



DEPARTMENT OF THE NAVY
TECHNOLOGY TRANSFER
ANNUAL REPORT

ADVANCING THE MISSION

FISCAL YEAR 2019-2020

WELCOME

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.”

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, the 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 have an unfair advantage in a fight—while lowering entry barriers for our small business and non-traditional partners.

Rear Admiral David J. Hahn

Chief of Naval Research



WHAT'S NEW IN THIS ISSUE

We aim to show how T2 enables the mission, how it can be used strategically, how we align with national defense strategy and other top level guidance and Navy business operating strategy. *list top level guidance* for the warfighter and for the mission.

In this year's annual report, you'll notice our easy-to-read, eye-catching graphics as well as:

- Mission-oriented stories showcasing the impact of T2
- Mission-oriented stories showcasing the impact of T2
- New geographical display of our 48 T2 designated laboratories
- Practical use cases
- A more readable format with eye-catching graphics
- Relevant studies
- Groundbreaking pilot projects and partnership highlights
- Examples of what a high-performing T2 office looks like
- Addition of IP and PLA information
- How we work with our Federal partners

We also spotlight new initiatives unveiled during FY19, including:

- The establishment of six "Tech Bridges," regional innovation hubs where warfare centers, government, academia and industry can partner.
- The creation of TechX, a makerspace, at NSWC PHD
- The advancement of a methodology for increasing the number of patent-licensing agreements and CRADAs from laboratories.
- NAWCAD Patuxent River OTA stacking authorities
- Combined 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.

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NAVAL T2 ENTERPRISE

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

WASHINGTON

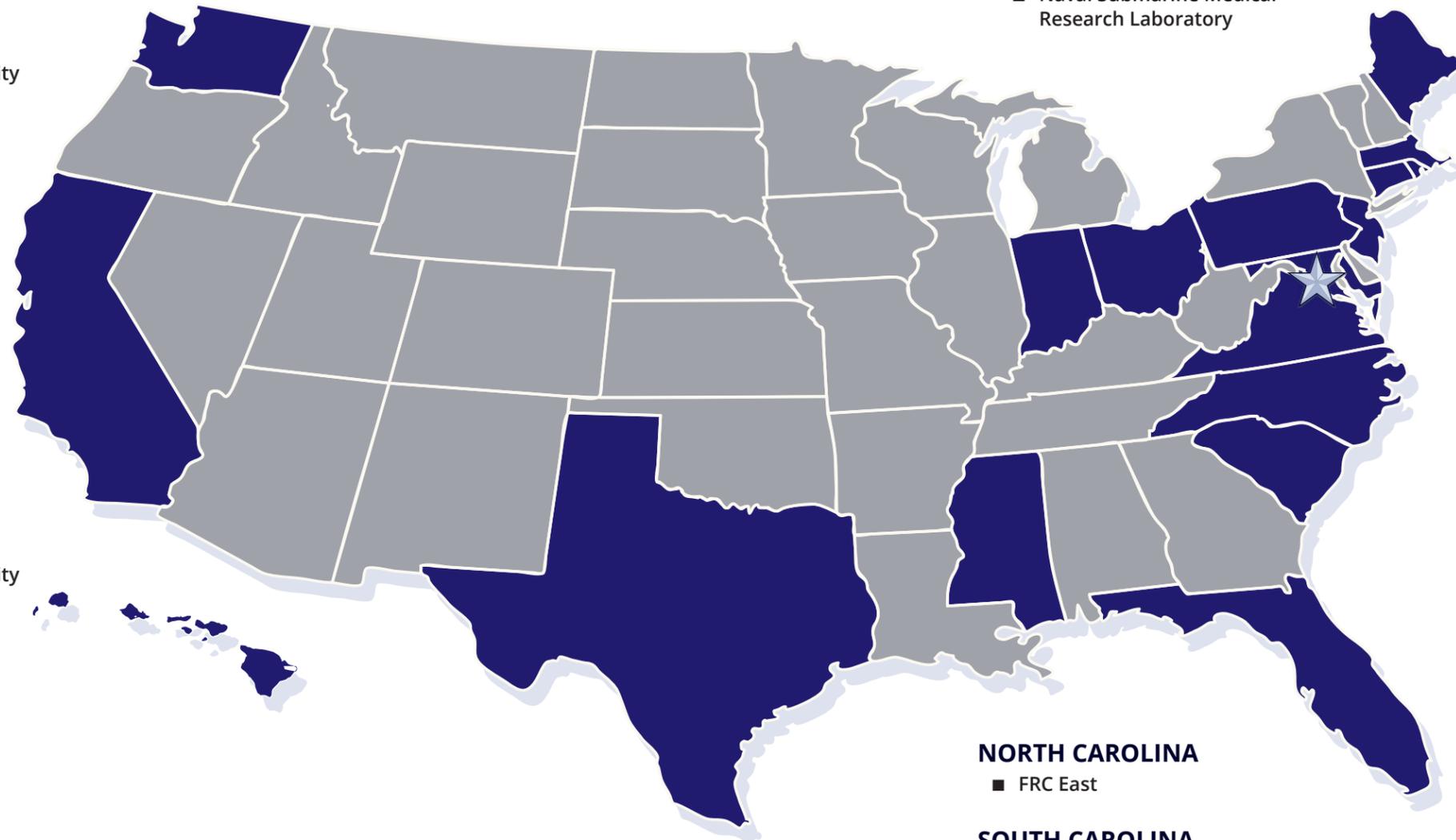
- **NUWC Division Keyport**
- Puget Sound Naval Shipyard & Intermediate Maintenance Facility

CALIFORNIA

- FRC Southwest
- Naval Health Research Center
- NMC San Diego
- **NIWC Pacific**
- **Naval Postgraduate School**
- NAWCWD China Lake
- **NAWCWD Point Mugu**
- **NAVFAC EXWC**
- **NSWC Port Hueneme Division**
- **NSWC Corona Division**

HAWAII

- Pearl Harbor Naval Shipyard & Intermediate Maintenance Facility



MAINE

- Portsmouth Naval Shipyard

MASSACHUSETTS

- Navy Clothing & Textile Research Facility

CONNECTICUT

- Naval Submarine Medical Research Laboratory

RHODE ISLAND

- **NUWC Division Newport**
- Naval War College

NEW JERSEY

- NAWCAD LKE

PENNSYLVANIA

- NSWC Philadelphia

MARYLAND

- **NAWCAD PAX**
- NMRC Silver Spring
- **NSWC Carderock Division**
- **NSWC Indian Head**
- U.S. Naval Academy
- USMC Forces Cyberspace Command

WASHINGTON, DC

- **Naval Research Laboratory**
- U.S. Naval Observatory

VIRGINIA

- ★ DON T2 Program Office (at ONR)
- **NSWC Dahlgren Division**
- Norfolk Naval Shipyard
- Headquarters Marine Corps Intelligence Department
- Marine Corps Cyberspace Operations Group
- Marine Corps Systems Command
- NMC Portsmouth
- Navy Warfare Development Command
- **Marine Corps Warfighting Laboratory/Futures Directorate**
- HQMC Deputy Commandant for Information (DCI) War Room
- Naval History and Heritage Command

Navy ORTA Directory website

<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

- NAMRU San Antonio

INDIANA

- **NSWC Crane Division**

OHIO

- NAMRU Dayton

MISSISSIPPI

- Naval Meteorology and Oceanography Command Stennis

NORTH CAROLINA

- FRC East

SOUTH CAROLINA

- **NIWC Atlantic**

FLORIDA

- FRC Southeast
- **NAWC Training Systems**
- Naval Entomology Center of Excellence
- NSWC Panama City Division



ROLES & RESPONSIBILITIES OF THE T2 PROGRAM OFFICE

The purpose of SECNAVIST 5700.17A is to implement, establish policy, and assign responsibility for the DON T2 Program. The DON T2 Program Office aligns the T2 community with naval Research, Development, Test & Evaluation (RDT&E) leadership direction and supports with tools and resources. Specific roles and responsibilities include:

- Manage and execute DON T2 based on authorized and delegated authorities;
- Communicate and represent DON T2 to CNR, Department of Defense (DoD) senior leadership, and the interagency 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 DON;
- Manage laboratory and Office of Research and Technology Applications (ORTA) representative delegation procedures; and
- Cultivate collaboration between DON Science and Technology (S&T) communities and industry to promote DON T2 efforts.

ROLES & RESPONSIBILITIES OF THE ORTA REPRESENTATIVE

The Stevenson-Wydler Technology Innovation Act of 1980 established an ORTA in each federal laboratory to coordinate and promote T2 DON ORTA representatives:

- Manage all T2 activities occurring at respective laboratory;
- Provide DON T2 PM its annual business plan, training materials, metrics, etc., as required by established policy and regulation;
- Offer at least two hours of T2 and marketing training to laboratory personnel annually;
- Receive at least eight hours of T2 training annually, complete online DON ORTA training, and provide the DON T2 Program Manager (PM) this training record yearly;
- Encourage participation and promote results of DON T2; and
- Comply with all policies and procedures.

