



DEPARTMENT OF THE NAVY
TECHNOLOGY TRANSFER

ANNUAL REPORT

ADVANCING THE MISSION

FISCAL YEAR 2019-2020



Prepared by:
Department of the Navy Technology Transfer Program Office
Arlington, Virginia
January 2021

“

Innovation is the engine that powers faster technology transfer and accelerates greater naval capabilities.”

WELCOME

Innovation is the engine that powers faster technology transfer and accelerates greater naval capabilities. The Department of the Navy's (DoN) Technology Transfer (T2) Program Office is vital to keeping this engine running at a high tempo. As chief of naval research, I'm proud to collaborate with them to strengthen the innovation ecosystems that fuel the cutting-edge work of the Naval Research Enterprise.



Much of the research, development, testing and evaluation performed at DoN laboratories involve leading-edge technologies in a wide array of technical disciplines. Moreover, equipment and facilities available for this work are often unique and cannot be replicated in the commercial workplace.

That's where DoN T2 can help. Thanks to a variety of T2-enabled agreements, private industry and academia can engage in mutually beneficial partnerships with Navy labs, or license Navy-patented technologies. I know you will enjoy reading this annual report and learning about the game-changing initiatives that DoN T2 cultivates to advance disruptive technology and always ensure U.S. warfighters possess an unfair advantage in a fight—all while lowering entry barriers for our small business and non-traditional partners.

Rear Admiral Lorin C. Selby

Chief of Naval Research



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NEW IN THIS ISSUE

We aim to show how T2 enables the DoN mission, how we can be used strategically and how we align with naval strategy.

- Mission-oriented stories showcasing the impact of T2
- Geographical display of our T2-designated laboratories
- Practical use cases
- Groundbreaking pilot projects and partnership highlights
- Examples of what a high-performing T2 office looks like
- Addition of Intellectual Property (IP) and Patent License Agreement (PLA) information
- How we work with our federal partners

We also spotlight new initiatives unveiled during fiscal years 2019 and 2020, including:

- The creation of TechX, a makerspace, at Naval Surface Warfare Center, Port Hueneme Division
- The advancement of a methodology for increasing the number of Patent Licensing Agreements (PLAs) and Cooperative Research and Development Agreements (CRADAs) from laboratories
- Naval Air Warfare Center Aircraft Division Patuxent River Other Transaction Authority (OTA)-stacking authorities
- Combined Federal Acquisition Regulations (FAR) and non-FAR projects

Whether you're a T2 professional, a contractor or staffer, or a laboratory researcher, we hope you find this annual report to be a value-added resource.





NAVAL T2 ENTERPRISE

DON T2-DESIGNATED LABS AND CENTERS AVAILABLE *for* PARTNERSHIP

WASHINGTON

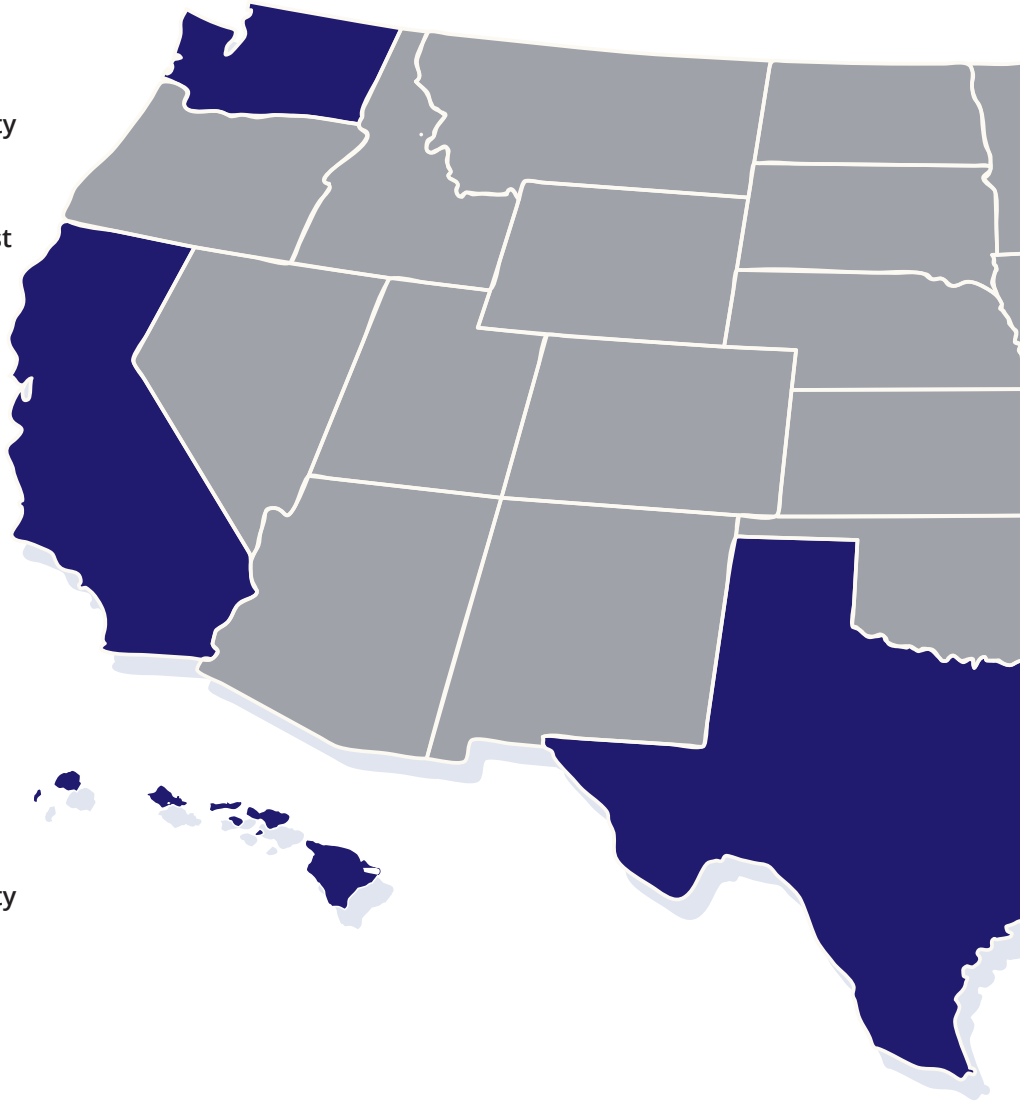
- Naval Undersea Warfare Center
Division Keyport
- Puget Sound Naval Shipyard and
Intermediate Maintenance Facility

CALIFORNIA

- Fleet Readiness Center Southwest
- Naval Air Warfare Center
Weapons Division China Lake
- Naval Air Warfare Center
Weapons Division Point Mugu
- Naval Facilities Engineering and
Expeditionary Warfare Center
- Naval Health Research Center
- Naval Information Warfare
Center Pacific
- Naval Medical Center San Diego
- Naval Postgraduate School
- Naval Surface Warfare Center
Corona Division

HAWAII

- Pearl Harbor Naval Shipyard and
Intermediate Maintenance Facility



Navy Office of Research and Technology
Applications (ORTA) Directory website

[https://www.onr.navy.mil/work-with-us/
technology-transfer-t2/ORTA-overview/Navy-
ORTA-directory](https://www.onr.navy.mil/work-with-us/technology-transfer-t2/ORTA-overview/Navy-ORTA-directory)

■ = Member of Tech Bridge Network

★ = DON T2 Headquarters

TEXAS

- Naval Medical Research
Unit San Antonio

INDIANA

- Naval Surface Warfare
Center Crane Division

OHIO

- Naval Medical Research
Unit Dayton

MISSISSIPPI

- Naval Meteorology and
Oceanography Command

MAINE

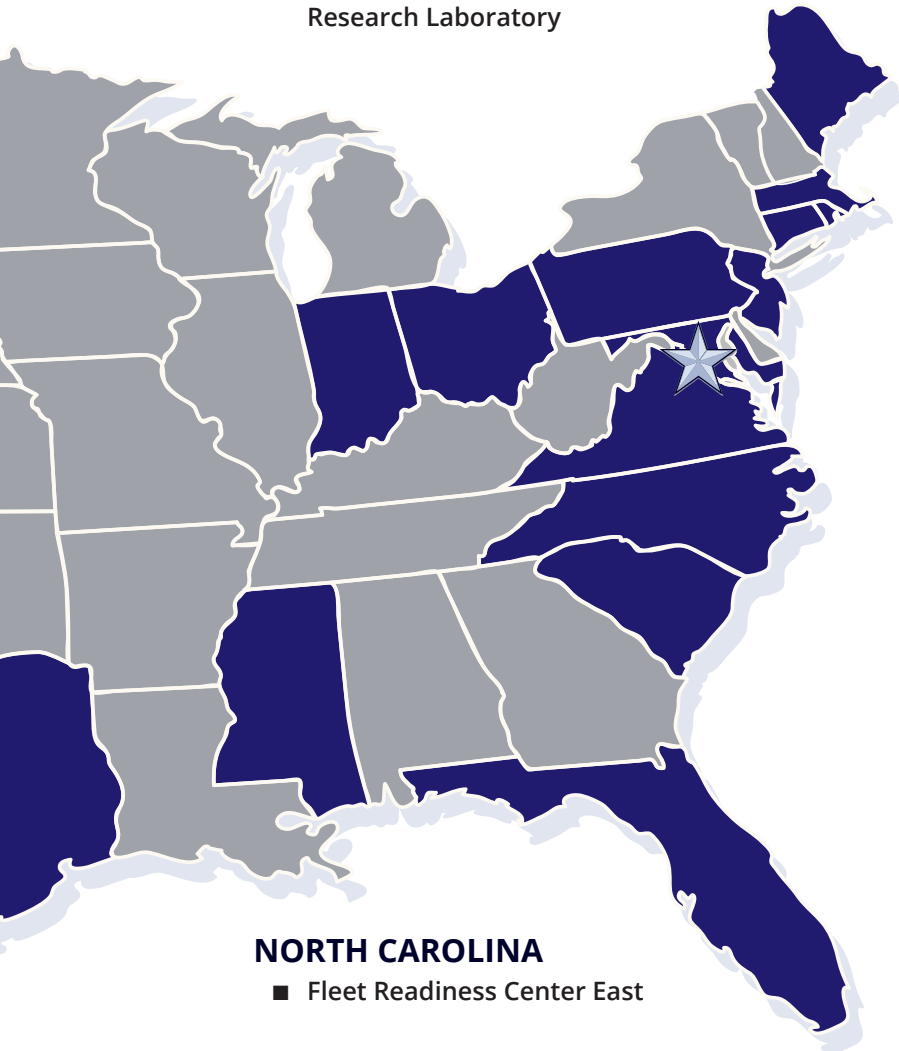
- Portsmouth Naval Shipyard

MASSACHUSETTS

- Navy Clothing and Textile Research Facility

CONNECTICUT

- Naval Submarine Medical Research Laboratory



NORTH CAROLINA

- Fleet Readiness Center East

SOUTH CAROLINA

- Naval Information Warfare Center Atlantic

FLORIDA

- Fleet Readiness Center Southeast
- Naval Air Warfare Center Training Systems Division
- Naval Entomology Center of Excellence
- Naval Surface Warfare Center Panama City Division

RHODE ISLAND

- Naval Undersea Warfare Center Division Newport
- Naval War College

NEW JERSEY

- Naval Air Warfare Center Aircraft Division Lakehurst

PENNSYLVANIA

- Naval Surface Warfare Center Philadelphia Division

MARYLAND

- Naval Air Warfare Center Aircraft Division Patuxent River
- Naval Medical Research Center
- Naval Surface Warfare Center Carderock Division
- Naval Surface Warfare Center Indian Head Division
- U.S. Naval Academy
- U.S. Marine Corps Forces Cyberspace Command

WASHINGTON, D.C.

- Naval History and Heritage Command
- Naval Research Laboratory
- U.S. Naval Observatory

VIRGINIA

- ★ DoN T2 Program Office (located at the Office of Naval Research)
- Headquarters Marine Corps Deputy Commandant for Information War Room Division
- Marine Corps Cyberspace Operations Group
- Marine Corps Systems Command
- Marine Corps Warfighting Laboratory
- Naval Medical Center Portsmouth
- Naval Surface Warfare Center Dahlgren Division
- Navy Warfare Development Command
- Norfolk Naval Shipyard



ROLES AND RESPONSIBILITIES OF THE DON T2 PROGRAM OFFICE

The Secretary of the Navy, through the authorities delegated in the SECNAV Instruction (SECNAVINST) 5700.17A Domestic Technology Transfer, authorizes the DoN T2 Program Office to establish policy and assign responsibility for DoN domestic technology transfer.

Specific roles and responsibilities include:

- Manage and execute DoN T2-based on authorized and delegated authorities;
- Communicate and represent DoN T2 to the Chief of Naval research, Department of Defense (DoD) senior leadership and interagency councils as required;
- Encourage participation and promote results of DoN T2;
- Maintain comprehensive record of all DoN T2 agreements;
- Develop and publish a DoN T2 handbook that establishes T2 practices within the DoN;
- Manage laboratory and Office of Research and Technology Applications (ORTA) representative designation procedures; and
- Cultivate collaboration between DoN science and technology communities, industry, and academia to promote DoN T2 efforts.



ROLES AND RESPONSIBILITIES OF THE ORTA REPRESENTATIVE

The SECNAVINST 5700.17A identifies the following roles and responsibilities for Office of Research and Technology Applications (ORTA) representatives at all DoN T2-designated laboratories:

- Coordinate, manage and direct all DoN domestic T2 within the laboratory;
- Coordinate with laboratory leadership to provide annual business plans, training presentations/ outlines, statistical data and other information as requested by the DoN T2 Program Manager (PM), or otherwise required by statute, regulation, directive, executive order and instruction;
- Offer at least two hours of T2-related training to laboratory personnel annually;
- Receive at least eight hours of T2-related training annually and submit a summary of the annual training to the DoN T2 PM at the end of each calendar year;
- Encourage participation in, and promote the results of, DoN domestic T2; and
- Comply with all policies and procedures to ensure that all T2 agreements have received proper legal; security, foreign ownership, control or influence; and public affairs office reviews.

NAWCAD

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

WHERE WORK GETS DONE >>

WHAT SUCCESS LOOKS LIKE:

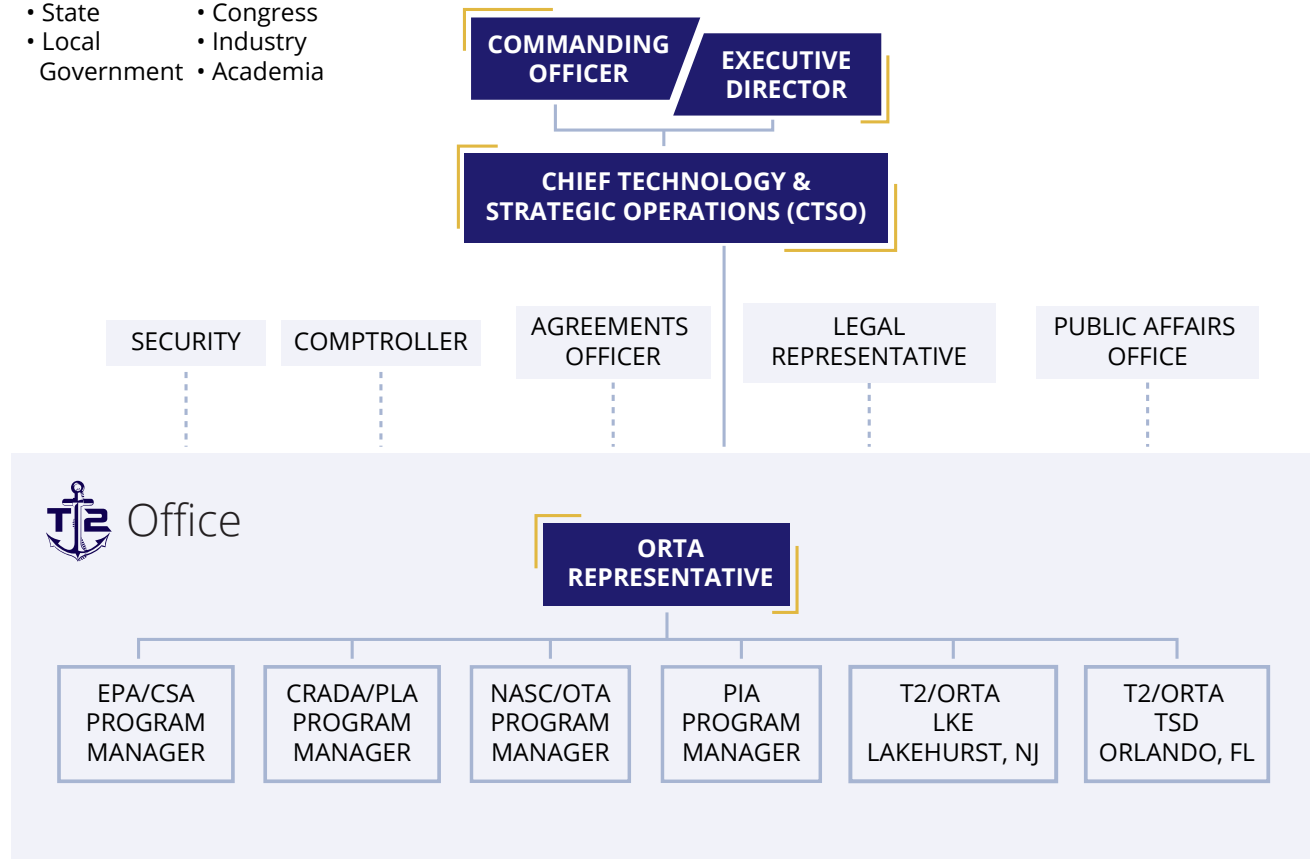
NAWCAD WARRANTED AGREEMENTS OFFICER TEAMS WITH T2 OFFICE

The Naval Air Warfare Center Aircraft Division (NAWCAD) Patuxent River T2 office is the command's Office of Research and Technology Applications (ORTA) representative. This office is organized under the NAWCAD Chief Technology and Strategic Operations Office (CTSO). The T2 office manages the command's non-Federal Acquisition Regulations (FAR) agreements with a team that includes legal counsel, an agreements officer and security. The non-FAR agreements include Cooperative Research and Development Agreements (CRADAs), Partnership Intermediary Agreements (PIAs), Work for Private Party Agreements, Educational Partnership Agreements (EPAs), and both the Other Transaction Authority (OTA) consortium and Naval Aviation Systems Consortium (NASC). The T2 office also leads Naval Air Station Patuxent River regional PIA partners, Georgia Tech Research Institute and the Patuxent Partnership. The alignment within the CTSO facilitates relationships with the Small Business Innovation Research office, Naval Innovative Science and Engineering program and science and technology leads. This collaboration promotes partnerships with industry, non-traditional firms and academia to transition new technologies to the warfighter.

NAWCAD T2 Organizational Chart

T2 ECOSYSTEM

- State
- Local Government
- Congress
- Industry
- Academia



WHAT SUCCESS LOOKS LIKE:

NSWC CRANE LEVERAGES DEPARTMENT T2 CHAMPIONS TO EXPAND REACH

The Office of Research and Technology Applications (ORTA) at Naval Surface Warfare Center (NSWC) Crane Division is a model within the DoN T2 community. It performs T2 functions with excellence and exemplifies how to engage internal and external stakeholders.

