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# In-Service Engineering Department

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Distribution Statement A: Approved for Public Release; Distribution is unlimited.

# NUWC Keyport Core Mission Area – In-Service Engineering



## Today's Navy

- Forward presence
- Limited autonomy
- Battlespace awareness
- Integrated defense
- Warfighter performance
- Budget constrained
- Need for in-service system sustainment

- Potential Game Changers/ Disruptive Technologies
- Unmanned Systems
  - Sustainment & Readiness in Denied Environments
  - Data and target fusion
  - Big Data analytics, machine learning, and visualization technologies
  - Augmented/virtual/mixed reality technologies
  - Fully integrated product support and logistic systems
  - Resilient architectures and software assurance



## Next Navy (+5-10 years)

Develop resilient and operationally ready systems that can stay in the fight in denied environments, reduce program life-cycle costs, and lower fleet maintenance burden

- Develop software assurance capabilities to reduce design flaws, improve security, and enhance reliability
- Develop mature AR/VR technologies; evaluating new/emerging human assistive technologies
- Support resilient cybersecurity designs of tactical system and network architectures
- Develop digital sustainment techniques to provide improved forecasting data to ensure material readiness
- Develop product support & logistics capabilities for contested environments
- Develop systems that provide remote diagnosis and effective distance support
- Develop tools and support for unmanned systems
- Develop adaptive data analytics and machine learning capabilities to detect, track and classify objects and fuse multiple data sources

# Enterprise Systems Engineering Division

## Services

- **N00178-04-D-4018-N0025317F3001 In-Service Engineering (ISE)/Integrated Logistics Support (ILS) Support Services**
  - Logistics and engineering support across the department
  - Awarded 01 May 2017
  - Expires 30 Apr 2022
  - BAE Systems (large business)
- **N00178-14-D-7860-FY01 Software Support Services**
  - Software development and maintenance
  - Awarded 29 Sep 2016
  - Expires 28 Sep 2019
  - Opal Soft Inc. (small business)

## Skillsets

- **Systems Administration:**
  - Virtualization: Docker, VMWare RHEL, Powershell,
  - Windows and active directory administration (i.e. managing Windows 10 seats), RHEL Active Directory integration, Git
- **Database Administration**
  - MS SQL, Oracle/Oracle Multi-tenant
  - Oracle Appliances
- **Cybersecurity**
  - ATO administration
  - F5 administration
  - HBSS/ESS administration
  - Patch management
- **Artwork:**
  - 3DS Max or Maya, Zbrush, Substance Painter, 3D modeler
- **Software:**
  - Programming Languages: C#, Java, Javascript, CSS, Powershell, ASP.net, React Framework, C++, JSON, xAPI standard
  - Integrated Development Environments: Visual Studio, Eclipse, Unity, Oracle
  - Testing: Unit testing, automated testing
- **Soft skills:**
  - Master Training Specialists (MTS)
  - Tech Writer/Publishing Agent
  - Training Front End Analysis (FEA)

# Weapons Systems Engineering Division

## Services

- **Software**
  - Custom computer programming
- **Testing**
  - Repair
  - Mechanical Re-certification
  - Electrical Re-certification
- **Hazardous Waste, Environmental Remediation**
  - Cleaning
  - Removal

## Manufacturing

- **Mechanical, Torpedo Components (Inert and Explosive)**
  - Industrial Gas, Commercial and Industrial Gas Cylinders
  - Explosives
  - Laminated Plastics, Sheet and Shape, O-Ring
    - OTTO Fuel II Compatible EPDM
  - Rubber Product for Mechanical Use
  - Metal Die-Casting
  - Metal Tank, Heavy Gauge
  - Hardware, marine and hull items
  - Ammunition, guided missile components
  - Mechanical Switchgear
  - Primary Battery, Nonrechargeable
  - Navigational, Aeronautical, and Instrumental
- **Electrical**
  - Printed Circuit Assembly
  - Instruments for testing electricity and electrical signals
  - Current-carrying wiring device
  - Semiconductor and related

# USW Systems Engineering

## Electronic Acquisition and Sensors, Code 432

### Production

- **Technology Insertion Hardware (TIH) 16/18 and TIH 20/22**
  - Production contracts for design and manufacture of display, workstation, processor, and network systems that provide computer processing and memory, data storage and extraction, and input/output interfaces to support specific software applications of Navy Combat Control and Sonar Systems.
- **Future Contracts: TIH 24/26**
  - A separate industry day will be held for this procurement and will be sponsored by the Program Office, PMS 425.

