



COMMAND OVERVIEW

Naval Undersea Warfare Center Division, Keyport

Presented to Industry

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CAPT Jon Moretty
Commanding Officer

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Dr. Marty Irvine, SES
Technical Director



Who We Are



- 115 years of undersea expertise
- Undersea weapons
 - Two of three heavyweight IMAs
 - World's only lightweight IMA
- Unmanned vehicles and payloads
- Undersea warfare test and evaluation
- Sustainment engineering
 - Shipyard innovation
 - DoD experts in obsolescence management
 - Custom engineered solutions
- Dispersed: NSLC, Hawaii, San Diego, Nevada, Japan and Guam
- Global partnerships
 - Internationally connected
 - International weapons training courses
 - Torpedo IMAs



NAVSEA Warfare Centers



Enabling Maritime Superiority Today, Tomorrow, and the Navy After Next



Mission-Vision-History

Mission:

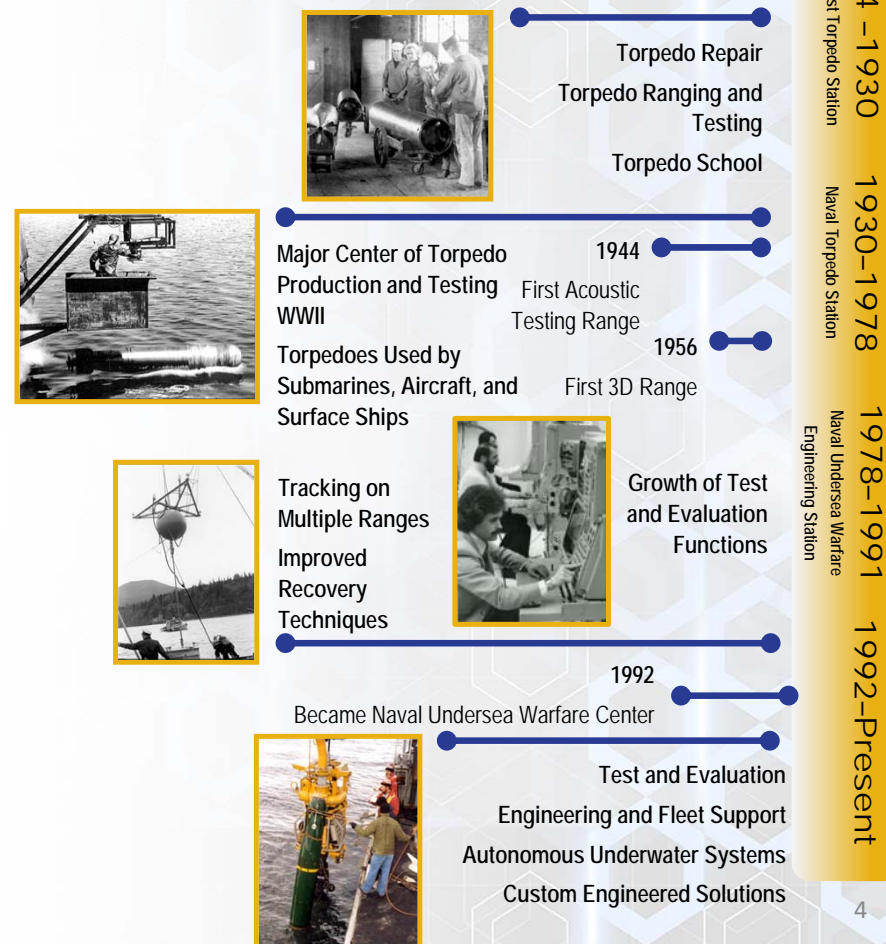
Provide advanced technical capabilities for test and evaluation, in-service engineering, maintenance and industrial base support, fleet material readiness, and obsolescence management for undersea warfare.

Vision:

