

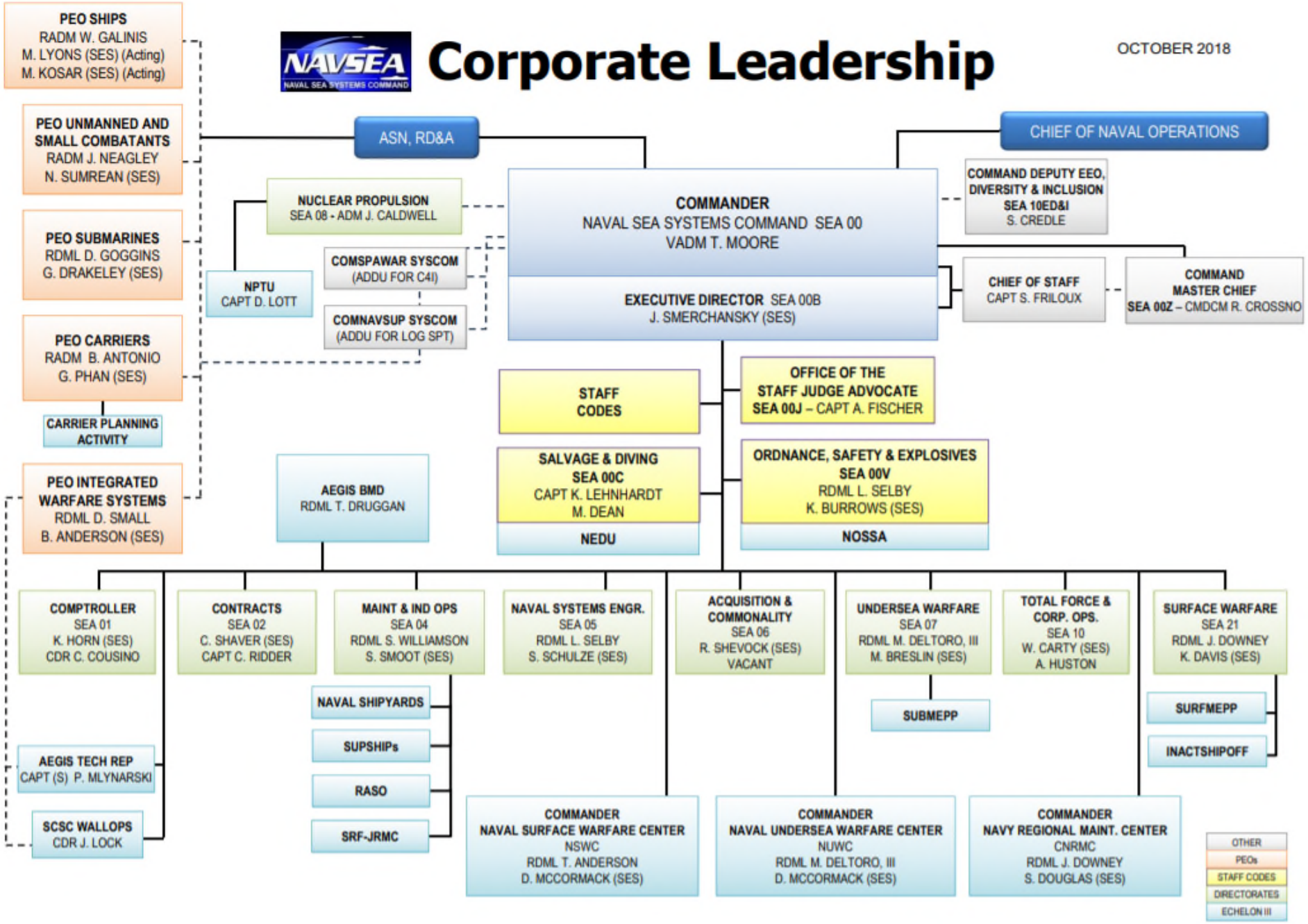
Emily Novak – TEAM SHIPS

Jennifer Greenwood – Program Executive Office Unmanned and Small Combatants

Lauren Chapman – TEAM SUBS

Dr. Lawrence Dressman– Program Executive Office Integrated Warfare Systems

NAVSEA Headquarters and Directorates


PEO SHIPS
RADM W. GALINIS
M. LYONS (SES) (Acting)
M. KOSAR (SES) (Acting)
PEO UNMANNED AND SMALL COMBATANTS
RADM J. NEAGLEY
N. SUMREAN (SES)
PEO SUBMARINES
RDML D. GOGGINS
G. DRAKELEY (SES)
PEO CARRIERS
RADM B. ANTONIO
G. PHAN (SES)
CARRIER PLANNING ACTIVITY
PEO INTEGRATED WARFARE SYSTEMS
RDML D. SMALL
B. ANDERSON (SES)
NAVSEA
NAVAL SEA SYSTEMS COMMAND
Corporate Leadership
OCTOBER 2018
ASN, RD&A
CHIEF OF NAVAL OPERATIONS
NUCLEAR PROPULSION
SEA 08 - ADM J. CALDWELL
NPTU
CAPT D. LOTT
COMSPAWAR SYSCOM
(ADDU FOR C4I)
COMNAVSUP SYSCOM
(ADDU FOR LOG SPT)
COMMANDER
NAVAL SEA SYSTEMS COMMAND SEA 00
VADM T. MOORE
EXECUTIVE DIRECTOR SEA 00B
J. SMERCHANSKY (SES)
COMMAND DEPUTY EEO, DIVERSITY & INCLUSION
SEA 10ED&I
S. CREDLE
CHIEF OF STAFF
CAPT S. FRILOUX
COMMAND MASTER CHIEF
SEA 00Z – CMDCM R. CROSSNO
STAFF CODES
OFFICE OF THE STAFF JUDGE ADVOCATE
SEA 00J – CAPT A. FISCHER
SALVAGE & DIVING
SEA 00C
CAPT K. LEHNHARDT
M. DEAN
NEDU
ORDNANCE, SAFETY & EXPLOSIVES
SEA 00V
RDML L. SELBY
K. BURROWS (SES)
NOSSA
AEGIS BMD
RDML T. DRUGGAN
COMPTROLLER
SEA 01
K. HORN (SES)
CDR C. COUSINO
CONTRACTS
SEA 02
C. SHAVER (SES)
CAPT C. RIDDER
MAINT & IND OPS
SEA 04
RDML S. WILLIAMSON
S. SMOOT (SES)
NAVAL SHIPYARDS
SUPSHIPs
RASO
SRF-JRMC
NAVAL SYSTEMS ENGR.
SEA 05
RDML L. SELBY
S. SCHULZE (SES)
ACQUISITION & COMMONALITY
SEA 06
R. SHEVOCK (SES)
VACANT
UNDERSEA WARFARE
SEA 07
RDML M. DELTORO, III
M. BRESLIN (SES)
SUBMEPP
TOTAL FORCE & CORP. OPS.
SEA 10
W. CARTY (SES)
A. HUSTON
SURFACE WARFARE
SEA 21
RDML J. DOWNEY
K. DAVIS (SES)
SURFMEPP
INACTSHIPOFF
AEGIS TECH REP
CAPT (S) P. MLYNARSKI
SCSC WALLOPS
CDR J. LOCK
COMMANDER
NAVAL SURFACE WARFARE CENTER
NSWC
RDML T. ANDERSON
D. MCCORMACK (SES)
COMMANDER
NAVAL UNDERSEA WARFARE CENTER
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RDML M. DELTORO, III
D. MCCORMACK (SES)
COMMANDER
NAVY REGIONAL MAINT. CENTER
CNRMC
RDML J. DOWNEY
S. DOUGLAS (SES)
OTHER
PEOs
STAFF CODES
DIRECTORATES
ECHELON III

NAVSEA WARFARE CENTERS

- NSWC Carderock
- NSWC Corona
- NSWC Crane
- NSWC Dahlgren
- NSWC Indian Head EOD Technology
- NSWC Panama City
- NSWC Philadelphia
- NSWC Port Hueneme
- NUWC Keyport
- NUWC Newport

NAVSEA SBIR/STTR
NAVSEA DIR HQ

Topic Number: N19A-T011

Topic Title: Remotely Operated Vehicle (ROV) Deployed Underwater Attachment

Technology Objective: Develop a "plug and play" inspection-class Remotely Operated Vehicle (ROV) compatible non-intrusive means to attach specialized Explosive Ordnance Disposal (EOD) tools to underwater threat objects to enable standoff neutralization of targets on the seabed and in the water column.

