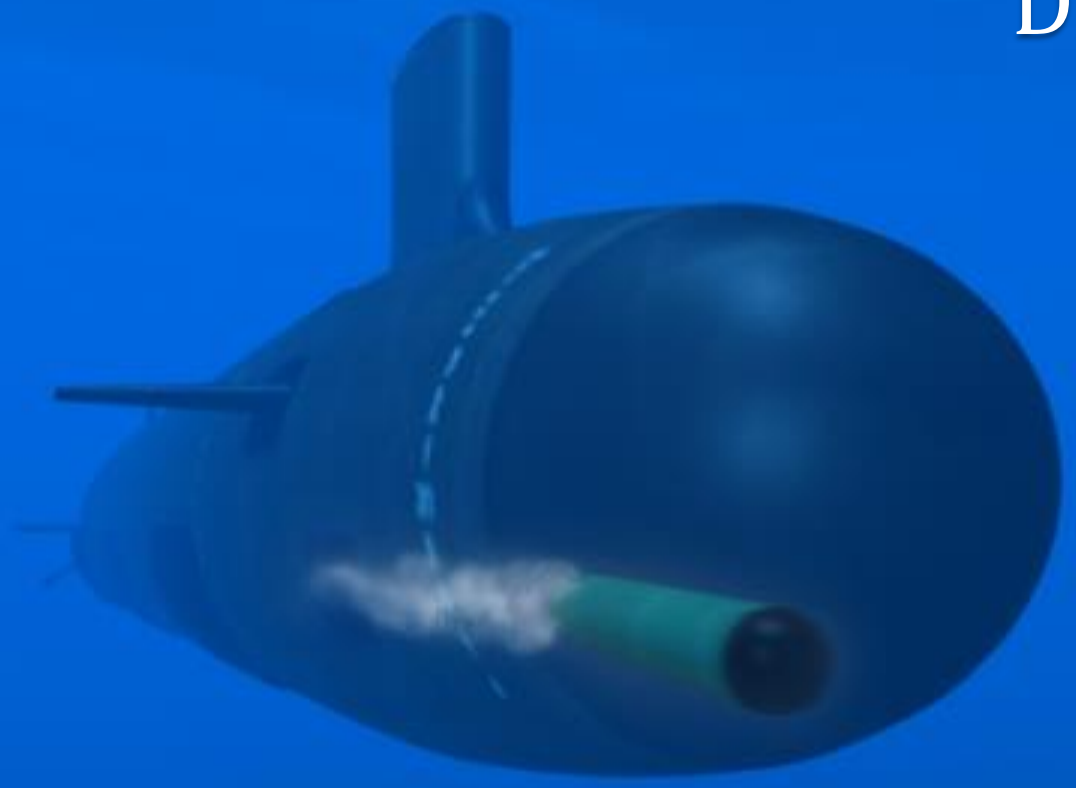
Naval Undersea Warfare Center

Division Newport



Captain Michael R. Coughlin, USN
Commanding Officer
NUWC Division Newport

Ronald A. Vien, SES
Technical Director
NUWC Division Newport

Approved for Public Release Distribution is Unlimited

18-NUWC-GRA/0049 FY18V14

NUWC Division Newport

Undersea Superiority Today and Tomorrow

We research, develop, test, evaluate, engineer, analyze, and deliver undersea warfare capabilities to expand United States Navy readiness

PEOPLE

Empower our diverse team of world-class professionals

PROCESS

Optimize speed, agility, and rigor of our technical and business processes

RESULTS

Ensure fleet readiness today and innovate for next generation systems tomorrow

Navy's Design for Maintaining Maritime Superiority

- Strengthen Naval Power
- Achieve High Velocity Learning
- Strengthen Navy Team
- Expand and Strengthen Our Network of Partners

NUWC Focus Areas

- Execute with Excellence
- Continuously Build and Shape a Capable Workforce
- Drive a Culture of Affordability
- Shape and Maintain Technical and Business Capabilities
- Improve Cybersecurity in Products and Processes

NAVY NAVSEA NUWC

Division Newport's Innovation Engine

NAVSEA WARFARE CENTERS NEWPORT

NUWC Newport

Facilities

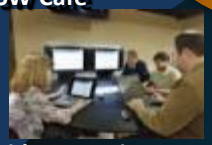
Narragansett Bay Test Facility

Virginia Payload Tube Facility

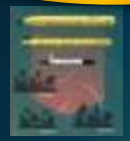
SSN Secure

AUV Development Laboratory

USW Café



Rapid Innovation Center

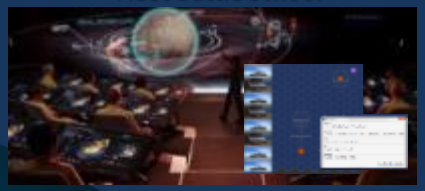


Cyber DeVIL Newport

Virtual Worlds

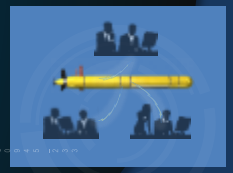
Innovative Solutions

Fleet Battle School



AWESUM

URCIs



Cyber Challenge

Challenges

- Navy Guidance
- ONR
- Leadership Challenges
- Stakeholder and Fleet Interactions
- Future Concepts Steering Group
- Council of Innovation