Expand America's Undersea Dominance

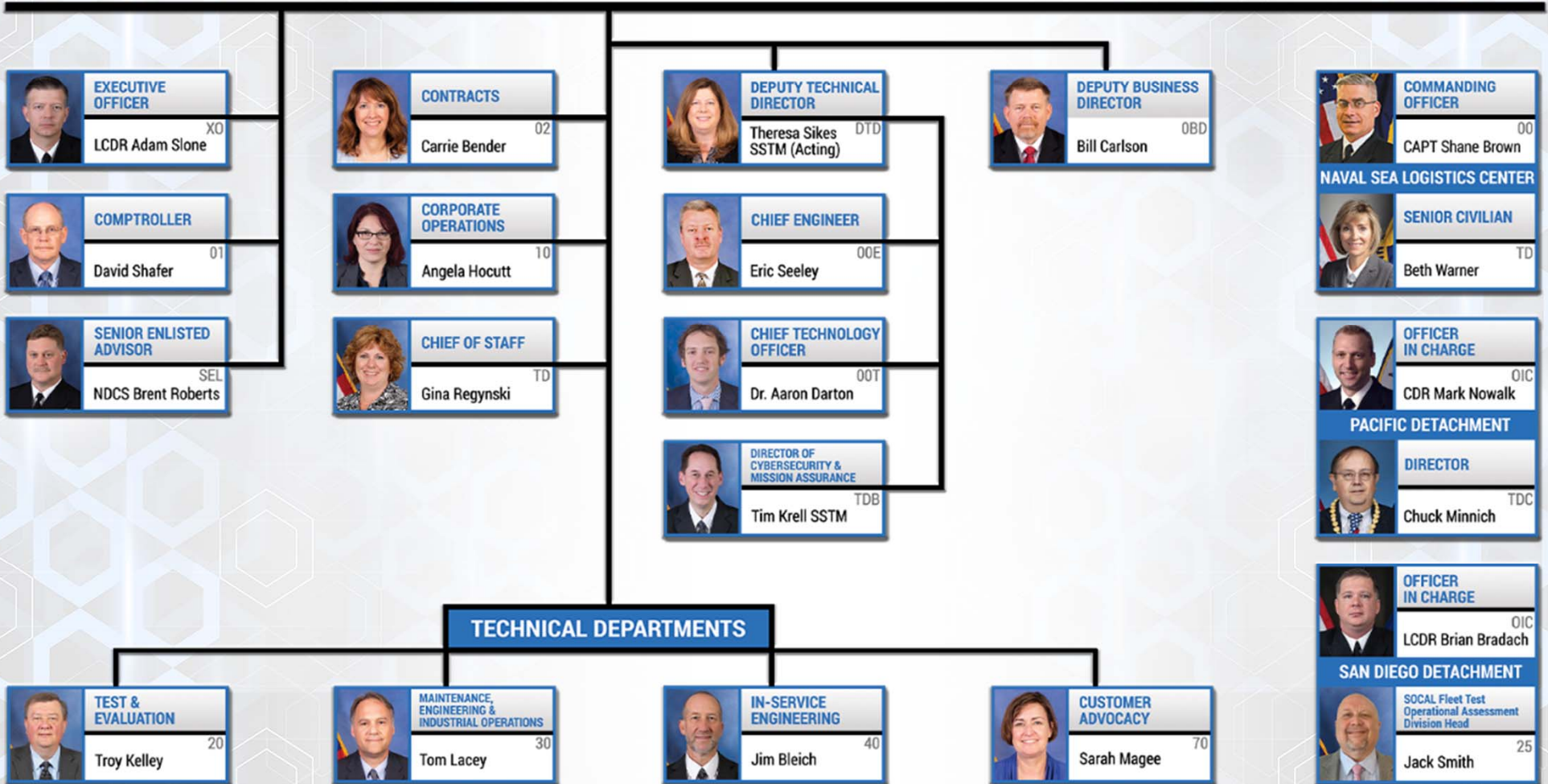
Core equities:

- Undersea weapons research & development, production, and sustainment
- Unmanned underwater vehicles
- Undersea warfare test & evaluation
- Theater undersea warfare
- Obsolescence management
- Prototyping and custom engineered solutions
- Sustainment engineering
- Cyber engineering

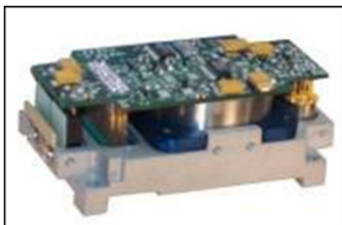




Command Structure



Capabilities



Prototyping & Custom Engineered Solutions

- Custom Engineered Solutions for Material Readiness
- Data science solutions for optimized and predictive maintenance
- Reverse Engineering & Redesign
- Advanced Depot Repair



Data Sciences and Analytics

- Predictable trend analysis
- Reliability analysis
- Manpower readiness tools
- Obsolescence management



USW Weapons and Targets

- Advanced undersea weapons R&D
- Advanced propulsion and energy
- IMA Digital Twin