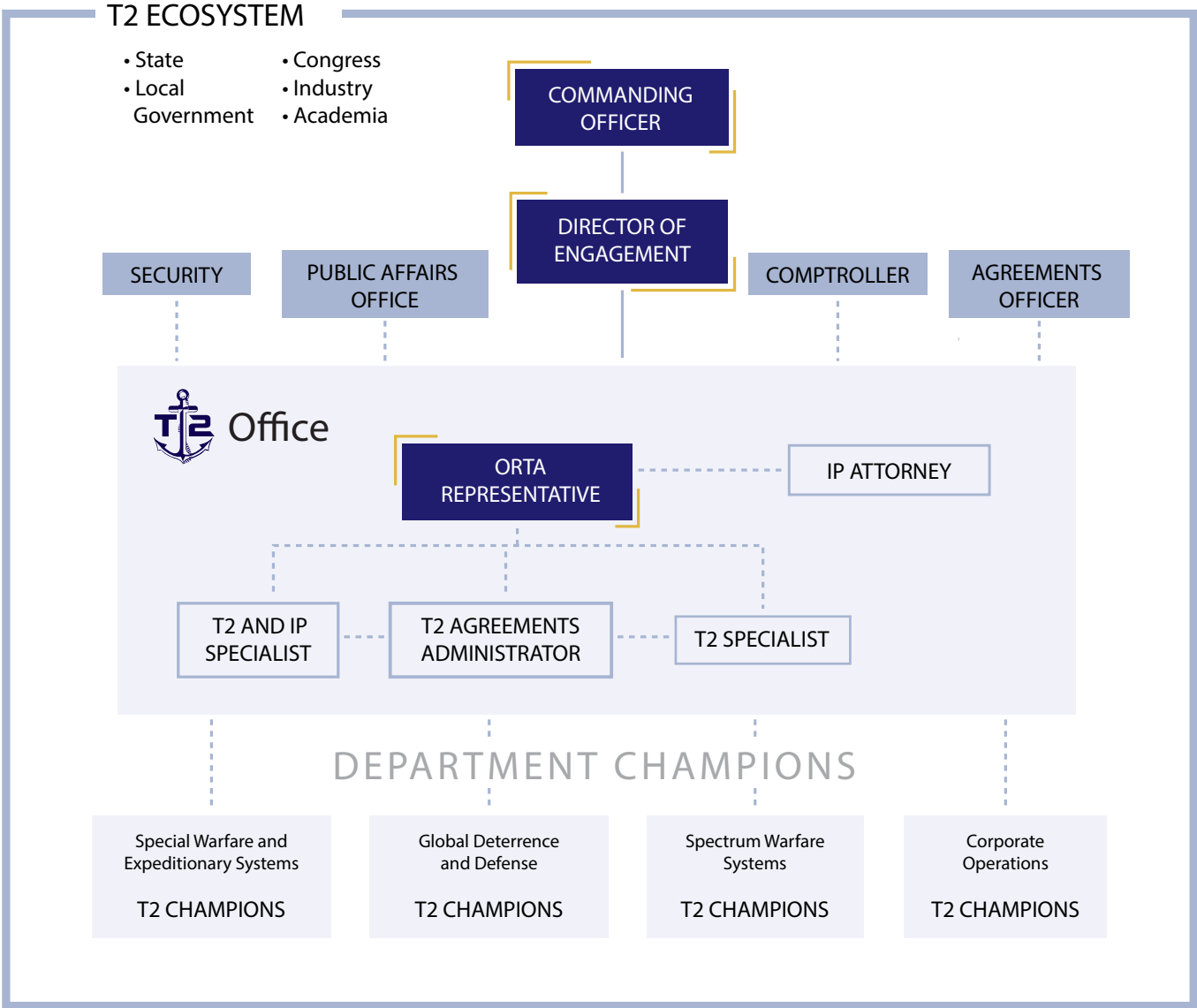
The NSWC Crane T2 Office's organization structure (see organization chart on facing page) provides the foundation for success. The ORTA representative is the central figure, orchestrating all T2 activities within the command. The agreements manager oversees development and tracking of Cooperative Research and Development Agreements (CRADAs), Patent Licensing Agreements (PLAs), Educational Partnership Agreements (EPAs) and other T2-related agreements. A legal representative ensures legal compliance. NSWC Crane leadership is considering co-locating its T2 Office with the offices of Security and Public Affairs to support even closer coordination, based on lessons learned from piloting this arrangement in fiscal year 2019. The T2 "champions" are informal in nature. They aren't directly associated with the T2 Office from an organizational standpoint, nor are they necessarily a set group of individuals. They are a small contingent of individuals who have utilized the T2 program, are active in sharing their successes with their colleagues, and help to communicate the value of T2 and encourage others to engage with the program.

NSWC Crane has established an efficient, effective model for internal outreach. The ORTA representative spends time educating scientists and engineers about the value of T2 mechanisms and how they can be utilized to enhance research and development efforts and expedite the delivery of technical solutions to the warfighter. These efforts are multiplied by scientists and engineers who have experienced T2 and tell their colleagues about the value of T2 and how to participate. These individuals hold a lot of sway with their colleagues, since they work shoulder to shoulder with them in NSWC's engineering departments and share a common technical background.

NSWC Crane also excels in external outreach. For many years it has cultivated relationships with regional start-ups, universities (e.g., Purdue, Notre Dame, Indiana University), corporations, small businesses, non-profits, private capital organizations, and government entities. As of 2019, it is also leading the NavalX-supported, Indiana-based Midwest Tech Bridge, which builds on those efforts. Dr. Kyle Werner, Director of Engagement at NSWC Crane, is responsible for outside engagement and works closely with NSWC Crane's ORTA representative. In 2019 the Massachusetts Institute of Technology validated the ecosystem that NSWC Crane has helped create, and the White House recognized it as a best practice across the federal government.



NSWC Crane T2 Organizational Chart



NAVALX TECH BRIDGE NETWORK

A former department head at the Office of Naval Research (ONR), Dr. Richard Carlin now serves in a new leadership role at the command—as its director of technology-acceleration programs.

In this capacity, Carlin, who is also called “the Naval Accelerator,” fosters smoother collaboration between naval warfare centers, academia and industry—to speed up technology development and delivery to warfighters. Much of this work is enabled by partnership agreements through T2 partnership agreements or each laboratory.

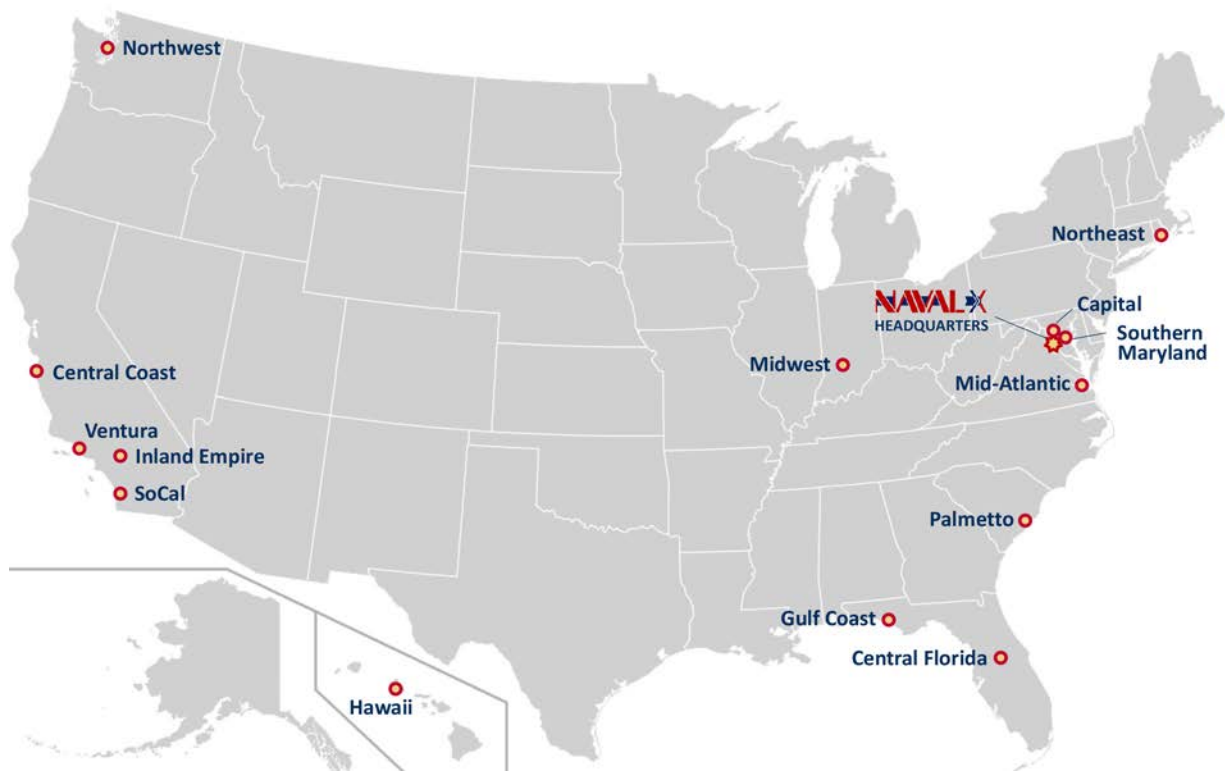
As ONR’s Naval Accelerator, Dr. Carlin shepherds multiple initiatives—many of them facilitated by DoN T2 agreements— designed to spur innovation. One prominent initiative is known as Tech Bridges.

A partnership involving the NavalX Agility Cell, the DoN Systems Commands, ONR and DoN T2, Tech Bridges serve as regional innovation hubs where warfare centers, government, academia and industry can partner on technology research, evaluation and commercialization—as well as economic and workforce development.

Each hub draws on unique, local resources. Tech Bridges are located close to system commands, as listed below:

- **Central Florida**, affiliated with Naval Air Warfare Center Training Systems Division
- **Gulf Coast** in Florida, affiliated with the Naval Surface Warfare Center Panama City Division, the Naval Research Lab Stennis and the Naval Meteorology and Oceanography Command
- **Hawaii**, affiliated with Naval Undersea Warfare Center, Keyport Detachment Pacific
- **Inland Empire** in California, affiliated with Naval Surface Warfare Center Corona Division
- **London** in England, affiliated with the U.S. Department of the Navy and the UK Ministry of Defence and the Royal Navy.
- **Mid-Atlantic** in Virginia, affiliated with Commander, 2nd Fleet; Naval Information Warfare Center Atlantic Hampton Roads Detachment; Naval Surface Warfare Center Dahlgren Division Dam Neck Activity; and Naval Surface Warfare Center Carderock Division Norfolk Detachment
- **Midwest** in Indiana, affiliated with Naval Surface Warfare Center Crane Division
- **Northeast** in Rhode Island, affiliated with Naval Undersea Warfare Center, Division Newport
- **Northwest** in Washington State, affiliated with Naval Undersea Warfare Center, Division Keyport
- **Palmetto** in South Carolina, affiliated with Naval Information Warfare Center Atlantic
- **SoCal** in California, affiliated with Naval Information Warfare Center Pacific
- **Southern Maryland**, affiliated with Naval Air Warfare Center Aircraft Division
- **Ventura** in California, affiliated with Naval Base Ventura County

Original article: <https://www.secnav.navy.mil/agility/Pages/techbridges.aspx>.







COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs)

CRADAS

A Cooperative Research and Development Agreement (CRADA) formalizes a collaboration between a naval laboratory and a non-federal entity that can be from academia, state and local governments, non-profit organizations, private sector organizations, or an individual to work towards a shared research and development (R&D) effort. The statutory authority for CRADAs is 15 U.S.C. § 3710a.

Any naval laboratory can commit non-monetary contributions such as personnel, services, facilities, equipment, intellectual property or other resources with or without reimbursement to the research and development effort. The non-federal entity collaborator can provide similar resources as mentioned above; and additionally, they can contribute funding toward the shared R&D effort.

CRADAs create long-term value and high returns on research and development investments that accelerate technology development towards advancing the mission for Sailors and Marines.

BENEFITS TO THE NAVY AND MARINE CORPS:

- Provide a joint approach to solving specific naval challenges by applying diverse, innovative applications;
- Reduce R&D costs, time, and risk to achieve naval mission and/or naval commercial goals by leveraging external expertise, ideas, investment and resources; and
- Add external funding and resources into the naval technology ecosystem to create new products, processes and intellectual property applicable to advancing the naval mission.

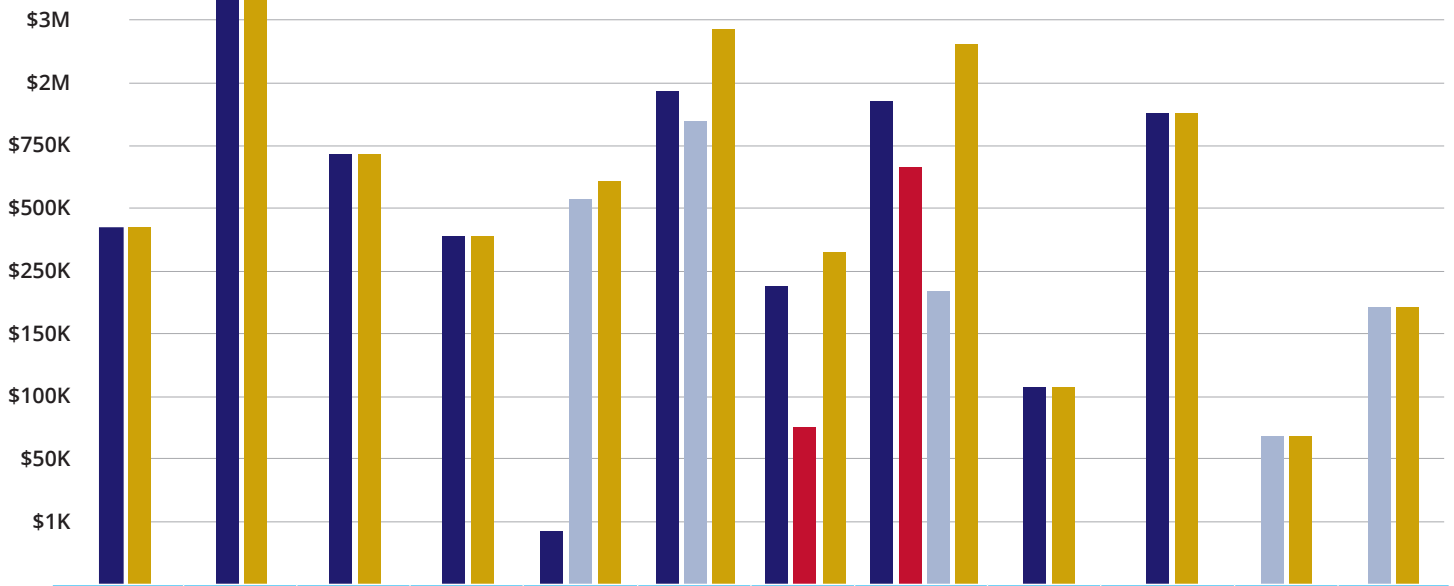
USE CASES FOR NON-FEDERAL ENTITIES:

- Access unique world-class facilities, equipment and personnel in a wide range of research fields to advance technologies to the next level;
- Ease of entering into arrangements to engage in naval R&D activities; and
- Test, characterize and evaluate materials, research tools and products for commercial use capability in a controlled or simulated environment across all scientific areas.

FISCAL YEAR	2016	2017	2018	2019	2020
EXECUTED CRADAS	303	365	403	388	356
AMENDMENTS EXECUTED	150	126	135	127	150
INCOME FROM INDUSTRY/NON-FEDERAL PARTNER FUNDS	\$6,468,063	\$4,455,583	\$8,374,277	\$6,331,778	\$9,769,684
INCOME FROM SBIR/STTR FUNDS	\$297,049	\$1,193,826	\$810,300	\$1,011,454	\$852,000
INCOME FROM OTHER GOV'T AGENCIES	\$2,233,249	\$666,254	\$2,756,115	\$720,313	\$2,019,039
AMENDMENT FUNDS	\$3,262,982	\$5,054,985	\$5,227,101	\$5,043,761	\$1,385,832
TOTAL CRADA INCOME	\$12,261,343	\$11,370,648	\$17,167,793	\$13,107,306	\$14,026,555

FY20 CRADA FUNDING BY SOURCE OF INCOME

■ Industry/Non-Federal Partner ■ SBIR/STTR ■ Other Gov't Agencies ■ Total Income

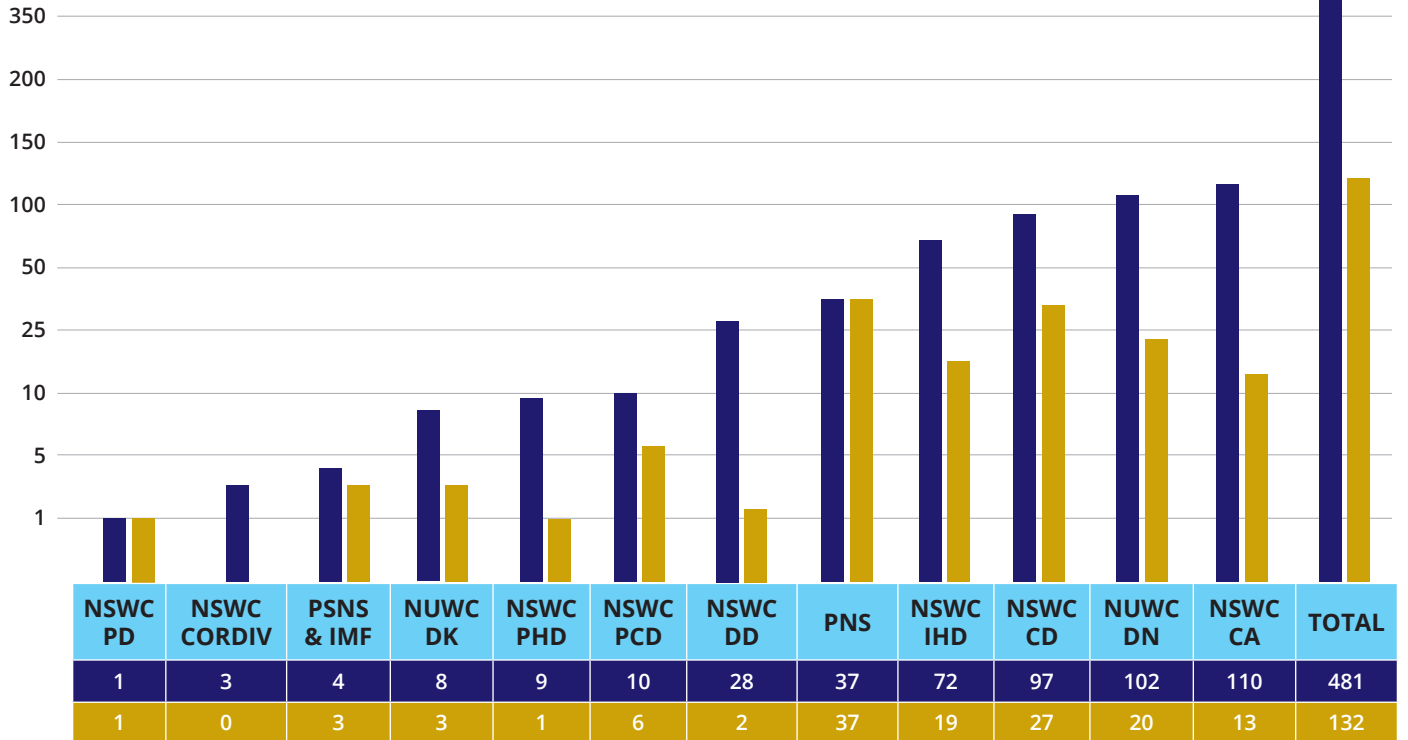


NAWCAD PAX	NAWC WDCL	NIWC PAC	NMCP	NMCS D	NMRC	NPS	NRL	NSWC CA	NSWC IHD	NSWC PCD	USNA
\$409,431	\$3,448,139	\$717,890	\$302,617	\$788	\$1,694,502	\$230,508	\$1,444,743	\$110,000	\$1,411,066		
						\$60,000	\$792,000				
				\$619,883	\$940,984		\$232,947			\$61,700	\$163,525
\$409,431	\$3,448,139	\$717,890	\$302,617	\$620,671	\$2,635,486	\$290,508	\$2,469,690	\$110,000	\$1,411,066	\$61,700	\$163,525

