

Naval Undersea Warfare Center

Division Newport

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NUWC Division Newport Strategic Alignment



NUWC DIVISION NEWPORT

We advance the state of the art in undersea warfare, ensuring maritime dominance through our research, development, and fleet support.

WARFIGHTING READINESS TODAY & TOMORROW

Hone our Wartime Readiness plans, processes and In-Service roles while continuing to deliver platforms, systems and new capabilities for the future.

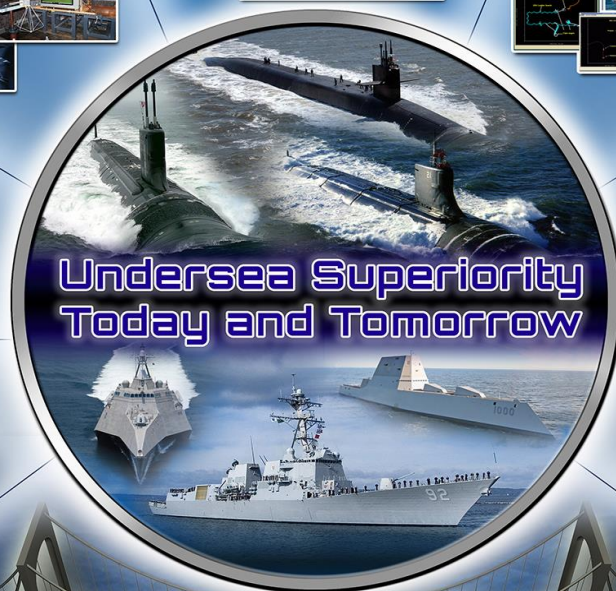
LEADERSHIP & WORKFORCE BRILLIANCE

Equip and empower our workforce with the tools and knowledge required to expand our experience base and excel in our domain.

TECHNICAL & BUSINESS EXCELLENCE

Innovate, build and deliver solutions to the warfighter while maximizing efficiencies in business and technical execution.