Unmanned Underwater Vehicles

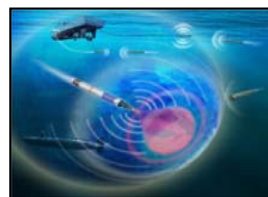
- Advanced undersea vehicles R&D
- Advanced propulsion and energy
- UxS payloads and integration



Ranges – USW Test and Eval

- Range of the future
- Physics-based test & training
- Modeling and simulation
- Sensors and threat emulation
- T&E of autonomous systems

Expanding America's Undersea Dominance
Excellence in execution
Advancing undersea readiness through innovation
Urgency: Delivering tomorrow's capability today
Aligned, better, faster



Undersea Defensive Warfare Systems

- Countermeasure set acoustic ISEA and development
- Special operations forces undersea mobility support



Theater Undersea Warfare

- Aircraft Carrier Tactical Support Center (CV-TSC)
- Undersea Warfare Decision Support System (U)
- Littoral Combat Systems ASW Module



Shipyard & Maintenance Innovation

- Advanced repair and maintenance technologies
- Advanced materials / manufacturing
- Industrial engineering
- In situ automated forward repair systems



Lifecycle Logistics

- Readiness Based Sparing
- Product Modeling and Metrics
- Product Support Element Management
- Outfitting
- Integrated Logistics Supply (ILS) Certifications



Maintenance

- Planned Maintenance System
- Reliability Centered Maintenance (RCM)
- Future of PMS (FoPMS)



Information Technology

- Software Lifecycle Support
- Operations and Information
- Information and Assurance



Engineering

- Navy Special Emphasis Program
- Level I/SUBSAFE
- Engineering Referrals
- DLA 339 Engineering Referrals
- Configuration Data Management
- Item Unique Identification (IUID)

**Deliver the power of innovative logistics solutions to
Expand the Advantage**



Data Sciences and Analytics

- Predictable trend analysis
- Supportability Analysis



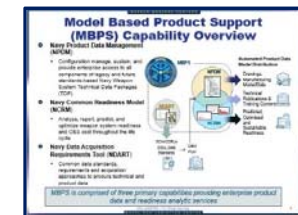
Property Management

- Centralized Warehouse Operations
- FIAR Compliance



Supplier Performance

- Product Data Reporting and Evaluation Program (PDREP)
- Contractor Performance Assessment Reporting System (CPARS)
- Supplier Performance Risk System (SPRS)



Model Based Product Support

- Navy Common Readiness Model (NCRM)
- Navy Product Data Management (NPDM)
- Navy Data Acquisition Requirements Tool (NDART)
- Human Centered Design