NAWCAD

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

WHERE WORK GETS DONE >>

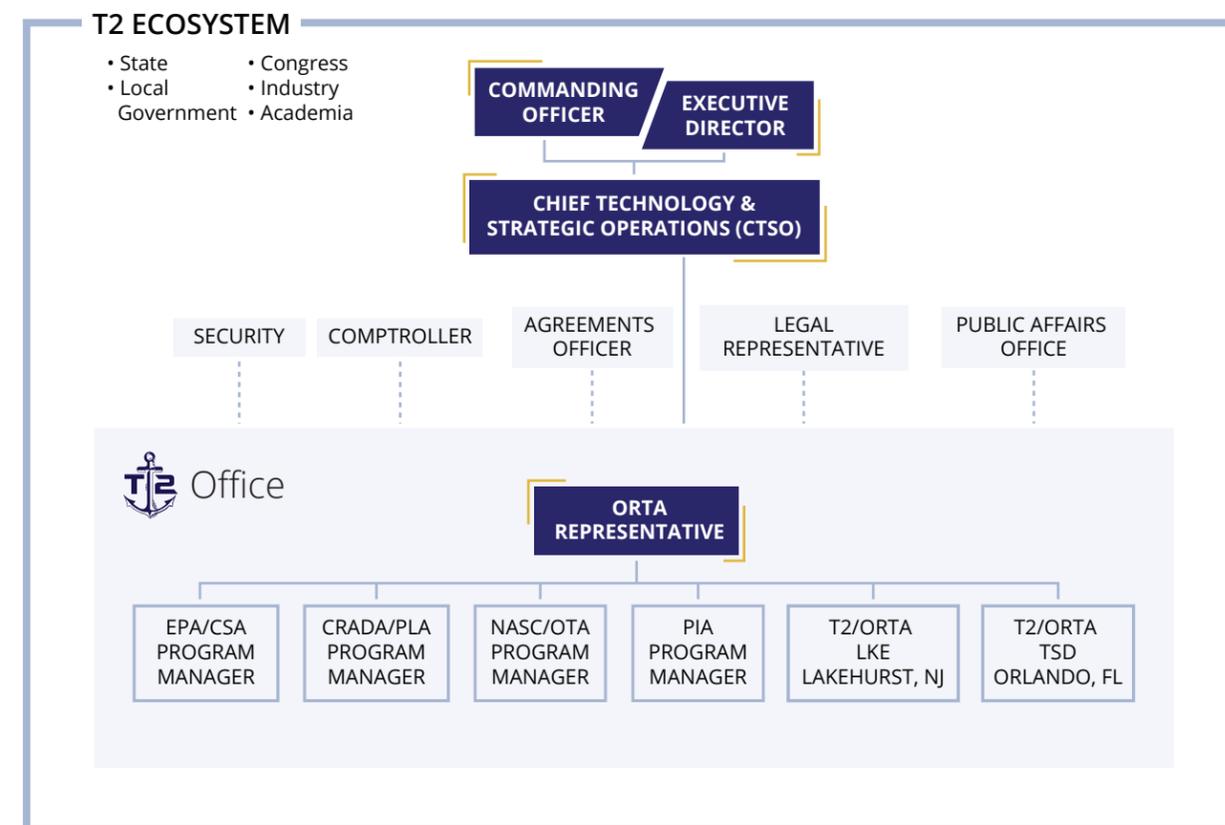


WHAT SUCCESS LOOKS LIKE:

**NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION (NAWCAD)
WARRANTED AGREEMENTS OFFICER TEAMS WITH T2 OFFICE**

The NAWCAD Pax T2 office is the command's ORTA representative. This Office is organized under the NAWCAD Chief Technology and Strategic Operations Office (CTSO). The T2 office manages the command's non-FAR agreements with a team that includes legal counsel, an agreements officer and security. The non-FAR agreements include CRADAs, PIAs, work with private party agreements, EPAs and both the OTA consortium and Naval Aviation Systems Consortium (NASC). The office also leads NAVAIR Patuxent River regional PIA partners, Georgia Tech Research Institute (GTRI) and the Patuxent Partnership. The alignment within the CTSO facilitates relationships with the SBIR office, NISE program, innovation 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



NAVAL SURFACE WARFARE CENTER

CRANE'S (NSWC CRANE) SECRET SAUCE: DEPARTMENT CHAMPIONS

The ORTA at NSWC Crane is a model within the DON T2 community. It performs the 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 CRADAs, PLAs, EPAs, and other T2-related agreements. A legal representative ensures legal compliance. NSWC Crane leadership is considering collocating 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 FY19.

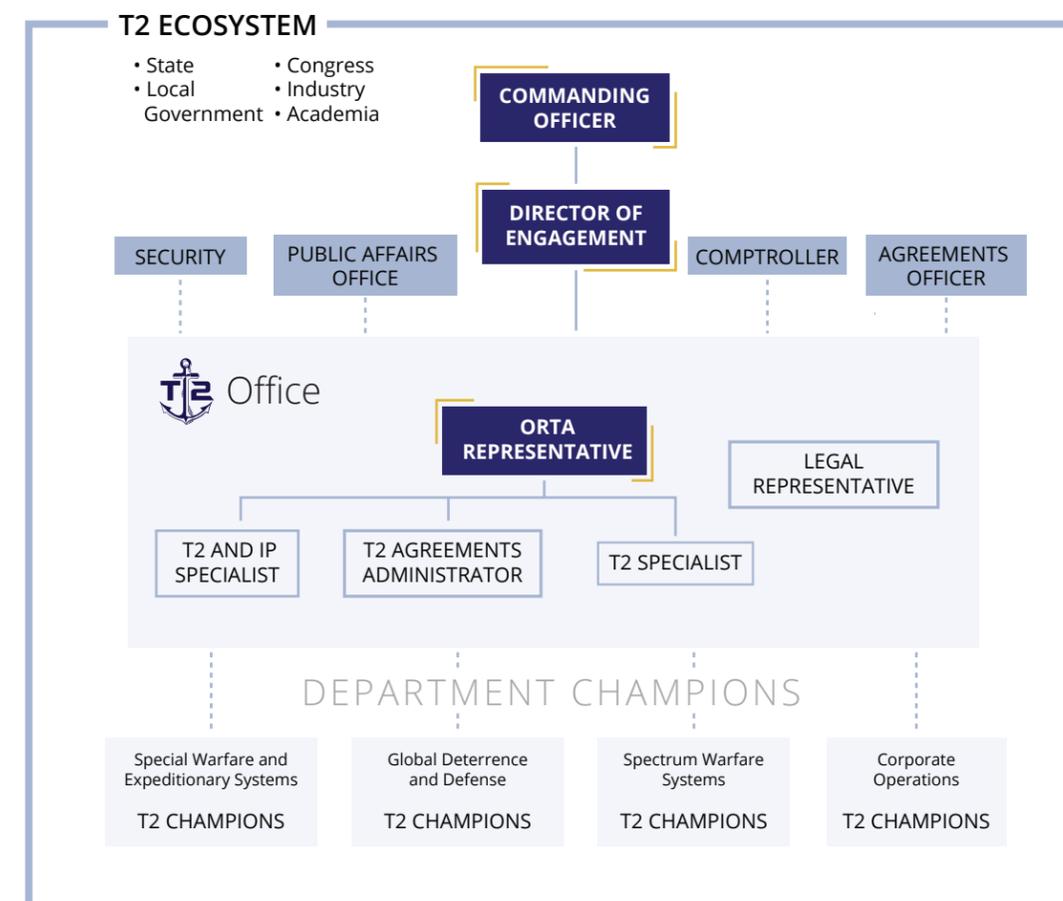
The T2 "champions" are informal in nature. They aren't directly associated with the T2 office from an organizational standpoint, nor are they necessarily a set group of individuals. They are a small contingent of individuals who have utilized the T2 program, that are active in sharing their successes with their colleagues and thus 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 R&D efforts and expedite the delivery of technical solutions to the warfighter. Her 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, given 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