Laboratories with income

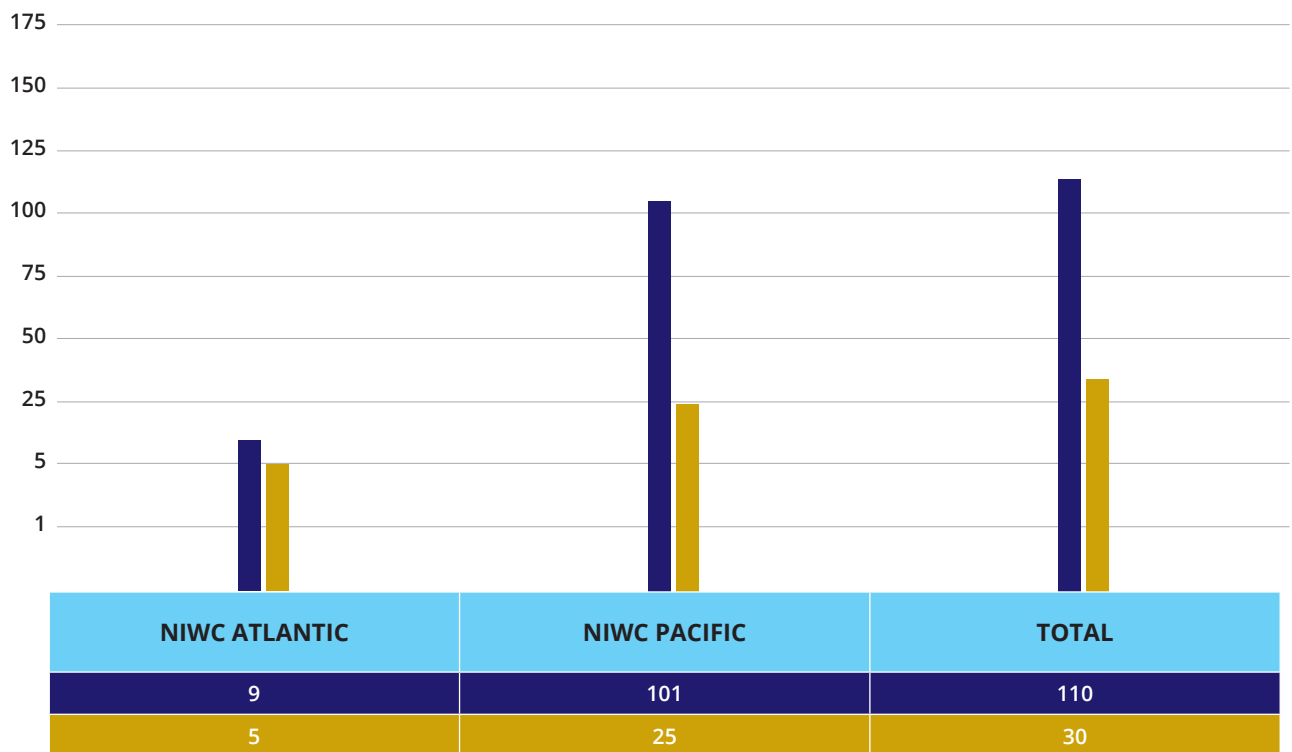
FY20 CRADAS - NAVSEA

■ Active CRADAs (Includes New CRADAs) ■ New CRADAs

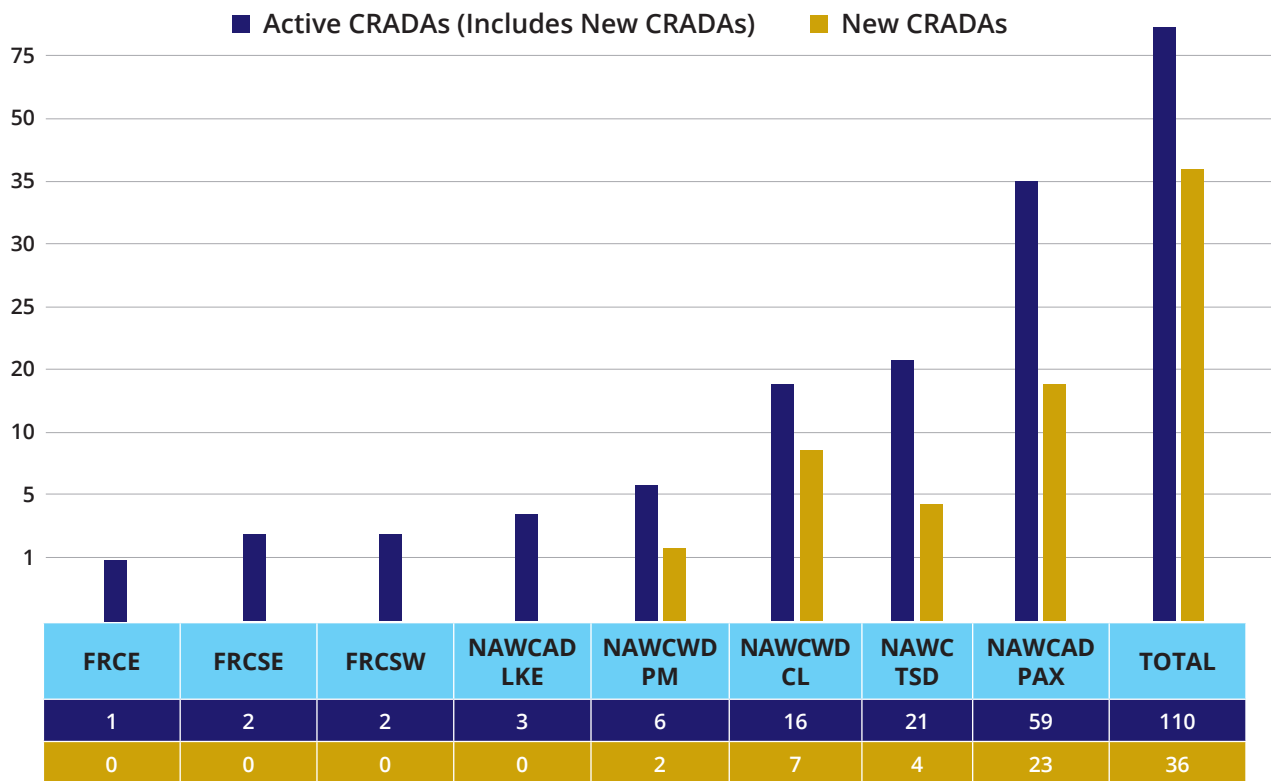


FY20 CRADAs - NAVWAR

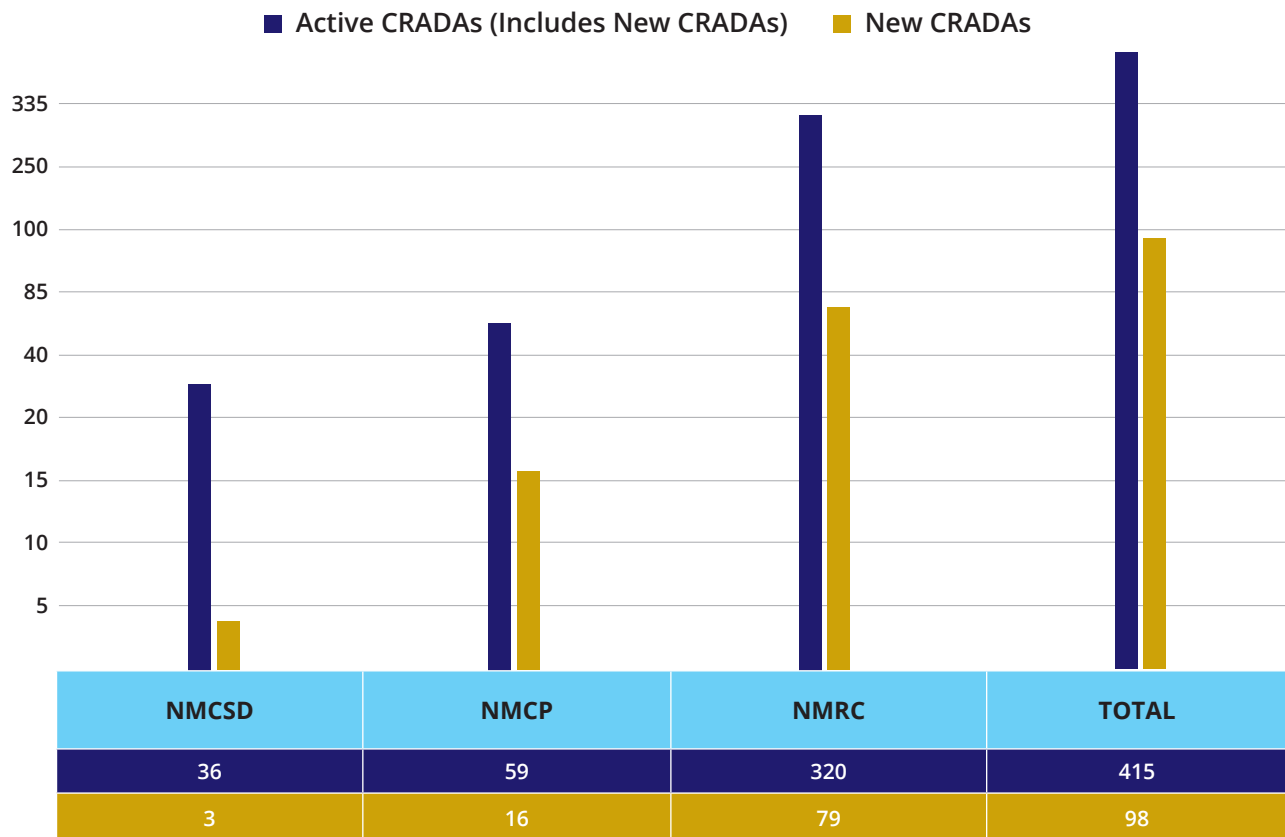
■ Active CRADAs (Includes New CRADAs) ■ New CRADAs



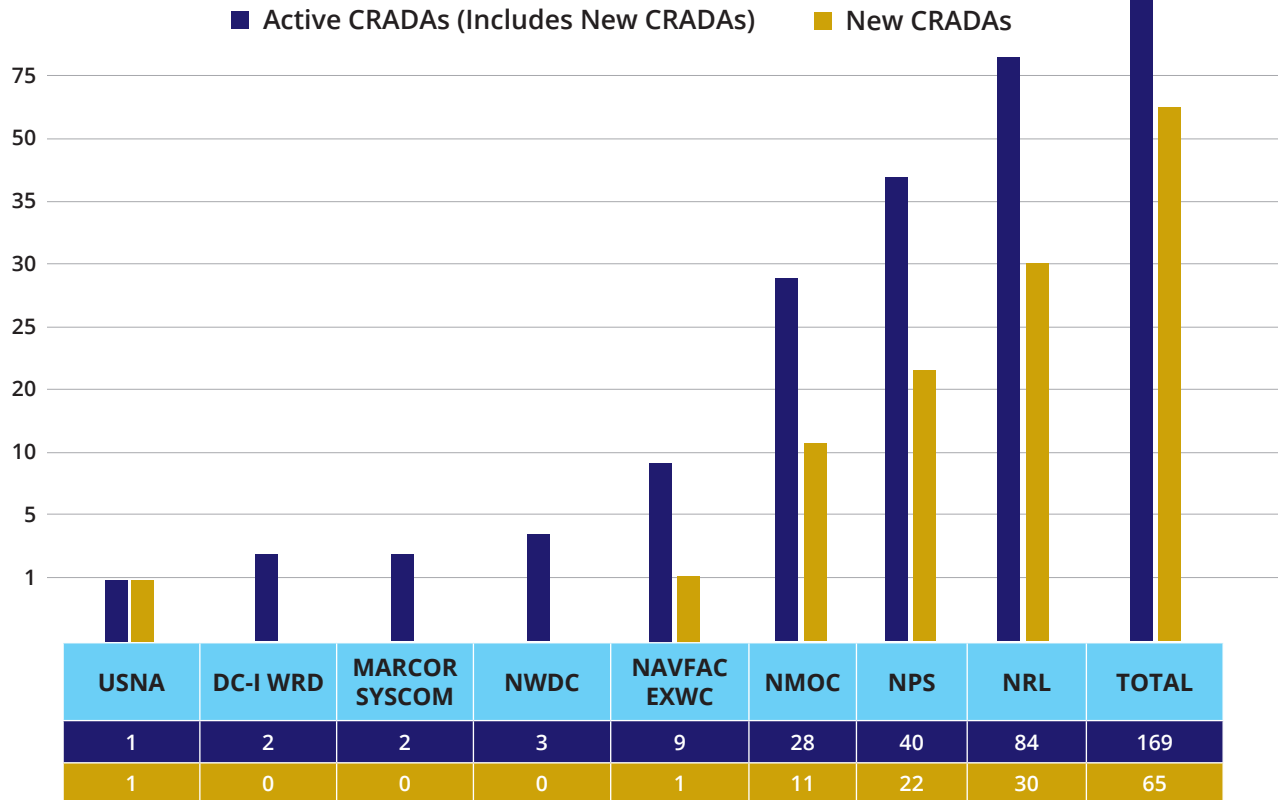
FY20 CRADAs - NAVAIR



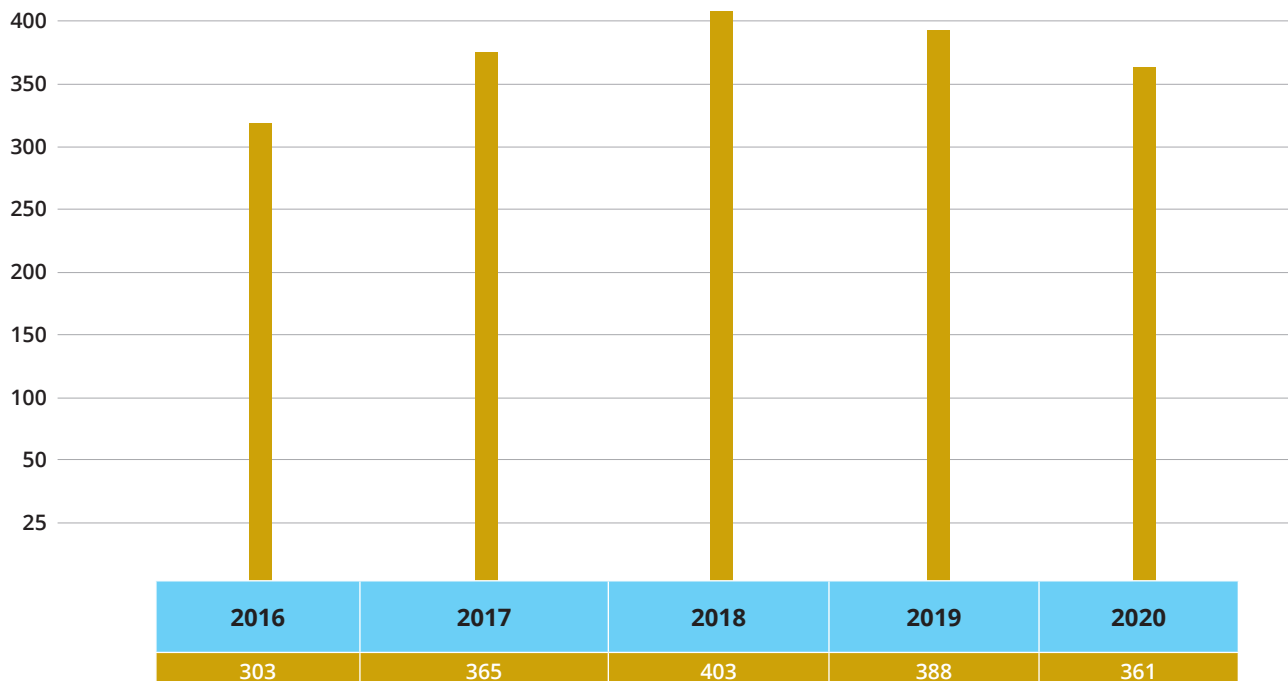
FY20 CRADAs - BUMED



FY20 CRADAs - OTHER LABS



DON EXECUTED CRADAs BY FY



FRC SOUTHEAST USES CRADA TO MAKE SAFER CORROSION-PREVENTION COATINGS

Fleet Readiness Center (FRC) Southeast, located in Jacksonville, Florida, entered a Cooperative Research and Development Agreement (CRADA) with Nevada-based CHEMEON Surface Technologies. The CRADA will reduce the use of hexavalent chromium—a carcinogen harmful to workers and the environment—in the development of corrosion-prevention coatings, in favor of the chemically benign trivalent chromium.

The corrosion-prevention coatings are applied to aluminum, aluminum alloys and other surfaces on the outer skin of aircraft. They provide a base for the paint primer and improve corrosion resistance and adhesion of the primer.

The team turned to Peter Sheridan, a senior materials engineer at FRC Southeast, and the Navy Environmental Sustainability Development to Integration project. They spearheaded the CRADA with CHEMEON Surface Technologies.

The purpose of the partnership is to design, develop, test and implement trivalent chromium as a pretreatment of aluminum and aluminum alloys; evaluate the effectiveness of various delivery mechanisms (spray application, ready-to-use solutions, touch-up pens and kits); and apply trivalent chromium on other surfaces as a post-treatment.

After laboratory testing at CHEMEON, the coatings underwent trials in the salt fog chamber at FRC Southeast, followed by beach exposure on outdoor panels at the John F. Kennedy Space Center in Florida.

The CRADA is being expanded to accommodate the corrosion, restoration and additive manufacturing programs at Naval Information Warfare Center (NIWC) Pacific. Sheridan will work with NIWC Pacific representatives to improve the corrosion resistance of the aluminum alloy components on antenna covers, electronics housings and other supporting assemblies.

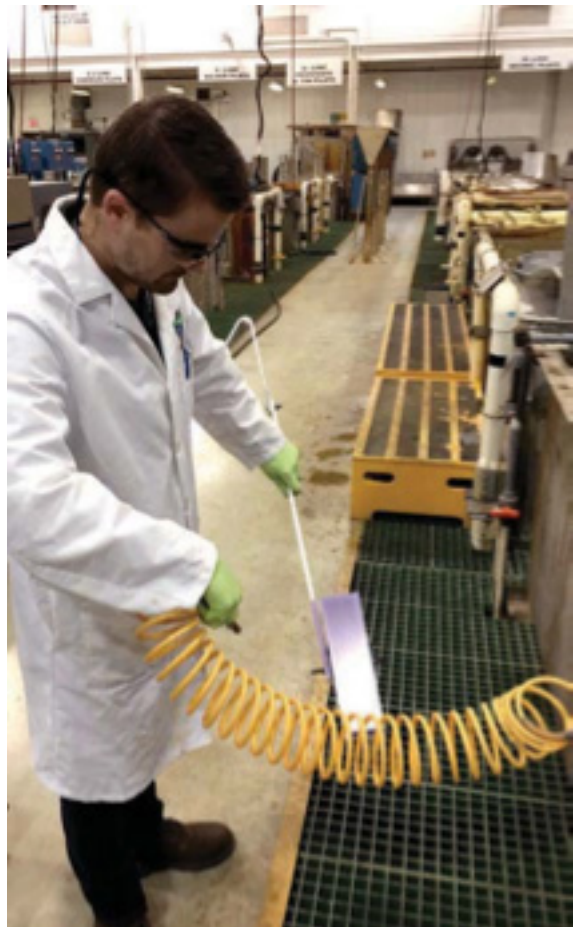


Photo by Sjon Westre

Original article: <https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/nescdi/NESDIAnnualReport2019v2.pdf>.

NPS, WOODS HOLE PARTNER TO ADVANCE UNDERWATER AUTONOMY

The Naval Postgraduate School (NPS) entered a Cooperative Research and Development Agreement (CRADA) with the Woods Hole Oceanographic Institution (WHOI) to advance future unmanned underwater vehicles (UUVs) and autonomous underwater vehicles (AUVs)—leading to new critical naval missions for these emerging systems.



(Photo: NPS)

With undersea warfare remaining a key domain for U.S. defense strategies, the ability to map and navigate the depths of the world's oceans becomes increasingly essential to maintaining an advantage. Responding to the Navy's emerging technological needs, NPS and WHOI are creating a virtual undersea environment to assist with the research and development of underwater vehicles to conduct marine mapping.

Partnering with WHOI—a private, nonprofit research and higher education organization dedicated to the study of marine science and engineering—NPS is capitalizing on its interdisciplinary curricula and innovative faculty and students to deliver real-world naval solutions.

“The general area of this research is to provide authentic virtual environments for developing and evaluating autonomous systems, specifically ocean robotics systems,” said Associate Professor Brian Bingham, director of NPS' Consortium for Robotics and Unmanned Systems Education and Research. “We're trying to create these virtual environments for a variety of underwater meteorology and oceanography platforms, as well as autonomous underwater vehicles, to test their operations and develop the autonomous software before doing real-world tests.”

“Almost everything is made easier and more efficient if you have a good map,” said Dr. Michael McCarrin, a research associate in NPS's Department of Computer Science. “The ocean is a challenging environment, and our reach using current technologies is relatively limited, even assuming an unlimited budget. As AUV technologies improve, the hope is that we will both extend our mapping capabilities, while simultaneously reducing risk to human operators.”

For WHOI, partnering with NPS can serve as a testbed for AUVs under development. For a virtual undersea map to be a reality, it will be autonomous systems that are exploring the ocean depths, and at lesser risk and expense than their manned counterparts.

Bingham and McCarrin credit NPS' relationships and collaborative efforts with others in private industry and academia for the shared resources that should ultimately lead to a successful virtual undersea environment, and ultimately better autonomous systems.

“Because of our position as an academic institution and a [Department of the Navy] entity, combined with our close proximity to Silicon Valley, we are in a good position to facilitate collaborative projects that bring to bear a lot of expertise,” said McCarrin. “We often have developers and leading research organizations working closely with NPS students and researchers.”

Original Article: <https://nps.edu/-/nps-creating-virtual-undersea-environments-to-advance-underwater-autonomy>.

NSWC PORT HUENEME CONTINUES COLLABORATION WITH TRANSHIELD TO MANUFACTURE PROTECTIVE WEAPONS COVERINGS

Naval Surface Warfare Center (NSWC) Port Hueneme Division signed a second Cooperative Research and Development Agreement (CRADA) with Transshield, Inc.—an Indiana-based maker of anticorrosive fabrics for a wide variety of uses, including naval weapon systems.

The new CRADA builds on an existing partnership between NSWC Port Hueneme and Transshield to manufacture protective covers that keep Navy combat weapon systems safe from corrosion—and prevent probing from adversaries equipped with technology like radio-frequency scanners. They also can be sized and designed to fit any equipment. This makes them adaptable to naval equipment as well as assets across all military branches.

“These covers were designed and invented at Port Hueneme with the help of Transshield and are meant to support the entire Navy fleet in protecting topside combat system elements,” said Armen Kvryan, an NSWC Port Hueneme materials subject matter expert. “It should be mentioned this also supports the entire Department of Defense [DoD] community. So, in essence, NSWC Port Hueneme was able to create something that has a significant impact on the fleet and DoD entities.”

With the new CRADA, NSWC Port Hueneme and Transshield will test how user-friendly and maneuverable the existing covers are on Navy ships—how easily and how well they fit onto equipment, if the zippers are in the right spots, if their corners fit correctly, and how easy it is for Sailors to handle and adjust them as needed.



(Photo: Armen Kvryan)

Original Article: <https://www.navsea.navy.mil/Media/News/Article/2223942/prestigious-association-of-old-crows-taps-armen-kvryan-to-speak-at-recent-event/>.

CRADA ENABLES INDUSTRY ACCESS TO TRANSFORM MARINE CORPS INSTALLATIONS

Led by the Marine Corps Installations Command (MCICOM), Installation neXt aims to transform Marine Corps bases through emerging technology and non-traditional partnerships.

Its strategy is to create collaborations to design the next generation of military installations—encompassing focus areas such as protection, resilience, community, mobility, maintenance, training and range support, operational reach, command and control, and data. MCI-West and Naval Information Warfare Center Pacific (NIWC Pacific) played vital roles in this endeavor, bridging the divide between Marine Corps installations and key technology companies.