UNDERSEA SUPERIORITY, TODAY AND TOMORROW



USW ELECTROMAGNETIC SYSTEMS

USW PLATFORMS & PAYLOAD INTEGRATION

USW MISSION ENGINEERING AND ANALYSIS

USW COMBAT SYSTEMS

RANGES, ENGINEERING, & ANALYSIS

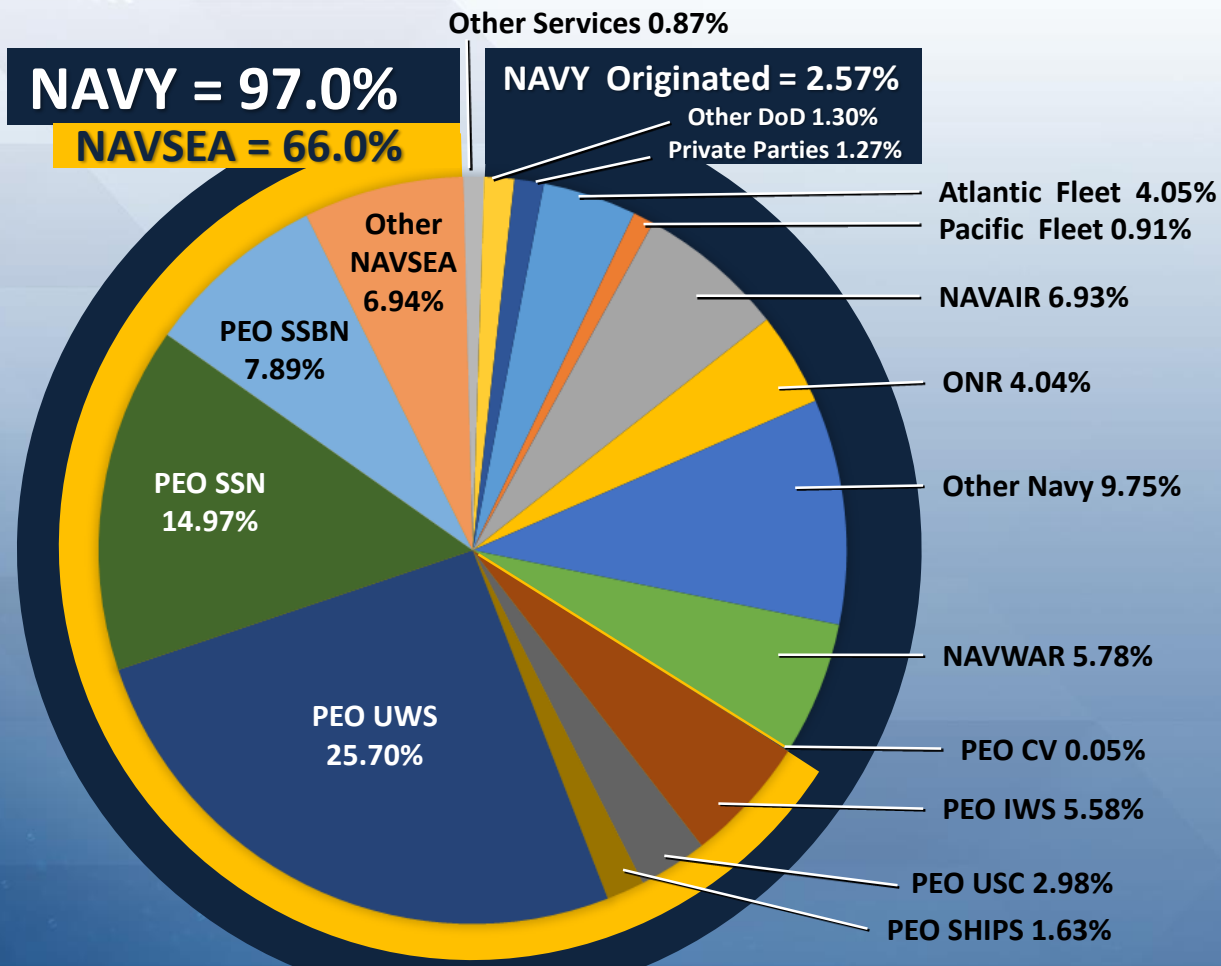
SENSORS AND SONAR SYSTEMS

USW WEAPONS, VEHICLES, AND DEFENSIVE SYSTEMS

Science & Technology Development Acquisition Support Fleet Support



NUWC Division Newport: Customers – All Funding