Ranges and Strategic Locations



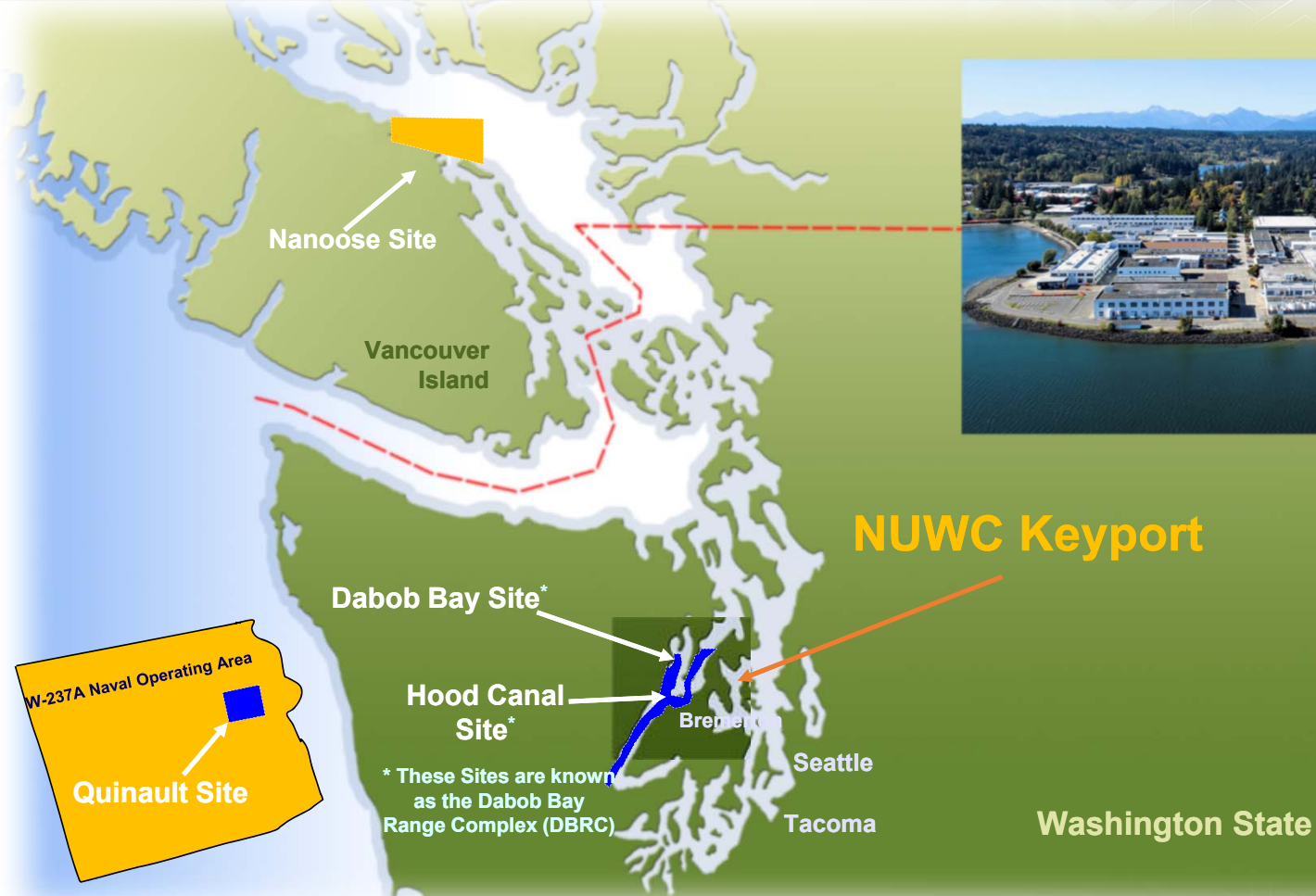
Ranges



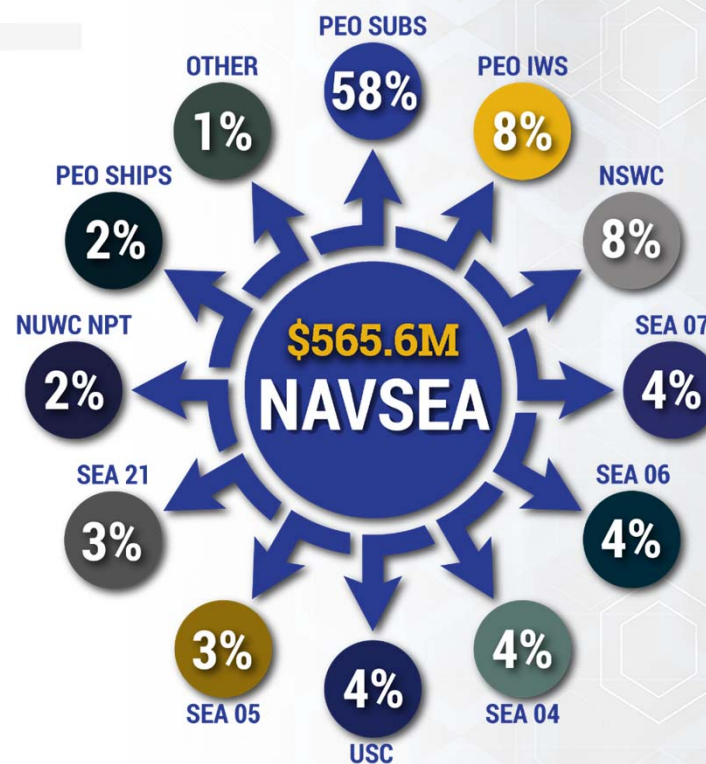
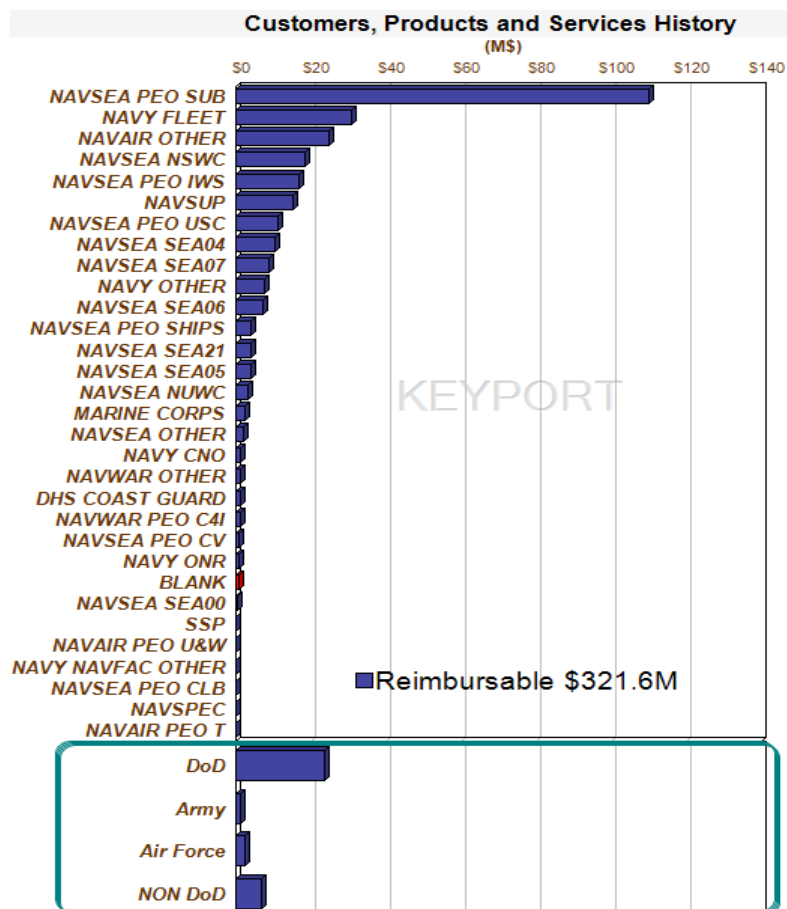
Portable Ranges