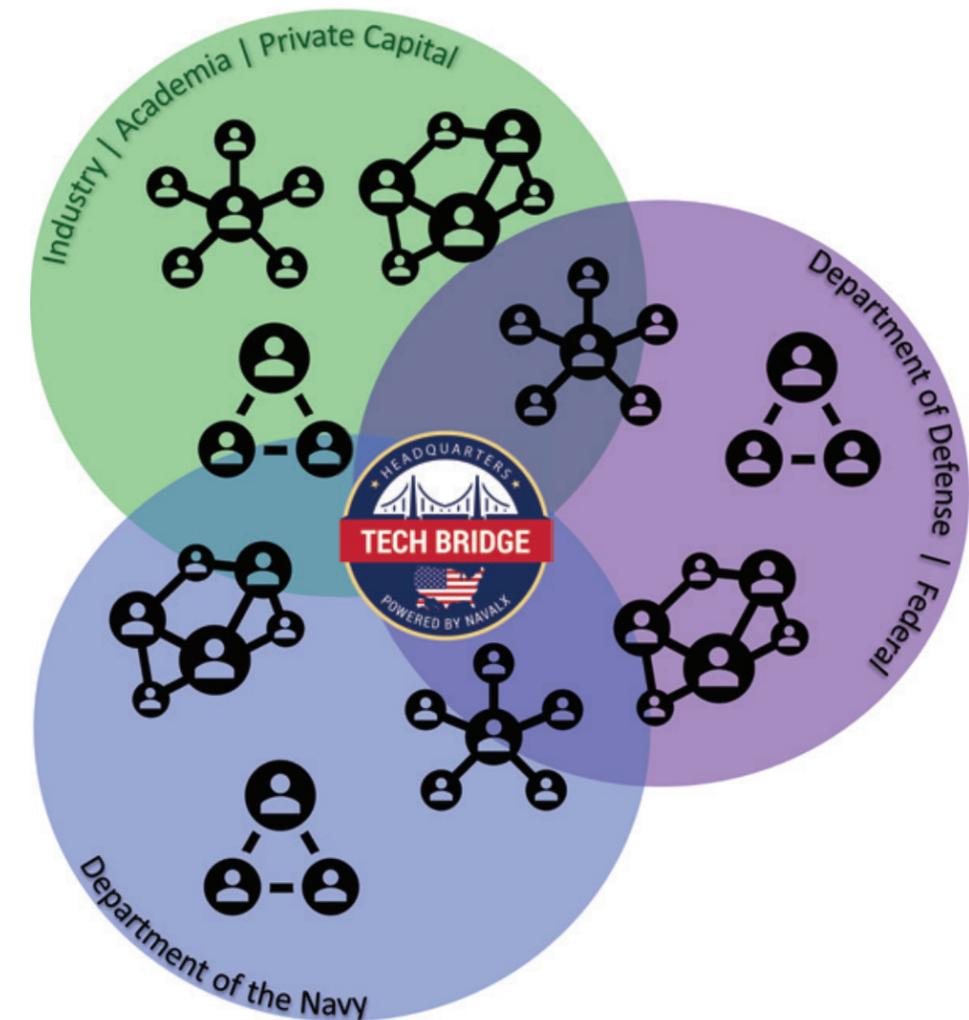
NAVALX/TECH BRIDGES/ TECH ACCELERATION

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.

In this capacity, Dr. 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 among the Naval Expeditions Agility Office (NavalX), 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:

- “401” in Rhode Island, affiliated with Naval Undersea Warfare Center, Division Newport;
- “Northwest” in Washington State, affiliated with Naval Undersea Warfare Center, Division Keyport;
- “SoCal” in California, affiliated with Naval Information Warfare Center Pacific;
- “Central Florida” in Florida, affiliated with Naval Air Warfare Center Training Systems Division;
- “Midwest” in Indiana, affiliated with Naval Surface Warfare Center Crane Division); and
- “Palmetto” in South Carolina, affiliated with Naval Information Warfare Center Atlantic.

For more information, see: <https://www.secnav.navy.mil/agility/Pages/techbridges.aspx>.



COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs)

CRADA SUMMARY & INCOME

A Cooperative Research and Development Agreement (CRADA) formalizes a partnership between a government laboratory and academia, private sector, federal agencies, state and local governments or individuals to work together on Research & Development (R&D) and then transfer the new technologies to the private sector.

CRADAs are especially valuable to small, high-tech companies, which often struggle with developing contacts inside defense laboratories. Once these companies identify a defense laboratory they want to work with, a CRADA offers a low-risk opportunity to collaborate, build valuable relationships, and develop technology.

Types of CRADAs include Limited-Purpose (LP), Clinical Trials, Multiple Party, Technical Assistance and Small Business Innovation Research (SBIR)-Funded Non-Standard.

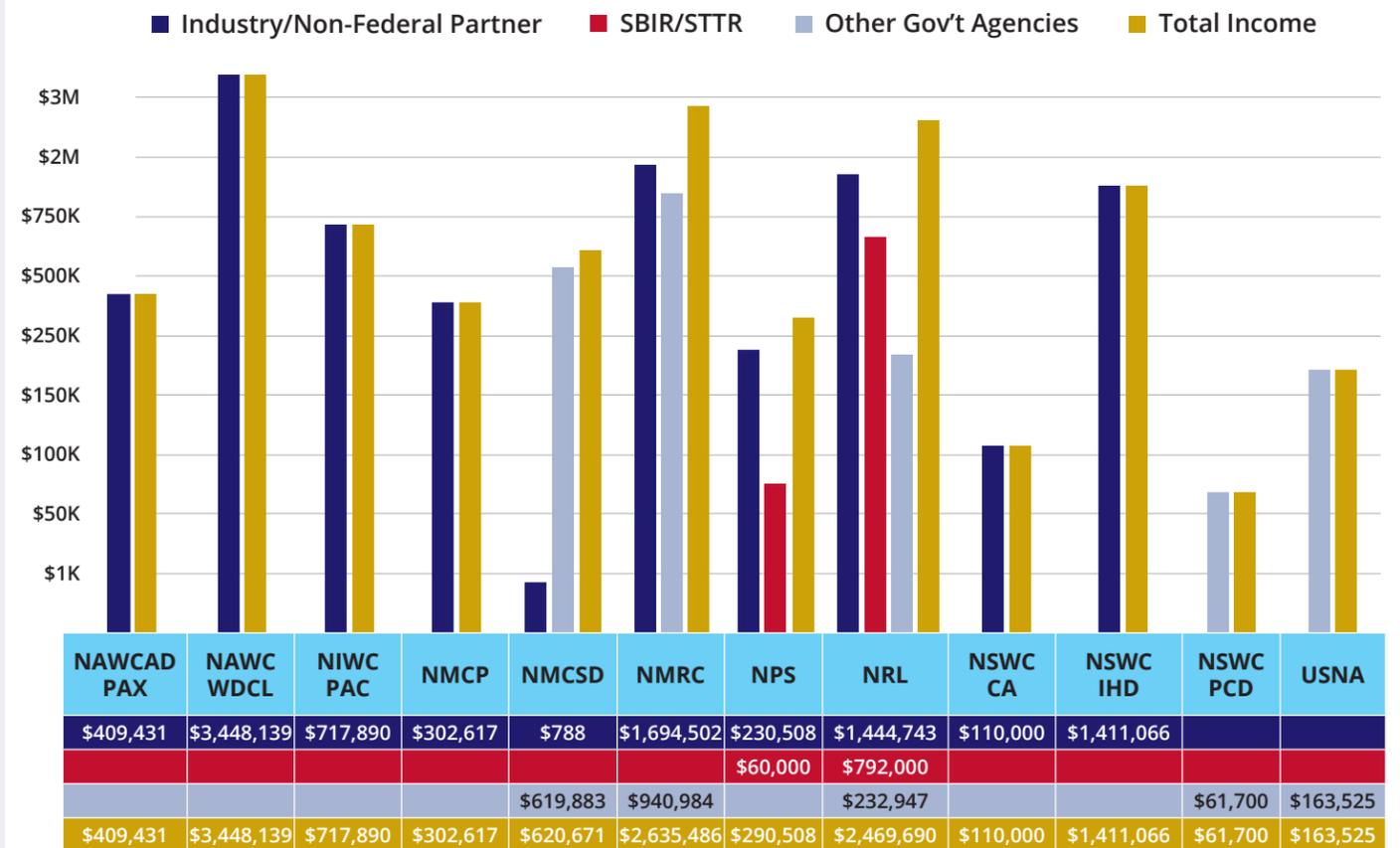
The table to the right shows the total number and revenues received from DON CRADAs for each of the last five fiscal years. FY19, laboratory and systems command-specific CRADA statistics and impact stories follow. Appendix A lists all the CRADAs that the DON executed in FY19.