Our FY23 Customers

\$1,598M

Navy Working Capital Fund Activity

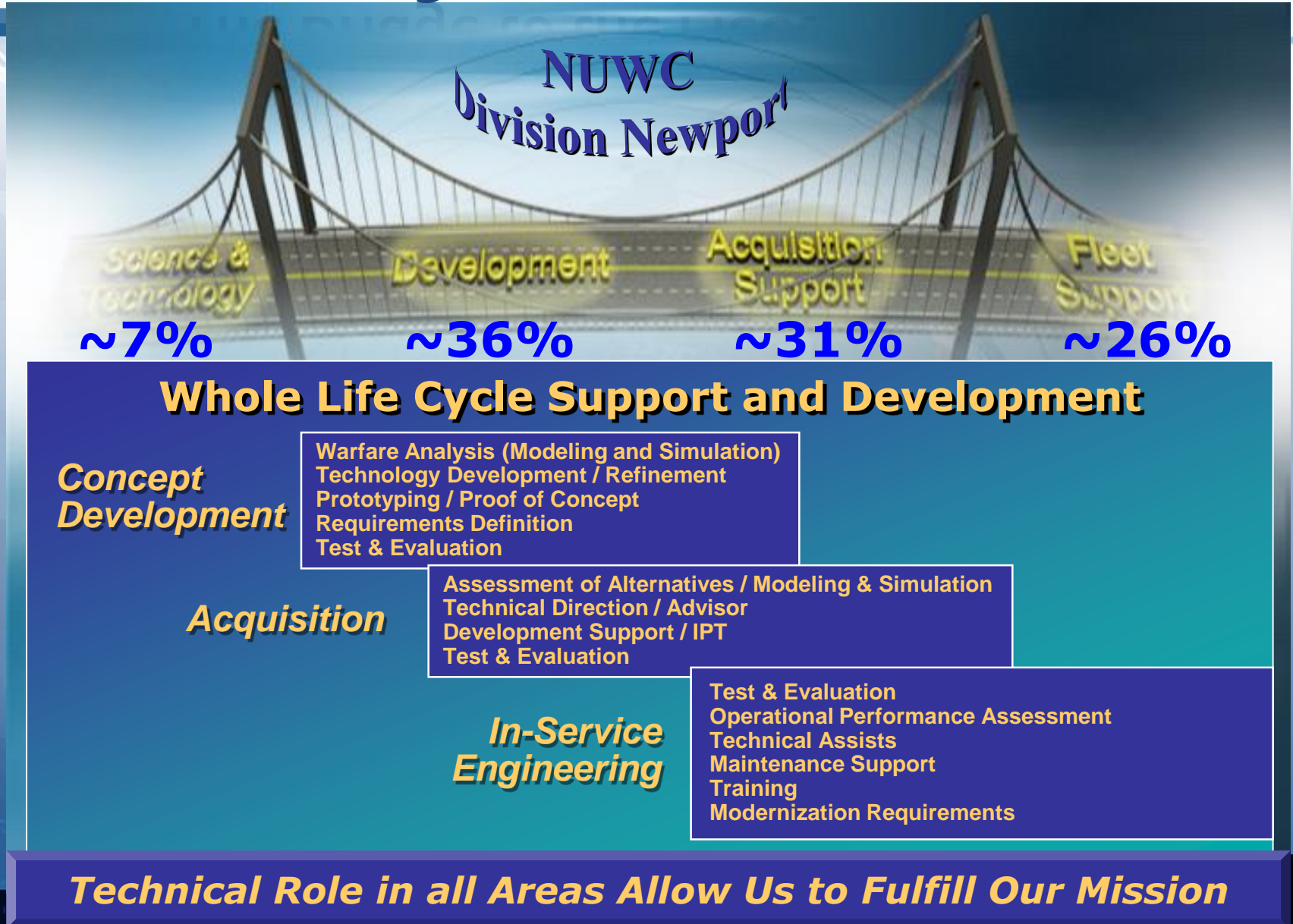
- Not a congressional line item
- Customers choose the Warfare Centers
- NUWC is accountable for efficient delivery of products and services

Customer Base

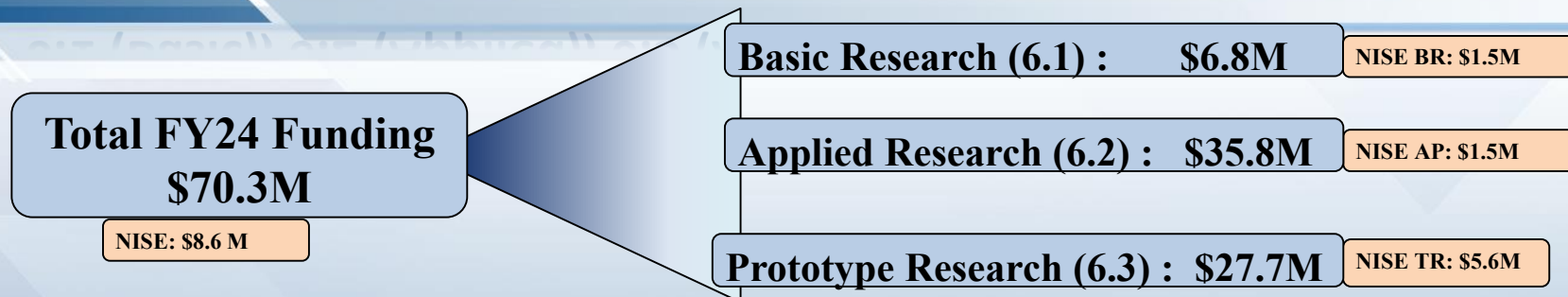
- Fleet
- Program and resource sponsors
- Scientific sponsors
- Intelligence community
- Defense industry
- Non-defense industry
- Foreign Navies