## Electronic Systems, Code 433

### Services

- **Future Contract Need:**
  - **Next Generation Gertrude (NGG): A Form, Fit Function replacement for the Legacy AN/WQC-2/2A used for communication between surface ships and submerged vessels. This system will follow STANAG requirements for voice and continuous wave (CW) communications in two frequency bands.**
  - **Procurement within the next three years.**

# Undersea Defense Systems Acoustic Countermeasures

## Countermeasures ISEA, Code 435

Responsible for:

- Technical assistance for any fleet or maintenance activity request.
- Technical Manual Development and Management
- Training and ILS Certification of Intermediate Maintenance Activities
- Configuration Management
- Preventive Maintenance Management
- Sustainment and Acquisition Logistics for CSA systems
- Alteration and Installation of CSA systems
- Sustainment and Acquisition Logistics for acoustic countermeasures (ADCs)

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# Undersea Defense Systems Acoustic Countermeasures

Code  
435

## Acoustic Device, Countermeasure (ADC)

Acoustic Countermeasures protect the submarine fleet from acoustic-homing torpedoes. Both 3-inch and 6-inch variants are produced.

Hardware Design and Development Contracts for countermeasures:

In production: ADC MK 2 MOD 7, ADC MK 3 MOD 1, ADC MK 4 MOD 1

In development: ADC MK 5 MOD 0



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# Undersea Defense Systems Acoustic Countermeasures

Code  
435

## Countermeasures Set, Acoustic (CSA)

CSA systems onboard submarines protect the submarine fleet by allowing for rapid deployment of countermeasures.

- Support Service Contracts
  - Drawing and Document Development and Updates
- Hardware Design and Development Contracts
  - CSA components
  - Circuit Card Assemblies, Printed Wiring Boards
- Hardware Procurement
  - Electrical Assemblies: Power Supplies, Junction Boxes, Test Hardware
  - Wiring Harnesses

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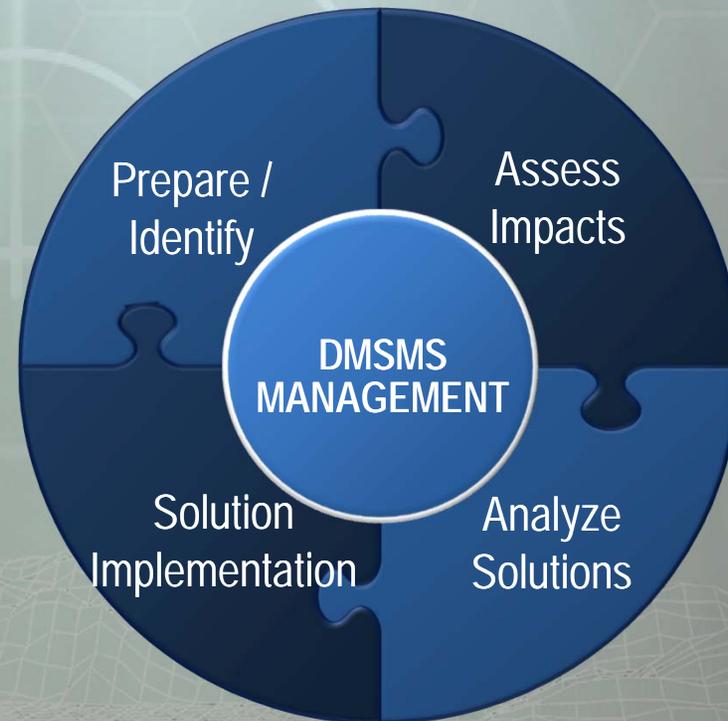
# Obsolescence Management Division

# NUWC Keyport's Diminishing Manufacturing Sources and Material Shortages (DMSMS) Process

The purpose of the program is to ensure that DMSMS issues are:

- Identified
- Analyzed
- Mitigated to best meet the lifecycle needs of the platform

## NUWC Division, Keyport's DMSMS Program



# DMSMS Center of Excellence

- Logisticians
- Data Analysts
- Engineers
- Technicians
- Software Developers

**Trained  
Qualified  
People**

- Desktop Guides
- Reporting
- Collaboration
- Business Case Analysis
- Quality

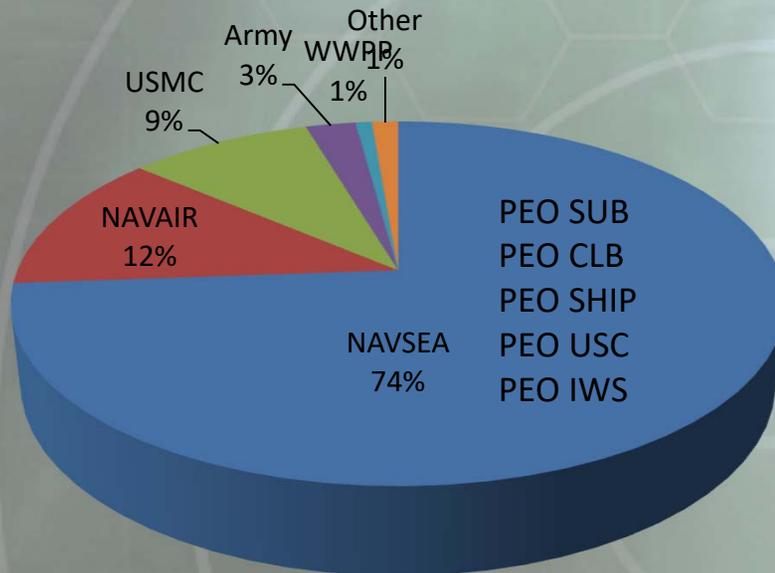
**Common  
Processes**

- Obsolescence Management Information System (OMIS)
- Impact Assessments
- Predictive Analysis
- Data Visualization
- Data Analytics