Technological Challenge/Risk: Achieving adequate attachment of payloads in marine environments (e.g. marine growth, surge/current, varied temperatures/salinities).

Transition Program: PMS-408

Topic Author: Jens Carr, PMS-408

Topic Number: N191- 024

Topic Title: Standoff Command and Control of Remotely Operated Vehicles (ROVs)

Technology Objective: Develop platform independent data and power transfer material solutions for enabling command and control of inspection class Remotely Operated Vehicles (ROVs) for real-time, human-supervised response operations from safe separation distances.

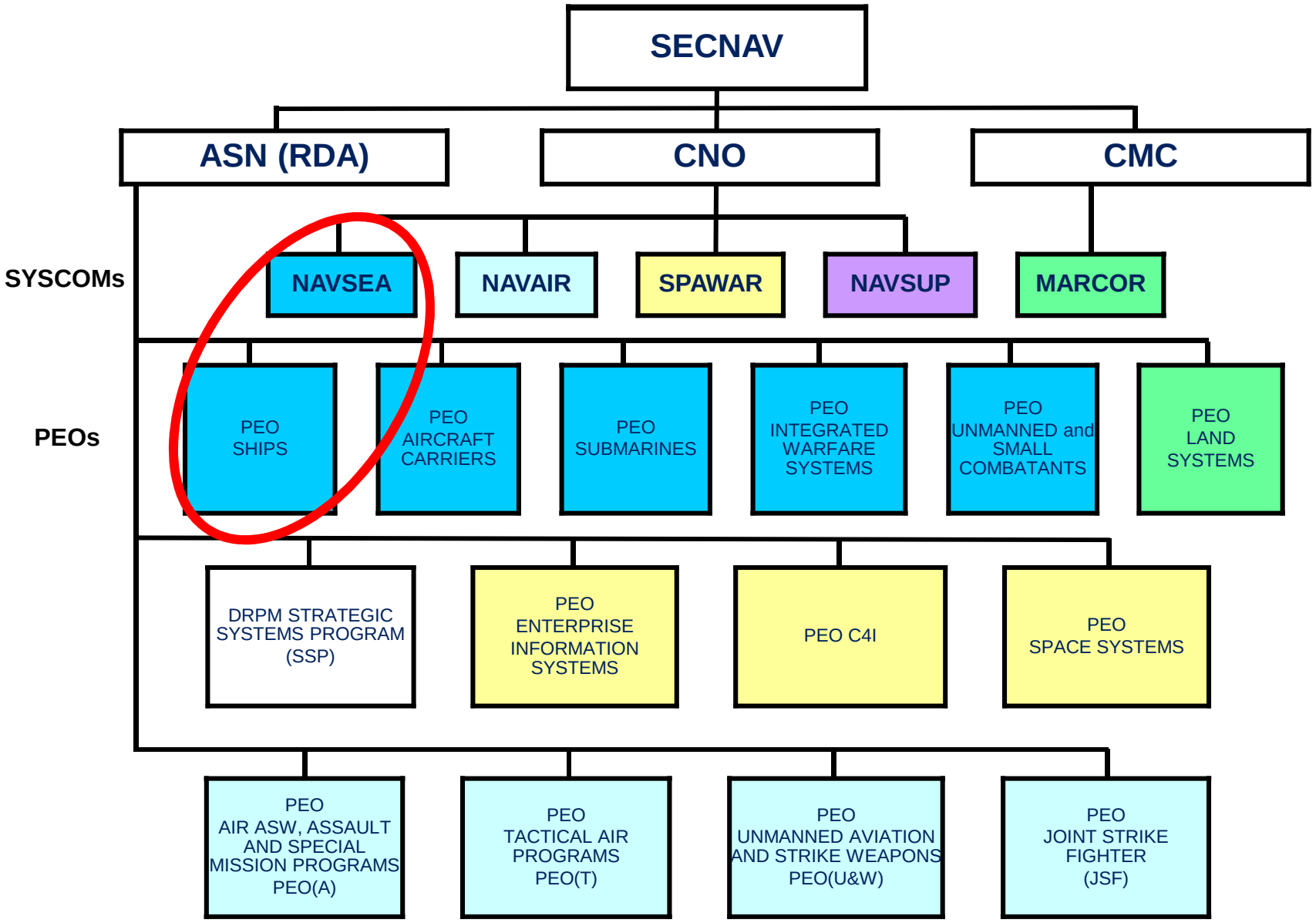
Technological Challenge/Risk: Cyber secure end-to-end communications reliability, latency, range in varying water depths and bandwidth.

Transition Program: PMS- 408

Topic Author: Jens Carr, PMS-408

TEAM SHIPS

Navy Program Executive Offices & Systems Commands



Team Ships Organization

Program Executive Office, Ships

PROGRAM EXECUTIVE OFFICER SHIPS
RADM Bill Galinis

Team Ships Staff

DEPUTY COMMANDER FOR SURFACE WARFARE; COMMANDER, NAVY REGIONAL MAINTENANCE CENTER
RDML Jim Downey

COMBATANTS OFFICE
Ms. Marianne Lyons
ACTING - EXECUTIVE DIRECTOR

- Ships Acquisition Management Office
- PMS 400D DDG 51
- PMS 500 DDG 1000
- PMS 320 Electric Ships Office
- FUTURE SURF COMBATANT

AMPHIBIOUS, AUXILIARY & SEALIFT OFFICE
Mr. Eric Ryberg
ACTING - EXECUTIVE DIRECTOR

- PMS 377 LHA(R) / SSC / LCAC / AADS / LCU
- PMS 317 LPD 17/ LX(R)
- PMS 325 Support Ships, Boats & Craft
- PMS 385 Strategic & Theater Sealift
- USCG / NAVY PIB Support

SURFACE WARFARE DIRECTORATE
Ms. Karen M. Davis (SES)
EXECUTIVE DIRECTOR

- Chief of Staff
- SEA 21P Chief Financial Officer
- SEA 21D Acquisition & Contracts Management
- SEA 21I Inactive Ships

COMMANDER, NAVY REGIONAL MAINTENANCE CENTER
Ms. Stephanie Douglas (SES)
EXECUTIVE DIRECTOR

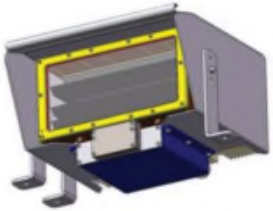
- SURFMEPP
- PMS 407 Surface Ship Modernization
- PMS 443 Surface Ship Readiness and Sustainment
- PMS 326 International Fleet Support
- PMS 339 Surface Training Systems

Technology Transition

TECHNOLOGY INSERTION INTO SHIP PROGRAMS

PROGRAM OFFICE
PUSH
NEEDS IDENTIFICATION
PULL

OSD - DARPA
ONR - NRL
INDUSTRY
ACADEMIA
NATIONAL LABS
OTHER SERVICES
PEOs & SYSCOMs
WARFARE CENTERS



TECHNOLOGY ASSESSMENT

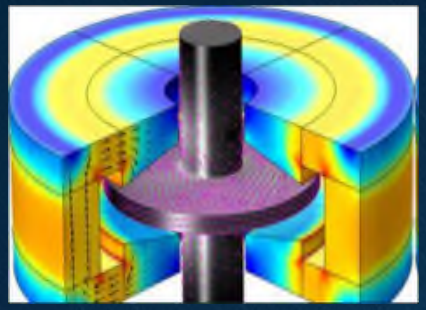
TEST & EVALUATION

AT-SEA DEMONSTRATIONS

ID CHANGES TO NAVY POLICIES & OPERATING PROCEDURES

TECHNOLOGY DEVELOPMENT

NAVSEA SBIR/STTR
Team Ships



Topic Number: N19A-T007

Topic Title: Power Dense Electrical Rotating Machines for Propulsion and Power Generation

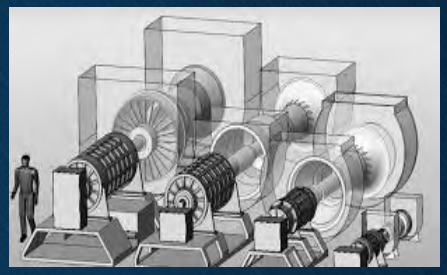
Technology Objective: Develop technology necessary to support design, construction and qualification of power dense electrical rotating machines (motors and generators) for shipboard application.