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

USE CASES

- Entry to classified security clearances
- Access to unique facilities
- Access to world class subject matter expertise in a wide range of disciplines
- Obtain test data/evaluation of equipment for military use/capatability
- Low barrier to entry for small businesses
- Protection from disclosure by the federal government of any proprietary information brought to the CRADA by the partner

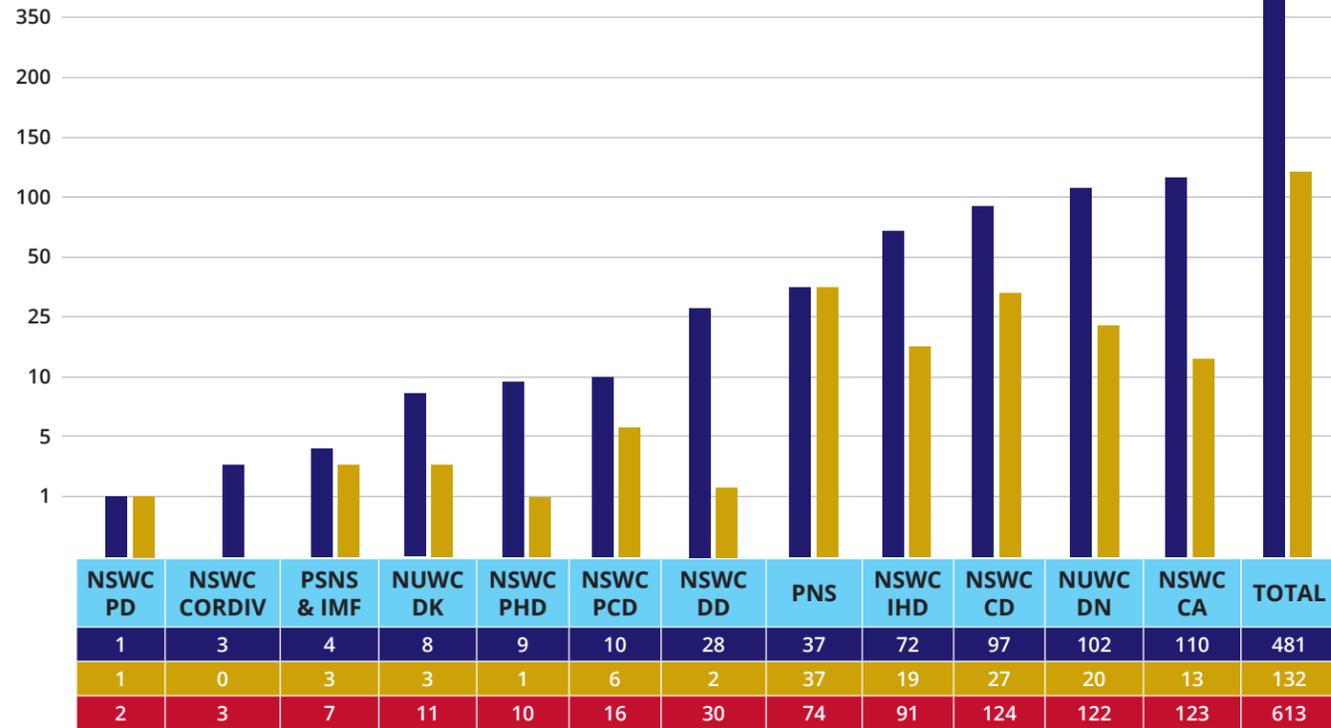
FY20 CRADA FUNDING BY SOURCE OF INCOME



Laboratories with income

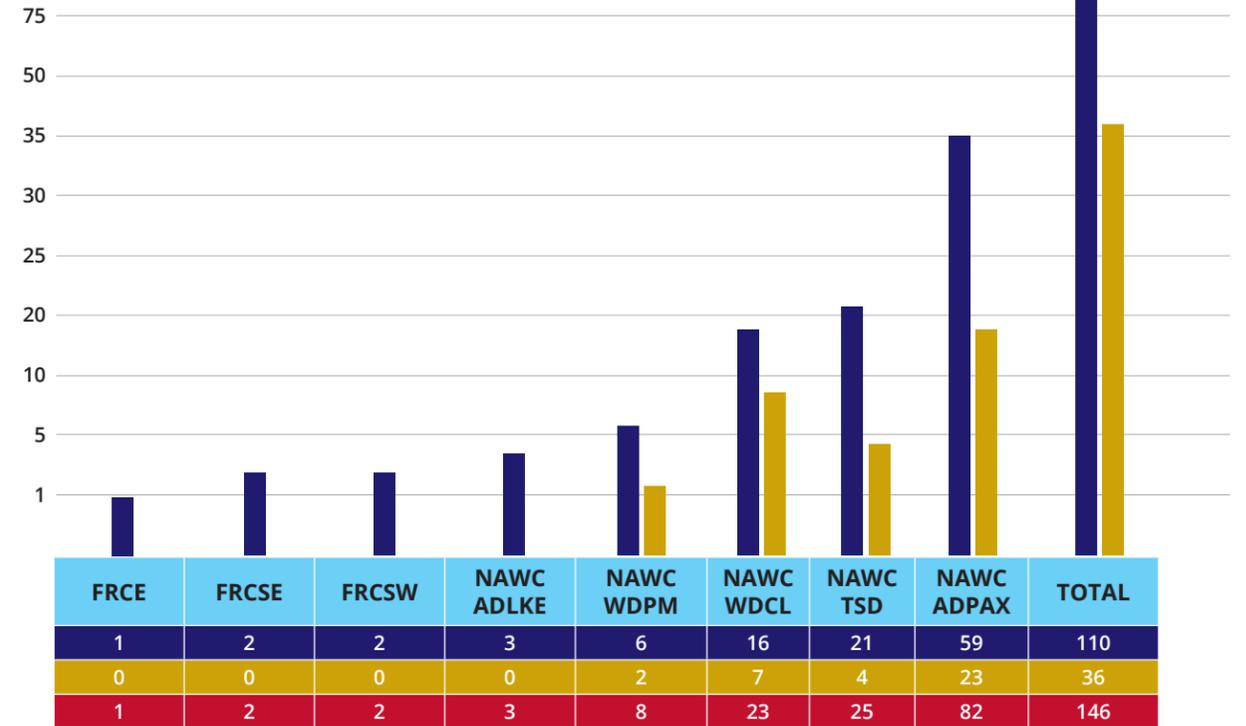
FY20 CRADAS - NAVSEA

Active CRADAs New FY20 CRADAs Total CRADAs



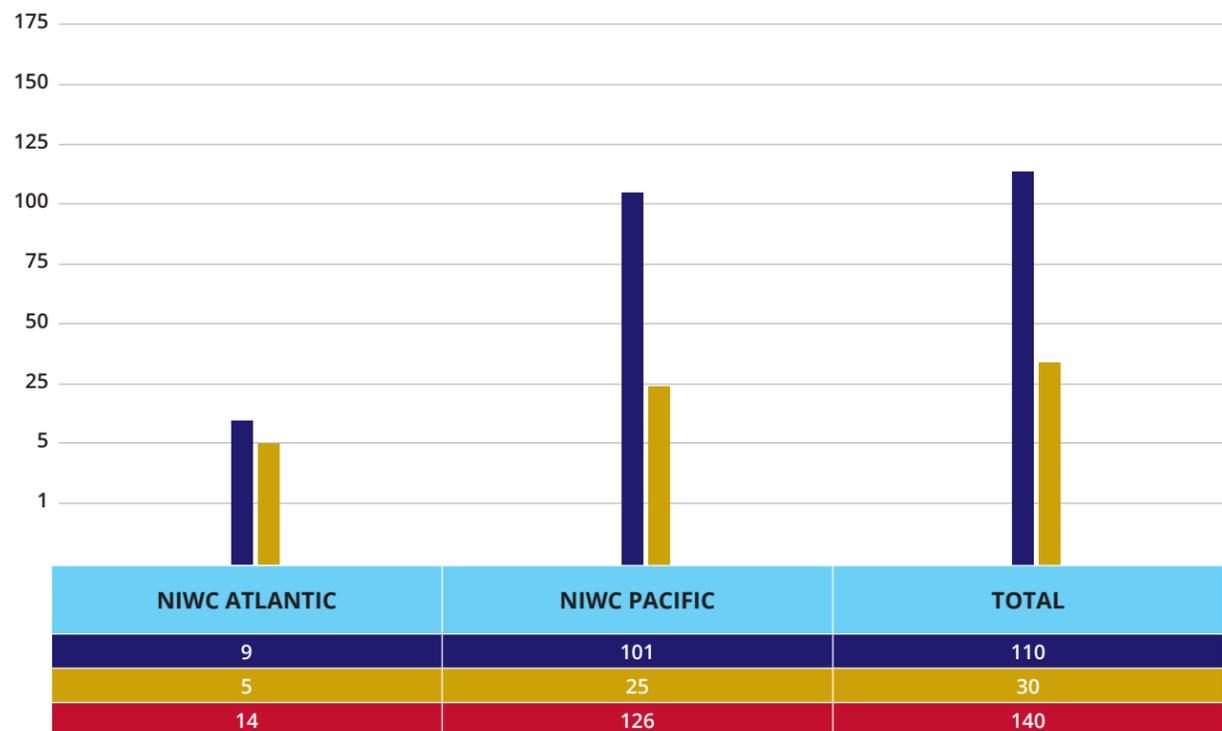
FY20 CRADAs - NAVAIR

Active CRADAs New FY20 CRADAs Total CRADAs



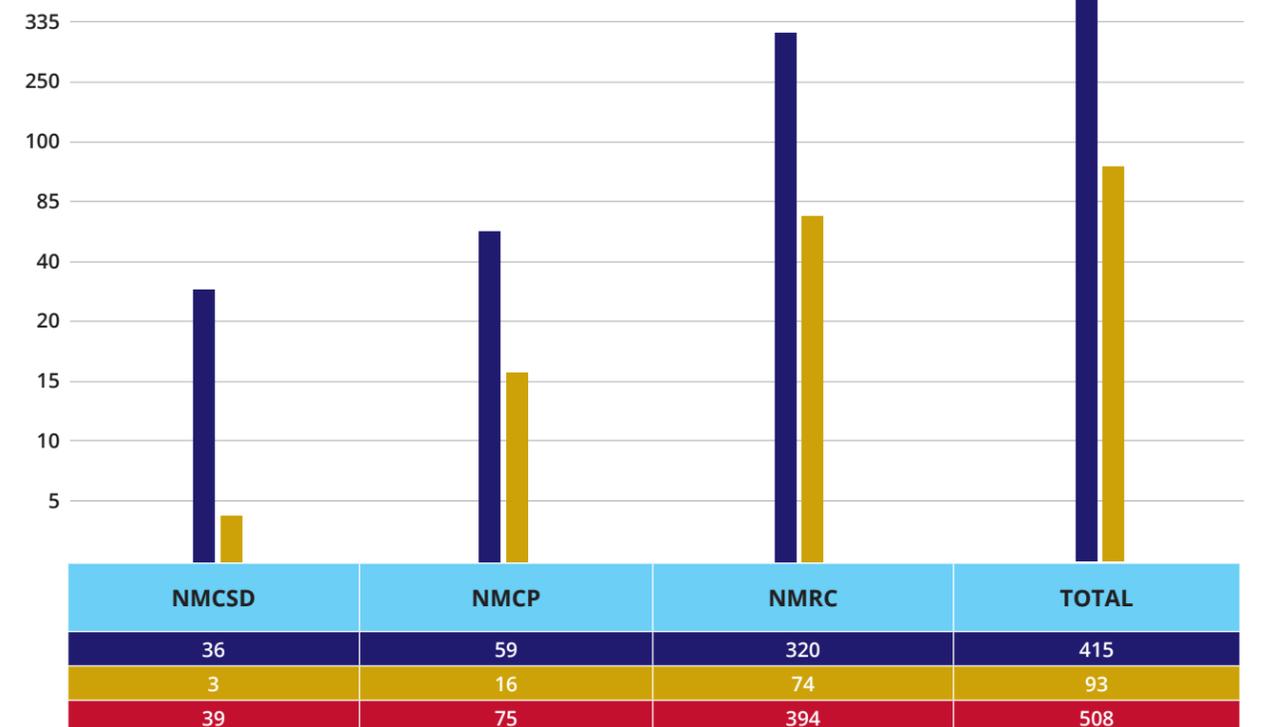
FY20 CRADAs - NAVWAR

Active CRADAs New FY20 CRADAs Total CRADAs

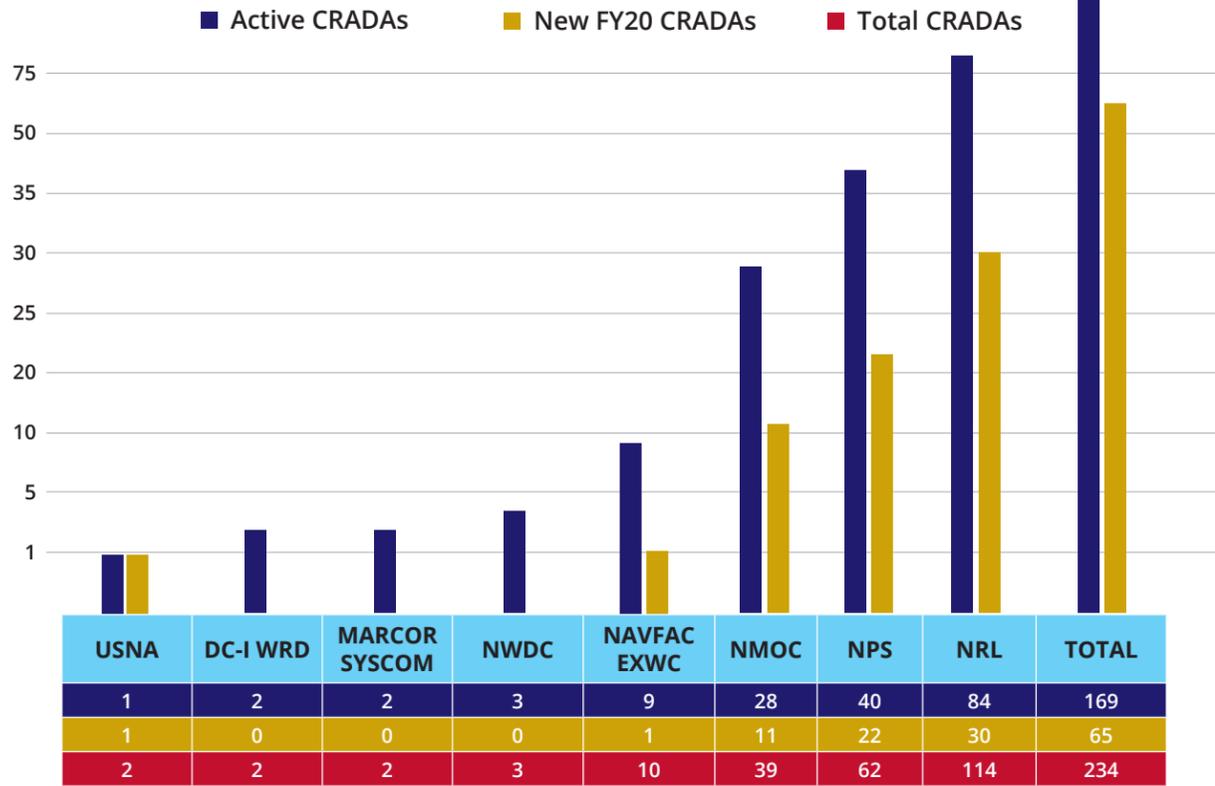


FY20 CRADAs - BUMED

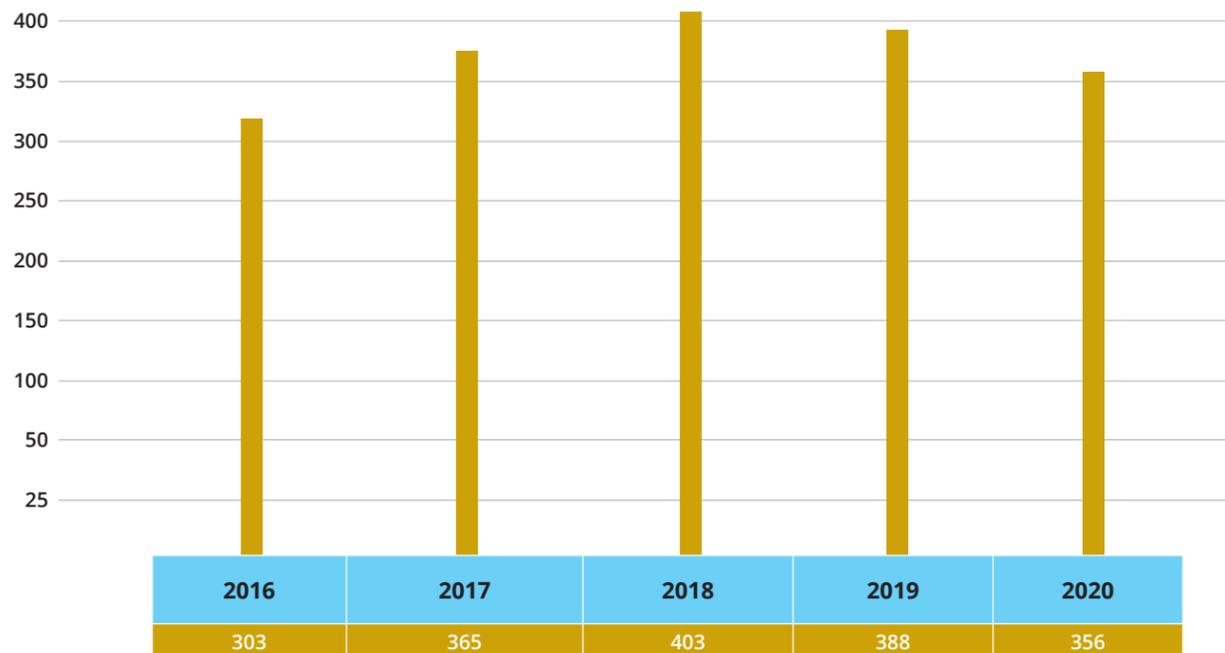
Active CRADAs New FY20 CRADAs Total CRADAs



FY20 CRADAs - OTHER LABS



DON EXECUTED CRADAs BY FY



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 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 (SMEs). 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, NIWC Pacific and HP, Inc. have engaged in a successful 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.



Brigadier General Steve Sklenka (center), Commanding General of 1st Marine Logistics Group, hosting Dr. Tim Weber, HP Global Head of 3D Metals, along with Dr. Kristin Holzworth of NIWC Pacific and the Marines of Expeditionary Manufacturing (EXMAN) at the CRADA Kickoff Meeting on 29 March 2018.

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

Empowered by a CRADA, Naval Surface Warfare Center, Port Hueneme Division (NSWC PHD) is developing greater applications for 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, 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.