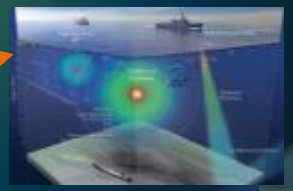
USW Innovation Hub

Workforce Development

- 219
- Tech Explorers
- NUWC University
- Lecture Series
- Advanced Degrees and Certifications
- Mentoring
- Research
- External Courses
- Rotational Assignments

Processes

- Hackathons
- Systems Engineering
- Prototyping
- Analysis
- Modeling and Simulation



USW Monitoring

FMAUV

Advanced Buoyant Cable Antenna

Strategic Alignment

NAVSEA WARFARE CENTERS NEWPORT

Drivers

Today's Navy/ The Navy in Operation

Customer Tasking from PEOs, Urgent Fleet Needs

Tomorrow's Navy/ The Navy in Construction

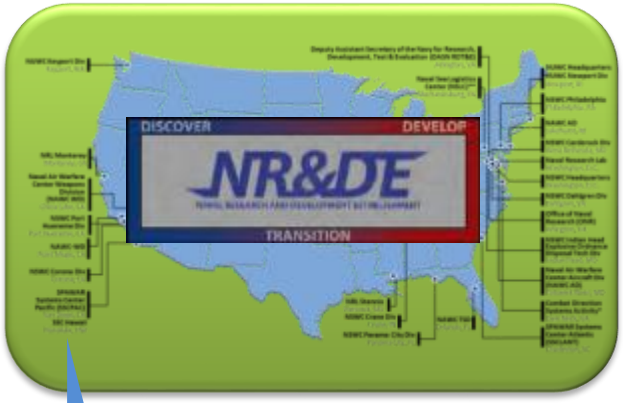
ONR, DARPA, NR&DE Rapid Prototyping, etc

