Developmental Status of our Navy's Timely MIW Systems

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<table>
<thead>
<tr>
<th>“Navy After Next”</th>
<th>“Next Navy”</th>
<th>“Current Navy”</th>
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<tbody>
<tr>
<td>Build an affordable future Fleet</td>
<td>Sustain the current Fleet</td>
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**S&T**
- Transitions
- Demonstrations
- Patents
- Innovation
- Scientific Papers

**R&D**
- Prototyping
- Software Development
- Hardware Development
- Design Teams
- Mod / Sim

**T&E**
- DT / IOT&E Events
- CSSQTs
- Tests @ Ranges / Major Facilities
- TACMEMOs
- Procedures Written

**Product Delivery**
- Integrations & Certifications
- Manufactured Products
- Modernizations & Alterations
- CASREPs Resolved
- Onboard Tech Assists
- Distance Support
- Installs

**Fleet Support**
- Depot Maint Repairs
- Tech Manuals

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**NSWC-PCD supports “Current”, “Next”, and “After Next” MIW**

**Distribution Statement A: Approved for Public Release; Distribution is Unlimited.**
Advanced Sensors

- Advanced Sensors
- Electro-optic Imaging
- Acoustic Imaging

Signal Processing / Fusion

- Multiple Mine Signatures to be Fused
- Signal Processing and Information Fusion
- Increased speed
- Reduced false alarm rates
- Environmentally robust

Automation & Dynamics

- Automated Inventory
- 3D Visualizations
- Automated L&R

Unmanned Systems Technology

- Computational Dynamics
- Display, Analysis, & Fusion of Contacts

Distribution Statement A: Approved for Public Release; Distribution is Unlimited.
• Analyze Requirements
• Assess Technologies
• Systems Engineering
• Mod/Sim (NMWS, TMSS)
• Development of Prototypes
• Systems/Platform Integration
• Developmental Experimentation
• Respond to Urgent Needs (UONS)
Test and Evaluation

- Develop Test Plan/Procedures
- System Integration & Testing
- Development / Operational Tests
- Data Collection & Analysis
- System Performance Assessments
- Hardware/Software Certifications
- Collect System Reliability Data

Quickstrikes

AMNS

AN/AQS 20

RMS

CMS

MCM Mission Modules

ALMDS
Product Delivery

- Modernize Systems (P3I)
- Certify Systems
- Fleet System Introductions
- Acquisition Support
- Logistics Support Plan
- Training Procedures
- Technical Manuals
- UONS Response

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Fleet Support

- Distance Support
- Tech Assists
- Resolve CASREPs
- Depot Maintenance Repairs
- Threat/Susceptibility Analyses
- Tactics/Mission Evaluations
- Development of TTPs
- Life Cycle Sustainment
- Obsolescence Management
- Fly-away Teams
Advanced Undersea Weapon System (AUWS)

- Support Quickstrike Mod 3 Improvements
- Build Transformation Capabilities (AUWS)

**Traditional Mining**
(strategic, autonomous, overt)

Quickstrike
- SHALLOW
- INTERMEDIATE
- DEEP

- 400 Traditional Mines
- Autonomous
- Deliver: Hours
- Arm / Engage / Sterilize: Months
- Clear: Months

**Transformational AUWS**
(tactical, controlled, clandestine)

- 1 Transformational Mine
- Remote Control w/ Supervised Autonomy
- Deliver: Hours
- Arm/DisArm: Minutes
- Engage: Minutes
- Sterilize: Minutes
- Extract: Hours

- Eases Delivery & Clean-up; Adds Tactical Flexibility

- Distributed Sensors
- LDUUV with Sensor and Weapon Modules
- Weapon on LDUUV Anchored

**Discussion**

- Eases Delivery & Clean-up; Adds Tactical Flexibility

Distribution Statement A: Approved for Public Release; Distribution is Unlimited.
A Robust MIW Capability Requires:
  - Sustaining the Current Fleet’s Readiness
  - Rapid Fielding of Fully-Developed Systems Capabilities
  - Development of Future Capabilities

Need Enabling Technologies
  - Accelerate Product Improvement and Other Technology Insertion Opportunities

Speed to Fleet
  - Do the Systems Engineering and Integrated Logistics Early
  - Perform Disciplined Testing and Problem Resolution
  - Field Systems “Ready-For-Issue”

It’s a Team Effort - - S&T through Sustainment