Technological Challenge/Risk: Future naval combatants will require electrical power generation, distribution, energy storage, and advanced controls in order to support advanced weapon and sensor systems. The power density of the electrical equipment must be increased in order to allow everything to fit on appropriately sized ships. Advances in power electronics have allowed reductions in converter sizes, however rotating machines have not seen comparable improvements in power density.

Transition Program: PMS 320, Electric Ships Office

Topic Author: Mr. Jeff McGlothin

Topic Number: N19A-T013



Topic Title: Advanced Power Density Improvements to Electrical Generation Systems

Technology Objective: Develop technology improvements to propulsion and power generation prime movers through increased power density and improved fuel efficiency. Develop and test a reduced scale technology demonstrator in the 50-100 KW range, scalable to 2500 KW. Solutions should be able to meet future higher power demands of directed energy weapons.

Technological Challenge/Risk: All proposed solutions will be analyzed for their impact on engine design and energy heat recovery capability. The technologies must not impose limitations on engine operations and must not impede the airflow of the intakes or uptakes. In addition, the installation of the new technology should not increase the combined generator weight and volume by more than 6% (threshold) or 4% (objective). Emphasis will be placed on modularity and scalability to higher power applications. Solutions must address shock and vibration requirements.

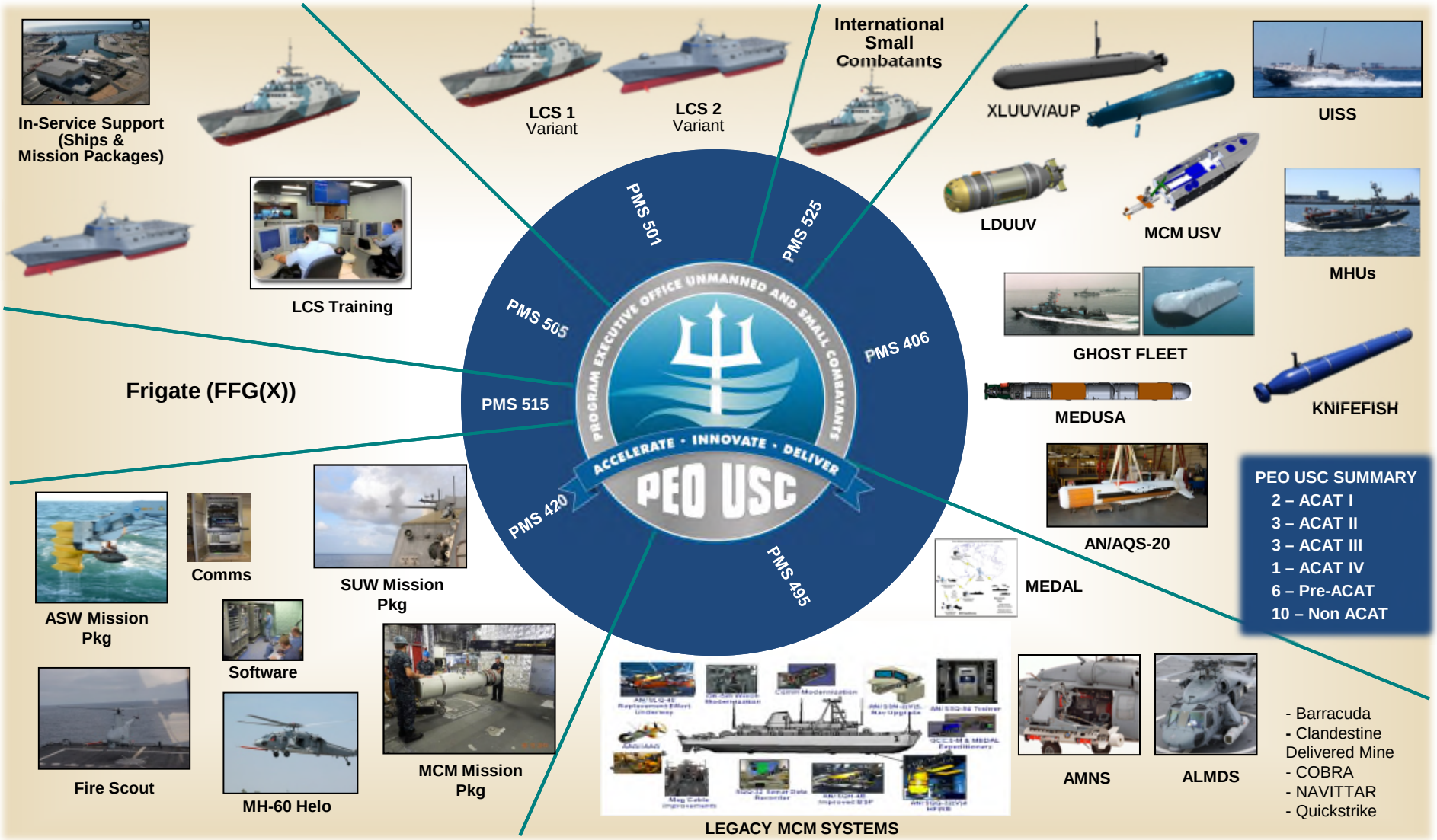
Transition Program: PMS 320, Electric Ships Office

Topic Author: Mr. William Zeller

Program Executive Office
Unmanned and Small Combatants

Transition to PEO USC

PEO USC Portfolio



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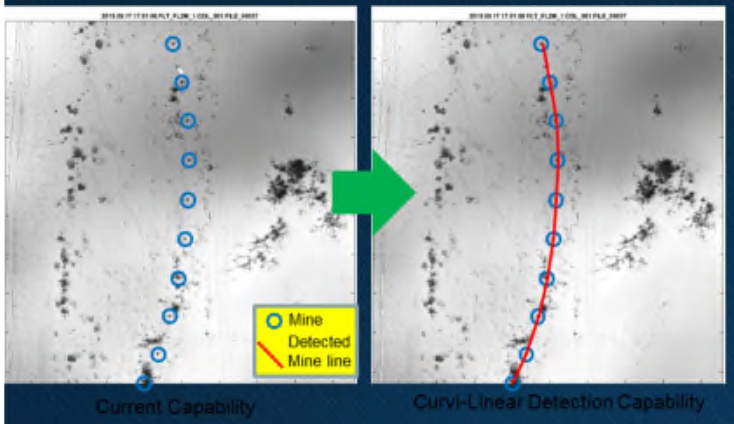
PEO USC



Topic Number: N191-021

Topic Title: Automated Curvilinear Mineline Detection

Technology Objective: Develop an automated curvilinear mineline detection algorithm.

Technological Challenge/Risk: Curvilinear Minelines (MLs) are an operationally relevant threat and COBRA Block I does not have a dedicated curvilinear ML detection capability. Current Curvilinear ML detection capabilities, which are based on other patterned ML and scattered Minefield Detection (MFD) algorithms, are limiting the COBRA Block I System ML Probability of Detection (Pd) performance, a Key Performance Parameter (KPP.

Transition Program: PMS 495, Mine Warfare Program Office

Topic Author: Dawn Klamser, NSWC Panama City

Topic Number: **N19A-T016**

Topic Title: **Quench Monitoring and Control System for High-Temperature Superconducting Coils**

Technology Objective: **Develop and demonstrate an innovative method to detect, prevent, and protect high-inductance, High Temperature Superconducting (HTS) coils from damage that would normally occur in a quench event.**

Technological Challenge/Risk: **Current quench control systems for large-scale HTS magnets for the LCS MCM mission are inadequate to fully protect these systems while in an operational environment. A quench control system is necessary to protect these costly HTS systems from failure while operating on unmanned platforms**

Transition Program: **PMS 406, Unmanned Maritime Systems Program Office**

Topic Author: **Peter Ferrarra, NSWC Philadelphia**

NAVSEA SBIR/STTR
PEO USC

Surf Zone (SZ) Operational Area

Topic Number: N19A-T010

Topic Title: Comprehensive Surf Zone Modeling Tool

Technology Objective: Research and develop a comprehensive software Surf Zone scene generation, target insertion, and sensor performance model.