Navy After Next/ The Navy in Planning

Future Capability Requirements from DoN S&T and RDT&E 30-Year Strategic Plan

Division Strategic Guidance

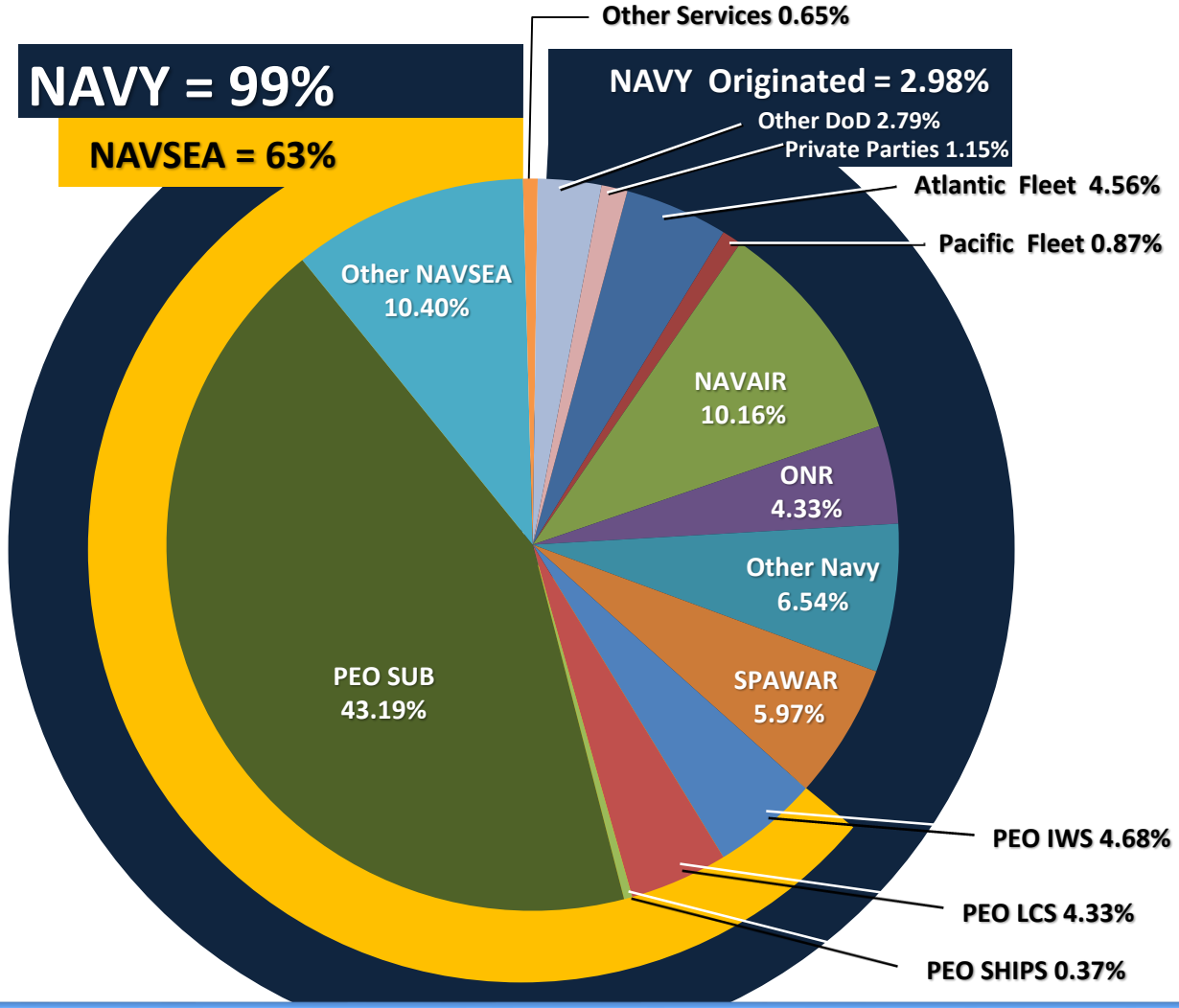
Enabling Technologies



- Promote NR&DE Collaboration
- Develop/shape workforce
- Increase Innovation / S&T Opportunities
- Revitalize Infrastructure
- Develop war room to provide situational awareness into USW strategy, challenges, opportunities and Division activity

NUWCDIVNPT Customers – All Funding

Our FY17 Customers
$1,176M



We are a Navy Working Capital Fund Activity

- We're not a congressional line item
- Customers decide whether to bring work to the Warfare Centers
- NUWC is accountable for efficient delivery of products and services

Spectrum of Customers

- Fleet
- Program and resource sponsors
- Scientific sponsors
- Intelligence community
- Defense industry
- Non-defense industry
- Foreign Navies