Range Operations



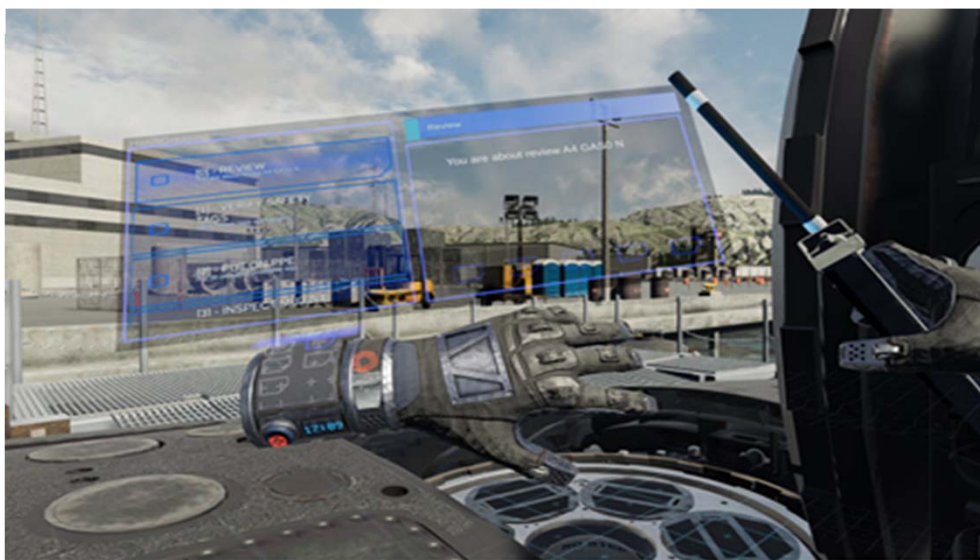
Customers



Total: \$565.6M
New Funds: \$399.6M
Reimbursable: \$321.6M
Direct Cite: \$78M

*as of 30 Sep 2019

Technical Innovation



AR/VR

The implementation of Augmented and Virtual Reality (AR/VR) technologies can revolutionize the way we perform many existing evolutions such as; training, performance support, mission rehearsal, maintenance rehearsal, and system design.

Data Sciences

Adopt and develop data analytics best practices across an integrated suite of In-Service Engineering decision-making tools and processes by 2024 that will transform warfighter readiness and capability.