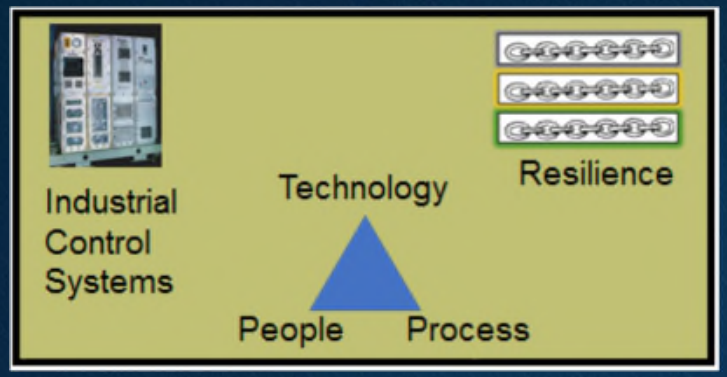
Technological Challenge/Risk: Limited SZ Detection capability is an operationally relevant threat to the minehunting mission. Currently, no end-to-end simulation of the SZ environment exists. The SZ environment model will support comparison of the legacy sensor to new sensors as COBRA moves toward future increments.

Transition Program: PMS 495, Mine Warfare Program Office

Topic Author: Mark Sherwood, NSWC Panama City

TEAM SUBS

NAVSEA SBIR/STTR
PEO SUBS



Topic Number: **N191-030**

Topic Title: Risk Reduction and Resiliency of Industrial Control Systems

Technology Objective: The objective is to develop an innovative software prototype that can model and evaluate the resiliency of industrial control systems in conjunction with processes and operations to reduce the risk of unacceptable consequences while eliminating the costs of unnecessary cybersecurity capabilities. This software prototype should provide a holistic approach that addresses risk and resilience across systems-of-systems and best prepares Navy platforms, shipyards, and critical infrastructure against future cyber threats.

Technological Challenge/Risk: **Current cybersecurity initiatives are difficult to measure and compare. This effort will look to measure and assess the resiliency of industrial control systems.**

Transition Program: PMS397

Topic Author: Amy Kobayashi, 202-781-4430, amy.kobayashi@navy.mil

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Topic Number: N191-022

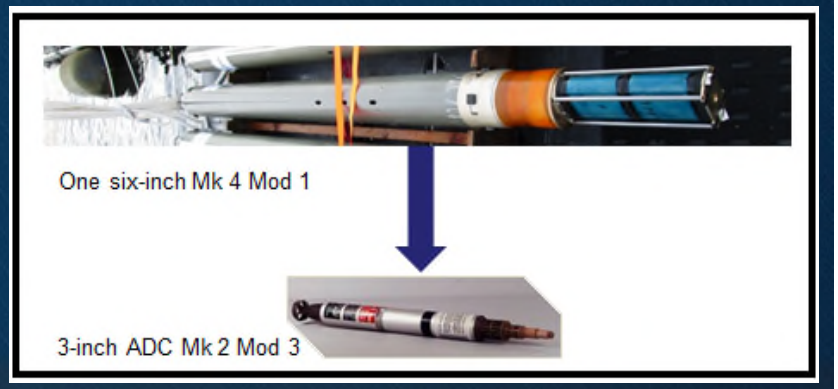
Topic Title: 3-inch SONAR Countermeasure

Technology Objective: Reduce the size of a ADC MK 4 Mod 1 to a 3-inch diameter form factor capable of internal launch. The change in volume is from ~3430 to 280 cubic inches, weight from 120 to 10 lbs, and reduce cost from $40k to $5k per unit.

Technological Challenge/Risk: Current SONAR countermeasures are in a 6.25-inch diameter, 107-inch long form factor to provide adequate volume to produce effective acoustic source levels and frequency ranges over sufficient operating duration. The technical challenge is to provide the same acoustic performance capabilities and durations in a 3-inch diameter, 39-inch length form factor for internal countermeasure launcher deployment.

Transition Program: PMS415

Topic Author: Michael Zarnetske, 401-832-3838, michael.zarnetske@navy.mil



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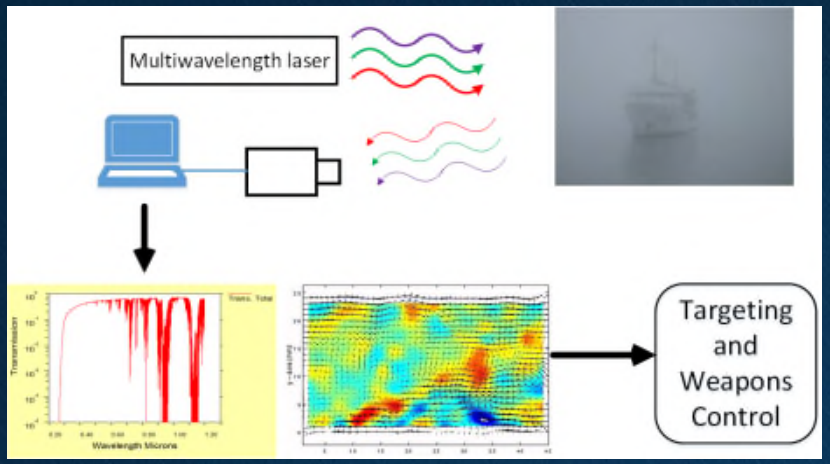

Topic Number: **N19A-T009**

Topic Title: 3-l band Pulsed Fiber Laser System for Marine Layer Measurements (STTR)

Technology Objective: **Advanced range detection and targeting control for HEL in complex marine environments**

Technological Challenge/Risk: Design of compact robust pulsed laser simultaneously operating in the UV, visible, and IR.

Transition Program: PMS435

Topic Author: Dr. Tariq Manzur, 401-832-6887, tariq.manzur@navy.mil

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Topic Number: N191-025

Topic Title: Compact High Energy Laser (HEL) Beam Director

Technology Objective: Develop an affordable single aperture atmospheric correction compact beam director system for a High Energy Laser (HEL) weapon to be employed by a US Navy Submarine for precise targeting in maritime environments at day and night operations with auto targeting and multiple aim point selection and closed loop targeting accuracy.

Technological Challenge/Risk: A single aperture beam deliver would need to address fiber optic cables and connectors that can carry very high optical powers (> 100kW total optical power).

Operates through haze and Full hemisphere (and below) coverage

Thermal blooming mitigated by large aperture & CONOPS

Beam pointing using NIR and MWIR trackers optically interlocked with the HEL beam provides end-to-end aim point selection and maintenance with 50-100X greater hit spot intensity

Transition Program: SEA073

Topic Author: Dr. Tariq Manzur, 401-832-6887, tariq.manzur@navy.mil

NAVSEA SBIR/STTR
PEO SUBS

Topic Number: N191-028

Topic Title: SBS Reduced High Power Fiber Delivery system for Submarine High Energy Laser

Technology Objective: The primary objectives of this proposal are to initiate efforts to analyze and characterize high energy single mode fiber delivery system from inboard laser system through optical Hull Penetrator to the outboard Beam delivery system.

Technological Challenge/Risk: A single mode fiber optic deliver would need to address fiber optic cables and connectors that can carry very high optical powers (> 5kW per fiber of total 30-100 kW total optical power) over distances of 60 feet or greater while overcoming Stimulated Brillouin Scattering (SBS) and RAMAN Scattering effects. The total loss of the delivery fiber shall be less than 0.5 dB.

Transition Program: **SEA073**

Topic Author: **Dr. Tariq Manzur, 401-832-6887, tariq.manzur@navy.mil**

Topic Number: N19A-T006

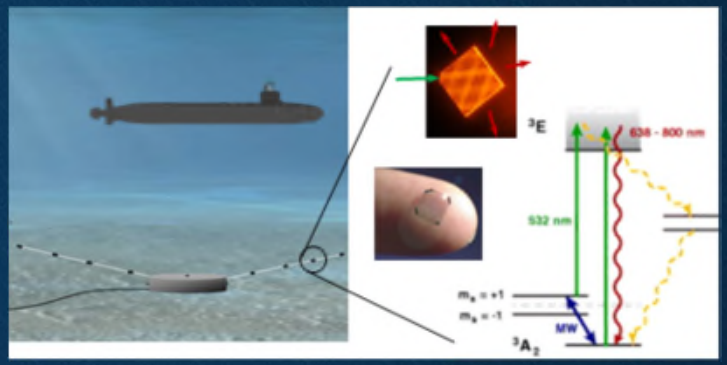
Topic Title: Atomic Triaxial Magnetometer (STTR)

Technology Objective: Leverage recent advances in atomic based magnetometers to develop a prototype triaxial-scalar magnetometer with low noise.