Provide Best Value to Our Customers

NUWC Division, Newport

NAVSEA WARFARE CENTERS NEWPORT

COMMANDING OFFICER
CAPT Michael R. Coughlin
USN 00

TECHNICAL DIRECTOR
Ronald A. Vien, SES
TD

CHIEF STAFF OFFICER
Executive Officer
CDR Marc Picard — CSO

OFFICER IN CHARGE
Detach AUTEC
CDR Craig Shillinger — 05

COMPTROLLER
Adam Macksoud — 01

DEPUTY USW SYSTEMS ENGINEERING
Patricia Eno — SEA05NB

CONTRACTS DEPT
Denise Abraham — 02

CORPORATE OPERATIONS DEPT
Vicki Comeau — 10

DEPUTY/TECHNICAL OPERATIONS
Donald Aker, SSTM — TDB

CUSTOMER ADVOCATE
John Babb — 0CA

STRATEGIC PLANNING
Dawn Vaillancourt — 00X

USW UNMANNED SYSTEMS & AUTONOMOUS BEHAVIOR
Christopher Egan, SSTM

DEPUTY/TECHNICAL EXCELLENCE
Vacant — TDB

CHIEF TECHNOLOGY OFFICE
Dr. Vittorio Ricci, SSTM — 00T

CHIEF ENGINEER
Joseph Gabriel (acting) — 00E

USW ELECTROMAGNETIC MANEUVER SYSTEMS
Darlene Sullivan, SSTM

USW PROTOTYPING
Denise Crimmins, SSTM — TDB

CYBERSECURITY USW COMBAT SYS INTEGRATION
Pat Kelley, SSTM

NON-TRADITIONAL SENSORS & PROCESSING SYSTEMS
Dr. Ben Gauthier, SSTM

UNDERSEA SENSORS TECHNOLOGY
David Pistacchio, SSTM

Technical Departments

SENSORS AND SONAR SYSTEMS
Joseph Sheltry, SSTM — 15

USW COMBAT SYSTEMS
Marie Bussiere, SSTM — 25

USW ELECTRO-MAGNETIC SYSTEMS
Dr. Jerry Exley, SSTM — 34

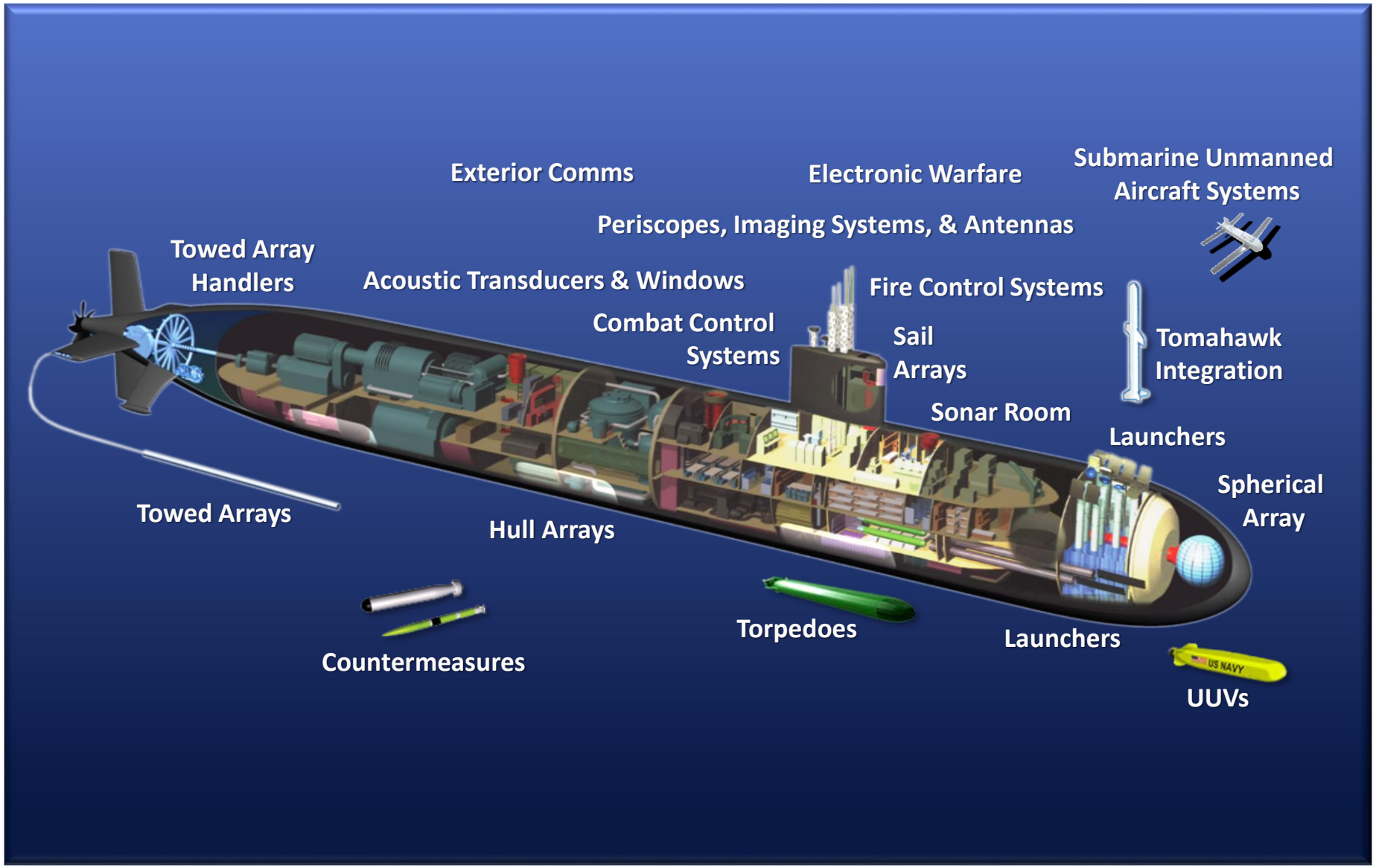
PLATFORM AND PAYLOAD INTEGRATION
Christopher DelMastro, SSTM — 40