Cybersecurity

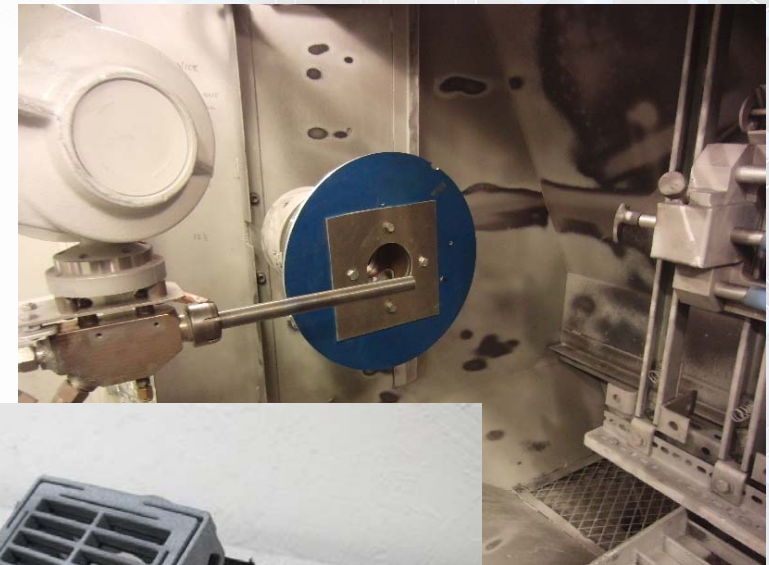
Cyber immunity and cyber hygiene are key pillars in the face of insider and supply chain threats. Traditional compliance based security is important but no longer enough to meet an ever-evolving threat.

Sensor Aggregation

Provide sailors using C2 and combat systems necessary information for threat assessment based on the platform and weapons characteristics of target platforms using threat data from ONI's MEPED database. Provide an independent, portable system to process Sonobuoy data and support analysis in identifying, classifying, and localizing acoustic contacts based on proven government-owned technologies

Technical Innovation

- Technology transfer
 - Northwest Tech Bridge
 - Local / regional / national relationships with industry, national labs and academia
 - Patent Council / Office of Research and Technology Application (ORTA)
 - Relationships with Manufacturing Extension Programs and TechLink
- Patents
 - 11 patent applications filed in first half of FY20
 - Patent-sourcing workshops
- Pedigree
 - Growing pool of S&E with PhDs
 - Key roles on NAVSEA / Navy wide technology initiatives
 - PEO USC S&T Autonomy Lead
 - NAVSEA Cold Spray Program Manager





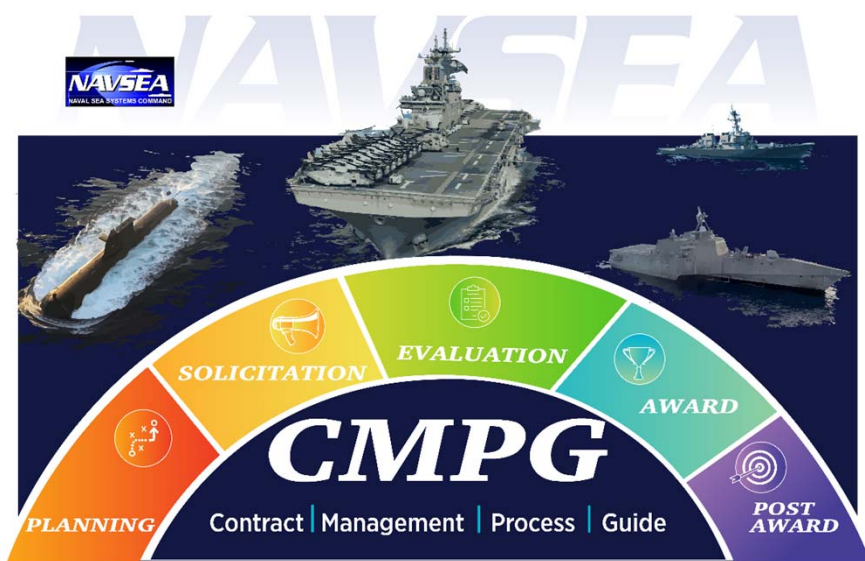
Business Innovation

Property Management

- Procurement request (PR tool)
- Digital property pass

Contracts

- Contract Management Process Guide (CMPG)



Barrier Removals

- 500,000 hours initiative

Comptroller

- Electronic delegation of authority letters
- Leave Overtime Comp time User System (LOCUS)
- Authorities Tracking Tool (ATT)

People

- Development of Propel training for supervisors
- Workforce Management System (WMS) – DEMO/WDS

Command Assessment

- Development of Propel training for WCs
- NAVSEA Enterprise Planning System (NEPS)
- Task Assignment & Acceptance Tool (TAAT)