Technological Challenge/Risk: Develop low frequency stability in existing atomic magnetometers to assess long range underwater detection.

Transition Program: SEA073

Topic Author: Dr. Stephen Potashnik, 301-227-8160, Stephen.potashnik@navy.mil



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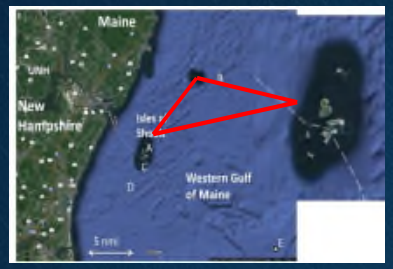

Topic Number: N19A-T015

Topic Title: EM Maneuverablity at Wave Boundary (WBL) Atmospheric Mondeling & Visualization and Submarine based Metrological Instrument Development

Technology Objective: EM Maneuverability at Wave Boundary layer strongly influences the performance of periscope imaging, Electronic warfare and high energy laser (HEL) beam propagation for an offensive and defensive application and impacts beam lethality.

Technological Challenge/Risk:

1. Physics based atmospheric model development and Wave Boundary layer data collection.
2. Submarine based single aperture metrological tool development
3. Model validation and visualization software development

Transition Program: SEA073

Topic Author: Dr. Tariq Manzur, 401-832-6887, tariq.manzur@navy.mil

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Topic Number: N191-027

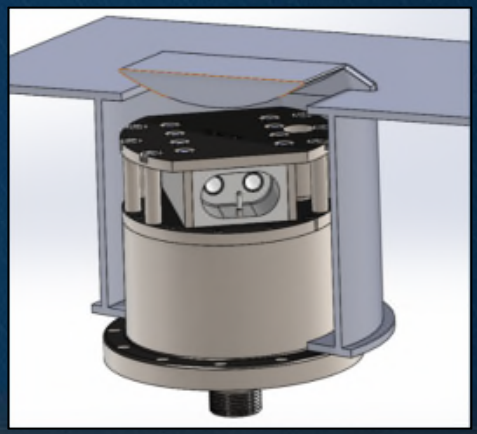
Topic Title: CTD for SSBN/SSGN/Columbia Class Submarines

Technology Objective: Develop conductivity, temperature, depth (CTD) sensor for SSBN/SSGN/Columbia class submarines to improve measurement of environmental parameters.

Technological Challenge/Risk: Design a new sensor optimized for existing sea chest and ducting configuration that is accurate, stable, rugged and cost effective.

Transition Program: PMS401

Topic Author: Nicholas Savage, 401-832-4367



NAVSEA SBIR/STTR
PEO SUBS

Topic Number: N191-023

Topic Title: Efficient 3-inch ADC Depth Control Systems

Technology Objective: Develop an efficient depth control solution capable of being implemented into both existing and future 3-inch diameter Acoustic Device Countermeasures (ADC) to allow for improved device acoustic performance without changing the existing power source. Novel approaches to meeting these requirements are encouraged.

Technological Challenge/Risk: Current 3-inch Mk 2 devices utilize an electric motor and small ducted propeller for depth control. The technical challenge for this topic is to develop a more efficient and cost-effective depth control system within the current volume requirements that could also survive internal launcher accelerations and forces.

Transition Program: PMS415

Topic Author: Michael Zarnetske, 401-832-3838, michael.zarnetske@navy.mil

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Topic Number: N19A-T008

Topic Title: Optical Emulator of complex EM systems with Nanophotonics (STTR)

Technology Objective: **Develop an optical emulator of complex electromagnetic maneuverability (EM) systems with nanophotonic structures that can be 3D printed within a few hours and the electromagnetic cross section characterized within a few minutes.**

Technological Challenge/Risk: Achieve manufacturing resolution and material substitution relevant for the specific case.

Transition Program: **PMS435**

Topic Author: Dr. Tariq Manzur, 401-832-6887, tariq.manzur@navy.mil

NAVSEA Program Executive Office Integrated Warfare Systems

PEO IWS Programs and Projects

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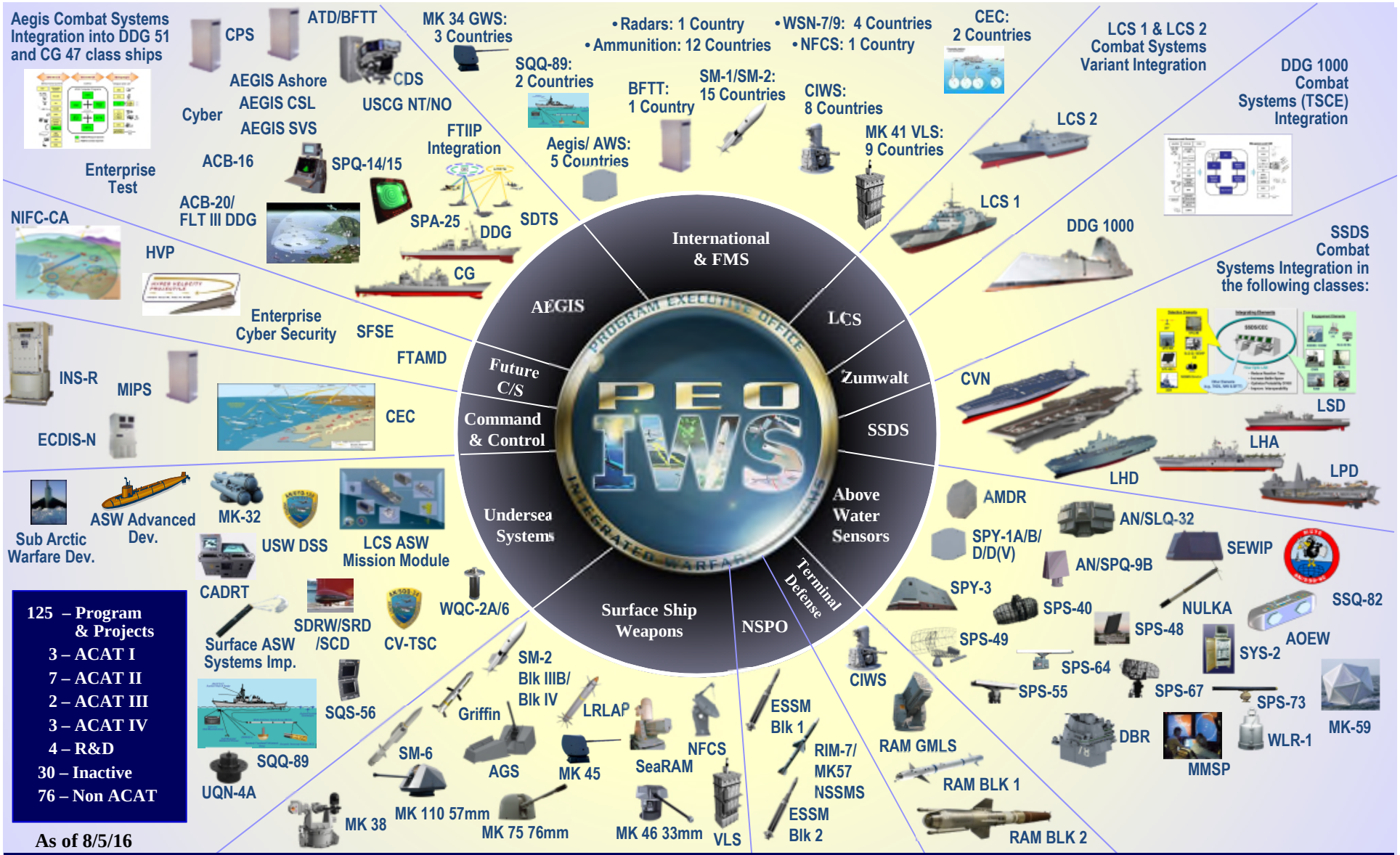


125 – Program & Projects
3 – ACAT I
7 – ACAT II
2 – ACAT III
3 – ACAT IV
4 – R&D
30 – Inactive
76 – Non ACAT

As of 8/5/16

Mission: *To develop, deliver, and sustain operationally dominant combat systems to Sailors and Marines: "Sea Power to the Hands of our Sailors"*

PEO IWS 1.0

NAVSEA SBIR/STTR
PEO IWS

Topic Number: N191-017

Topic Title: Enhanced Visualization for Situational Understanding

Technology Objective: Develop an automated three dimension (3-D) enemy Courses of Action (COAs) application that utilizes five dimensional (5-D) representations for complex missions that provide situational visualization to achieve greater situational understanding in real-time.