USW MISSION ENGINEERING AND ANALYSIS
David Grande, SSTM — 60

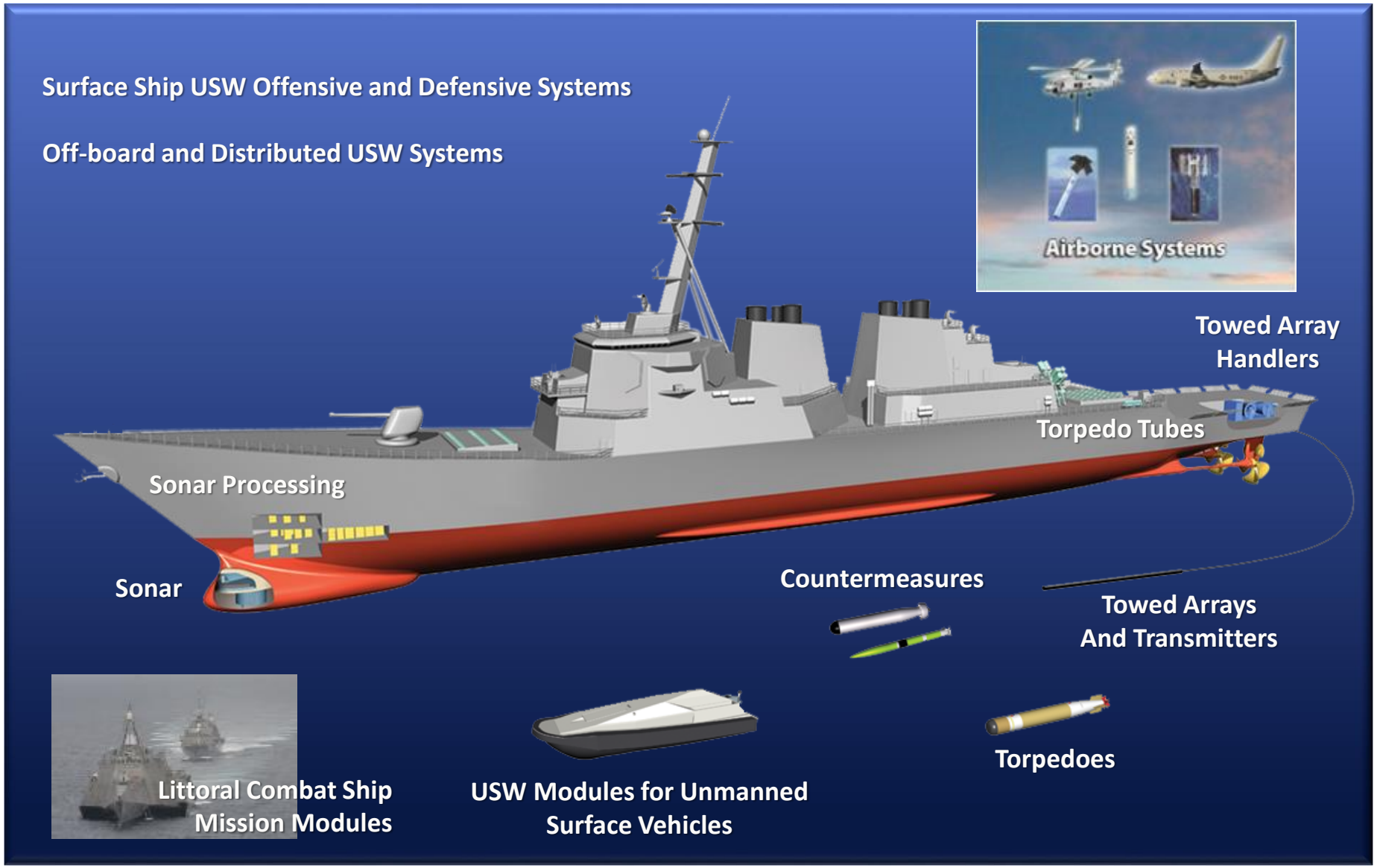
RANGES, ENGINEERING AND ANALYSIS
Eric Spigel, SSTM — 70

USW WEAPONS, VEHICLES AND DEFENSIVE SYS
Christopher DelMastro, SSTM (acting) — 85

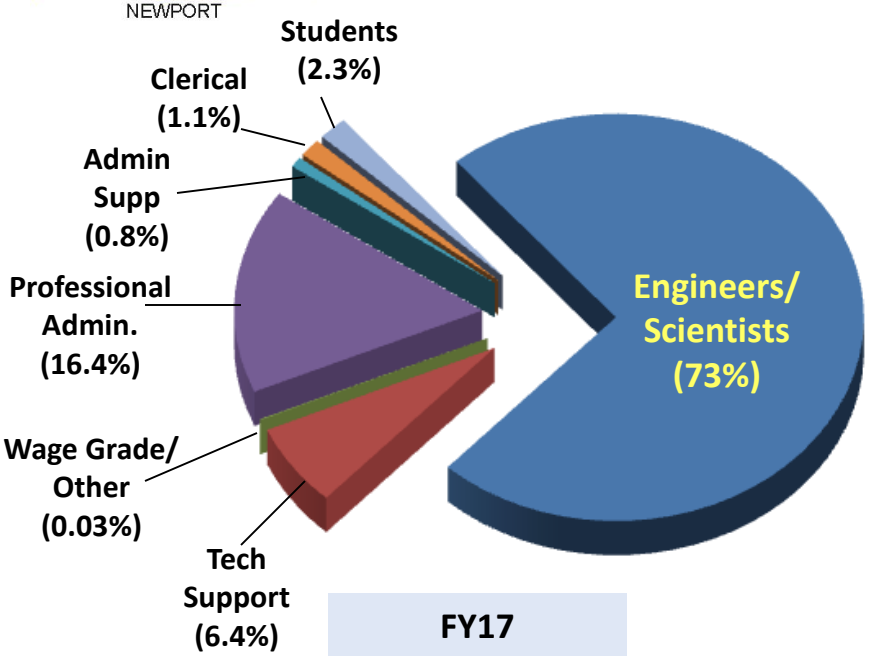
Division Newport Providing Expertise in Submarine Technology



Division Newport Providing Expertise in Surface Ship Technology



Our People



FY17	
Civilian	3,212
Military	41

- 74% Of Our Workforce are Engineers and Scientists
- 28% of Our Scientists and Engineers Have Advanced Degrees
  - 147 PhDs (5%)
  - 763 Masters (24%)
- An Award Winning Workforce
  - 42 Winners in Award Programs FY17-Highest Total winners for all warfare centers