The NIWC Pacific T2 Office executed Memorandums of Understanding (MOUs) with MCICOM and Marine Corps Air Station (MCAS) Miramar, while executing Cooperative Research and Development Agreements (CRADAs) with industry to create an innovation ecosystem that allowed for meaningful collaboration.



Installation neXt will soon focus on testing 5G technology at MCAS Miramar to enable digital networks to operate faster with increased bandwidth. NIWC Pacific and a 5G-network provider are in the final stage of drafting a CRADA to accomplish this.

As part of the MOUs and CRADAs, MCAS Miramar retains the authority to monitor and control onsite activities—while NIWC Pacific personnel function as technical subject matter experts. It is a win-win for everyone involved and demonstrates how the military and players in San Diego's innovation ecosystem could learn from each other and partner to create and test technologies.

CRADA OFFERS SOLUTION TO MARINE CORPS SUPPLY CHAIN ISSUES

In an effort to address Navy and Marine Corps supply chain challenges, Naval Information Warfare Center Pacific and HP, Inc. have engaged in a successful Cooperative Research and Development Agreement (CRADA) partnership focused on validating additive manufacturing technology solutions. This burgeoning field offers the military greater flexibility and opportunity to manufacture key equipment in various operational environments.

Consistent with the National Defense Strategy, NIWC Pacific and HP, Inc. conducted continuous experimentation research, accelerated technology adoption and performed risk reduction for Marine Corps operations, using innovative 3D printing technology.

Marine Corps Systems Command is building upon this CRADA's success by funding a one-year initiative to teach Marines how to operate the HP Metal Jet—an advanced 3D printing technology for high-volume manufacturing of metal parts.

The Command will embed three Marines for two weeks per month at Parmatech Corporation, an HP Metal Jet beta test site. California-based Parmatech Corporation produces low-cost, high-volume metal parts for the medical and industrial sectors. The trio of Marines will train on the HP Metal Jet technology under the guidance of Parmatech employees to identify solutions that can ease the supply chain woes of the Navy and Marine Corps.



(Photo: NIWC Pacific)

CRADA PAVES WAY FOR UNMANNED AERIAL SYSTEMS TO IMPROVE SHIP MAINTENANCE, READINESS



Empowered by a Cooperative Research and Development Agreement (CRADA), Naval Surface Warfare Center, Port Hueneme Division (NSWC PHD) is developing greater applications for unmanned aerial systems (UAS) to enhance maintenance and fleet readiness for the U.S. Navy. This is a result of a thriving partnership with Aerial Alchemy, a California-based UAS and data capture company.

To accelerate new capabilities to the fleet, NSWC PHD and Aerial Alchemy are currently refining methods of capture, collection and processing of UAS data for ship maintenance and repair.

By flying the UAS, which is capable of visually capturing the exterior surface of naval ships, Aerial Alchemy gathers data that are used to develop 3D “Digital Twins,” models identifying damage, corrosion and alignment issues on the ships. Accomplished through combined aerial and on-board photogrammetry with Light Detection and Ranging (LIDAR), the level of detail is so exceptional that a Digital Twin can be used to view an individual flake of rust on the actual ship. This form of digital engineering lends itself to Navy preventative maintenance needs by enabling engineers and maintenance personnel to compare scans of a ship and observe corrosion degradation to key systems, with unprecedented clarity.

Through this work under the CRADA, NSWC PHD and Aerial Alchemy have identified methods to reduce maintenance costs by producing data that can be shared and viewed by multiple experts and inspectors remotely. Thus, these experts could recommend specific system repairs before the ship system degrades to the point of failure—without ever having stepped foot on that respective vessel.

This process can also reduce human error and negligence issues that can arise from inspection routine repetition and failure.

“The concept of a Digital Twin or as-built models of surface ships provides extensive opportunities to better serve the fleet,” said Alan Jaeger, Office of Research and Technology Applications (ORTA) manager at NSWC PHD. When accompanied by evidence from the 3D model, the reporting of maintenance issues can be substantiated more accurately and reliably—ultimately reducing long-term logistical costs for the Navy.

Original article: <https://www.doncio.navy.mil/CHIPS/ArticleDetails.aspx?ID=10743>

SHIPYARD CRADA ACCELERATES MAINTENANCE MODERNIZATION WITH EXOSKELETONS AND ROBOTS

In a first-of-its-kind collaboration involving a Navy shipyard, the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) and Sarcos Robotics are jointly developing robotic technologies to increase shipyard safety and productivity.

Under this Cooperative Research and Development Agreement (CRADA), PSNS & IMF and Sarcos are collaborating to customize Sarcos' full-body powered exoskeletons and inspection robots to assist shipyard workers in unstructured, ergonomically challenging work environments—for example, the confined spaces encountered aboard a Navy ship or submarine undergoing maintenance, modernization or retirement procedures.

“This partnership provides an exciting opportunity for the shipyard to develop innovative solutions to improve our work while providing a safer, more ergonomic work environment for our employees,” said Capt. Howard Markle, former PSNS & IMF commander.

PSNS & IMF received the designation as a T2 laboratory in June 2017 from the Office of Naval Research. This laboratory status enabled the shipyard to enter into this CRADA to accelerate the access to critical technologies. This forward-thinking approach will help the U.S. Navy innovate its processes to maintain, modernize and retire fleet assets.

Original Article: <https://www.navsea.navy.mil/Media/News/SavedNewsModule/Article/1781637/shipyard-and-sarcos-robotics-announce-collaborative-partnership/>.







EDUCATIONAL PARTNERSHIP AGREEMENTS (EPAs)



EPAS

An Educational Partnership Agreement (EPA) enables naval laboratories to partner with U.S. educational institutions. The naval laboratory can loan and donate equipment, make laboratory personnel available to teach or assist in developing courses, involve faculty and students in research, and help to train future naval employees by promoting student interest in STEM careers. Educational institutions include local educational agencies, colleges, universities and any other non-profit institutions dedicated to improving science, mathematics, business, law, technology transfer or transition, and engineering education. The statutory authority for EPAs is 10 U.S.C. § 2194.

EPAs encourage and enhance study in scientific disciplines at all levels of education to bring STEM talent to the forefront and into the Navy ecosystem to advance the naval mission.

BENEFITS TO THE NAVY AND MARINE CORPS:

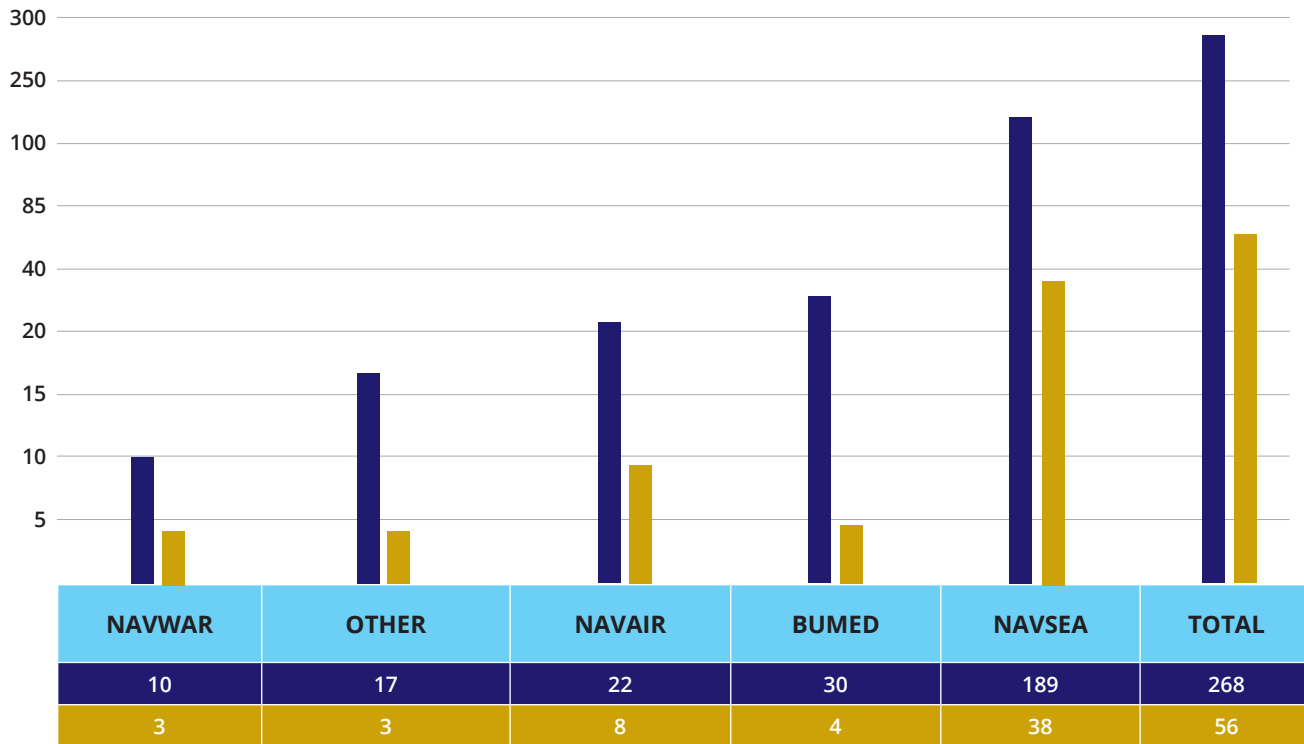
- Cultivate STEM students who can lead the future naval innovation and technology;
- Involve faculty and students as an extension of resources to naval laboratories to solve essential naval research and development (R&D) projects; and
- Provide academic teaching opportunities for naval scientists and engineers to recruit talent and to leverage academic approach methods to solving naval challenges.

USE CASES FOR NON-FEDERAL ENTITIES:

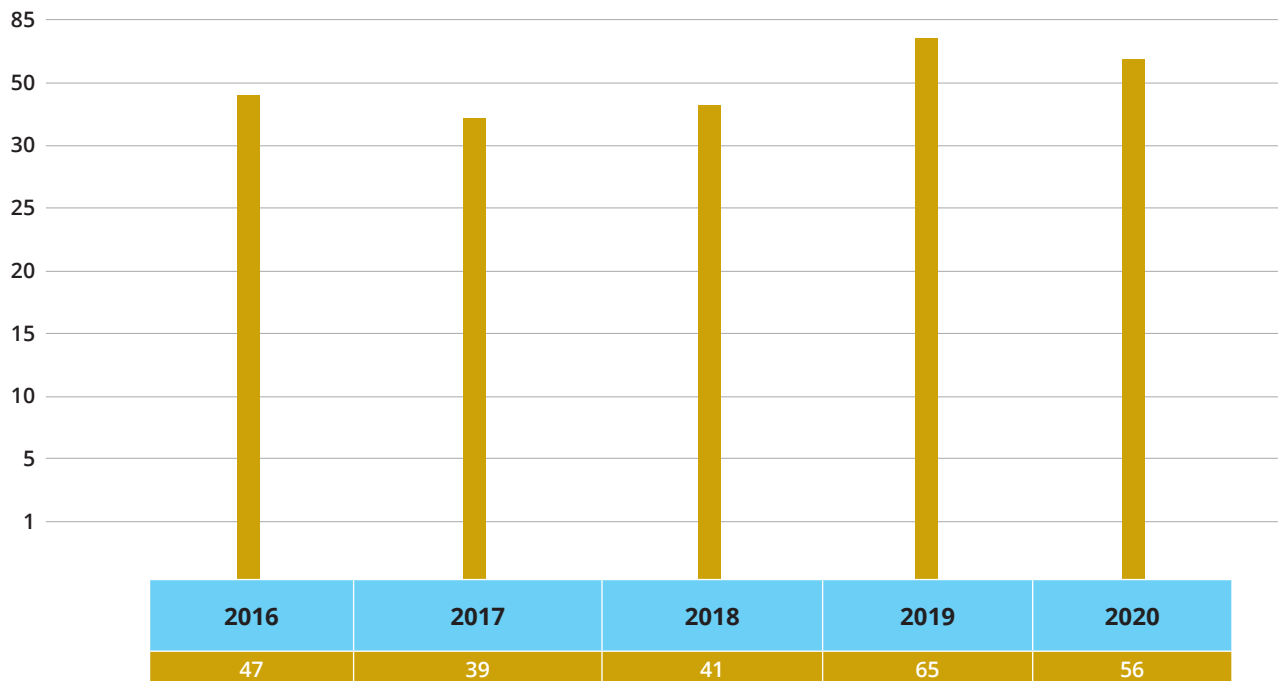
- Gain academic credits in student's research focus, while receiving valuable experience and synergy working alongside Navy subject matter experts;
- Develop student and faculty career training through naval internships and mentoring opportunities; and
- Receive loaned and transferred naval computer or other scientific equipment for student and faculty for academic R&D.

DON FY20 EXECUTED EPAs BY SYSCOM

■ Active EPAs (Includes New EPAs) ■ New EPAs



DON EXECUTED EPAs BY FY



PNSY AND UMASS LOWELL LAUNCH EPA TO INNOVATE SHIPYARD AND WORKFORCE



(U.S. Navy photo by Jim Cleveland/Released)

Portsmouth Naval Shipyard (PNSY) entered into an Educational Partnership Agreement (EPA) with the University of Massachusetts (UMass) Lowell at a signing ceremony in February.

“The partnership allows us to work collaboratively with UMass Lowell and their unique facilities and talented people to address real-world technical challenges we see in a shipyard environment,” said Shipyard Commander Capt. Daniel Ettlich. “This promotes education collaboration and knowledge sharing to adapt new technologies in support of our mission to safely deliver submarines to the fleet on time and on budget.”

The five-year agreement will allow the Navy to make its scientific, engineering and technology assets and subject matter experts available to university faculty to enhance the educational experience of UMass Lowell students. In turn, the Navy is able to involve UMass Lowell faculty and students in innovative projects underway at PNSY.

“This EPA solidifies the growing partnership between PNSY and UMass Lowell,” said Joseph Hartman, provost and vice chancellor for Academic Affairs at UMass Lowell. “The agreement permits a tremendous opportunity for our students, faculty and staff to work directly with experts at the yard, as well as provide for technology transfer between the two entities.”

“Executing the EPA is the beginning of a long and mutually beneficial partnership,” said Bradley Mingels, director of Academic Programs and Advanced Manufacturing for UMass Lowell. “We’re ready to go and will begin our initial technology and workforce training program in additive manufacturing very soon.”

“Our EPA with UMass Lowell is a way for the shipyard and university to help each other in a number of impactful technical areas,” said PNSY Technology Transfer Manager Sarah Buttrick. “The university is a great resource with a broad array of labs and research initiatives in addition to UMass Lowell’s Francis College of Engineering.”

Original Article: <https://www.seacoastonline.com/news/20200205/portsmouth-naval-shipyard-enters-agreement-with-umass-lowell/>

PORTSMOUTH SHIPYARD EPA CREATING INDUSTRIAL WORKPLACE PIPELINE

Portsmouth Naval Shipyard (PNS) entered into an Educational Partnership Agreement (EPA) with the Community College System of New Hampshire (CCSNH) at a formal signing ceremony Sept. 27, 2019.

The five-year agreement will allow the shipyard to make its scientific, engineering and technology assets and subject matter experts available to the college faculty to enhance their research activities and the educational experience of CCSNH students. In turn, the shipyard can involve CCSNH faculty and students in Navy research projects underway at Portsmouth Naval Shipyard.

“With seven colleges located across the state of New Hampshire, CCSNH contributes to the development of many potential members of the local workforce,” said Shipyard Commander, Capt. Daniel Ettlich. “This is our second educational partnership, which promotes STEM education through collaboration and knowledge sharing, while tapping into the enthusiasm of CCSNH students and faculty. This will ultimately lead to increased innovation within our work practices.”

The EPA is a dynamic agreement that can be used to meet the needs of either organization. It protects the intellectual property, such as inventions, data and proprietary information, of each partner. Among other things, the EPA enables the school to structure projects similar to typical shipyard-related challenges, thus providing realistic on-the-job experience to students.

“We are pleased to deepen our partnership with Portsmouth Naval Shipyard,” said CCSNH Chancellor Ross Gittell. “Colleges can act as strong strategic partners with employers to ensure that the expertise and problem-solving capacity intrinsic to educational institutions fuels real-world solutions and supports strong industry practices and growth. Community colleges, in particular, are designed to be attuned to future workforce and work practice needs within our regions and businesses.”

Original Article: <https://www.greatbay.edu/portsmouth-naval-shipyard-congressional-and-public-affairs-office/>.



T2 CONNECTS LOCAL COLLEGES AND BUSINESSES BY GROWING NAVAL CAPABILITY IN RURAL SOUTHERN MARYLAND

A thriving Educational Partnership Agreement (EPA) between Naval Surface Warfare Center, Indian Head Division (NSWC IHD) and the College of Southern Maryland (CSM) stemmed from mutual concerns over sagging local economies and the struggles of naval laboratories to attract and retain top-tier talent and industry partners.



Thanks to the efforts of Dr. Christopher Wilhelm, the Office of Research and Technology Applications (ORTA) at NSWC IHD, and Mr. Thomas Luginbill, director of CSM's Entrepreneur and Innovation Institute, this partnership among the Navy, industry and academia has achieved marked success quickly.

In 2019, the DoN T2 Program Office provided \$100,000 funding to NSWC IHD to support the creation of a small business to hire students from CSM and Morgan State University and design a prototype of a Navy-patented technology for demonstration.

The partnership is paying off. CSM's Velocity Center—a collaborative space created by the college and NSWC IHD—is helping to attract and retain warfare center employees. Here, CSM students have worked with Navy scientists and local businesses to execute commercialization plans—resulting in two technology licenses issued by NSWC IHD to a pair of new regional companies.

Both companies want to license additional Navy technologies to promote innovation, strengthen the naval workforce and stimulate the economy of southern Maryland. One company is exploring a space to manufacture products for commercial sales—and the other is seeking a training site where warfighters, law enforcement and first responders can examine the products.

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PARTNERSHIP INTERMEDIARY AGREEMENTS (PIAS)

PIAS

A Partnership Intermediary Agreement (PIA) is between a naval laboratory and an agency of a state or local government or a non-profit entity owned, funded and operated in whole, or in part, by chartered by, on behalf of a state or local government. Partnership Intermediaries assist, counsel, advise, evaluate or otherwise cooperate with industry or academic institutions that need or can make demonstrably productive use of technology related assistance from a federal laboratory. It enables the intermediary to identify new technologies in the private sector, the local laboratories, and the naval ecosystem that can be used by the DoN to accelerate delivery of technological capabilities to the nation and to help identify DoN technologies that can be licensed and commercialized. The statutory authorities for use of partnership intermediaries are Title 15 USC § 3715 and Title 10 UCS § 2368.

PIAs increase successful cooperative and joint activities with facilitating with U.S. small businesses that can accelerate the delivery of new technological capabilities to advance the naval mission.

BENEFITS TO THE NAVY AND MARINE CORPS:

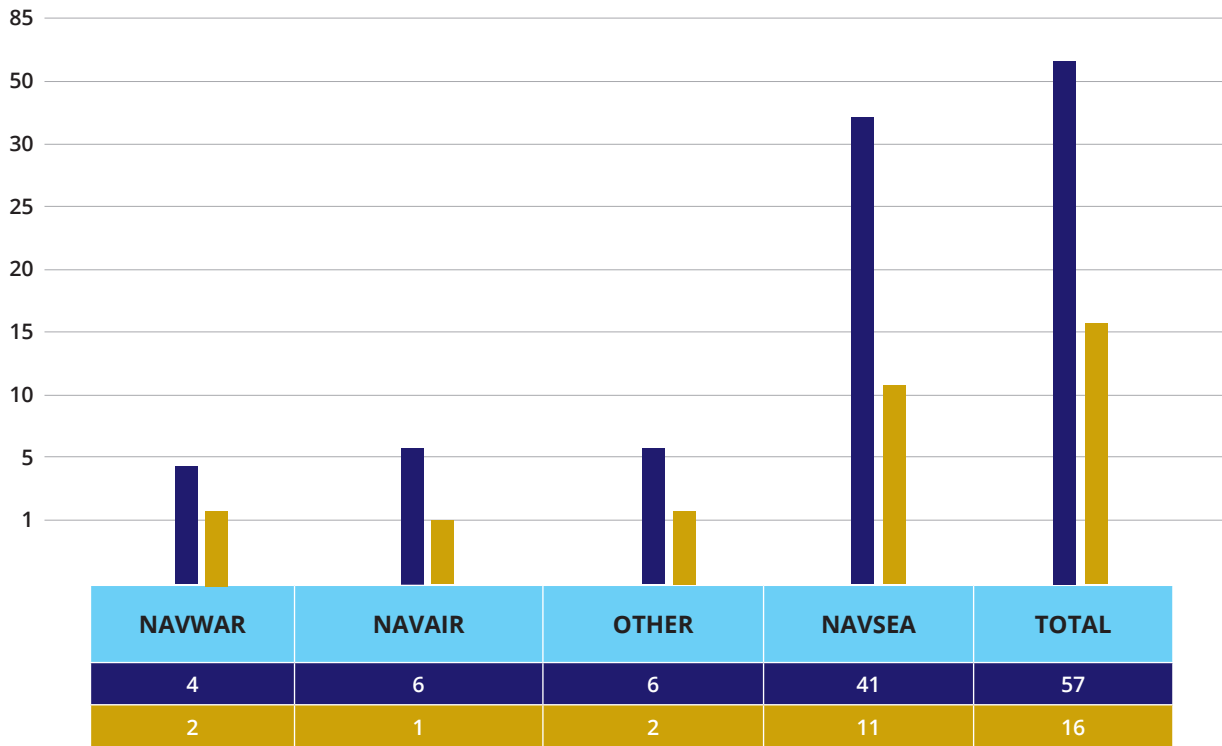
- Increase licensing, prototype creation, testing, manufacturing and commercialization of naval technologies to benefit the Sailors and Marines;
- Encourage engagements between the naval ecosystem and industry, academia and non-traditional contributors to create transformative opportunities while fostering a naval culture of innovation; and
- Develop an enhanced naval ecosystem with a knowledge-based workforce by promoting research, innovation, education and technological advancements.