Full Spectrum Provider: Science & Technology to In-Service Engineers

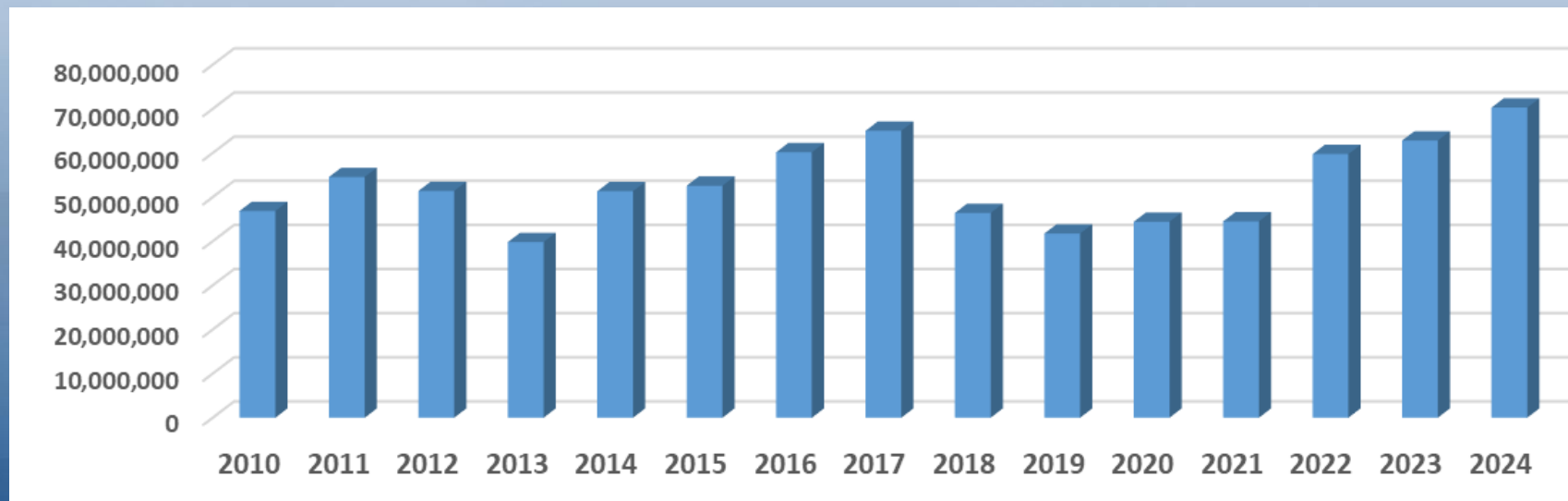
NUWC Division Newport: The Bridge to the Fleet



FY24 S&T Portfolio: 6.1 (Basic), 6.2 (Applied), 6.3 (ATD/Prototype)