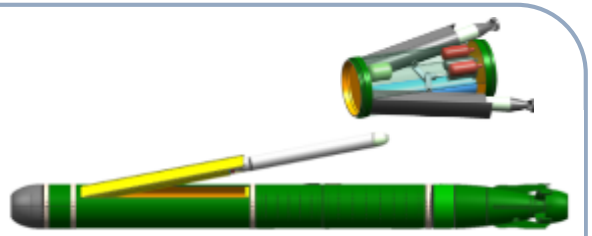
Total Employment by Classification	Civil Service	Contract WYs	Est Overall Employment
Engineering/Science	2344	779	3123
Technical Support	205	637	842
Professional Administrative	528	829	1357
Administrative Support	25	108	133
Clerical	36	105	141
Wage Grade/Other	1	85	86
Students	73	0	73
Total	3,212	2,543	5,755

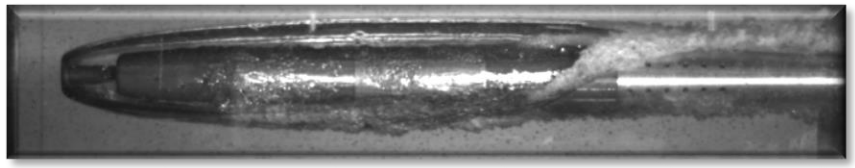
Data as of 9/30/2017

Externally recognized innovative workforce in place to support Undersea Warfare to maintain Maritime Superiority

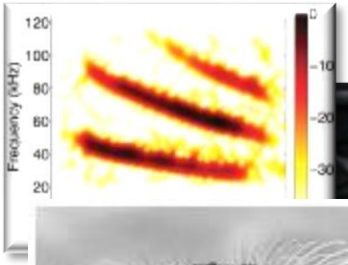
Focusing on Innovation in USW

Weapons & Vehicles





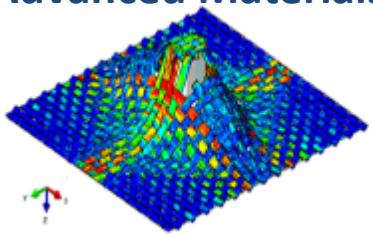
Biologically Inspired

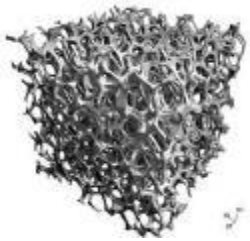


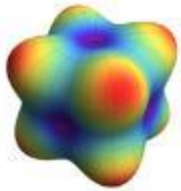
Sensors

Marine Mammal Behavior

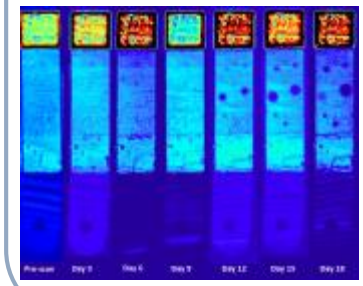
Advanced Materials

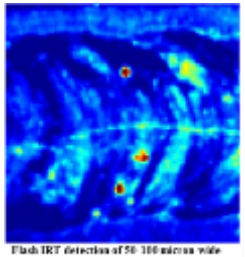






Non-Destructive Evaluation

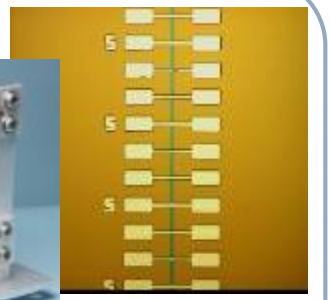




Flash IRT detection of 50-100 micron wide crack in a MIG welded steel plate. Note: The crack is the line in the middle. The red spots are lost weld oxides.

Lasers & Optics

Antennas



Division Newport
Contributing to the Navy After Next

NAVSEA WARFARE CENTERS NEWPORT

Theater Based Undersea Warfare Capabilities

- Wargames
- Innovation Events

Sensors & Sonar

- Distributed Sensing for Missions from Under the Sea

Platform & Payload Integration

- Transformational Weapons Integration to expand mission portfolio and use available volume most efficiently

Communications

- Stealthy communications to support interoperability

USW Imaging

- Multifunction masts combining communications, EW, and Imaging

USW Combat Systems

- On Demand System Upgrades
- Adaptive Task Management
- Automated Tactical Agents
- Flexible Payload Support

✓ Own the Best
✓ Grow longer arms
✓ Beat the adversary's "system"
✓ Protect our Strategic Assets and Threaten Theirs
✓ Get on the same page
✓ Get faster
✓ Be the Best*

* Commander's Intent for the United Stated Submarine Force and Supporting Organizations" - December 2015