USE CASES FOR NON-FEDERAL ENTITIES:

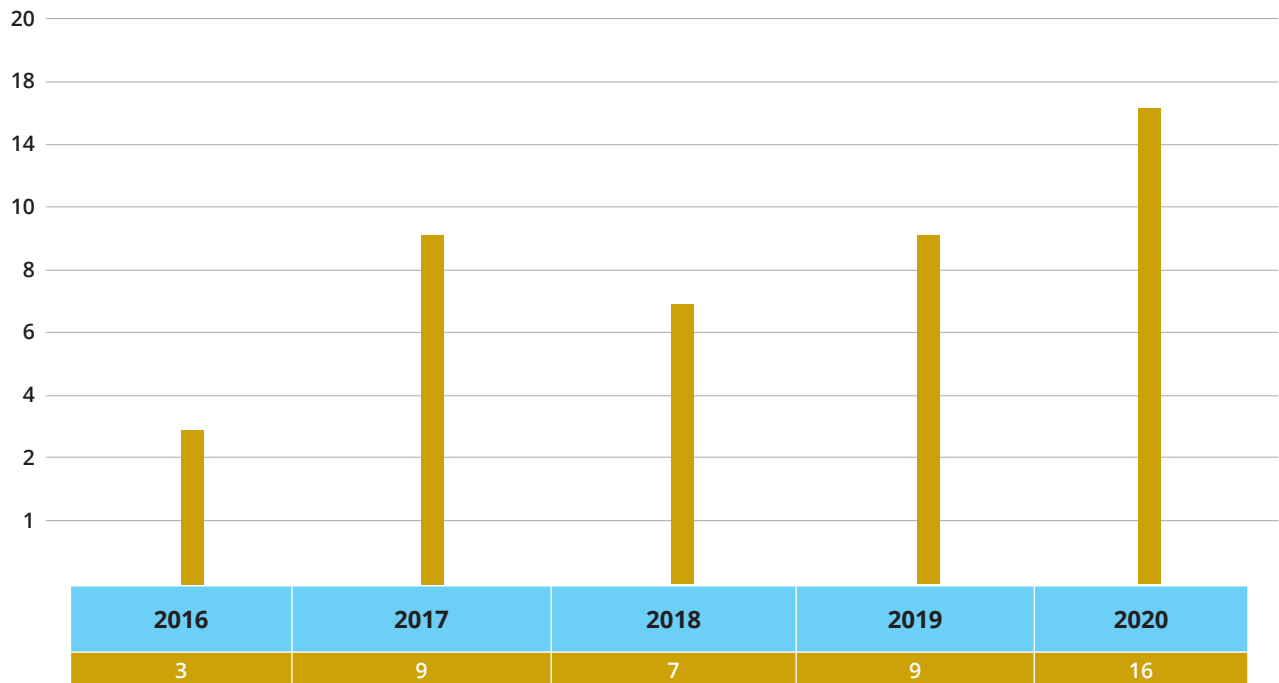
- Create a collaborative research environment through locations accessible to the Navy, private industry and academic institution to foster strategic alliances;
- Facilitate key partnerships to leverage naval technologies and promote technology licensing and Cooperative Research and Development Agreement (CRADA) opportunities; and
- Research and evaluate markets, help create opportunities for designs and prototypes of naval technology and promote manufacturing capabilities.

DON FY20 EXECUTED PIAs BY SYSCOM

■ Active PIAs (Includes New PIAs) ■ New PIAs



DON EXECUTED PIAs BY FY



NUWC DIVISION NEWPORT PIA STOREFRONT TO SHOWCASE PROJECT INCUBATION

Naval Undersea Warfare Center (NUWC) Division Newport signed a Partnership Intermediary Agreement (PIA) with Polaris Manufacturing Extension Partnership, which allows NUWC Division Newport to team with the University of Rhode Island, the Composites Alliance of Rhode Island and the R.I. Textile Innovation Network—in order to reach out to businesses and educational institutions for further collaborative research opportunities. Steve Bordonaro, director of the 401 Tech Bridge, which launched in December 2019, shared updates on the construction of the Tech Bridge facility at Polaris' campus in Portsmouth, Rhode Island.

The Portsmouth facility is envisioned as a place to conduct prize challenges, hold pitch days, and house twin labs with each side having a dirty space and a clean space. The facility is not intended to be a company incubator, as much as a project incubator or accelerator. A singular project could mature through its technological lifecycle at the Tech Bridge facility.

In addition to its function as a workspace, the space in Portsmouth will also provide a physical storefront to attract businesses and universities that typically would not have worked with the Department of Defense (DoD) in the past. Tech Bridges, combined with Other Transactional Authorities (OTAs) and prize challenges, are lowering barriers to work with the DoD.

Original Article: <https://www.doncio.navy.mil/CHIPS/ArticleDetails.aspx?ID=13232/>





NUWC DIVISION NEWPORT PIA HELPS LOWER BARRIER TO ENTRY FOR UNDERSEA SECURITY EXERCISE

Naval Undersea Warfare Center (NUWC) Division Newport held its fifth Advanced Naval Technology Exercise (ANTX) in August 2019, which was executed through its Partnership Intermediary Agreement (PIA) with Southeastern New England Defense Industry Alliance.

More than 800 attendees saw over 70 technologies during the ANTX held at the Narragansett Bay Test Facility. The 2019 ANTX theme—“Prepare for Battle: Undersea Security”—was attended by Navy leadership, politicians, industry and academic partners, SMEs and the Division Newport workforce. Internal investment dollars supported the NUWC Division Newport workforce development aspect of ANTX connecting employees from across the experience spectrum with the latest technologies from industry and academia.

ANTX 2019 successfully provided an opportunity for the numerous parties within the NUWC Division Newport ecosystem to identify promising technologies and potential partners to address the Navy’s mission of strengthening its undersea security needs.

Original Article: <https://www.dvidshub.net/news/338561/newest-naval-technologies-demonstrate-cutting-edge-capabilities-nuwc-division-newport-during-antx-2019/>





INTELLECTUAL PROPERTY/PATENT LICENSE AGREEMENTS (IP/PLAS)

IP/PLAS

An Intellectual Property License Agreement (IPLA) is between a naval laboratory and a non-federal entity in which the naval laboratory owns some form of intellectual property (IP) such as a copyright, trademark and/or a patent, and permits a non-federal entity to use the naval laboratory's intellectual property under defined conditions. The naval laboratory retains all ownership to its IP. The DoN T2 Program Office focuses on patent and software licenses to advance the naval mission.

The statutory authorities for naval patent and software licenses are 10 U.S.C. § 2260; 35 U.S.C. § 209, 37 C.F.R. Part 404; and 37 C.F.R. Part 501.

License agreements facilitate the development, manufacture, commercialization and, ultimately, the return of naval technologies back into the naval T2 ecosystem for the benefit of the warfighter.

BENEFITS TO THE NAVY AND MARINE CORPS:

- Benefit from products made by industry, based on technology originally developed by naval scientists and engineers;
- Leverage naval research and development investments to improve or create naval products and systems; and
- Contribute to U.S. economic growth and impact new job creation, resulting in a more diverse and competitive marketplace to better serve the DoN and the DoD.

USE CASES FOR NON-FEDERAL ENTITIES:

- Create cutting-edge competitive commercial products that can also benefit the warfighter;
- Access naval software to create commercial products that can be used by the warfighter; and
- Design commercial systems and processes that can increase effective execution of warfare activities across the DoD.

For a list of technologies available for license within the DoN, visit https://techlinkcenter.org/?s=Navy&post_type=technologies/



	2019	2020
PATENT LICENSING INCOME	\$1,677,519.41	\$2,760,204.16
NEW INVENTIONS DISCLOSED	443	440
PATENT APPLICATIONS FILED	526	509
PATENTS ISSUED	378	338
TOTAL ACTIVE PATENTS	4,371	4,243
NEW PATENT LICENSES	10	23
TOTAL ACTIVE PATENT LICENSES	65	65
TOTAL ACTIVE INCOME BEARING PATENT LICENSES	65	65
EXCLUSIVE PATENT LICENSES	16	15
PARTIALLY EXCLUSIVE PATENT LICENSES	20	18
NON-EXCLUSIVE PATENT LICENSES	25	28
OTHER IP ACTIVE LICENSES	4	5

NAWCADPAX COMMERCIALIZES 'GREENER' CLEANING SOLVENT FOR MULTI-SERVICE USE

The U.S. Navy and the InTech Environmental Canada Corporation finalized a Patent License Agreement (PLA) to commercialize a new, "greener" cleaning product.

Called NAVWIPE, the solvent efficiently cleans plastic or metal surfaces but contains very low levels of volatile organic compounds—making it much safer for people and the environment.

The PLA gives Vancouver-based InTech commercial rights to develop the Navy's NAVWIPE cleaning formula, which was protected by U.S. Patent 9,920,280 in 2018.

"We are marketing it as SimpliSolv™ and it fits perfectly with our line of sustainable solvent products," said InTech CEO Dave Pasin. "It's a high-performance, multi-purpose, commercial-grade cleaner and degreaser that contains no hazardous air pollutants and is biodegradable. It can cost-effectively address cleaning and prepping challenges in marine, aviation, automotive, machining and other industries."

Dr. El Sayed Arafat, a chemist at the Naval Air Warfare Center Aircraft Division Patuxent River (NAWCADPAX) invented NAVWIPE.

Micaela Whalen, senior tech manager at TechLink—the Department of Defense's national partnership intermediary for technology transfer—facilitated the PLA. She works closely with Rick Tarr and Michelle Miedzinski in NAWCADPAX technology transfer office to help companies access Navy research and development.

"The need for greener solutions is really a universal need," said Miedzinski. "And this patent license agreement allows Dr. Arafat's work to benefit the environment, the fleet and workers in any uniform."

Original Article: <https://techlinkcenter.org/news/canadian-company-intech-commercializing-us-navys-greener-cleaning-solvent/>



PLA ENABLES TRANSITION TO KEEP EXPLOSIVE ORDNANCE DISPOSAL WARFIGHTERS SAFE



Grey Ops, a Maryland startup company, licensed a U.S. Navy-patented technology from the Naval Surface Warfare Center Indian Head Division (NSWC IHD) T2 Office. The licensed technology enables explosive ordnance disposal (EOD) warfighters to safely bring explosives from the field to the laboratory.

The technology, called Silent Spring, is a liquid-safing product. When poured onto a bomb or improvised explosive device, it coats and desensitizes the primary explosives, preparing them for transport to a safe location for disassembly and forensic analysis.

Silent Spring decreases the risk for civilian and military operators who have to deal with these terrible weapons on a day-to-day basis. And it does so without affecting the composition of the primary explosive, which is important for determining where it came from.

In conjunction with the licensing agreement, a public-private partnership authorized under a federal law known as “Centers of Industrial and Technical Excellence,” allows the Navy’s T2 program activities to foster collaboration with industry, leverage private-sector investment and promote commercial business ventures.

This partnership will provide the EOD community with access to this unique technology, reduce hazards during explosive neutralization and removal activities, and maintain stringent quality control—which is necessary for EOD safety standards. The Navy will stay involved in Silent Spring’s production, with Grey Ops handling packaging and order fulfillment.

Utilizing NSWC IHD’s experience and facilities to scale the formula for initial production quantities, Grey Ops can leverage this capability today and focus efforts on the packaging, distribution and service rather than investing starting capital into their own manufacturing plant.

Original Article: [https:// www.navsea.navy.mil/Media/News/SavedNewsModule/Article/1978842/nswc-indian-head-eod-technology-division-announces-cite-partnership-agreement-w/](https://www.navsea.navy.mil/Media/News/SavedNewsModule/Article/1978842/nswc-indian-head-eod-technology-division-announces-cite-partnership-agreement-w/)

PLA FIGHTS NAVAL WORKPLACE FATIGUE AND INJURY

The Naval Surface Warfare Center (NSWC) Crane T2 office initiated a Patent License Agreement (PLA) with GoX Studio, a wearable robotics company to develop an innovative product—the Ergo Wearable Sensor Kit. This technology addresses workplace injury and consists of multiple sensors measuring lifting form, fatigue, force and rate of exertion—making it easier to protect individuals from injury and improve performance.

The patented technology was invented by Dr. Robert Templeman, a senior scientific technical manager at NSWC Crane. Dr. Templeman, a running enthusiast and microelectronics expert, saw the potential benefit of applying power-measuring technology found in sensors embedded in cycling pedals to measuring human performance in physical activities. The ability to quantify foot power, not just steps and stride, can be combined with software algorithms to determine form, fatigue, force and rate of exertion.

GoX Studio, a Phoenix, Arizona-based company founded by two service-disabled veterans, recognized the value of Dr. Templeman’s creation—calling it the “missing link” needed to fully develop their product.

Beyond the PLA, NSWC Crane and GoX Studio entered into a Cooperative Research and Development Agreement (CRADA) to further develop sensor prototypes to embed in shoe insoles and test during military human-performance trials.

GoX Studio used these prototypes to optimize the sensor kit for dual-use applications. Ergo is commercially available in a clip-on torso motion pod, a smart watch and smartphone, and smart insoles. Ruggedized versions are now deployed on warfighters to monitor fatigue and injury risk during operations.

Original article: <https://federallabs.org/successes/awards/awards-gallery/2019/gox-studio-ergo-wearable-sensor-kit/>



HOLOLENS SOFTWARE LICENSE AGREEMENT TO IMPROVE SHIPBOARD MAINTENANCE, TRAINING

Naval Surface Warfare Center Port Hueneme Division (NSWC PHD) successfully executed its first Patent License Agreement (PLA) in August 2019, involving two patents for Command-developed software. In partnership with California-based startup Axis3, NSWC PHD licensed non-exclusively these technologies to the company to potentially transform Navy ship maintenance, operations and training.



Axis3 plans to use the technologies to create applications for the HoloLens 2—Microsoft Corporation’s head-mounted display, an augmented-reality (AR) system. The HoloLens 2 allows device wearers to see holograms superimposed over real-life objects, amid audio command prompts. The technologies include a voice-command interface and visual-recognition component that, when integrated into Axis3’s proposed HoloLens2 applications, enable AR system operations in secure areas, such as Navy vessels.

As the fleet strives for greater agility, these applications could be used to enhance maintenance operations and improve training for sailors, thereby increasing operational capabilities. For instance, the head-mounted display can provide technicians virtual blueprints and targeted voice commands to increase maintenance efficiency.

According to Alan Jaeger, Office of Research and Technology Applications (ORTA) manager and chair of the Invention Evaluation Board at NSWC PHD “If the commercial entity can develop this concept and come up with software, the Navy would be able to purchase it without paying industry licensing fees, thereby providing a cost-effective solution to the warfighter.”

Original article: <https://www.navsea.navy.mil/Media/News/Article/1979379/nswc-phd-licenses-technology-so-ship-maintenance-programs-can-use-augmented-rea/>

PLA FIGHTS RUST CORROSION ATTACKING MILITARY VEHICLES

Craig Matzdorf, a chemist at Naval Air Warfare Center Aircraft Division (NAWCAD) Patuxent River is a renowned specialist in anti-corrosion coatings—a field built on rust. But there is nothing rusty about the patent portfolio the Navy has amassed over the last 15 years based on work in Matzdorf's laboratory.

NAWCAD Patuxent River and Aviation Devices and Electronic Components (Av-DEC), an aviation engineering company, recently announced the exclusive international licensing of Matzdorf's latest patent-pending invention, known as "Synergistic Metal Polycarboxylate Corrosion Inhibitors," which protects aluminum, steel and other alloys on naval assets from corrosion.

By adding polycarboxylate inhibitors to aluminum-rich coatings, a previous Navy invention, Matzdorf and his team were able to double the corrosion resistance.

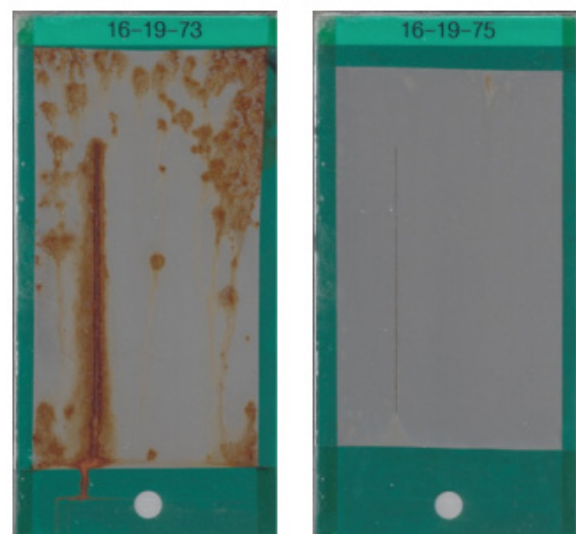
"This is a critical portfolio for the fleet," said Michelle Miedzinski, a PM at NAWCAD Patuxent River who has overseen the commercialization of Matzdorf's patent portfolio since 2011. "Corrosion is a multibillion-dollar problem. The DoD has thousands of aircraft, ships and vehicles that we need to keep in the air, in the water and on the road."

Discussions between NAWCAD Patuxent River and Av-DEC regarding the Patent License Agreement (PLA) began in October 2018. The license is limited to making, using and selling Matzdorf's technology within Europe, Mexico, Canada and the Republic of Korea. While American industries frequently license Navy technology for domestic markets, such licensing efforts are rare for international markets. This is because a company takes on the cost of filing and potentially defending the patent in each country on behalf of the Navy, in exchange for the exclusive license.

Av-DEC, based in Fort Worth, Texas, will use the new formula to enhance its existing product lines (gaskets, sealants and tape) and develop a new primer additive to supply to military and commercial aircraft manufacturers.

Ultimately, the new coating additive will benefit the military and civilian communities by reducing maintenance costs of vehicles and extending their life cycles.

Original article: <https://techlinkcenter.org/news/av-dec-granted-international-license-for-navys-anti-corrosion-additives/>

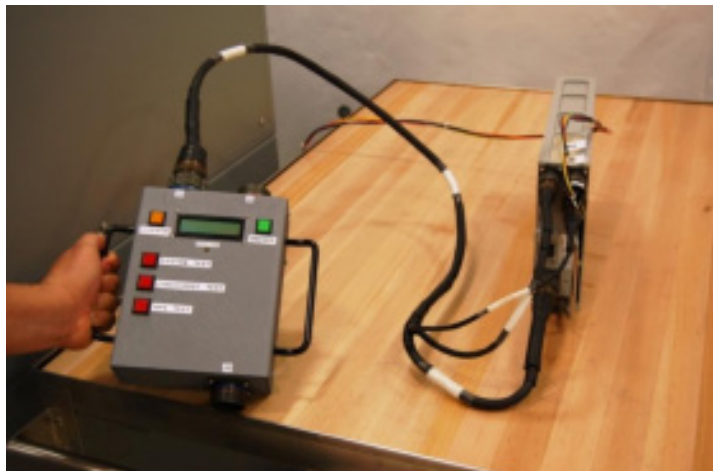


SMART CONNECTOR PLA TO HELP MILITARY AIRCRAFT RUN MORE SMOOTHLY AND SAFELY

Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst recently executed a Patent License Agreement (PLA) with DragoonITCN, an Ohio-based small business serving the military-aviation sector. The PLA allows DragoonITCN to commercialize NAWCAD Lakehurst-patented Smart Connector device—an electronic-systems diagnostics tool that isolates faults among specific aircraft hardware by inserting test access points between avionics boxes.

The Smart Connector was invented by four NAWCAD Lakehurst electronics engineers, including Dr. Russell Shannon, the head of the command’s Integrated Diagnostics and Automated Test Systems laboratory. The device is fully configurable and customizable; can detect a wide range of fault indicators; and is small enough to integrate into aircraft wiring bundles or operate as stand-alone test equipment. DragoonITCN plans to incorporate the Smart Connector into its own CORVUS avionics diagnostic tool, which was developed through Air Force Research Laboratory Small Business Innovation Research funding.

Original article: <https://techlinkcenter.org/news/navy-developed-smart-connector-licensed-by-ohio-based-avionics-firm-dragoonitcn/>







NON-FAR MEETS FAR: T2 & CONTRACTS

STACKED AUTHORITIES:

OTAS, PIAS AND CONSORTIA PROVIDE SOLUTIONS FOR PEOS/PMS

As outlined by 10 U.S.C. 2371b, the DoD has the authority to carry out certain prototype, research and production projects via Other Transaction Authority (OTA) agreements.