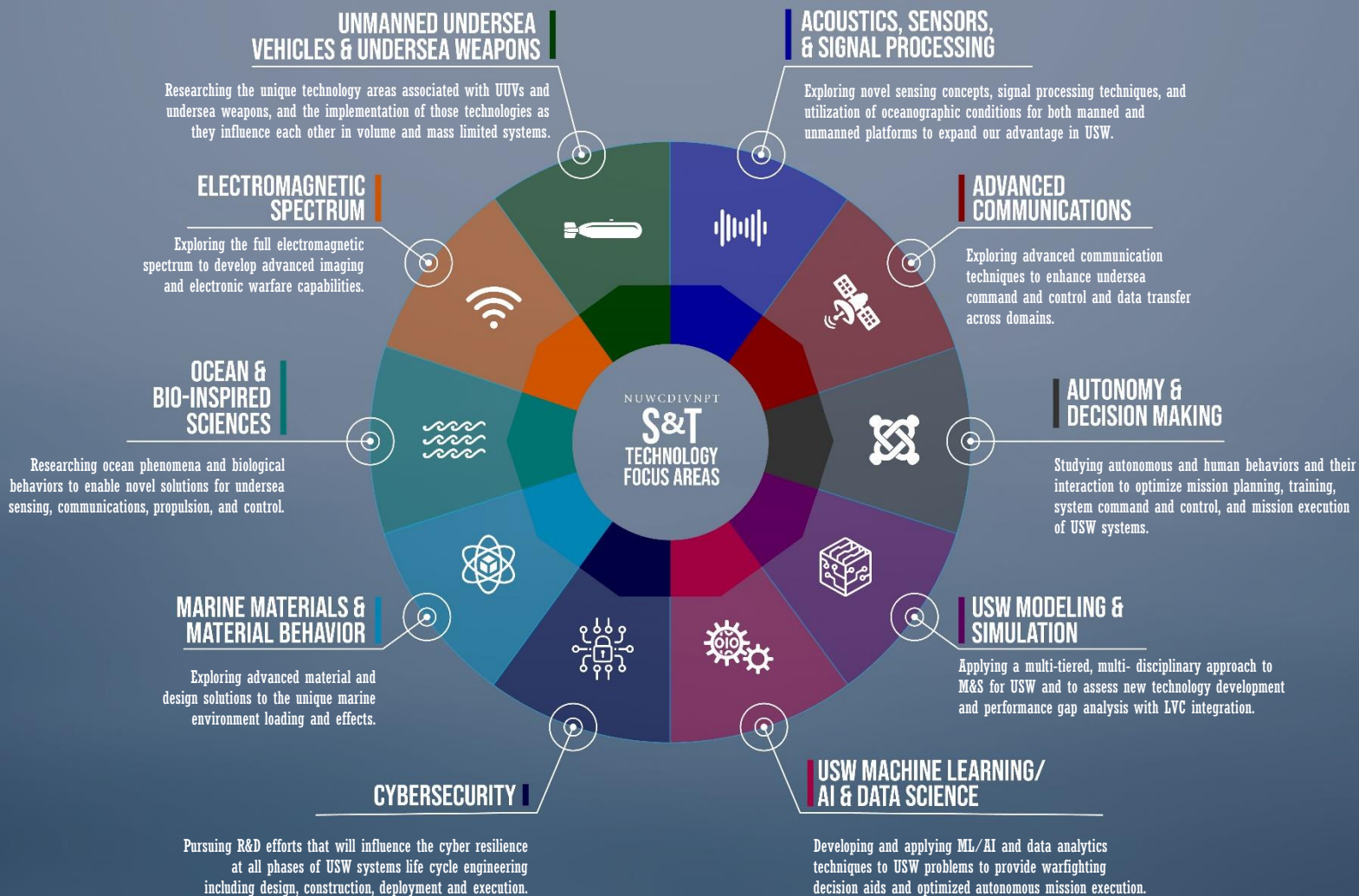


Total S&T Funding per FY



-S&T Represents approx. 6-8% portfolio-

NUWC Division Newport: S&T Focus Areas



NUWC Division Newport Research



- Air Independent Energy, Fuel cells, batteries



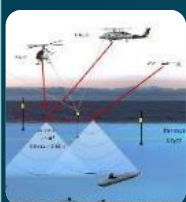
- Advanced Hydrodynamics, Supercavitation



Supercavitation



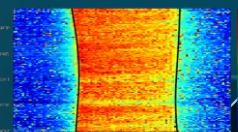
- Opto-Acoustics
- Boundary layer lasers



- Underwater Soundscapes



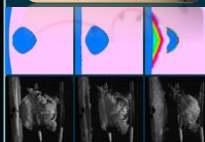
- Bio-Inspired Sensing



- Bio-Inspired Propulsion and Swarming Behavior



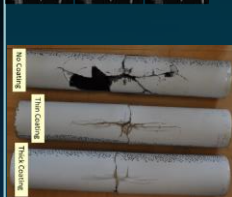
- Implosion, Underwater Shock loading



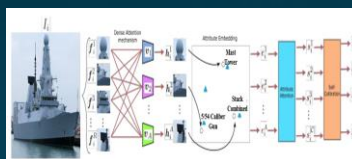
- Corrosion & Delamination

- Bio-fouling

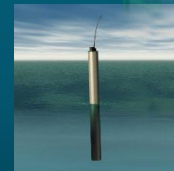
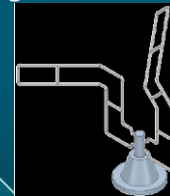
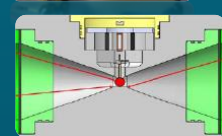
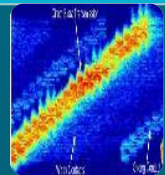
- Marine Effects on Advanced Materials