Undersea Distributed Networked Systems

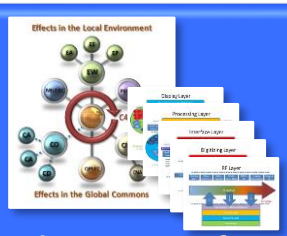
- Multi-Phenomenology Sensor Field
- Coatings: Biofouling & Anti-Corrosion

Ranges

- Indiscriminate Target Tracking
- Adaptive Signal Processing & Sensors
- Distributed & Autonomous Sensors
- Marine Mammal Behavior

USW Weapons & Autonomous Vehicles

- Undersea Autonomous Influence Convergence
- Autonomy
- Long Endurance Power Sys.
- Multi-Vehicle Collaboration
- Biomimetic Vehicles



Electronic Warfare

- Modular masts
- Multi-spectral imaging
- Panoramic imaging and display
- Advanced Human Machine Interface

Undersea Warfare Analysis

- Evolving National Maritime and Naval Strategies
- Design for USW
  - Resource constrained environment
  - Rapidly evolving threat capabilities

Cooperative Force Torpedo Defense

- Shorten kill chain
- Adaptive Systems and Technologies to Outpace the Threat
- Virtual Environment for M&S and Training

Focused on Innovative Solutions to USW Challenges Across the Spectrum

One Team

CYBER SECURITY END-TO-END EVALUATION

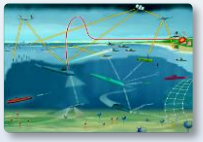
NUWCDIVNPT Campus Network Supports Vulnerability Insight & Certification in Development of Secure & Resilient Submarine Systems & Architectures

Undersea Warfare Systems Engineering Technical Warrants – SEA05N

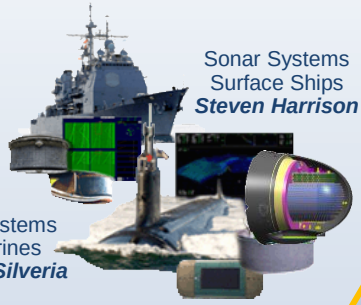
NAVSEA WARFARE CENTERS NEWPORT

USW Defensive Systems
Bradford Wheeler

Exterior Communications and Antenna Systems Submarines
Angela Barclay



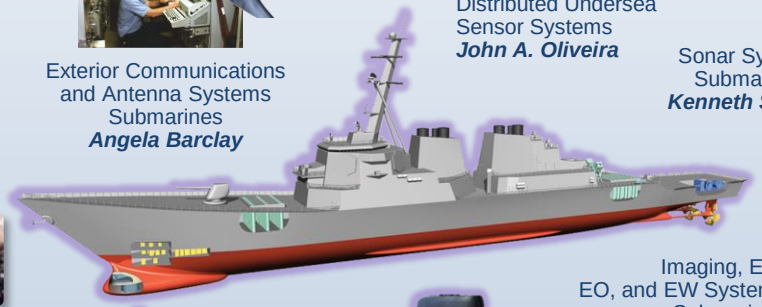
Distributed Undersea Sensor Systems
John A. Oliveira



Sonar Systems Surface Ships
Steven Harrison

Sonar Systems Submarines
Kenneth Silveria

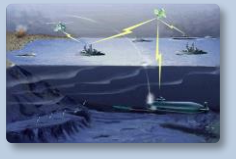
Waterfront CHENG – Keyport Torpedo Depot
Paul Taatjes



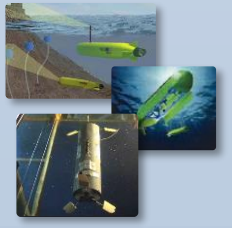
Imaging, EM, EO, and EW Systems Submarines
Darren Almeida