**Organic  
Tools**

**Providing DMSMS  
management support  
since 1985**

# DMSMS Customer Portfolio



NUWC Keyport DMSMS Customers

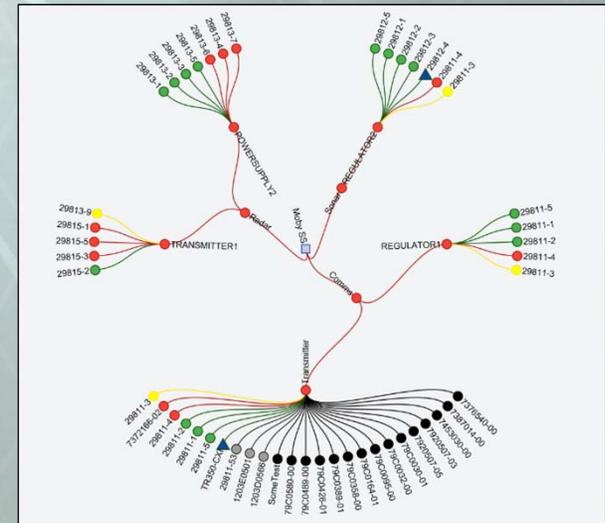
## DMSMS tasking focused on NAVSEA

- All submarine classes (HM&E systems)
- Submarine PARM systems
- Surface ships (HM&E systems)

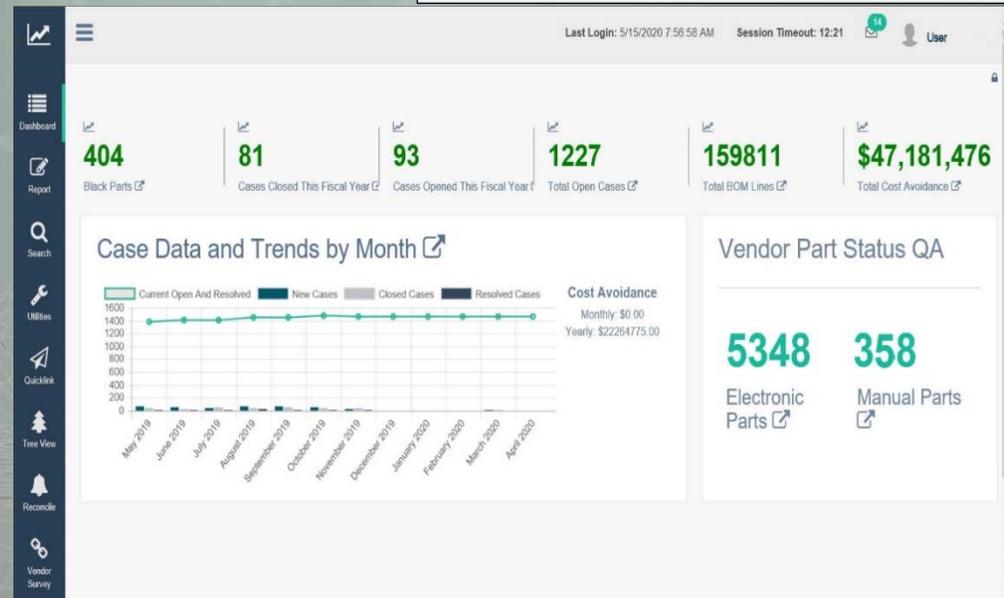
*As a national leader driving policy, research, and best practice execution, Keyport has a strong reputation that extends beyond the NAVSEA community into the DoD Enterprise. Keyport is a major player developing OSD Policy and Guidance and is a perennial leader and speaker at the annual DoD DMSMS Conference.*

# Obsolescence Management Information System (OMIS™) Capabilities

- **Obsolescence Status**
  - Illustrates obsolescence impact down to the configuration part number based on manufacturer part status
  - Statuses are rolled up to show overall impact to systems
- **Case Management – Obsolescence Case Log**
  - Maintain cases to track progress towards resolution
  - Capture respective cost avoidance and metrics
  - Master case creation to monitor multiple cases as a single case



- **Supply Data Management**
  - Data import and inventory monitoring
  - Watch list and supply forecasting
- **Bill of Material (BOM) Management**
  - Both import and export capabilities
- **Forecasting Obsolescence**
  - Predicting future obsolescence impacts
  - Data visualization
- **Customizable Reports**



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 NUWC Keyport #17-046.

# Our Mission: Eliminate DMSMS risk to Warfighter readiness.