Technological Challenge/Risk: 5-D represents an animated Time reference. Time has not been used in 3-D before.

Transition Program: Integrated into, the current AWS operational planning tools through ACB 20 or higher

Topic Author: Bob Rumbaugh

Topic Number: N191-019

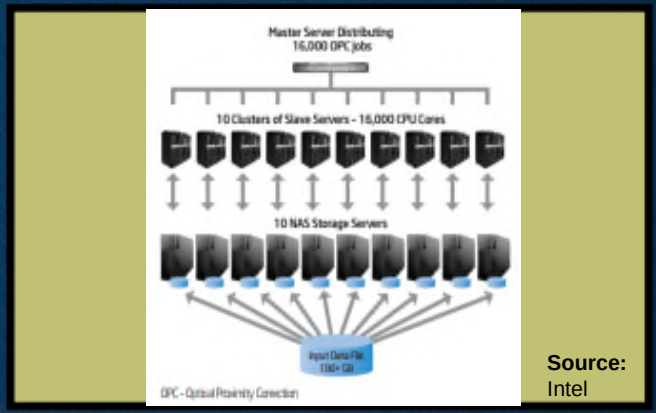
Topic Title: High Performance Computing (HPC) for AEGIS Combat Systems Test Bed (CSTB)

Technology Objective: Provide scheduling software for High Performance Computing (HPC), which allocates computing resources to achieve extraordinary levels of processing speed for the Combat Systems Test Bed (CSTB).

Technological Challenge/Risk: Providing a way to schedule resources, then allocate them across multiple servers to maximize runtime performance of the CSTB.

Transition Program: Integration through testing in the CSTB and then transitioned into AEGIS CSTB.

Topic Author: John Clarke



Source: Intel

NAVSEA SBIR/STTR
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Topic Number: N191-20

Topic Title: Target ID Interrogation Data Stream Analytics

Technology Objective: Develop a system architecture and algorithmic framework to identify air targets in real-time (RT) quickly, accurately, and reliably for the AEGIS Combat System.

Technological Challenge/Risk: Development of a system to provide the AEGIS Combat System with an air target identification and verification capability based on target transponder data, observed target radar signature, and track maneuverability behavior

Transition Program: Product will consist of a set of correlation algorithms implemented via a modular software based addition to current combat ID capability in AEGIS BL 10 or later.

Topic Author: Scott Bewley

Topic Number: N191-032

Topic Title: Artificial Intelligence Real-Time Track Modeling and Simulation for Combat Systems

Technology Objective: Provide an Artificial Intelligence (AI) capability for target identification and behavior-based predictive track vector generation combined with Real-time Modeling and Simulation (M&S) based combat system target and track management that fills gaps presented in a communication and/or sensor challenged environment.

Technological Challenge/Risk: Development of a set of AI-based heuristic real-time on-the-fly M&S algorithms capable of handling a large number of potential target tracks in a shipboard tactical data processing environment.

Transition Program: Incorporate into the AEGIS BL 10 and later baseline modernization process.

Topic Author: Scott Bewley

NAVSEA SBIR/STTR
PEO IWS

Topic Number: N191-034

Topic Title: Automated Multi-System Course of Action Analysis Using Artificial Intelligence

Technology Objective: Create a mission planner decision aid that enables Automated Decision Support utilizing Artificial Intelligence (AI) and is scalable and composable to provide timely and effective employment of maritime resources and off board sensors.

Technological Challenge/Risk: Utilizing AI to integrate Tactical decision aids of multiple Navy mission plans to provide real time decision support.

Transition Program: Deliver expanded COA analysis capability into Navy C4I architecture as a web service in AEGIS BL10

Topic Author: Bob Rumbaugh

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Topic Number: N191-018

Topic Title: Automated Event Logging for Improved Electronic Warfare Operations

Technology Objective: Develop an innovative event logging application for efficient EW operator human-machine interaction.

Technological Challenge/Risk: Achieving increased capability while reducing operator workload.

Transition Program: Transitions to the EW display upgrade project for the AN/SLQ-32 shipboard EW system.

Topic Author: Lawrence Dressman

Topic Number: N191-029

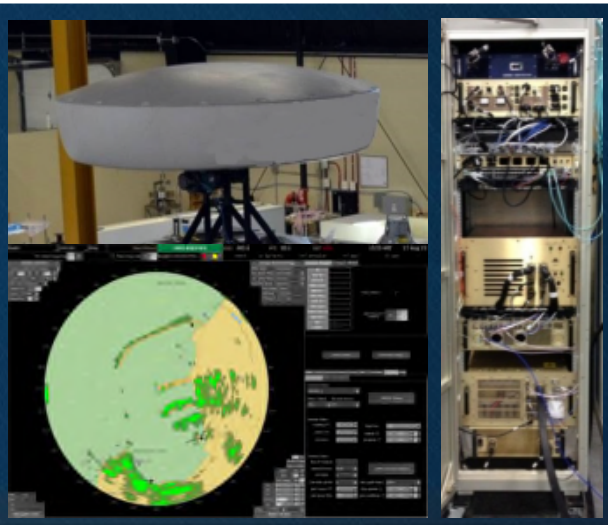
Topic Title: Adaptive Radar Algorithms for Next Generation Surface Search Radar

Technology Objective: Develop innovative algorithms that enhance the Next Generation Surface Search Radar capability by exploiting its software-defined achitecture.

Technological Challenge/Risk: Achieving sufficient software utility and modularity.

Transition Program: Transitions to the NGSSR program as a software update.

Topic Author: Lawrence Dressman



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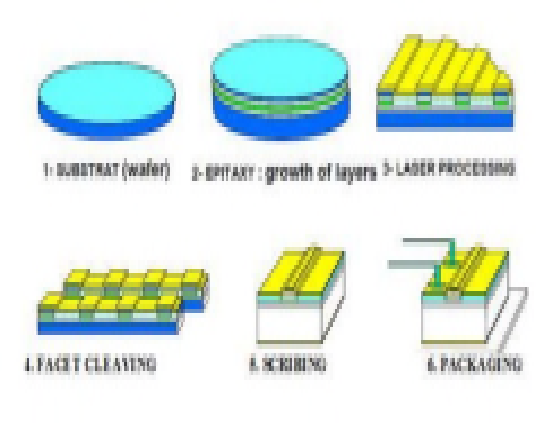


Topic Number: N191-031

Topic Title: Quantum Cascade Laser Manufacturing Cost Reduction

Technology Objective: Develop and demonstrate a new standardized fabrication process for quantum cascade lasers (QCLs) operating in the mid-wave IR (MWIR) band that is optimized for repeatable and cost effective manufacture.

Technological Challenge/Risk: Achieving 10:1 cost reduction.

Transition Program: Technology transitions directly to the SEWIP Block 4 future program of record during development as a fundamental component-level technology.