Information Technology

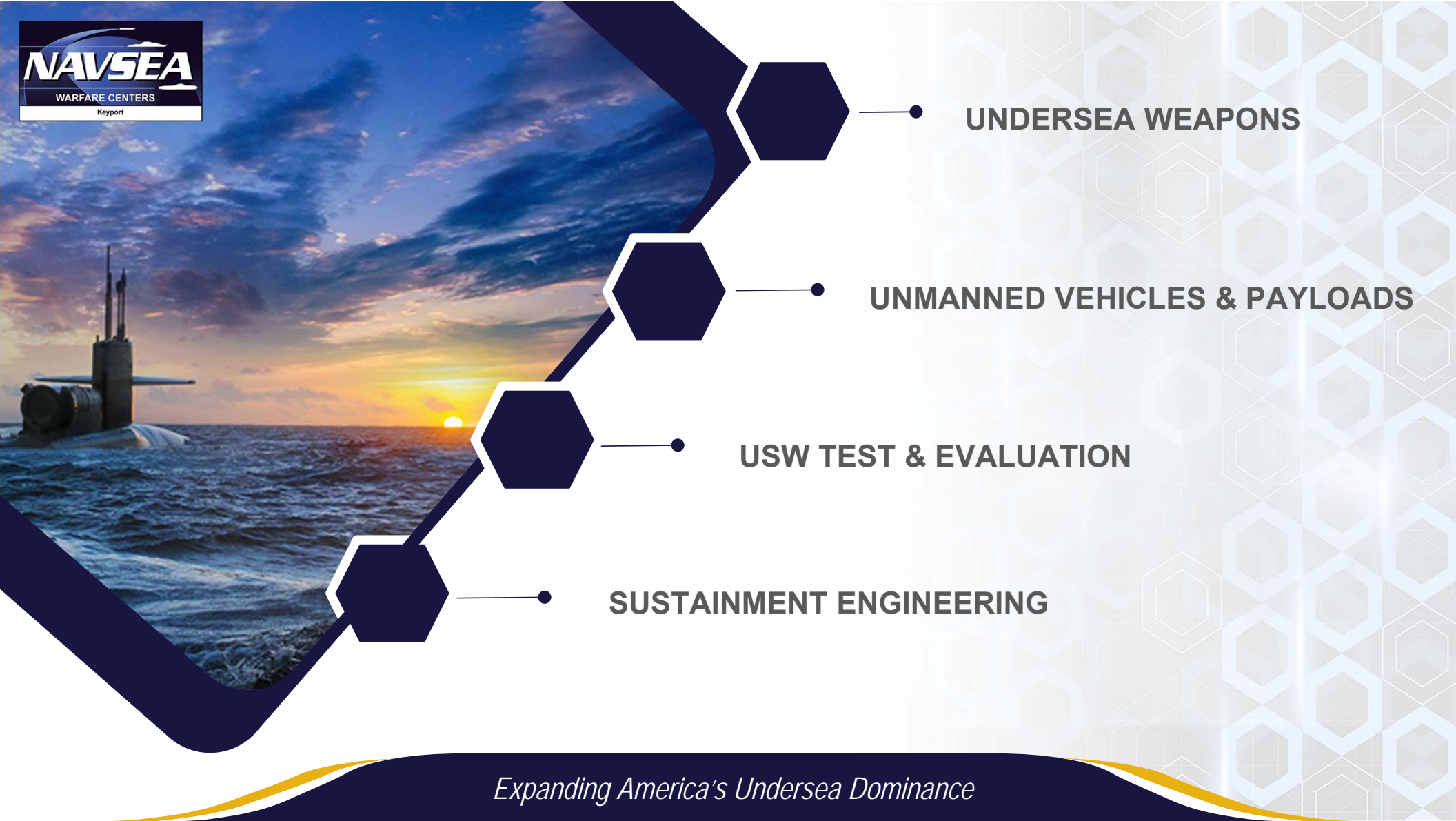
- Desk guides tracking - iNFUSION
- Shop Workload Management System (SWMS)
- Corrective and Preventative Audit Application (CAPA)
- User Wizard (UW)



Partnerships & Collaboration

- Strong recruiting relationships
 - Outreach through senior design projects
 - Collaborative research proposals
 - Research supporting IMA modeling and simulation
 - NEEC collaborations on data analytics, robotics and material science
 - 8 Special Purpose CRADAs
 - 8 Educational Partnership Agreements
 - 3 Program Intermediary Agreements
- Mutually developing research program at local Washington State University campus
 - Long relationship via NEEC on testing autonomy with University of New Hampshire
 - Collaboration on Modeling the Millennia and UUVs for range support
 - Micro grant on UUV fault detection
 - NNED on autonomy testing
 - Collaborating on COVID PPE response with UAF
 - Exploring additional partnerships leveraging UAFs expertise on power and energy and in the Arctic





UNDERSEA WEAPONS

UNMANNED VEHICLES & PAYLOADS

USW TEST & EVALUATION

SUSTAINMENT ENGINEERING

Expanding America's Undersea Dominance

Questions?