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 & Intermediate Maintenance Facility (PSNS & IMF) and Sarcos Robotics are jointly developing robotic technologies to increase shipyard safety and productivity.

Under this 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 ONR. 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.





EDUCATIONAL PARTNERSHIP AGREEMENTS (EPAs)



EPAS

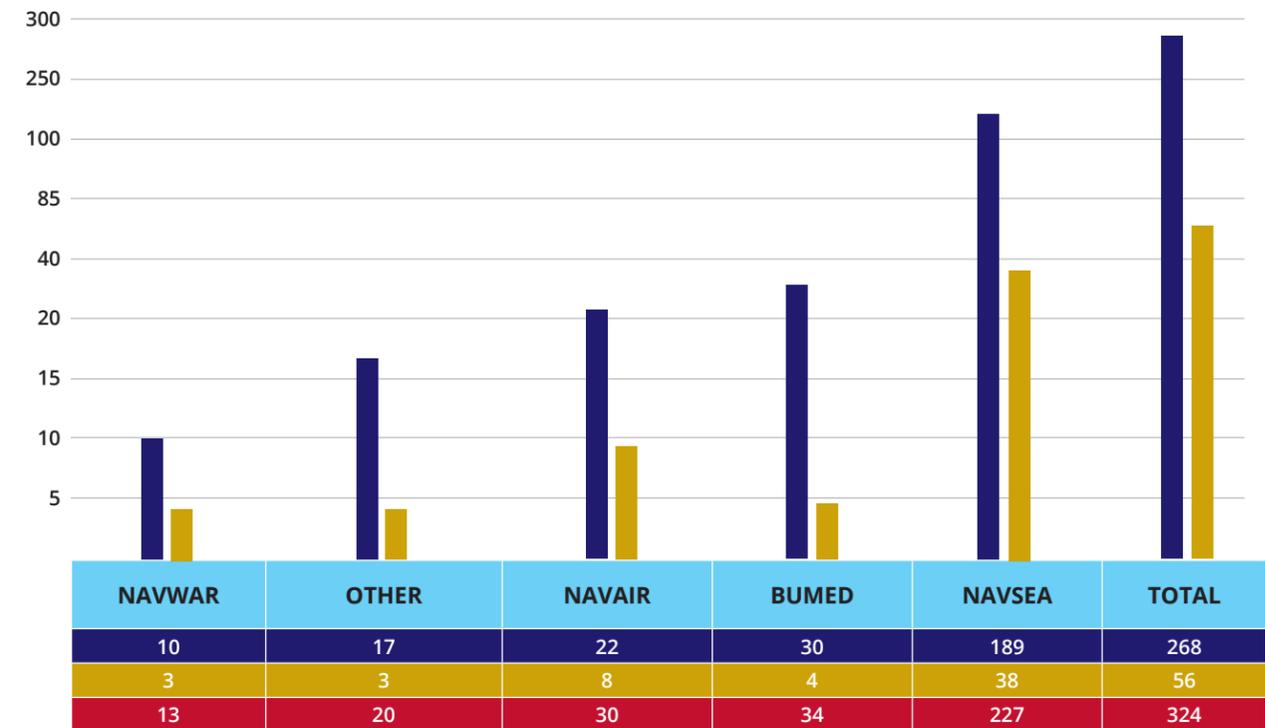
An EPA is an agreement between the DON and educational institutions in the U.S., including legal education agencies, college universities and nonprofit institutions that are dedicated to improving science, technology, engineering and mathematics (STEM) education. These agreements are put in place to encourage and enhance study in scientific disciplines at all levels of education (pre-kindergarten and up). The government laboratory can loan equipment, donate equipment, make laboratory personnel available to teach or assist in developing courses, involve faculty and students in research, etc. Such agreements may benefit the DON laboratory by training potential future employees and the country by promoting student interest in STEM career fields. Appendix C lists the PIAs that the DON executed in FY19.

USE CASES

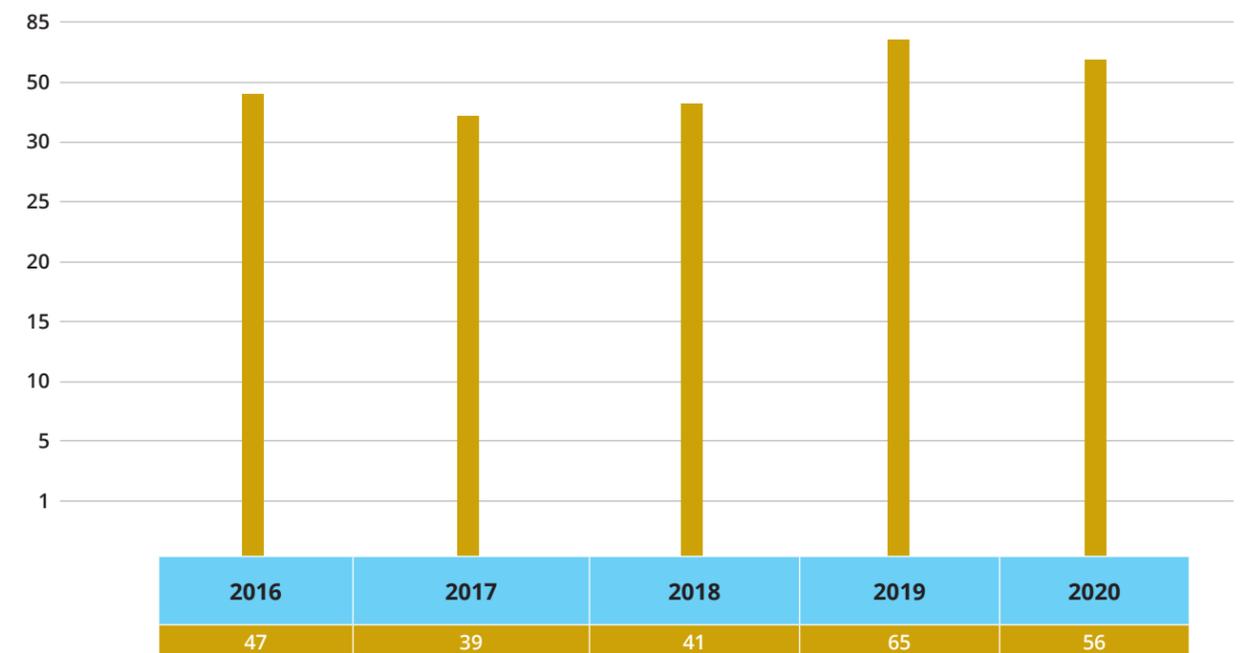
- Allows educational institutions the opportunity to access equipment and resources which may not be available to the institution
- Providing STEM equipment to K-12, universities
- Stimulating access to the Intelligence community
- Work with schools to create solutions to real-world challenges of a laboratory through case studies and class projects
- Developing the future workforce for defense laboratories
- Augmented and virtual reality training

DON FY20 EXECUTED EPAs BY SYSCOM

■ Active EPAs ■ New FY20 EPAs ■ Total EPAs



DON EXECUTED EPAs BY FY



PORTSMOUTH SHIPYARD EPA CREATING INDUSTRIAL WORKPLACE PIPELINE

Portsmouth Naval Shipyard (PNS) entered into an EPA with the Community College System of New Hampshire (CCSNH) at a formal signing ceremony 27 September 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.”



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

A thriving EPA between NSWC IHEODTD 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 ORTA at NSWC IHEODTD, 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 \$100k funding to NSWC IHEODTD 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 IHEODTD—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 IHEODTD 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.