Topic Author: Lawrence Dressman

Topic Number: N191-033

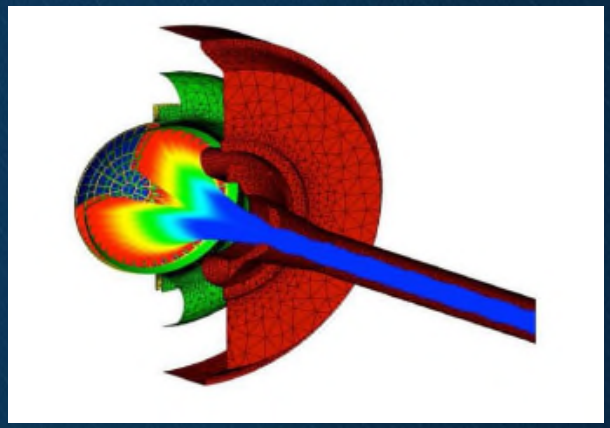
Topic Title: Spatially Distributed Electron Beam Gun for High Pulse Repetition Rate Operation

Technology Objective: Develop and demonstrate a high current density, low voltage electron gun based suitable for millimeter wave vacuum devices.

Technological Challenge/Risk: Achieving sufficient current density and life with novel cathode materials.

Transition Program: Transitions to a NRL development program for future insertion into surface EW and countermeasures.

Topic Author: Lawrence Dressman



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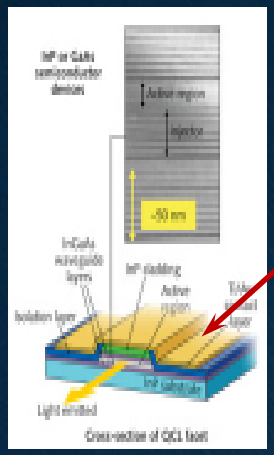

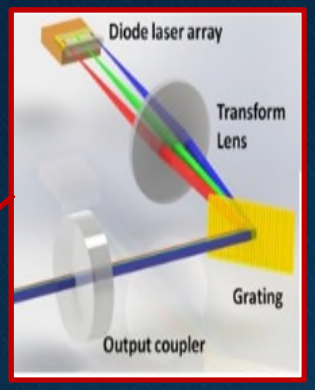

Topic Number: N19A-T005

Topic Title: Quantum Cascade Laser Array with Integral Wavelength Beam Combining

Technology Objective: Develop and demo an array of quantum cascade lasers (QCLs) with integral "on-chip" wavelength beam combining.

Technological Challenge/Risk: Achieving on-chip wavelength beam combining of 20 or more quantum cascade lasers (QCLs) with at least 80% combing efficiency.

Transition Program: Technology transitions directly to the SEWIP Block 4 future program of record during development as a fundamental component-level technology incorporated into multiple IR laser modules.

Topic Author: Lawrence Dressman

PEO IWS 3.0

NAVSEA SBIR/STTR
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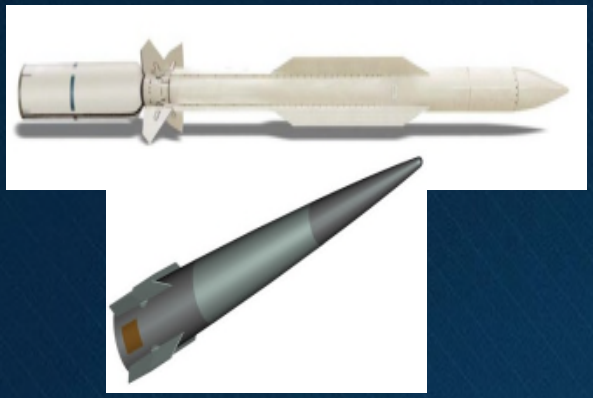


Topic Number: N191-026

Topic Title: Antennas and Antenna Radomes for Missile Applications with Extreme Thermal Shock Resistance

Technology Objective: Develop conformal antenna and antenna cover (radome) materials that provide stable antenna performance in increasingly demanding flight environments (e.g., high acceleration, high altitude, weather, and time of flight).

Technological Challenge/Risk: Providing material solution(s) meeting the demanding flight environment while maintaining conformal shape and structural integrity.

Transition Program: This technology will be developed for and transitioned to Navy Missiles (e.g. STANDARD Missile SM-6) and Guided Projectiles (e.g., Hypervelocity Projectile (HVP)/Long Range Guided Projectile)

Topic Author: Curtis Martin

PEO IWS 5.0

NAVSEA SBIR/STTR
PEO IWS

Energy distribution is exploitable for classification

Topic Number: N191-016

Topic Title: Clustering and Association for Active Sonar Tracking and Classification

Technology Objective: Improve active sonar tracking and classification performance using improved energy clustering and association techniques to represent the spatial and doppler distribution of active sonar returns.

Technological Challenge/Risk: Standard clustering techniques associate energy by proximity and represent as a point (range, bearing, doppler). Real sonar energy is spread in these dimensions and contains information lost in standard techniques. Novel clustering techniques are needed to exploit energy distribution for tracking and classification.

Transition Program: Initial technology transition will be targeted for the AN/SQQ-89 Advanced Capability Build (ACB) 23/25, as well as the Littoral Combat Ship (LCS).

Topic Author: Meg Stout

Topic Number: N191-035

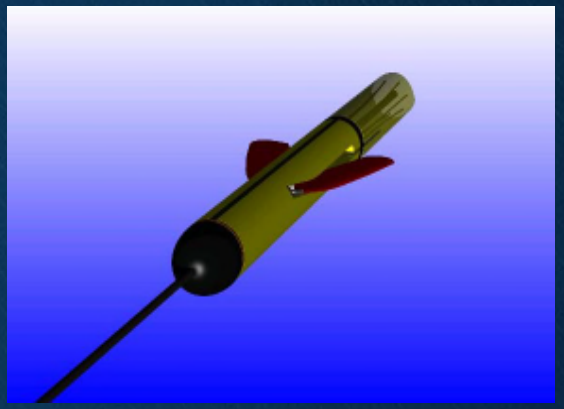
Topic Title: Fat-Line Towed Array Aft Stabilizer

Technology Objective: Develop a passive or active control system that stabilizes the aft end of fat line arrays while under tow.

Technological Challenge/Risk: Towed arrays are often towed in conditions where turbulence is found and the length is limited for adding a stabilization module to the aft end. A compact device to maximize aft stability is needed.

Transition Program: Initial technology transition will be targeted for the TB-34X and TB-34 programs and followed up by the TB-16() programs

Topic Author: Michael Williams



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Topic Number: N191-036

Topic Title: High Speed Threat Detection

Technology Objective: Big Data Solutions for High Speed Threat Detection and Classification

Technological Challenge/Risk: Passive processing in modern sonar systems produces hundreds of display surface options with associated automation, most of which has been optimized for slow targets. Desire to leverage big data analysis tools to improve capability to detect high speed threats (e.g., torpedoes, rogue surface vessels)

Transition Program: Initial technology transition will be targeted for the AN/SQQ-89 Advanced Capability Build (ACB) 23, as well as the Littoral Combat Ship (LCS).

Topic Author: Ken Andronowitz

Topic Number: N19A-T012

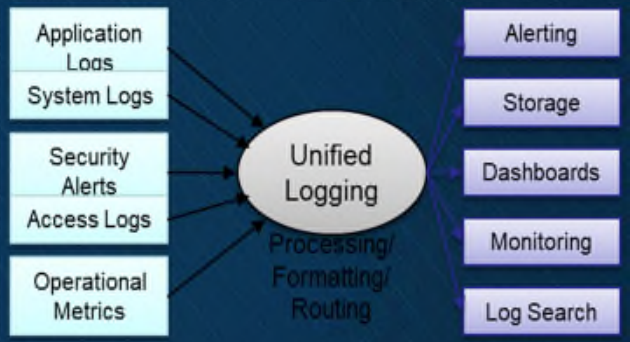
Topic Title: Unified Logging Layer

Technology Objective: Provide a unified logging layer for all application, host, network, and sensor logs and alerts.

Technological Challenge/Risk: The unified logging layer would provide a pipeline for logs /alerts from current and future data sources into a standard format for consumption by monitoring, alerting, and storage systems in a modular architecture.

Transition Program: Initial technology transition will be targeted for CY23-24.