While this capability has been around for decades, duty contracting officers are using it more frequently today to cut through bureaucracy and expedite contracting—in support of the agility for which the Chief of Naval Research (CNR) and other military leaders are pushing. The FY16 National Defense Authorization Act bolstered the use of OTAs by giving the DoD permanent authority to award contracts under 10 U.S.C. 2371 for research, prototype and production purposes.

Typically, an OTA consortium lead is appointed and given authority to award contracts that meet certain parameters. Part of the push toward OTAs stems from the desire to work with “nontraditional” companies that have cutting-edge capabilities but do not have systems in place to do business with the DoD, such as Defense Contracting Audit Agency-approved accounting systems.

Some OTA consortiums are organized around technical domains such as composites, cybersecurity or artificial intelligence, while others are organized around the mission of certain military organizations. Similar to Partnership Intermediary Agreements (PIAs), OTAs allow an intermediary to extend the DoD’s reach. While the primary function of OTA consortiums is to bring new technology into the DoD, innovative naval ORTA representatives are using OTA consortiums to collaborate and push naval technology out to the private sector.

For example, in June 2019 Naval Air Warfare Center Aircraft Division (NAWCAD) awarded the Naval Aviation Systems Consortium (NASC) a five-year, no-ceiling OTA agreement. It features a unique structure and operational model, providing privity of contract to the performing member(s). Under the OTA, NASC may award contracts to companies that have capabilities sought by the Naval Air Systems Command (NAVAIR).

In concert, NAWCAD used a PIA to form the Innovation and Modernization Patuxent River (IMPAX), a partnership with the Georgia Tech Research Institute. NAWCAD and NASC have charged IMPAX with bringing new companies into the consortium, pairing up companies with complementary capabilities and educating them about NAVAIR’s needs. Many of these companies have not previously done business with the DoN.

NAWCAD’s ORTA representative sees the potential for this consortium to expand her reach in support of the T2 mission. It represents a whole new set of companies that may be interested in licensing DoN technology or executing Cooperative Research and Development Agreements (CRADAs) to partner with the DoN on developing technologies.



HOW SBIR AND T2 WORK TOGETHER

Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) is a federal government program, coordinated by the U.S. Small Business Administration to fund early stage research performed by American small businesses. DoN SBIR/STTR commonly works with DoN T2 to fund cooperative research and development projects with small businesses to develop and move research to the mission and marketplace.

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAS) WITH DON SBIR PARTNERS ADVANCE TECHNOLOGY FOR FLEET NEEDS

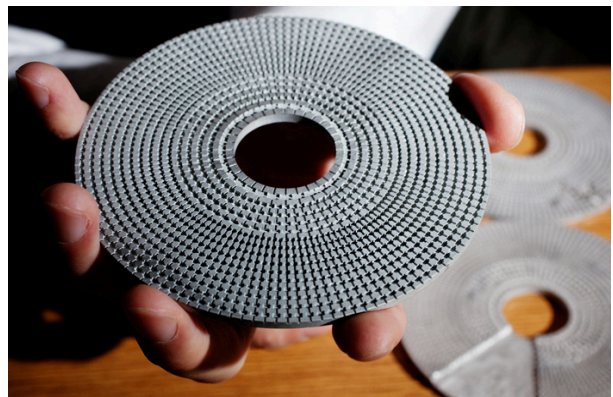
For example, in fiscal year (FY) 2019:

- A small business used part of its SBIR award to fund a naval laboratory engineer to perform engineering calculations on its sea water antenna.
- A small business used part of its SBIR award to fund a naval laboratory to test, integrate and evaluate its training software, which increased fleet input on the final design and advanced the technology readiness level.

Naval Undersea Warfare Center, Division Newport partnered with two DoN SBIR awardees to advance the development of naval technology. This was made possible by an FY2014 change to the SBIR/STTR guidelines, which allowed federal laboratories to accept SBIR/STTR funds from a small business under a CRADA to perform a portion of the work awarded under an SBIR/STTR contract.

NUWC Division Newport established such partnerships with Thornton Tomasetti, Inc., and Navatek, Ltd., to test and evaluate each companies' technologies.

The Thornton Tomasetti SBIR award focused on acoustic metamaterials, which can be applied to hull arrays, a critical aspect of a submarine's acoustic detection system. NUWC Division Newport had the expertise to validate the company's design and suggest improvements because of its deep expertise in the design, simulation and optimization of acoustic metamaterials for underwater applications. The work occurred at NUWC Division Newport's state-of-the-art Acoustic Test Facility.







DON T2 STUDIES



DON T2 ECONOMIC IMPACT STUDY

In 2018 TechLink, a Department of Defense (DoD)-funded PIA at Montana State University, conducted and published an economic impact study in collaboration with the Business Research Division of the Leeds School of Business at the University of Colorado Boulder. The study's primary purpose was to determine the extent to which DoD patent license agreements (PLAs) active during the 2000-2017 period contributed to new economic activity and job creation in the United States. The study's secondary purpose was to estimate the extent to which these license agreements resulted in the transition of new technology to U.S. military use.

The study breaks out economic impact by military branch, citing direct impact, indirect impact, induced impact and total economy-wide impact. TechLink defines direct impact as the dollar value of product sales based on licensed technology. Indirect impact is defined as the dollar value of inter-industry purchases of components and raw materials needed to manufacture products based on the licensed technology. Induced impact is defined as the dollar value of additional induced household expenditures across the economy as a result of the PLAs. Total economy-wide impact is the sum of the other impacts.

The economic impact of DoN license agreements active during 2000-2017 was quite significant. Major findings from the study included the following (DoN only):

- \$1.8 billion in direct impact (with almost 5,000 jobs supported);
- \$1.4 billion in indirect impact;
- \$1.5 billion in induced impact; and
- \$4.6 billion in total economy-wide impact.



The following table provides a more detailed look at the economic impacts resulting from DoN licenses active during the 2000-2017 period. TechLink’s study can be found at:

https://techlinkcenter.org/wp-content/uploads/2019/06/DoD_Licensing_Study_2018_With_Cover.pdf

IMPACT TYPE	DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT	TOTAL ECONOMY-WIDE IMPACT
Output \$ Millions	1,758	1,419	1,470	4,647
Value Added \$ Millions	773	737	829	2,339
Employment	4,993	6,245	8,898	20,136
Labor Income \$ Millions	523	463	470	1,456
Labor Income Per Job	104,745	74,058	52,871	72,305

TechLink. pp. 50–54, National Economic Impacts from DoD License Agreements with U.S. Industry.

DON T2 CRADAS CREATE BROAD-BASED ECONOMIC BENEFITS

A 2019 report by TechLink in partnership with the University of Colorado - Boulder (CU-Boulder) summarized a pilot study of the national economic impacts of Department of Defense (DoD) Cooperative Research and Development Agreements (CRADAs).

The study assessed economic impact of CRADAs established by three representative DoD laboratories—one laboratory each from the Army, Navy and Air Force. The Navy was represented by Naval Surface Warfare Center (NSWC) Crane. The research team surveyed all 413 companies and other organizations having CRADAs with the three DoD labs established during the 1996-2018 period. Companies were asked to divulge the total sales of new products and services, as well as other economic outcomes directly related to the technologies they developed under their DoD CRADAs. They also were asked about related economic outcomes, including sales to the U.S. military, follow-on research and development contracts, licensing revenue, and sales by licensees and spin-out companies.

The overall results from the three DoD labs were impressive. The study found \$8.7 billion in total sales of new products and services resulting from the DoD CRADAs, \$4.9 billion in sales of new products to the U.S. military, more than \$23 billion in total economic impact nationwide, and almost 120,000 high value jobs created over the 22-year span of the study.

NSWC Crane’s results were also impressive. Its 2003-2018 CRADAs created \$2.8 billion in total sales of new products and services, \$1.9 billion in sales of new products to the U.S. military, more than \$7.3 billion in total economic impact nationwide, and more than 42,000 high-value jobs.

Original article: <https://techlinkcenter.org/news/study-shows-cooperative-research-with-military-labs-driving-billions-in-economic-growth/>

IMPACT TYPE	OUTPUT \$ BILLIONS	VALUE ADDED \$ BILLIONS	EMPLOYMENT	LABOR INCOME
Direct Impact	2.790	1.879	13,486	1.574
Indirect Impact	1.350	0.873	9,683	0.578
Induced Impact	3.196	1.805	19,046	1.025
Total Economy-Wide Impact	7.336	4.557	42,216	3.177

NSWC Crane results

CO-DEVELOPMENT BETWEEN LABORATORY AND INDUSTRY INCREASES LIKELIHOOD OF MARKET SUCCESS

A June 2019 report prepared by the non-profit federal consulting firm RTI International for the National Institute of Standards and Technology (NIST) analyzed the nature of federal technology transfer and profiled best practices. The report, entitled “Overview and Analysis of Technology Transfer from Federal Agencies and Laboratories,” reinforces the broadly held belief that T2 will not happen overnight and that it is not likely to happen in a vacuum.

Federal T2 offices need to spend time coordinating and promoting partnerships between their laboratories creating useful innovations and the licensees hoping to bring that intellectual property to the marketplace. This longer-term commitment includes “providing resources, championing the to-be-transferred technologies and instilling a culture in the federal laboratory that values such activity.” Continued co-development between the laboratory and the licensing individuals or companies through development contracts and Cooperative Research and Development Agreements (CRADAs) increases the likelihood that the transferred technology will find market success.

The report profiles a port security barrier system invented at the Naval Facilities Engineering Systems Command and subsequently co-licensed by Harbor Offshore, Inc. and Truston Technologies, Inc. Since the technology was first licensed in 2006, it has been installed at all 24 U.S. Navy homeports and resulted in almost \$200 million in government and commercial sales for the licensees.

Original Article: <https://www.rti.org/publication/overview-and-analysis-technology-transfer-federal-agencies-and-laboratories>







PILOT PROJECTS



WHAT ARE PILOT PROJECTS?

The DoN T2 Pilot Projects are an initiative run by the DoN T2 Program Office that offers funding to Office of Research and Technology Applications (ORTA) managers at DoN T2 laboratories for innovative approaches to T2. The intent of the initiative is to identify unique, novel projects—once successfully piloted at the T2 lab—that can be instituted across the DoN T2 community. For example, the Innovation Discovery Event (IDE) was initially funded as a DoN T2 pilot project effort and now has grown into an established effort successfully administered at many DoN T2 laboratories.

This initiative provides an opportunity for DoN T2 laboratories to apply for, and to potentially receive funding for, these novel activities. Past pilot projects have included the following:

- T2 Handbook - Naval Surface Warfare Center (NSWC) Panama City Division
- IP Mining Pilot - NSWC Crane Division
- TechLink collaboration with several laboratories to organize IDEs
- Innography Business Intelligence Software - Multiple Navy Laboratory Participation
- Environmental Remediation Technologies - NSWC Carderock Division
- K9 Chemical Detection Training Device, later know as Mixed Odor Detection Device - Naval Research Laboratory

SUBSPACE PLANNING AND WORKFLOW MANAGEMENT TOOL DEVELOPMENT

PORTSMOUTH NAVAL SHIPYARD (PNSY)

PNSY is developing a novel workflow management tool that will greatly improve maintenance operations at the shipyard. Due to the complex nature of naval submarine maintenance, many highly-skilled engineers across numerous disciplines are needed to accomplish the monumental task. With many of these professionals in limited supply at the shipyard, there is a high demand for their skills. This workflow management tool seeks to solve the problem by efficiently planning each skilled technicians' labor across the submarine, aiding in the day-to-day planning process. Once this application is successfully piloted, the shipyard team hopes to develop Small Business Innovation Research (SBIR) topics that address development of a comprehensive workflow management tool, which can be leveraged across the naval maintenance community.



STATUS UPDATE

Application prototype sample due in January 2021.



PROJECT DESCRIPTION

The work flow management and physical subspace computer/tablet application will provide a real-time, visual picture of the current status of multiple jobs and functions on the ship.



\$95,000

FUNDING

*joint funding with SBIR



PROJECT MILESTONES

- Initial submarine layout ingested into prototype application.
- Shipyard project teams consulted for key application needs.
- Multi-layer functions identified for the application.

PILOT IMPACT



Provide the shipyards and naval maintenance community an application to assist with day-to-day planning of skilled labor to deliver maintenance needs to the naval fleet.

EPA SUPPORT FOR PIPELINE DEVELOPMENT

PORTSMOUTH NAVAL SHIPYARD (PSNY)

PNSY is cultivating an already established Educational Partnership Agreement (EPA) with Great Bay Community College (GBCC) to further enhance the Non-Destructive Testing (NDT) curriculum at the community college, a critical trade skill for the shipyard. The shipyard and the local ecosystem can greatly benefit from a Naval Sea Systems Command (NAVSEA)-accredited NDT program, through increased participation of the future workforce in this necessary trade. The shipyard is working with the GBCC to develop a submarine structural use-cases to be used in training and skills development for students.



STATUS UPDATE

NDT use-case material to be delivered by January 2021.

PROJECT DESCRIPTION



Effort with EPA partner GBCC to enhance NDT curriculum and to identify a plan to receive NAVSEA accreditation, to improve the workforce pipeline in this critical skill at the shipyard.



**\$65,000
FUNDING**



PROJECT MILESTONES

- NDT program evaluated and NAVSEA-accreditation qualification requirements understood.
- Gaps in knowledge and equipment identified in GBCC NDT program for development by the shipyard.
- Virtual meeting held with GBCC to share knowledge, NDT program and accreditation process.

PILOT IMPACT



An accredited NDT program can increase the employee pipeline to the shipyard with this critical skill for submarine maintenance.

TECHNOLOGY INNOVATION AND TRANSITION LABORATORY (TECHX)

Naval Surface Warfare Center, Port Hueneme Division (NSWC PHD) developed a joint use innovation laboratory that will facilitate the integration of research, development, prototyping, testing and transition functions among the DoN, regional first responders and non-traditional businesses. This pilot funding leveraged approximately \$2 million in existing laboratory equipment and will be specifically used to develop and enhance activities and processes within this regional laboratory environment. NSWC PHD personnel debuted the TechX space as a part of the Fathomwerx Lab, which was designated as the NavalX Ventura Tech Bridge in May 2020. The Ventura Tech Bridge will use the laboratory to host, educate and collaborate with companies participating in the Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) program, as well as companies that have not yet done business with the Department of Defense.



STATUS UPDATE

TechX maker space has been integrated into Fathomwerx Lab, home of the Ventura Tech Bridge.



PROJECT DESCRIPTION

Development of a maker space located outside of the gate to facilitate collaboration within the region.



\$100,000

FUNDING

*joint funding with SBIR



PROJECT MILESTONES

- Industry and stakeholder outreach conducted.
- Standard operating procedures developed.

PILOT IMPACT



Provide a physical space for NSWC PHD, other laboratories, academia, industry and other partners to leverage mutual and complementary capabilities for innovation.

IMPROVING T2 EFFICIENCY WHILE REDUCING DEFENSE ACQUISITION TIMELINES

Naval Surface Warfare Center, Indian Head Division (NSWC IHD) developed a business methodology that sought to increase knowledge sharing with commercial partners, reduce risk realized by commercial partners, and increase the number of PLAs and CRADAs while increasing the number of successful product launches with DoN commercialization partners. This T2 pilot project utilized Small Business Innovation Research (SBIR) funding and leveraged third-party funding to work within a structure proven successful in private industry to rapidly advance DoN-patented technologies for demonstration and reduce defense acquisition timelines. To validate this methodology, NSWC IHD selected a patented technology to participate in the program to yield a demonstration in approximately 12 months. A cohort of College of Southern Maryland (CSM) students worked with the inventor of the selected patent to define the commercial market, user base, and market potential for the technology. During the market-definition activities, the team worked to introduce companies to the SBIR process. After completing its participation in the T2 Pilot Project effort, NSWC IHD continued working on the methodology, drafting a manuscript for publishing, and they are planning to draft an accompanying training curriculum that can be shared with universities and federal laboratories.



STATUS UPDATE

The methodology trademarked as Defense Gat2e and has been drafted for publication. Training course based on the methodology for academic and federal labs is planned for development.



PROJECT DESCRIPTION

Validation of business methodology to apply to lab patented technologies to improve commercialization.



\$100,000
FUNDING

*joint funding with SBIR



PROJECT MILESTONES

- CSM student cohort worked with inventor to develop commercialization strategy utilizing the methodology.
- Team drafted a manuscript for journal publication highlighting the methodology.
- Trademark in process for the methodology.

PILOT IMPACT



Once validated, the methodology can be applied to Navy-developed technologies to increase the number of PLAs, CRADAs and market potential.

DOD PATENT MARKETING GUIDE

Naval Air Warfare Center Weapons Division (NAWCWD) and TechLink collaborated for two years to create a guide to help the Department of Defense (DoD) effectively market its patent portfolio to industry. The team ultimately created and published the DoD Patent Marketing Guide during the effort. The guide offers a detailed process for T2 staff to decipher the highly technical patent claim language in U.S. Navy Patents into jargon-free, functional statements. These statements can then be incorporated into highly effective marketing materials that industry can understand and pursue licensing opportunities. Initial beta testing improved NAWCWD's licensing results nearly 20 percent.

Original Article: <https://www.onr.navy.mil/en/work-with-us/technology-transfer-t2/Partnership-Options/DoD-Patent-Marketing-Guide>



STATUS UPDATE

DoD Patent Marketing Guide was published under Distribution A, and available to the public and all DoD laboratories.



PROJECT DESCRIPTION

Developed a comprehensive guide to translate technical patent vernacular for industry.



\$35,000 FUNDING



PROJECT MILESTONES

- Coordinated and collaborated with TechLink on guide language.
- Successful beta testing conducted.
- Final report and DoD Patent Marketing Guide published for DoD laboratory community.



PILOT IMPACT

Guide increased NAWCWD patent licensing by 20 percent during the beta testing period.

TECHNOLOGY HUNTER FOR NAVY INNOVATION

Naval Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC) partnered with Economic Development Collaboration of Ventura County (EDC-VC) and Matter Labs (ML) to identify Ventura County, California-based, financially stable companies that have mature and promising technologies that may address naval requirements. Once identified, the laboratories may partner with the businesses through a T2 agreement for continued RDT&E. During this pilot project, EDC-VC and ML identified companies with technology that address NAVFAC EXWC research priorities. Then EDC-VC produced a two-minute overview video for each relevant technology. During a one-day session, EDC-VC shared with NAVFAC EXWC personnel the videos, during which naval personnel prioritize technologies based on naval applicability and invited to participate in longer discussions. EDC-VC also produced company research reports that provide additional background to NAVFAC EXWC personnel, to accompany more in-depth discussions between the lab and companies.

https://www.youtube.com/channel/UCTZUf0XzaWqgkg4QI5h-jWw?view_as=subscriber



STATUS UPDATE

At completion of pilot, 14 technology videos were produced and available on YouTube.



PROJECT DESCRIPTION

Development of two-minute overview videos for local technology companies to stimulate T2 discussions between the lab and companies.



\$20,000 FUNDING



PROJECT MILESTONES

- Local companies screened and selected for participation.
- Technology overview videos created for companies and shared with NAVFAC EXWC personnel.
- Companies selected for in-depth discussions and potential collaborations.



PILOT IMPACT

Introduce local companies to naval lab ecosystem and increase potential for T2 collaborations.

FEDERAL ENGINEER PARTICIPATION IN FEDTECH STARTUP STUDIO COHORT

NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION

Pilot project funding was provided to NSWC Carderock to support an inventor whose technology was selected to participate in the Spring 2019 FedTech Startup Studio Cohort. Through this program, entrepreneurs are connected to technologies developed across federal research enterprise, and paired with advisors and inventors to develop a business plan for a product built on the federal IP. The NSWC Carderock engineer provided subject matter expertise to the entrepreneur team, as they worked together to identify pathways to commercialize the spray-casting technology. Through this effort, the lab gained a better understanding of the commercial space and how to potentially market the technology to licensees or potential partners in the market.



STATUS UPDATE

NSWC Carderock identified additional markets that the technology could be applied to and the entrepreneur team formed a company, GGB Solutions, Inc., to continue efforts.

PROJECT DESCRIPTION



Funding provided to NSWC Carderock scientist to participate in the FedTech Startup Studio cohort.



**\$15,000
FUNDING**



PROJECT MILESTONES

- Entrepreneur team identified a market and potential paths for commercialization.
- Inventor served as an advisor to entrepreneur team throughout the 12-week program.
- Entrepreneurs presented at Pitch Day.



PILOT IMPACT

Team identified a novel market—disaster relief—which the spray-casting technology could be applied to.

FEDERAL SCIENTIST AND ENGINEER PARTICIPATION IN FEDTECH STARTUP STUDIO COHORT

NAVAL INFORMATION WARFARE CENTER PACIFIC

Pilot project funding was awarded to NIWC Pacific to support two inventors whose intellectual property (IP) were selected for the Spring 2019 FedTech Startup Studio Cohort. Through this program, entrepreneurs are connected to technologies developed across the federal laboratory landscape, as they work with advisors and inventors to develop a business plan for a product that incorporates the technology. Three NIWC Pacific efforts were selected, two artificial intelligence (AI) patents from one scientist and one telecommunications patent from an engineer. The three teams consulted the inventors and developed plans for marketing and commercializing a product that utilizes each patent.