**PARTNERSHIP
INTERMEDIARY
AGREEMENTS (PIAS)**

PIAS

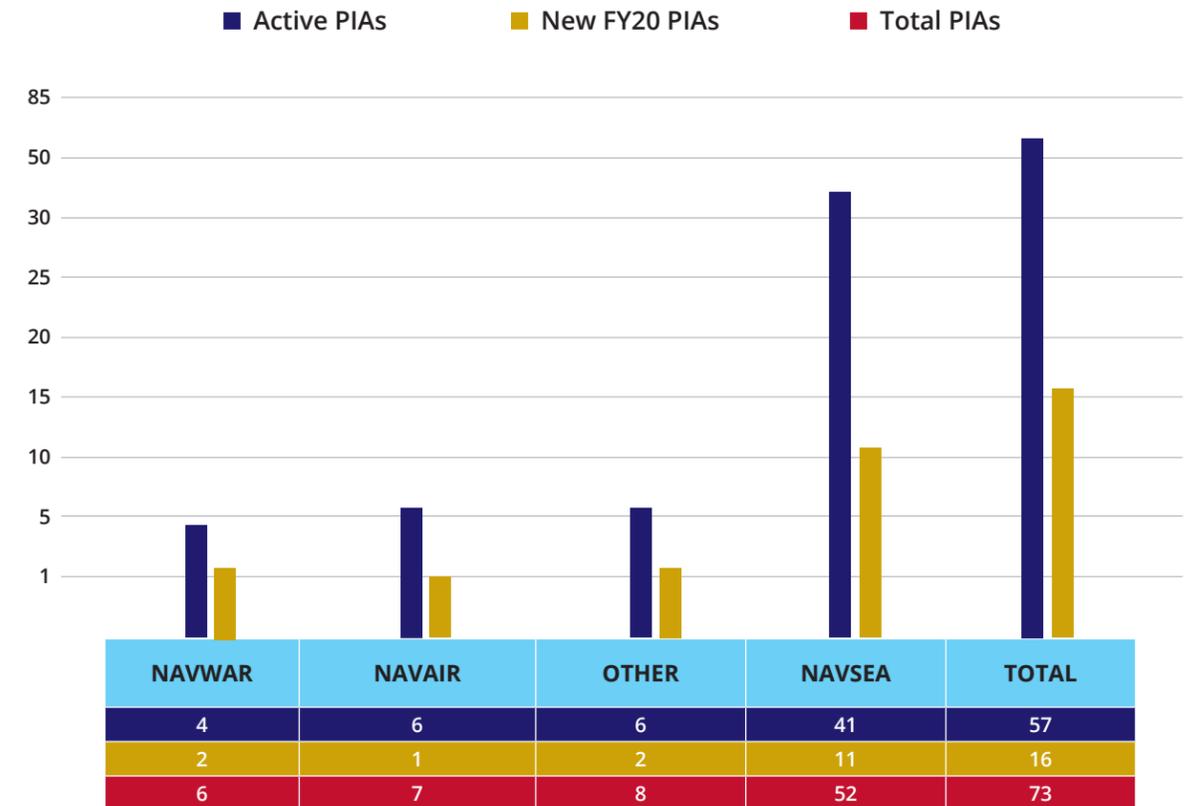
A Partnership Intermediary Agreement (PIA) is an agreement between the DON and an agency of a state or local government or a nonprofit entity as defined in Section 3715 of Title 10, United States Code. It is used to allow the intermediary to identify new technologies in the private sector that can be 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. Appendix B lists the PIAs that the DON executed in FY19.

USE CASES

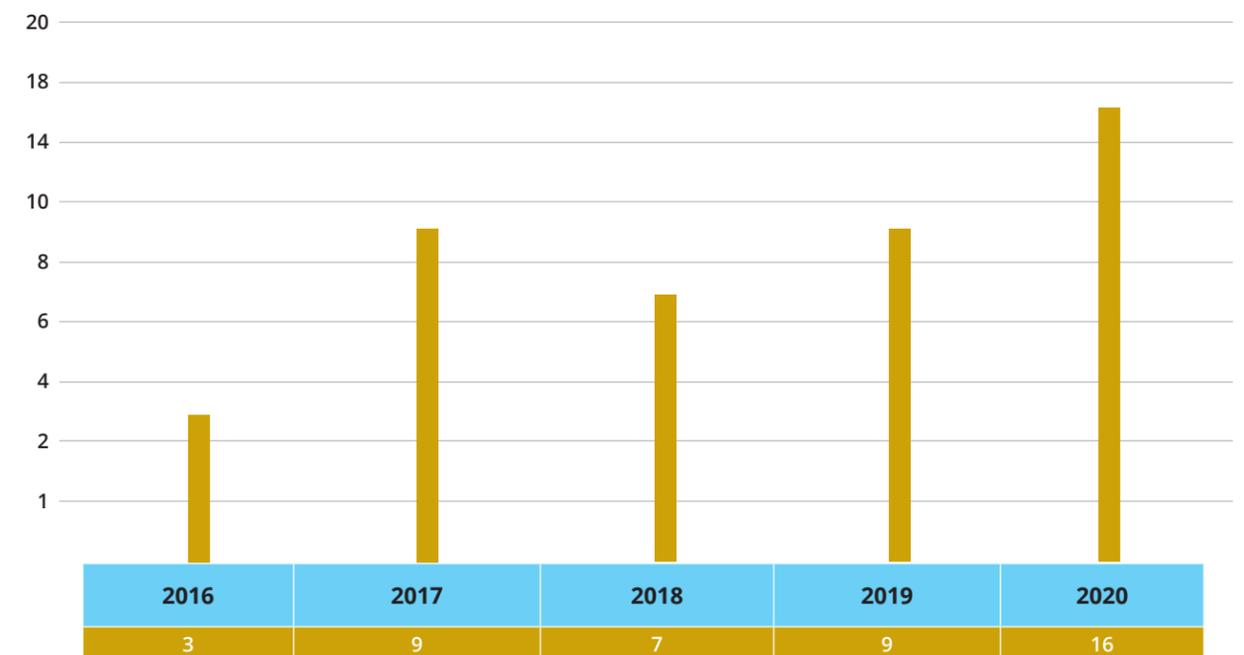
- Combined with OTAs & consortia, they work to solve PEO/PM requirements
- Commercial Tech Scans
- Industry Day Events Marketing
- Market and help with STEM events
- Technical exchanges at tech incubator spaces
- Tech Bridges
- Advanced Naval Technology Exercises (ANTX)



DON FY20 EXECUTED PIAs BY SYSCOM



DON EXECUTED PIAs BY FY





NAVFAC EXWC PIA SUPERCHARGES LOCAL ECOSYSTEM TO FILL TECHNOLOGY GAPS

Building strong collaborations comes easily to Naval Facilities Engineering & Expeditionary Warfare Center (NAVFAC EXWC) in Port Hueneme, California. Cheryl Monzon, IP and T2 PM worked with representatives from the Economic Development Center Ventura County (EDC-VC) and with the owners of Matter Labs—a think tank, startup studio and consulting firm specializing in emerging technologies, to execute a PIA.

The partnership sent T2 into overdrive in the Ventura County region, resulting in vibrant T2 and economic development activity in 2019 alone. One of the most successful events planned through the partnership was the first NAVFAC EXWC sponsored industry day, which brought together scientists, engineers and technology vendors with T2 as the primary mechanism for facilitating development and implementation of a new capability.

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

NUWC Division Newport held its fifth Advanced Naval Technology Exercise (ANTX) in August 2019 which was executed through its 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 on 28-29 August 2019. 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 DN 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 DN ecosystem to identify promising technologies and potential partners to address the Navy’s mission of strengthening its undersea security needs.





**INTELLECTUAL
PROPERTY/PATENT
LICENSE AGREEMENTS
(IP/PLAS)**

IP & PLAS

Protected inventions from Naval laboratories are available for licensing to businesses for new product development and sales. Signing a PLA with naval laboratories allow a business to manufacture or use the invention in their products with the right to bar others without a license from doing the same. The business may receive additional supporting materials, such as software code, drawings, test and trials data, use cases, and prototypes. Each PLA is individually negotiated between representatives from the respective federal laboratory and the prospective licensee (business).

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

USE CASES

- Protect technology for the warfighter
- Private sector partner commercialization of IP developed by the government
- Distribute government-developed software to industry as open source

New Inventions Disclosed	440
Patent Applications Filed	509
Patents Issued	338
Total Active Patents	4,243

New Patent Licenses	23
Total Active Licenses	65
Total Active Income Bearing Licenses	65
Other IP Active Licenses	5
Exclusive Licenses	15
Partially Exclusive Licenses	18
Non-Exclusive Licenses	28

PLA ENABLES TRANSITION TO KEEP EXPLOSIVE ORDNANCE DISPOSAL (EOD) WARFIGHTERS SAFE

Grey Ops, a Maryland startup company, licensed a U.S. Navy-patented technology from the Naval Surface Warfare Center Indian Head Explosive Ordnance Disposal Technology Division (NSWC IHEODTD) T2 Office. The licensed technology enables 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 IHEODTD’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.



PLA FIGHTS NAVAL WORKPLACE FATIGUE AND INJURY

The NSWC Crane T2 office initiated a 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 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.

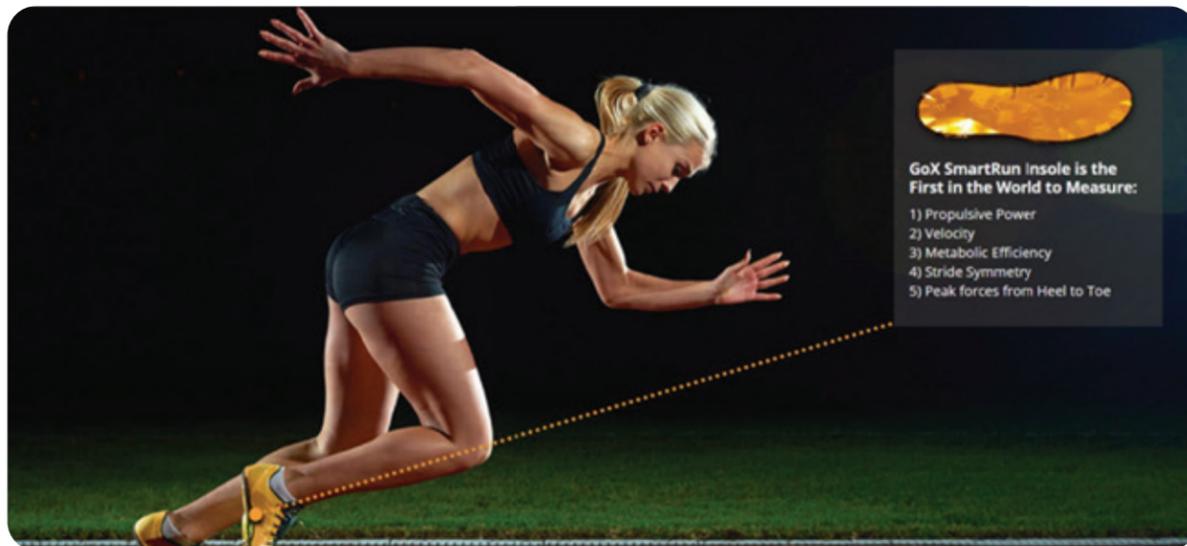
HOLOLENS SOFTWARE LICENSE AGREEMENT TO IMPROVE SHIPBOARD MAINTENANCE, TRAINING

NSWC Port Hueneme Division successfully executed its first PLA in August 2019, involving two patents for Command-developed software. In partnership with California-based startup Axis3, NSWC Port Hueneme 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, ORTA manager and chair of the Invention Evaluation Board at NSWC Port Hueneme, “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.”