Topic Author: Robert McNeal



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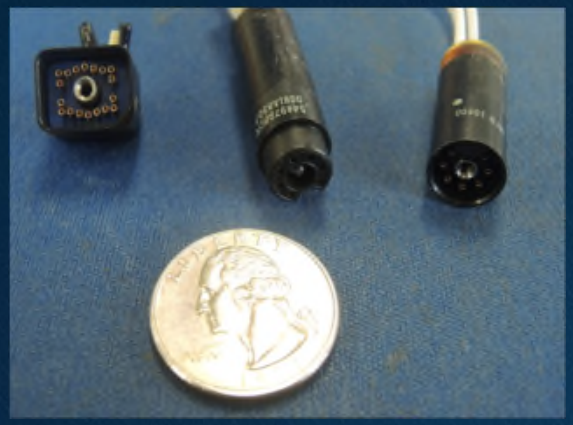


Topic Number: N19A-T014

Topic Title: Low Cost, High Density, Harsh Environment, Miniature Electronics Connector

Technology Objective: Develop a high density, low cost miniature, marine environment, high pressure electrical connector to replace the present connectors used in towed systems.

Technological Challenge/Risk: Manufacture of a high reliability miniature connector for these environmental constraints is difficult.

Transition Program: Initial technology transition will be targeted for the Open Architecture Telemetry (OAT) program and followed up by the TB-29X and TB-37X programs

Topic Author: Robert Cutler

NAVAIR Overview and Topics

Navy SBIR/STTR Topics Workshop

03 Dec 2018

Presented to: New England Business Association

Presented by: Tony Brescia / NAVAIR 4.5 National S&T Lead

NAVAIR

N191-006

US Navy Photo
180920-N-CR843-080

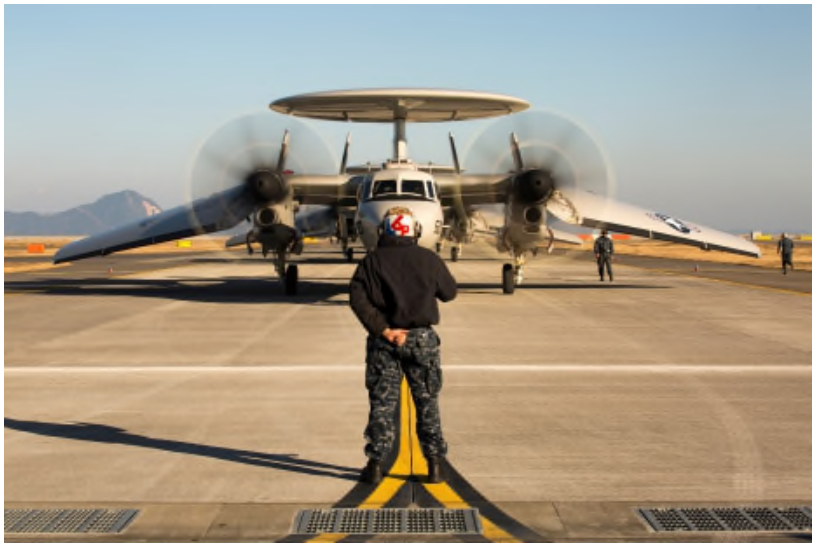
Topic Title: Compact Radio Frequency-to-Optical Transmitter for Airborne Military Environments

Description: Develop and package a radio frequency (RF) to optical transmitter in a compact form factor, operating at 1.55 micron wavelengths, for wideband RF photonics applications.

Sponsoring PMAs: PMA-234, PMA-290

TPOC: NAWCAD, (301) 342-9115

N191-007



US Navy Photo
170202-M-HD015-0078

Topic Title: Data Analytics Tools for the Automated Logistics Environment (ALE)

Description: Develop a toolset that would leverage machine learning and analytics to analyze the system design with Automated Logistics Environment (ALE) data collected across the fleet to design and develop improved maintenance procedures that will improve readiness.

Sponsoring PMAs: PMA-231, PMA-260, PMA-262

TPOC: NAWCAD, (301) 757-6592

N191-008

Topic Title: Improved Quantum Efficiency Photo-Detector

Description: Develop a photo-receiver device with high quantum efficiency, low noise, and high dynamic range, and that is optimized for operation in the blue-green region of the electromagnetic spectrum.

Sponsoring PMAs: PMA-264, PMA-299

TPOC: NAWCAD, (301) 342-2034

N191-010

US Navy Photo
181116-N-FC670-1620

Topic Title: Miniature Diode-Pumped Solid State Laser for Military and Aerospace Environments

Description: Develop and package fiber pigtailed high-power diode-pumped solid state lasers, operating at 1.55, 1.06, and 1.32 micron wavelengths, for wideband Radio Frequency (RF) photonics applications.

Sponsoring PMAs: JSF, PMA-272, PMA-290

TPOC: NAWCAD, (301) 342-9115

N191-011

US Navy Photo
140918-N-UZ648-009

Topic Title: Automatic Threat Radar Waveform Recognition

Description: Develop an automatic radar waveform detector using passive radio frequency sensors such as existing radar receivers to detect, discern, classify, locate, and track low-probability of intercept (LPI) radars.

Sponsoring PMAs: PMA-262, PMA - 268, PMA-299 (ASW)

TPOC: NAWCAD, (301) 904-4742

N191-012

Topic Title: Mid-Wave Infrared Polarization-Maintaining Single Mode Fiber

Description: Develop single mode polarization-maintaining fiber (PM-fiber) that covers the Mid-Wave Infrared (MWIR) wavelengths from 2um – 6um for applications that require a high polarization extinction ratio at the fiber output and is able to waveguide tens of watts of optical power through the fiber.

Sponsoring PMAs: PMA-272

TPOC: NAWCAD, (904) 790-5916

N19A-T002

US Navy Photo
140918-N-JQ696-147

Topic Title: Enhanced Sensor Resource Management Utilizing Bayesian Inference

Description: Augment traditional first order logic sensor resource management approaches by employing Bayesian inference approaches that leverage information that is accumulated over a surveillance mission in a confined area of interest.

Sponsoring PMAs: PMA-262, PMA 268, PMA-290, PMA-299

TPOC: NAWCAD, (301) 904-4742

DARPA Overview

DARPA SBIR/STTR Programs

POC/Website: David Busigo, Office Director and Susan Celis, Program Director Small Business Programs Office and SBIR/STTR Program Manager. Visit http://www.darpa.mil/work-with-us/for-small-businesses to learn more. Contact us: sbir@darpa.mil

Mission - Creating breakthrough technologies for national security. By making pivotal investments in new technology-driven ideas for the United States, DARPA imagines and makes possible new capabilities for overcoming the multifaceted threats and challenges that lie ahead. This makes a better, more secure future possible. In an uncertain world, with constrained budgets, providing these new capabilities is more important than ever. For more information regarding DARPA's mission, perspective, and history, visit http://www.darpa.mil/about-us/about-darpa

Uniqueness - DARPA is DoD's innovation engine focused on revolutionary change. DARPA maintains and encourages a culture of innovation and the ability to execute rapidly and effectively. To do this, the agency recruits individuals, who are at the top of their fields -from industry, academia, and government agencies -to tackle difficult challenges and to take big risks that push the limits of their disciplines. Program Managers (PMs) are the key to working with DARPA. PMs are generally with the agency for 3-5 years, and a program typically ends when the PM leaves.

Annual Budget - SBIR ~$88M/STTR ~$12M

Solicitations – DARPA typically participates in 3 SBIR and 1 STTR solicitations per year.

Topics - Average 18 SBIR and 6 STTR Topics per year

Awards - Average 75 Phase I contracts per year ranging from $150-225K. Average 25 Phase II contracts per year up to $1.5M.

Commercialization Assistance - DARPA offers 24-month Transition and Commercialization Support Program for all Phase II awardees. See our Fact Sheet: http://www.darpa.mil/work-with-us/for-small-businesses/commercialization-continued

DARPA's research portfolio is managed by six technology offices charged with developing breakthrough technologies.

Biological Technologies Office (BTO):

Bio-complexity | Bio-systems | Disease | Health | Med-Devices | Syn-Bio

Defense Science Office (DSO):

Autonomy | Complexity | Fundamentals | Materials | Math | Sensors

Information Innovation Office (I2O*):*

Algorithms | Cyber | Data | ISR | Networking | Processing | Programming

Microsystems Technology Office (MTO):

Decentralization | Electronics | EW | Globalization | Microsystems | Mobile | Photonics | PNT | Spectrum

Strategic Technology Office (STO):

Air | Communications | Countermeasures | EW | ISR | Mobile | Spectrum | Tech-Foundations

Tactical Technology Office (TTO):

Air | Ground | ISR | Maritime | Munitions | Robotics | Space