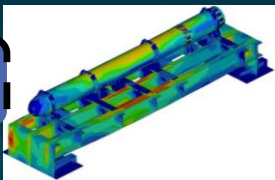
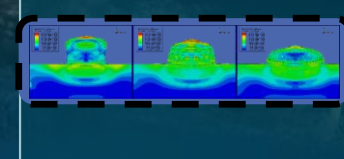
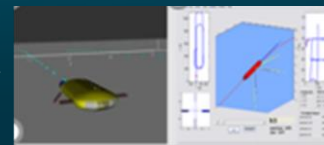
- Reinforcement Learning/Reactive Autonomy
- AI Enabled Detection
- Adversarial Attacks on Deep Learning Models
- Intrusion Detection
- Zero Trust Architecture



- Active/Passive Signal Processing
- Transduction Material Science
- Sensor/Array Design
- Underwater Comms
- Meta Material Antennas
- Antenna Measurement Techniques
- Advanced buoy and antenna design



- Vehicle Control & Advanced Autonomy
- Autonomous Vehicle Command & Control
- Open Vehicle Architecture
- Human Machine Teaming
- Physics Based Modeling



Why we do it ...

To respond to current urgency, we need the entire community working on technically relevant solutions that enable priority Fleet missions

How we do it ...

Through Partnership and Collaboration mechanisms enabled by the authorities in our Office of Research and Technology Applications (ORTA) that resides in the Technology Partnership Office (TPO)

Partnering Mechanisms:

- **Cooperative Research and Development Agreement (CRADA)**
- **Partnership Intermediary Agreement (PIA)**
- SBIR/STTR
- S&T BAA
- Work with Private Party (WPP) agreement
- Patent License Agreement (PLA)
- Education Partnership Agreement (EPA)
- Intergovernmental Support Agreements
- Memorandum of Agreement (MOA)
- Memorandum of Understanding (MOU)
- Etc.

CRADAs

Agreement to perform cooperative & mutually beneficial R&D

Not a funding path

Protects individual and shared IP rights

Examples:

- Sharing and alignment of IRAD efforts and info on Fleet priorities
- Provide Gov developed tools and Software
- Joint Technology Demonstrations

PIAs

- Agreement with non-profit that can act as bridge for multiple industry partners to interact with NUWC
- Multiple PIA partnerships used to enable Northeast Techbridge (Tech scouting, Prize Challenges)
- Provides exposure to Fleet priorities to wide array of companies
- Can be a funding path
- Examples
 - 401 Tech Bridge Demo Day
 - SENEDIA led Prize Challenge on Shipboard Additive manufacturing

Shared Values of Undersea Warfare Community support CNO priorities:



Warfighting: Deliver Decisive Combat Power
Warfighters: Strengthen the Navy Team
Foundation: Build Trust, Align Resources, Be Ready

Industry Engagement via the Tech Bridge

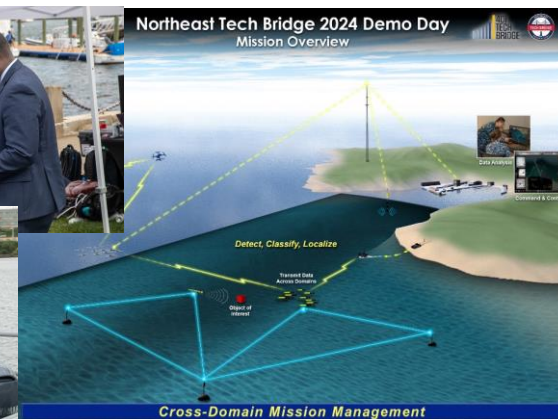
- ONR/NavalX is the Navy's innovation cell and sponsors the Tech Bridge Program
 - Source Navy problems \longleftrightarrow Engage industry and academia to find technology solutions

- Northeast Tech Bridge facilitates access to:

<ul style="list-style-type: none"> – Partnerships with small businesses & academia – Forums for rapid prototyping & experimentation – Procurement for testing & experimentation 	<ul style="list-style-type: none"> - Technical SMEs (WCs, industry, academia) - Collaboration and lab space off campus - Market research
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- Tools available to support industry engagement include:

<ul style="list-style-type: none"> – Tech Scouting – Prize Challenges – In-water Demo Days 	<ul style="list-style-type: none"> - Tech Talks and Technical Exchanges with industry - Accelerators/Incubators - Other TPO/SBO tools: CRADAs, SBIR, EPAs, BAA - Tech Showcases
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The Tech Bridge Network