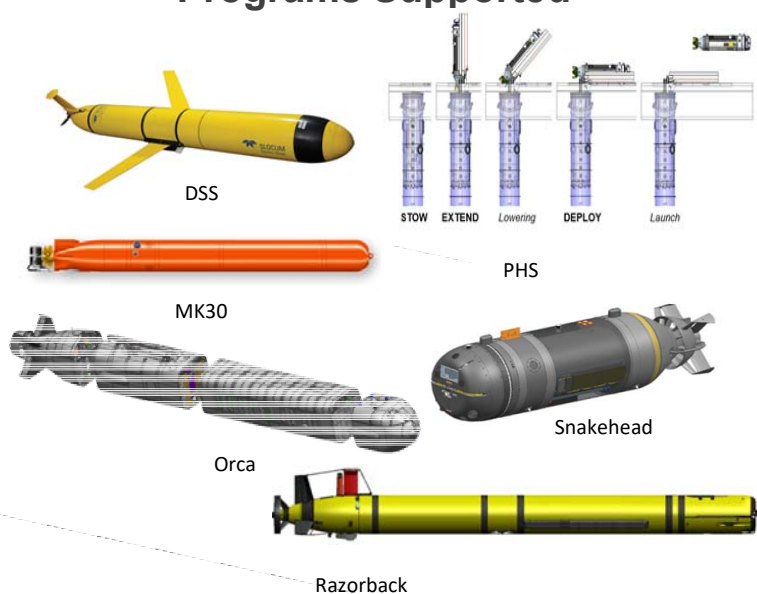
Undersea Weapons

- Weapons research, development, test & evaluation
- Weapons in-service engineering
- Weapons maintenance
- Depot repair
- Fleet material readiness
- Maintenance and repair technology development
- Ordnance handling, transportation, and storage



Unmanned Vehicles & Payloads

Programs Supported



- UUV S&T and R&D
- UUV in-service engineering agent (ISEA)
- UUVRON Homeport
- Payload design and integration

- Advanced propulsion and energy systems
- UUV Maintenance
- Design agent and logistics
- Maintenance planning and process development

USW Test & Evaluation



S&T Experimentation
Testing



R&D / DT Testing



Operational Testing



Production Acceptance

Core capabilities:

- Physics-based test and training (at sea and land-based)
- Performance and assessment
- Test, training and evaluation (TT&E) design and deployment
- System acquisition and procurement
- Modeling and simulation
- Data sciences
- Sensors
- Performance and assessment
- Threat emulation
- T&E of autonomous systems
- LVC

Full-Spectrum T&E Capabilities for S&T, R&D, Technology Evaluation, Systems Acquisition, and In-Service Performance Assessment



Sustainment Engineering



Waterfront Fleet Support

- Submarine ISE support
- Electronic warfare support
- Cyber support
- Technical services



Rapid Prototyping & Manufacturing

- Additive Manufacturing
- Advanced Materials
- Advanced Coating Technologies



Obsolescence Management

- Analysis, prediction and resolution
- Real-time tracking and mitigation

Cybersecurity & Engineering

- Serial protocol inspection
- Zero trust architecture
- Exploitation assessment

Data Sciences and Analytics

- Predictive Trend Analysis
- Reliability Analysis
- Manpower Readiness Tools

Industrial Fabrication

- Circuit Card Prototyping
- Electronics Fabrication
- Metal Fabrication
- Undersea Encapsulated Cables
- Composites and Coatings

Theater Undersea Warfare

- Aircraft Carrier Tactical Support Center (CV-TSC)
- Undersea Warfare Decision Support System (USW-DSS)
- Littoral Combat Systems Anti-Submarine Warfare Module

Submarine In-Service Engineering

- Platform Acquisition Support – VA and CLB Class
- NPES ISE and Logistics (SONAR, CCS, EW, Towed systems, Imaging, RADAR, Hull sensors)
- Acquisition Support – Technical Insertion Hardware
- Non-Tactical Software Development

Fleet Technical Support

- Analysis, Prediction & Resolution
- Real-time Tracking & Mitigation
- AV/VR Training & Maintenance



Undersea Defensive Warfare Systems

- Countermeasures Set Acoustic ISEA and Development
- Special Operations Forces Undersea Mobility Support