Following the conclusion of the Spring FedTech Startup Studio, one entrepreneur has engaged the NIWC Pacific scientist regarding other IP he has developed, specifically developing a separate AI technology. The entrepreneur team has formed a new company, called AION Systems, Inc., and is actively pursuing Small Business Innovation Research topics and has been in discussions with the lab for a future Cooperative Research and Development Agreement (CRADA) and potential license.



STATUS UPDATE

Entrepreneur continued working with NIWC scientist on separate IP and formed AION Systems, Inc. to potentially pursue funding for an AI technology.



PROJECT DESCRIPTION

Funding provided to NIWC Pacific engineer and scientist to participate in the FedTech Startup Studio cohort.



\$20,000 FUNDING



PROJECT MILESTONES


- Entrepreneur teams collaborated with inventors to develop marketing plan for technology.
- Inventors served as advisors to entrepreneur teams throughout the 12-week program.



PILOT IMPACT

FedTech Startup Studio program offers opportunity for lab inventions to undergo potential commercialization and collaborate with entrepreneurs to develop a business plan.

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With the unexpected emergence of Covid-19 in 2020, every corner of the military was forced to reimagine ways to achieve their directives and overcome previously unheard of obstacles, all while attempting to contribute to combatting the pandemic. Here are a few examples of how naval technology transfer programs across the country responded to and mobilized for the warfighter and community.



DON T2 COVID-19 RESPONSE HIGHLIGHTS

NSWC INDIAN HEAD DIVISION, LOCAL DISTILLERY USE CRADA PARTNERSHIP TO PRODUCE HAND SANITIZERS

Naval Surface Warfare Center (Indian Division (NSWC IHD) is helping one business give back to emergency responders by partnering with a local business, Blue Dyer Distilling Company in Waldorf, Maryland, to pivot their operations from the production of spirits to the creation of hand sanitizer.

A subsequent Navy Cooperative Research and Development Agreement (CRADA) was signed April 6 with NSWC IHD, allowing the two organizations to combine their efforts to speed up the release of the hand sanitizers for those who need it most.



(U.S. Navy photo by Matt Poynor)

“We are providing materials, facilities and operators on-site to aid with the large-scale production of this critical commodity,” said Dr. Chris Wilhelm, NSWC IHD Office of Research and Technology Applications lead. “This is an opportunity to help a local business do some good in an area where we have the materials and capabilities to aid them. If we can find a unique way to leverage our assets during this crisis, we are going to find a way to do so.”

To date, Dunbar says his distillery has produced approximately 200 gallons of sanitizer so far which have been delivered to more than 30 state, local and government agencies, including law enforcement personnel and other emergency services.

“This is a time when we all need to be flexible and identify where there is an opportunity for the greater good of the community,” said Wilhelm. “As Charles County’s second largest employer, we’re fortunate to be able to have the capabilities to support such organizations who are able and devoted to help those that need it most right now.”

Original article: <https://www.navsea.navy.mil/Media/News/SavedNewsModule/Article/2138665/nswc-indian-head-eod-technology-division-local-distillery-partner-in-production/>

PORTSMOUTH NAVAL SHIPYARD PARTNERS WITH U.S. ARMY AND UNIVERSITY OF NEW HAMPSHIRE TO DELIVER CRITICAL PPE

For York, Maine, a small coastal town of 13,000, personal protective equipment (PPE) has been hard to come by during the pandemic. With this in mind, the Portsmouth Naval Shipyard stepped in, donating critical PPE, including masks and other materials, for first responders and health care workers in York. The shipyard worked with the University of New Hampshire (UNH), through an established Educational Partnership Agreement (EPA), to 3D print face shields and an “intubation box” used to help health care workers treat patients with coronavirus. The face shields and boxes are currently in use at both York and Portsmouth Regional hospitals.

For its work, the shipyard received a Community Recognition Award from the town, honoring it for “stepping up and going above and beyond” during the coronavirus pandemic.

In October, in response to equipment shortages stemming from the pandemic, the Army Medical Research and Development Command (AMRDC) assembled a team of experts to help produce and procure medical materials.

One of the group’s main projects was a 3D printed nasal swab that could be produced quickly, cost-effectively and in line with FDA regulations. The coffee stirrer-sized swabs are necessary for the diagnostic testing critical to combating coronavirus, and have often been in short supply during the course of the pandemic. AMRDC was able to partner with several groups, including the DoD Organic Industrial Base, to manufacture swabs in collaboration with academic and industry allies.

One of these partners was the Portsmouth shipyard, which built the capacity to churn out as many as 10,000 swabs per day. The partnership has presented an opportunity for the institutions to maximize their separate strengths during a difficult period, said Sarah Buttrick, the shipyard’s strategic planning and technology transfer manager.

“This partnership will bring opportunities to collaborate together as innovation accelerators for high-impact programs,” Buttrick said. “This agreement opens up research opportunities, and will provide UNH students and faculty an opportunity to gain hands-on experience with technical challenges faced by one of the largest employers in the region.”

Original Article: <https://www.seacoastonline.com/news/20200412/shipyard-ung-team-up-to-make-ppe/>



(U.S. Navy photo by Jim Cleveland/Released).

NORTHWEST TECH BRIDGE RAPID-PROTOTYPES PROTECTIVE GEAR FOR FIRST RESPONDERS

To equip those on the front lines of coronavirus response, the Naval Undersea Warfare Center (NUWC) Division Keyport—in partnership with the U.S. Navy’s Tech Bridges program—manufactured over 500 face shields and personal protection equipment for first responders at two hospitals and naval commands in the state of Washington.

Johannes Schonberg, director of the Northwest Tech Bridge at NUWC Division Keyport, teamed with engineers in the rapid-prototyping shop at NUWC Division Keyport’s Maintenance, Engineering and Industrial Operations Department—where they refurbished the protective equipment using traditional manufacturing methods as well as 3D printing.

The project was so successful that ONR is sponsoring a similar collaboration among the Northwest Tech Bridge, NUWC Division Keyport and the University of Alaska Fairbanks (a Tech Bridge academic partner). NUWC Division Keyport and the Northwest Tech Bridge are sharing best practices and successful manufacturing models with the university—providing it with a playbook to work with local industry to produce protective equipment for first responders at Fairbanks Memorial Hospital.

Original article: <https://www.onr.navy.mil/Media-Center/Press-Releases/2020/Navy-Provides-Protective-Gear-to-First-Responders/>



(U.S. Navy photo by Nathanael T. Miller)

NIWC PACIFIC TEAMS WITH MARINE CORPS SYSTEMS COMMAND AND UCSD MEDICAL CENTER TO DESIGN AND 3D-PRINT VENTILATOR SPLITTERS

The University of California San Diego (UCSD) Medical Center has partnered with the Marine Corps Systems Command (MCSC) to help medical professionals as they deal with the evolving crisis of coronavirus.

In early March 2020, Dr. Sidney Merritt, an anesthesiologist at UCSD Medical Center, contacted MCSC's Advanced Manufacturing Operations Cell (AMOC) requesting assistance in coordinating 3D printer assets to design parts to enable the simultaneous ventilation of multiple patients.

MCSC, NIWC Pacific and UCSD have established a Cooperative Research and Development Agreement (CRADA) to facilitate current and future support requests. A Memorandum of Understanding among MCSC, NIWC Pacific and the Navy's Bureau of Medicine and Surgery is also being established to codify roles and responsibilities.

Merritt provided design files for the ventilator splitter, based upon a successful test print conducted by the UCSD engineering team. UCSD requested assistance in printing ventilator splitters in higher resolution and with diverse materials that could meet specific design requirements.

After receiving the design files, MCSC, AMOC and the NIWC Pacific RESTORE lab printed several prototypes using different materials. In less than a day, MCSC AMOC used its industrial printer in Quantico, Virginia, and the RESTORE Lab employed its organic printers, to produce initial prototypes.

The 3D-printed ventilator splitters were scanned to ensure accuracy with the design files and then brought to UCSD Medical Center for fit testing and further design analysis.

"I couldn't be prouder of the Marine Corps and NIWC Pacific team," said Carly Jackson, Naval Information Warfare Systems Command chief technology officer. "We are demonstrating the power, agility and speed of response that our naval research and development centers bring to bear in times of national need."

Original article: <https://www.marcorsyscom.marines.mil/News/News-Article-Display/Article/21233729/ucsd-medical-center-requesting-mcscs-help-to-support-covid-19-crisis/>

INDIANA HOSPITAL LEVERAGES ROYALTY-FREE LICENSE FOR LONG-RANGE TEMP-SCANNING TECH DEVELOPED BY NSWC CRANE

In order to lessen the severity of the new coronavirus outbreak and shorten economic recovery, officials at the Naval Surface Warfare Center (NSWC), Crane Division launched the Rapid Response Licensing Program, which made NSWC Crane's 300-plus patented technologies available for royalty-free licensing for 12 to 18 months, depending on whether the repurposed technologies directly aim to solve complications stemming from the coronavirus pandemic.

Among those to take advantage of the new program was Greene County General Hospital (GCGH), an area hospital looking to leverage NSWC Crane-developed, sensor-agnostic thermal-imaging system and software to increase social distancing between hospital staff and patients. The technology allows the staff to detect feverish persons up to 200 yards away. The software-enabled system is also capable of detecting fevers in near real-time—every 0.016 seconds—and works on individuals and moving crowds. The software runs on any laptop with USB capability, requiring a capture card, a commercial infrared sensor and a calibrated temperature reference tool, so that the software can identify the temperature of a person.

Radius Indiana, an economic development agency, connected GCGH with NSWC Crane regarding this technology and the parties began negotiating a Cooperative Research and Development Agreement (CRADA), along with the patent license with TechLink's support. The CRADA was put in place to loan equipment and set up a trial of the software system at the hospital.

Stacy Burriss, MPA, Director of Foundation and Community Outreach at GCGH, said "The Rapid Response program has allowed us to get an affordable solution quickly, a huge benefit for a small hospital like GCGH. With this, we don't have to spend time applying for grants and waiting for them to come through—we can start alleviating our staff almost immediately."

Jenna Dix, who leads NSWC Crane's Tech Transfer Office, said that tech transfer allows federal research and development to spur growth in the private sector, creating jobs and new tech solutions for the public. Dix said other private companies and entrepreneurs can also license then use, or license to manufacture and sell, the temp-checking tech.

"This technology was made for sailors and Department of Defense civilians, but has applicability just about anywhere," said Dix. "We want Crane's resources to be made available to others—out of the lab and right into the hands of the public."

NSWC Crane leadership hopes that businesses and entrepreneurs will use these technologies to protect American lives during the COVID-19 pandemic and support new jobs and economic growth.

Original article: <https://techlinkcenter.org/news/navy-laboratory-offers-patent-licenses-to-fight-virus-boost-economy> and <https://www.navsea.navy.mil/Media/News/Article/2356901/nswc-crane-provides-thermal-imaging-solution-to-area-hospital-during-coronavirus/>



(U.S. Navy photo)

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DON T2 TRAINING



DOD TECHNOLOGY TRANSFER AND TRANSITION WORKING GROUP

In 2020, the Department of Defense (DoD) T2 community pivoted its annual T2 training workshop to a virtual format. The group was renamed the DoD Technology Transfer and Transition Working Group (T3WG) to capture the relationship between technology transfer and technology transition.

Based on feedback from the DoD T2 community to create more year-round training options, the DoD T3WG transitioned to hosting hour long webinars biweekly in November 2020. Each webinar covered a topic of interest to the DoD T2 community, and sessions were recorded for personnel to access on-demand. The Federal Laboratory Consortium (FLC) has worked with the DoD T2 community to facilitate and host the training webinars, and lead some of the legislation-related sessions. Webinar sessions topics scheduled include:

- Technology Transfer Legislation Updates
- Introduction to Technology Transition
- Communicating T2 Value: CRADA Economic Impact Study and Success Stories
- PIAs 101
- DoD PIA Study Results

DoD T3WG webinar sessions were recorded and can be viewed here:

<https://federallabs.org/learning-center/on-demand/online-courses>

DoN T2 TRAINING WEBINAR

In 2020, the DoN T2 Program Office did not host its annual ORTA/Legal Workshop. Instead, the program office identified training topics relevant to DoN T2 Community, including training webinars on DoN T2 Business Plans and the DoN T2 Pilot Project program. In addition, the DoN T2 Program Office will continue to plan and coordinate courses throughout the upcoming year that complement Federal Laboratory

TRAINING

Consortium and DoD training opportunities.

2019 DON T2 ORTA LEGAL WORKSHOP

In November 2019, the DoN T2 Program Office hosted its 11th Navy ORTA/Legal Workshop (OLW) at Naval Base Kitsap Bangor in Silverdale, Washington. The DoN T2 Program Office worked with the two T2 laboratories in the Seattle-area to host the workshop: Naval Undersea Warfare Center (NUWC) Division Keyport and Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF).

The OLW provided a forum for Navy T2 professionals from T2 labs' ORTA and Counsel offices across the country to exchange ideas and address relevant topics of interest to the Navy's T2 efforts. The workshop offered an opportunity for individuals from both offices to discuss their professional viewpoints across many issues during various panel sessions. The workshop also provided an opportunity for new and veteran T2 professionals to network in person and develop professional connections they can leverage to propel their T2 efforts to the next level.

The three-day workshop featured two days of panels and networking, and the third day included tours of PSNS&IMF machine and shipfitter shops and the NUWC Division Keyport Innovation lab, advanced manufacturing lab and UUV homeport. Highlights of the topics presented during the two-day agenda include the following:

- What Can be Done Under a PIA
- Using 801 Licensing Authority and Software Licensing
- Metrics Matter: Reporting on Technology Transfer
- Use of Other Transaction Authorities and T2 Agreements
- Optimizing Patent Strategy
- DoN T2 Program and Process Improvements





DOMESTIC PREPAREDNESS SUPPORT INITIATIVE (DPSI)

DOMESTIC PREPAREDNESS SUPPORT INITIATIVE (DPSI)

The Department of Defense (DoD) DPSI, located in the Office of the Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, coordinates DoD efforts to identify, evaluate, deploy and transfer technology, items and equipment to Federal, state and local first responders. DPSI seeks to protect and secure the homeland by sharing expertise, equipment and technology, as appropriate, across military and civilian boundaries.

Through these critical partnerships, DPSI bridges the gap between first responder needs and relevant, available DoD technologies, items and equipment. Annually, the DoN T2 program facilitates a DoN DPSI prototype competition. The winner receives approximately \$100,000 in funding to test, evaluate and/or transfer the technology to the first responder community. The competition also increases DPSI's exposure to DoN Laboratories and Office of Research and Technology Applications representatives. Fiscal year (FY) 2019 funds went to demonstrate Naval Surface Warfare Center Indian Head Division's "Silent Spring" liquid-saving product (previously discussed in this annual report) for domestic first responders.

During FY 2019 the DoN T2 program sent a representative to the following conferences in support of the DPSI mission:

- DPSI Defense to Response Competition (College Station, Texas)
- DoN ORTA/Legal Workshop (Monterey, California)
- Sea-Air-Space (National Harbor, Maryland)
- DoD T2 Training Workshop (Pittsburgh, Pennsylvania)
- Modern Day Marine (Quantico, Virginia)
- Association of the United States Army (Washington, D.C.)

During FY 2020 the DoN T2 program sent a representative to the following conferences in support of the DPSI mission:

- Modern Day Marine [Virtual] (Quantico, Virginia)
- Association of the United States Army [Virtual] (Washington, D.C.)

DOD DPSI PARTNERSHIP SAVES LIVES WITH EMILY ROBOTIC VEHICLE

As the result of DoD DPSI efforts, a robotic “lifeguard” vehicle, officially called the Emergency Integrated Lifesaving Lanyard (EMILY), participated in disaster-relief efforts after Hurricane Dorian struck the Bahamas in September 2019.

EMILY is a remote-controlled, sensor-laden, unmanned surface vehicle (USV) that has proven its worth saving imperiled swimmers during natural disasters and humanitarian crises.

After Hurricane Dorian, EMILY was used by first responders to map out underwater navigational hazards that blocked rescue operations from delivering much-needed supplies to Abaco Island in the Bahamas.

EMILY is the product of a collaboration among the DoN T2 Program Office and Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, the Office of Naval Research (ONR), and marine robotics company Hydronalix. The technology in EMILY followed a long road over its 18 years of development, advancing from marine mammal research to unmanned aerial vehicles (UAVs) in Iraq to lifesaving rescue innovation. EMILY’s roots stretch back to 2001, when Tony Mulligan—the founder of drone manufacturer Advanced Ceramics Research, and current president and CEO of Hydronalix—received ONR and SBIR/STTR funding to develop a computer-operated and sensor-enabled UAV to monitor whale movements during Navy sonar testing. In 2003, after the wars in Afghanistan and Iraq erupted, Mulligan improved and transformed his vehicles into Silver Fox UAVs, which helped U.S. troops conduct aerial surveillance and reconnaissance missions.

In 2011, Mulligan received Navy funding to disassemble existing Silver Foxes and use their components—such as motor parts and navigation computers—to build USVs for hurricane tracking, tsunami response and search-and-rescue missions. Mulligan incorporated this technology into EMILY’s design.

Hydronalix has delivered more than 400 EMILY vehicles to navies, coast guards and search-and-rescue units in the U.S. and other countries.

EMILY is a prime example of a successful partnership involving T2, ONR, Navy SBIR/STTR and industry— resulting in numerous impactful military and civilian applications that ultimately save lives.

Original article: <https://www.onr.navy.mil/Media-Center/Press-Releases/2019/EMILY-Bahamas-Hurricane-Dorian/>







OUR FEDERAL PARTNERS

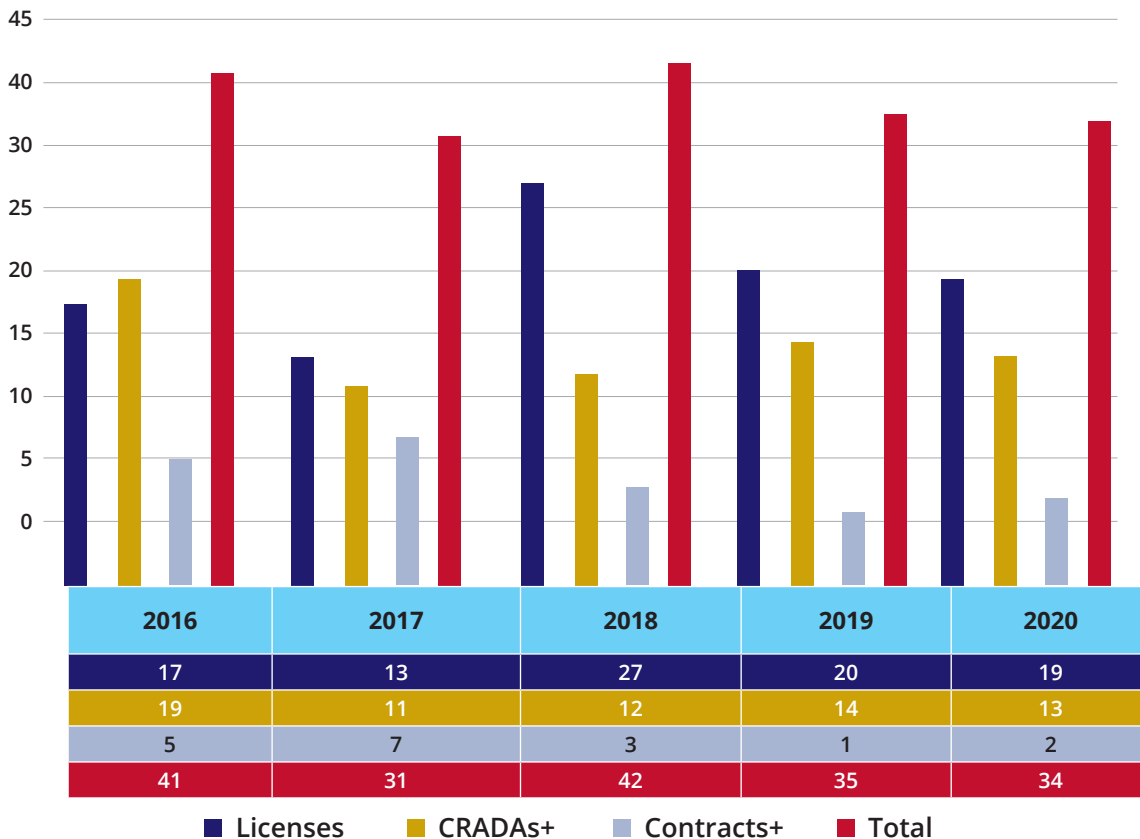
HOW TECHLINK PARTNERS WITH T2

<http://www.techlinkcenter.org>

Established in 1996, TechLink is a center within Montana State University's (MSU's) Office of Research and Economic Development. In 1999, TechLink became the Department of Defense's (DoD) first national partnership intermediary, helping companies nationwide to license DoD inventions.

In addition, TechLink manages MSU's Technology Transfer Office, operates the university's Software Engineering and Analysis Laboratory, promotes Small Business Innovation Research, and engages with other MSU entities to advance the state's innovation economy and foster economic development.

In fiscal year 2020, TechLink assisted DoN T2 with 34 agreements.