Combat and Weapons Control Systems Submarines
Thomas O'Malley

Undersea Range Tracking Systems
Neal Prater

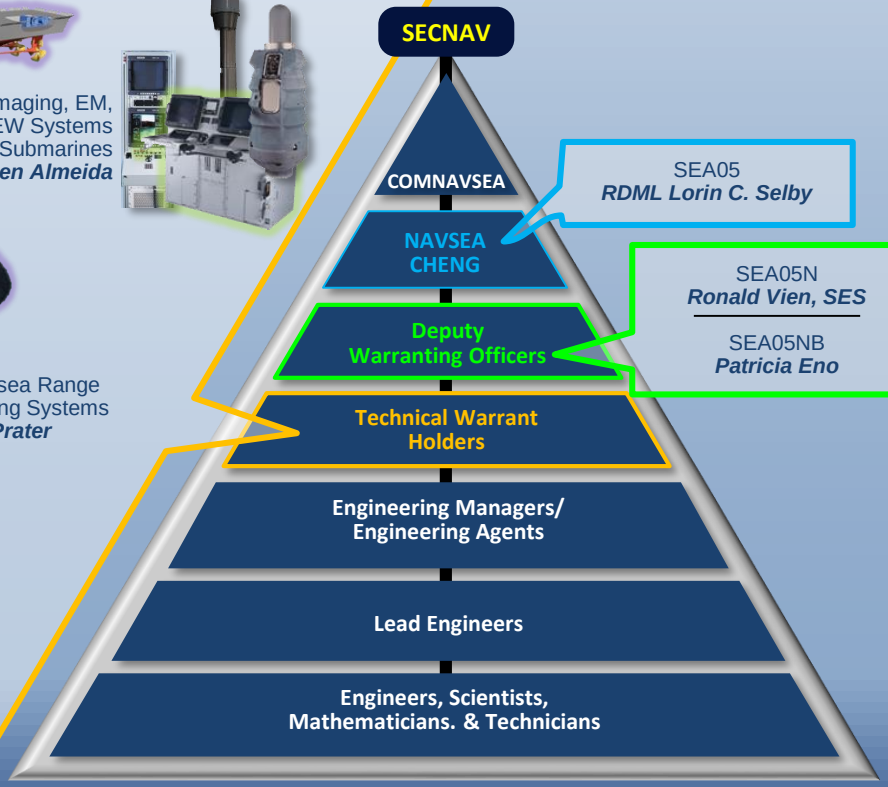


USW Combat and C2 Systems Integration
Steve Harrison (acting)



Unmanned Underwater Vehicles
James Spresser

Torpedoes
Robert Tompkins



Foremost Technical Authority for USW

Collaboration Fuels Global USW Innovation

NAVSEA WARFARE CENTERS NEWPORT

DoD Partners

- Stable, Long Term Investments
  - Stewardships
- High Risk, High Payoff R&D

ONR Office of Naval Research

DARPA

NR&DE

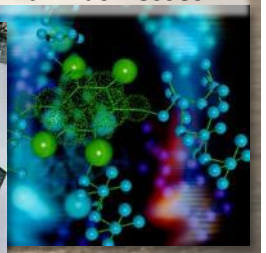
Academia

- Basic Research, Fundamental Ideas, Scientific Talent Pool
  - 40 Educational Partnership Agreements (EPA)

Collaboration Innovation

Industry

- Demo/Validation, Production
  - 76 Cooperative Research & Development Agreements (CRADA)
  - 3 Partnership Intermediary Agreements (PIA)
  - 62 Small Business Innovation Research (SBIR) TPOCs
  - 36% Contracts to Small Businesses



Global Presence

- 198 Reps Worldwide
  - 184 at Detachments/On-Site Offices and In-Service Engineering Agents
  - 14 Field Team Reps

International Components

Foreign Military Sales

- 52 S&T Engagements in 11 Countries
- 76 FMS Cases in 16 Countries

Armament Cooperation Programs

Data Exchange Agreements

Technical Cooperation Programs

Cooperative Research and Development Programs

Division Newport's Global Presence

Detachments (Det), On-Site Offices (OSO), In-Service Engineering Agents (ISEA) and Field Team

198
reps worldwide

CONNECTICUT (24)
RSG Groton, NSS, OSO Niantic, NUWC NLON, SLC, UWDC HQ

NEW YORK (4)
OSO Dresden

MARYLAND (2)
NAS Patuxent River, ONI Suitland

VIRGINIA (60)
Det Manassas, FEO Norfolk, OSO Williamsburg, OSO Virginia Beach, SWOS (Det Norfolk), CDSA Dam Neck, NGNN Shipyard, NWS Yorktown, SCO, CSF, ONR

PENTAGON, D.C. (18)
OPNAV, ASN/RDA, SSP 23, RDSA,, WNY

FLORIDA (55)
AUTEC-Det West Palm Beach, OSO Mayport, OSO Okahumpka

GEORGIA (10)
OSO Kings Bay

WASHINGTON (13)
Det Bangor, OSO Keyport, Port Angeles, Trident Training Facility

CALIFORNIA (2)
SCORE, OSO San Diego

HAWAII (8)
COMSUBPAC, COMPACFLT, NSTCP (Det Newport)

TOKYO (1)
ONR-G Asia

AUSTRALIA (1)
HMS Stirling

184 *Det, OSO and ISEA*
14 *Field Team reps*

Our Forward Presence Enables Rapid Response to Fleet Needs

NAVSEA Warfare Centers

NAVSEA WARFARE CENTERS NEWPORT

Warfare Centers Board of Directors

RDML Thomas Anderson
Commander, NSWC

RDML Moises DelToro III
Commander, NUWC

Donald F. McCormack, SES
Executive Director Warfare Centers

Division Technical Directors

Alan D. Kent, SES
NUWC Keyport

Dr. Brett A. Seidle, SES
NSWC Crane

Dr. Paul Shang, SSTM
(acting) NSWC Carderock

Michael R. Kistler, SES
NSWC Philadelphia

Ronald A. Vien, SES
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