HOW MILTECH PARTNERS WITH T2

<http://www.montana.edu/miltech/>

MilTech provides hands-on, industry-experienced product design, prototyping and manufacturing expertise to help the Department of Defense accelerate the transition of technology to the U.S. warfighter. Since 2004, MilTech has performed over 150 technology acceleration and transition projects for every military service, including joint and special commands.

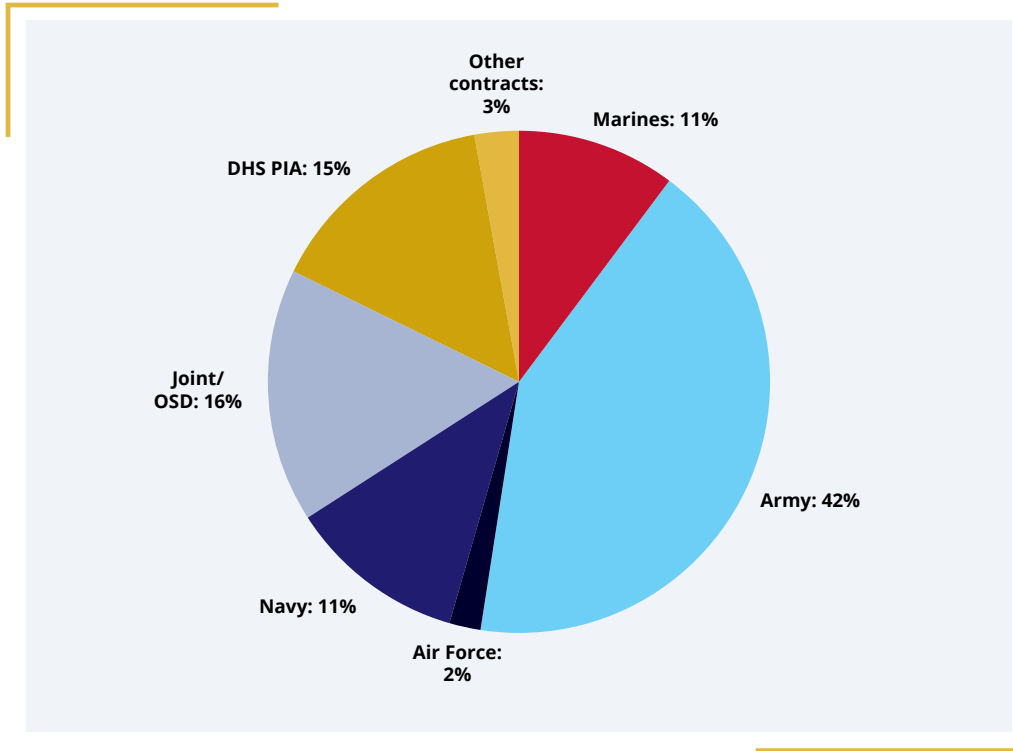
The DoD T2 national Partnership Intermediary Agreement (PIA), established in 2004, focuses on leveraging the National Institute of Standards and Technology Manufacturing Extension Partnership (NIST MEP) for T2 as well as:

- Tech scouting and market research
- Design, design review, and prototyping
- Independent government cost estimates
- Cost reduction recommendations
- Vendor manufacturing capability assessment and review
- Vendor-Partner scouting identification and assessment
- Providing design and manufacturing expertise to Integrated Product Teams

Recently, MilTech piloted a program to enhance technology transfer and transition (T3) across the DoD. In this pilot, MilTech actively sought suitable manufacturing licensees for DoD lab technologies. Thus far, this effort has resulted in two Patent License Agreements (PLAs) at Naval Surface Warfare Center (NSWC) Crane, one PLA at NSWC Dahlgren and an additional pending PLA submitted to NSWC Philadelphia Division. MilTech is now working with the licensees to apply transition assistance in a follow-through manner, with the ultimate goal being the commercialization and/or fielding of these Navy-developed technologies.

MilTech also sponsors a Virtual Industry Day as a tech scouting platform that connects government needs to industry solutions. www.virtualindustryday.org.

MilTech Customers GY 2020



FY19 NAVY PROJECTS	
NAVCLean Dry	NAWCAD
Project Red Team	NAVSEA
Ammunition Backpack	NSWC Crane
Lasercom	NRL
Greenstick-Expeditionary use of UAV	Naval Special Warfare
Scalable Load Cartridge Reverse Engineering and Refinement	MCSC
Enhanced Combat Health Repair Kit	MCSC
Lightweight Polymer-Cased Caliber .50 Ammunition	MCSC
AR Bolt Cleaning	MCSC
Glider	MCWL
Tech Scout 17	MCWL
Augmented Reality Monocle	MCWL

FY20 NAVY PROJECTS	
Lasercom Design and Manufacturability	NRL
Glider Tech Scouting	MCWL
Emerging Technologies Technology Scouting	MCWL
CRBN Pouch Design and Manufacturability	MCSC
CRBN Hydration Technology Scouting and Design	MCSC
Vendor ID and Tech Scouting	MCSC
Inscribed Fit, Body Armor Design	MCSC
Body Armor Plate Integration	MCSC
FIFRA Registration	NAWCAD
Load Bearing Design	MCSC
Medium Lift Tech Scouting	USN
Fender Design	USN
Sensitive Project	USN
PRU-70 Vendor Validation	NAVAIR
ECH Helmet Deformation Solutions	MCSC
General Technology Scouting	MCWL
Vendor ID and Tech Scouting	MCSC
Helmet D-UNS design and Tech Scouting	MCSC
Human Factors Support	MCSC
Ship Survey and Mapping Market Research	USN
Personal Floatation Device Design	USN
M4 Bolt Cleaning Device Design	MCSC
Augmented Reality Goggles Market Research	MCWL

FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER (FLC)

www.federallabs.org

The FLC community comprises of more than 300 federal laboratories, facilities and research centers, and their parent agencies. Members include world renowned scientists, engineers, inventors, entrepreneurs, academics, laboratory personnel and T2 professionals.

The FLC provides the tools, services and educational resources that reflect the latest science and technology legislation through the most current technological platforms of the time. The organization creates an environment that adds value to and supports the T2 efforts of its members and potential partners by offering resources and cutting-edge tools and services to make the T2 process as accessible as possible for commercialization successes.

LATEST HAPPENINGS

2020 NATIONAL MEETING

Due to the pandemic, the largest federal technology transfer meeting of the year, the FLC National Meeting, took place in a virtual format from Aug. 31 to Sep. 3. The meeting included a variety of events, from training sessions on technology transfer and the specifics of CRADA to networking and professional development sessions where attendees could strengthen their T2 skills while connecting with others in the industry.

The meeting also included the presentation of more than two dozen technology transfer-based awards that highlighted some of the best work done in the industry over the past 12 months.

FLC Training events are recorded and available on-demand.

<https://federallabs.org/learning-center/on-demand>

2020-2025 STRATEGIC PLAN

Earlier this year, FLC published its 2020-2025 Strategic Plan. It provides the mission, vision and goals for the organization during the next five years. Most notably, three strategic focus areas were identified:

1. **Promote:** Actively promote availability, benefit and value of federal laboratory assets through technology transfer to improve national economic prosperity and execution of lab missions.
2. **Educate:** Provide progressive full spectrum education and training and networking opportunities for federal T2 professionals and key internal stakeholders.
3. **Facilitate:** Proactively engage and leverage partnerships that connect relevant private sector

partners with individual federal laboratories to increase measurable outcomes.

In addition, these focus areas were launched with corresponding committees, with the three committee chairs serving on the FLC Executive Board.

FLC NAVY OFFICERS

Every year, FLC members votes on several leadership positions on the FLC Executive Board. These officers will serve two-year terms at the start of the new fiscal year beginning October 1. In addition, inaugural chairs of the FLC committees, Educate, Facilitate and Promote, were selected.

The DoN T2 community is excited to announce the following teammates were elected:



Member-At-Large
Valerie Larkin
Naval Undersea Warfare
Center (NUWC)
Division Newport



Facilitate Committee Chair
Jenna Dix
Naval Surface Warfare
Center (NSWC) Crane
Division

The following teammates are continuing to serve in their elected positions:



FLC Chair
John Dement
NSWC Crane Division



Southeast Regional Coordinator
Paige George
NSWC Panama City Division



NAVY FLC AWARD WINNERS

2020 FLC NATIONAL AWARDS



Inaugural Technology Transfer Innovation Award

*Advanced Naval Technology Exercise (ANTX)
NUWC Division Newport*



2019 FLC NATIONAL AWARDS



Excellence in Technology Transfer Award

*GoX Studio Ergo Wearable Sensor Kit
NSWC Crane Division*



Excellence in Technology Transfer Award

*Laser Analysis and Sorting Instrument
NRL*



Excellence in Technology Transfer Award

*LED Air Warning System
NSWC Panama City Division*



Excellence in Technology Transfer Award

*Spindle Locator Tool
NAVFAC EXWC*



2019 FLC Representative of the Year

*Elizabeth (Brooke) Pyne
NSWC Crane Division*



2019 FLC Rookie of the Year

*Jenna Dix
NSWC Crane Division*

NATIONAL SECURITY INNOVATION NETWORK DEFENSE INNOVATION ACCELERATOR (NSIN DIA) 2020

National Security Innovation Network (NSIN) is an unrivaled problem-solving network that adapts to the emerging needs of those who serve in the defense of our national security, and it is dedicated to bringing together defense, academic and entrepreneurial innovators to solve national security problems. FedTech is a partner in innovation, founded in 2015 after participating in the National Science Foundation's Innovation Corps.

In 2020, NSIN launched the Defense Innovation Accelerator (DIA), powered by FedTech, to pair Department of Defense (DoD) technologies with those interested in starting a high-tech company. The DIA builds off of the previous NSIN-FedTech cohort model, in which many Navy-developed technologies have participated. The program initiated a new two-phased approach, each lasting 12 weeks. In Phase I, entrepreneur teams worked with the inventor and advisors to identify customers, develop business plans and market analyses, culminating in an internal shark tank competition to select winners for Phase II. In Phase II, the winning 11 teams further refined their business proposals and commercialization plans for a final pitch day, DIA Demo Day, during which the winning team would receive funding.

For DIA 2020, 24 DoD lab-developed technologies, including 16 from naval labs, were identified for participation in Phase I. At the end of Phase I, 11 teams were selected to participate in Phase II, six of which were Navy-developed. At the conclusion of DIA 2020, two Navy technology teams won accolades. FORCYTE, a team formed around Naval Surface Warfare Center Crane-patented wireless power technology, won the Demo Day Audience Choice Award. Candelitics, a team formed around a Naval Information Warfare Center Pacific-patented analytics tool, was announced the Demo Day Judge's Choice Winner.

Below is a summary of the 16 naval lab technologies that participated in the DIA 2020, including updates on the company's work on their specific technology.



NAVY PHASE I TEAMS

NAVY LAB	TECH NAME/DESCRIPTION	DIA TEAM NAME	TEAM STATUS
NRL	<p>Quantum Imaging for Underwater Navigation</p> <p>This technology utilizes quantum imaging to visualize arctic underwater environment (e.g., an iceberg shelf) for submarine navigation.</p>	BlueSpace	The team decided not to continue commercialization efforts due to the lack of funding.
NRL	<p>Elastomer Coating for Pressure Vessel</p> <p>The technology is elastomeric-engineered rubber coating that can improve the robustness of a pressure vessel against mechanical impact.</p>	NxGen Vessels	The team decided not to continue due to the limited availability of technological test data.
NRL	<p>Graphene Fuel Sulfur Detection</p> <p>This is a highly sensitive sensor technology that can detect sulfur impurity in jet fuel, which is critical for utilizing the universal logistics fuel (FC-24) for fuel cell applications.</p>	SensoryGrid	The team decided not to continue due to the additional R&D required to commercialize the technology.
NSWC Dahlgren	<p>SCAPEGOAT UAV</p> <p>This sensor platform is a housing interface where a chemical, biological or radiological sensor module can be attached to allow remote detection and monitoring of a threat from a distance.</p>	SCAPEGOAT	The team continues the commercialization effort.
NSWC Carderock	<p>Smart Structure</p> <p>The technology combines granular packing and shear thickening fluid to build a passive “smart structure” that is dynamically strengthened under a load.</p>		The team disbanded during Phase I, since they concluded the technology is in an early stage of R&D.
NSWC Crane	<p>3D Printing of Circuit Boards</p> <p>This is a method to fabricate circuit boards through 3D printing technology and other multipurpose equipment and materials, to enable deployed units to utilize point-of-use circuit board manufacturing.</p>		The team disbanded during Phase I, since they concluded it will be challenging to compete in the market with the current status of the technology.
NSWC Crane	<p>Networked Buoy for Underwater Communication</p> <p>The buoy communication system is designed to maintain a low profile as it increases speed moving through the water. The case allows the user to use a mobile device while underwater. The cable provides the connectivity so that GPS and RF communication are available underwater.</p>	DolphinDivers	The team continues the commercialization effort.
NSWC Crane	<p>Flexible Electronics for Structural Health Monitoring</p> <p>A mesh network of sensing elements that can report localized structural damage events so the extent of the damage can be rapidly assessed and mitigated.</p>	SmartBumper	The team continues the commercialization effort
NSWC Crane	<p>Avenger Pack</p> <p>This technology is designed to increase ammunition capacity and duration of fire between reloads for soldiers in firefights and other combat missions. It is designed to be lightweight and comfortable to wear, while providing a continuous feed of ammunition to the weapon.</p>	Avenger Pack	The team disbanded during Phase I, since they concluded the market need is not strong enough.

NAVY PHASE II TEAMS

NAVY LAB	TECH NAME/DESCRIPTION	DIA TEAM NAME	DIA PROGRAM MILESTONE
NRL	<p>Miniature Hyperspectral Imager</p> <p>This technology delivers spectral imaging capability for VIS/NIR region with a micro-optic chip size smaller than half of a penny.</p>	MOSES	The team disbanded during Phase II due to challenges in securing necessary resources for commercialization.
NSWC Corona	<p>CYCLOPSS: Precision Ground Measurements from UAV Platform</p> <p>This technology is a drone-based weapons scoring sensor package that can provide users real-time solutions to DoD weapons scoring personnel.</p>	CYCLOPSS	The team is pursuing government use license and identifying potential funding.
NSWC Crane	<p>Passive Drone Detection and Surveillance</p> <p>This technology passively detects and tracks consumer-grade drones using sensors to track their radio frequency emissions.</p>	DynamicGain	Team continues the commercialization effort.
NSWC Crane	<p>Equipment Shipping, Storage, Lift and Installation (ESSLI) System</p> <p>This technology is an AI-enabled software solution that ensures accurate packaging.</p>	Inuveon	The team submitted proposal to AF SBIR solicitation.
NSWC Crane	<p>Artificial Learning Counter Surveillance System</p> <p>This technology automates analytical processes by leveraging AI and ML to assess image quality and degradation.</p>	theia.ai	The team is pursuing a license and preparing to submit to a NSF SBIR solicitation.
NSWC Crane	<p>Wireless Power System Design Toolbox</p> <p>This is a wireless power software to enable wireless power transfer with analytics and data visualization.</p>	Forcyte	<p>DIA Demo Day Audience Choice Winner</p> <ul style="list-style-type: none"> • Signed a non-exclusive license with NSWC Crane • Secured \$100,000 private funding • Actively discussing CRADA with NSWC Crane • Submitted application to AFWERX energy challenge
NIWC Pacific	<p>LIDAR Virtual Environment Mapper</p> <p>This is a LIDAR-based technology coupled with algorithms to access, visualize and fully leverage 3D data.</p>	Candelytics	<p>DIA Demo Day Judge's Choice Winner</p> <ul style="list-style-type: none"> • Secured \$10,000 outside funding • Actively pursuing CRADA with NIWC Pacific



@Navy_T2



Navy Technology
Transfer



[linkedin.com/company/
navy-technology-transfer](https://www.linkedin.com/company/navy-technology-transfer)



ACRONYMS

ANTX	Advanced Naval Technology Exercise
AR	Augmented Reality
Av-DEC	Aviation Devices and Electronic Components
CNR	Chief of Naval Research
CRADA	Cooperative Research and Development Agreement
CSM	College of Southern Maryland
DCI	Deputy Commandant for Information
DC-I-WRD	Deputy Commandant for Information War Room Division
DoD	Department of Defense
DoN	Department of the Navy
DPSI	Domestic Preparedness Support Initiative
EDC	Economic Development Corporation
EDC-VC	Economic Development Corporation-Ventura County
EMILY	Emergency Integrated Lifesaving Lanyard
EOD	Explosive Ordnance Disposal
EPA	Educational Partnership Agreement
FAR	Federal Acquisition Regulations
FLC	Federal Laboratory Consortium
FRC	Fleet Readiness Center
FRCE	Fleet Readiness Center East
FRCSE	Fleet Readiness Center Southeast
FRCSW	Fleet Readiness Center Southwest
FY	Fiscal Year
HQ	Headquarters
HQMC	Headquarters Marine Corps
IDE	Innovation Discovery Event
IMPAX	Innovation and Modernization Patuxent River
IP	Intellectual Property
LIDAR	Light Detention and Ranging
LP-CRADA	Limited Purpose-CRADA
MARFORCYBER	Marine Corps Cyberspace Command
MCCOG	Marine Corps Cyberspace Operations Group
MCSC	Marine Corps System Command

ACRONYMS (CONT.)

MCAS	Marine Corps Air Station
MCICOM	Marine Corps Installations Command
MCWL	Marine Corps Warfighter Laboratory
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAMRU	Naval Medical Research Unit
NASC	Naval Aviation Systems Consortium
NAVAIR	Naval Air Systems Command
NAVALX	Naval Expeditions Agility Office
NAVFAC EXWC	Naval Facilities Engineering and Expeditionary Warfare Center
NAVSEA	Naval Sea Systems Command
NAVWAR	Naval Information Warfare Systems Command
NAWCAD	Naval Air Warfare Center Aircraft Division
NAWCAD LK	Naval Air Warfare Center Aircraft Division, Lakehurst
NAWCAD PAX	Naval Air Warfare Center Aircraft Division, Patuxent River
NAWC TSD	Naval Air Warfare Center Training Systems Division
NAWCWD	Naval Air Warfare Center Weapons Division
NAWCWD CL	Naval Air Warfare Center Weapons Division, China Lake
NAWCWD PM	Naval Air Warfare Center Weapons Division, Point Mugu
NIST	National Institute of Standards and Technology
NIWC	Naval Information Warfare Center
NIWC ATLANTIC	Naval Information Warfare Center, Atlantic
NIWC PACIFIC	Naval Information Warfare Center, Pacific
NMC	Naval Medical Center
NMCP	Naval Medical Center, Portsmouth
NMCSD	Naval Medical Center, San Diego
NMOC	Naval Meteorology and Oceanography Command
NMRC	Naval Medical Research Center
NPS	Naval Postgraduate School
NRL	Naval Research Laboratory
NSWC	Naval Surface Warfare Center
NSWC CA	Naval Surface Warfare Center, Carderock Division
NSWC CD	Naval Surface Warfare Center, Crane Division

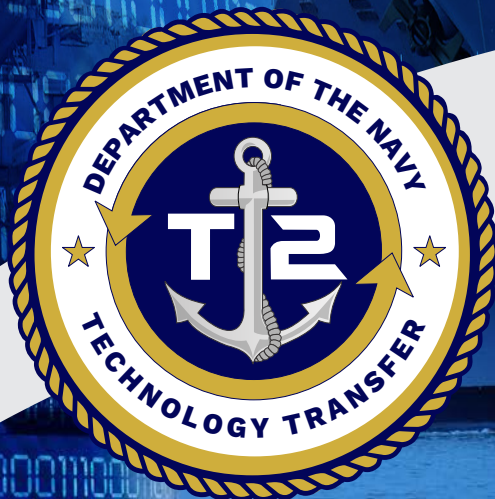
ACRONYMS (CONT.)

NSWC DD	Naval Surface Warfare Center, Dahlgren Division
NSWC CORDIV	Naval Surface Warfare Center, Corona Division
NSWC IHD	Naval Surface Warfare Center, Indian Head Division
NSWC PCD	Naval Surface Warfare Center, Panama City Division
NSWC PHD	Naval Surface Warfare Center, Port Hueneme Division
NUWC	Naval Undersea Warfare Center
NUWC DK	Naval Undersea Warfare Center, Division Keyport
NUWC DN	Naval Undersea Warfare Center, Division Newport
NWDC	Naval Warfare Development Command
ONR	Office of Naval Research
ORTA	Office of Research and Technology Applications
OTA	Other Transaction Authority
PEO	Program Executive Office
PHNS & IMF	Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
PIA	Partnership Intermediary Agreement
PLA	Patent License Agreement
PM	Program Manager
PNSY	Portsmouth Naval Shipyard
PO	Program Office
POC	Point of Contact
PSNS & IMF	Puget Sound Naval Shipyard and Intermediate Maintenance Facility
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation
S&T	Science and Technology
SBIR	Small Business Innovation Research
SME	Subject Matter Expert
STEM	Science, Technology, Engineering and Mathematics
STTR	Small Business Technology Transfer
T2	Technology Transfer
UAS	Unmanned Aircraft Systems
USMC	United States Marine Corps
USV	Unmanned Surface Vehicle

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WHERE TO FIND US

<https://www.onr.navy.mil/en/work-with-us/technology-transfer-t2>

<https://www.navytechtransfer.navy.mil/>