PLA FIGHTS RUST CORROSION ATTACKING MILITARY VEHICLES

Craig Matzdorf, a chemist at 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.

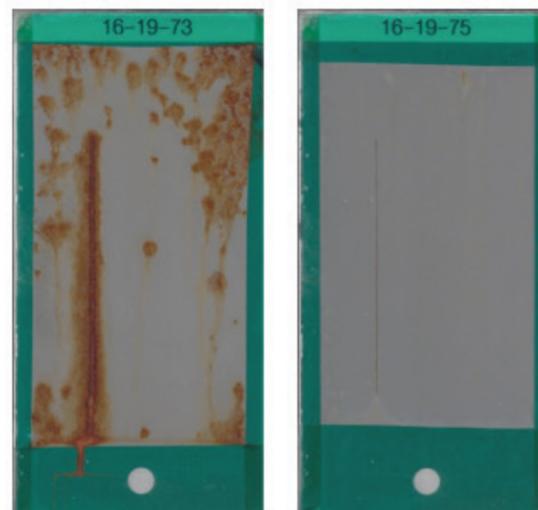
By adding polycarboxylate inhibitors to aluminum-rich coatings, a previous Navy invention, Matzdorf and his team were able to double the corrosion resistance.

“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 license 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.

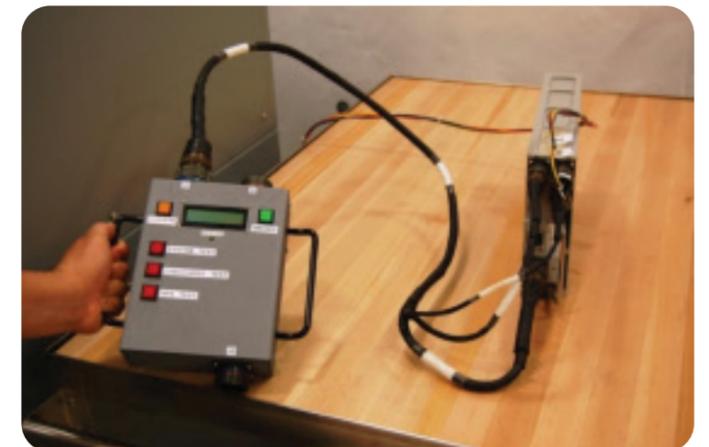
Ultimately, the new coating additive will benefit the military and civilian communities by reducing maintenance costs of vehicles and extending their life cycles.



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

NAWCAD Lakehurst recently executed a 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 standalone test equipment. DragoonITCN plans to incorporate the Smart Connector into its own CORVUS avionics diagnostic tool, which was developed through Air Force Research Laboratory SBIR funding.





NON-FAR MEETS FAR: T2 & CONTRACTS

STACKED AUTHORITIES:

OTAs, PIAs & 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 OTAs.

While this capability has been around for decades, duty contracting officers are using it more frequently nowadays to cut through bureaucracy and expedite contracting—in support of the agility for which the 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 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 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 CRADAs to partner with the DON on developing technologies.



HOW SBIR & T2 WORK TOGETHER

SBIR/STTR is a U.S. 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.

CRADAS WITH DON SBIR PARTNERS ADVANCE TECHNOLOGY FOR FLEET NEEDS

For example, in FY19:

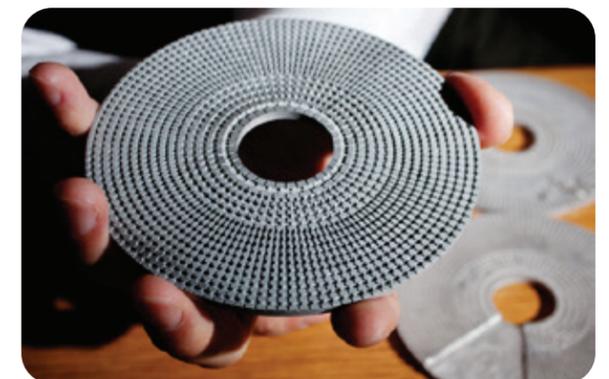
- A small business used part of its SBIR award to fund a naval laboratory engineer to perform engineering calculations on its sea water antenna.
- A small business used part of its SBIR award to fund a naval laboratory to test, integrate, and evaluate its training software, which increased fleet input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

NUWC DN partnered with two DON SBIR awardees to advance the development of naval technology.

This was made possible by an FY14 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 DN established such partnerships with Thorton Tomasetti, Inc. and Navatek, Ltd. to test and evaluate each companies’ technologies.

The Thorton 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 DN 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 the state-of-the-art NUWC DN Acoustic Test Facility.





DON T2 STUDIES



DON T2 ECONOMIC IMPACT STUDY

In 2018 TechLink, a 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 license agreements 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 PLA. 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 DoD 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 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 and other economic outcomes directly related to the technologies that 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 24-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.

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 CRADAs increases the likelihood that the transferred technology will find market success.

The report profiles a port security barrier system invented at NAVFAC 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 \$200M in government and commercial sales for the licensees.

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





FY20 PILOT PROJECTS



TECHNOLOGY INNOVATION AND TRANSITION LABORATORY (TECHX)

NAVAL SURFACE WARFARE CENTER, PORT HUENEME DIVISION

NSWC PHD is developing a joint use innovation laboratory that will facilitate the integration of research, development, prototyping, testing and T2 and transition functions among the DON, regional first responders and non-traditional businesses. The funding provided under this pilot leveraged approximately \$2M in existing laboratory equipment and will be specifically used to develop and enhance activities and processes within this regional laboratory environment. NSWC PHD personnel plan to use the laboratory to host, educate and collaborate with companies participating in the SBIR/STTR program, as well as companies that have not yet done business with the DoD.

WHAT ARE PILOT PROJECTS?

The DON T2 Pilot Program offers funding to ORTAs at DON laboratories to pilot innovative approaches to T2. The intent of the program is to identify unique, beneficial programs that can be leveraged across the DON T2 community. This will afford DON laboratories the opportunity to utilize maker spaces, collaborate with small businesses, and continue acceleration efforts.

Past pilot projects have included the following:

- T2 Handbook - NSWC Panama City Division
- IP Mining Pilot - NSWC Crane
- TechLink collaboration with several laboratories to organize Innovation Discovery Events (IDEs) in FY15 and FY17
- Innography Business Intelligence Software - Multiple Navy Laboratory Participation
- Environmental Remediation Technologies - NSWC Carderock
- K9 Chemical Detection Training Device that came to be known as Mixed Odor Detection Device - NRL

PROJECT DESCRIPTION
Development of a joint use innovation laboratory (maker space)

STATUS UPDATE
TechX will open in July 2020.

\$100,000 FUNDING
*joint funding with SBIR

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

PROJECT MILESTONES

- Stakeholder outreach
- Develop standard operating procedures
- Industry outreach

IMPROVING T2 EFFICIENCY WHILE REDUCING DEFENSE ACQUISITION TIMELINES

NAVAL SURFACE WARFARE CENTER INDIAN HEAD EXPLOSIVE ORDNANCE: DISPOSAL TECHNOLOGY DIVISION

SBIR funds were used to validate business methodologies developed by NSWC IHEODTD that increases knowledge sharing with commercial partners, reduces risk realized by commercial partners, increases the number of PLAs and CRADAs while increasing the number of successful product launches with DON commercialization partners. This T2 pilot program leveraged third party funding and the SBIR Program to work within a structure proven successful in private industry and to rapidly advance DON patented technologies to demonstration. Within this methodology, they are working to introduce these companies to the SBIR process. At completion of the pilot NSWC IHEODTD had a validated methodology and had advanced a DON patented technology to demonstration in approximately twelve months. A cohort of College of Southern Maryland students worked with the inventor of the selected patent to define the commercial market, user base, and market potential for the technology.

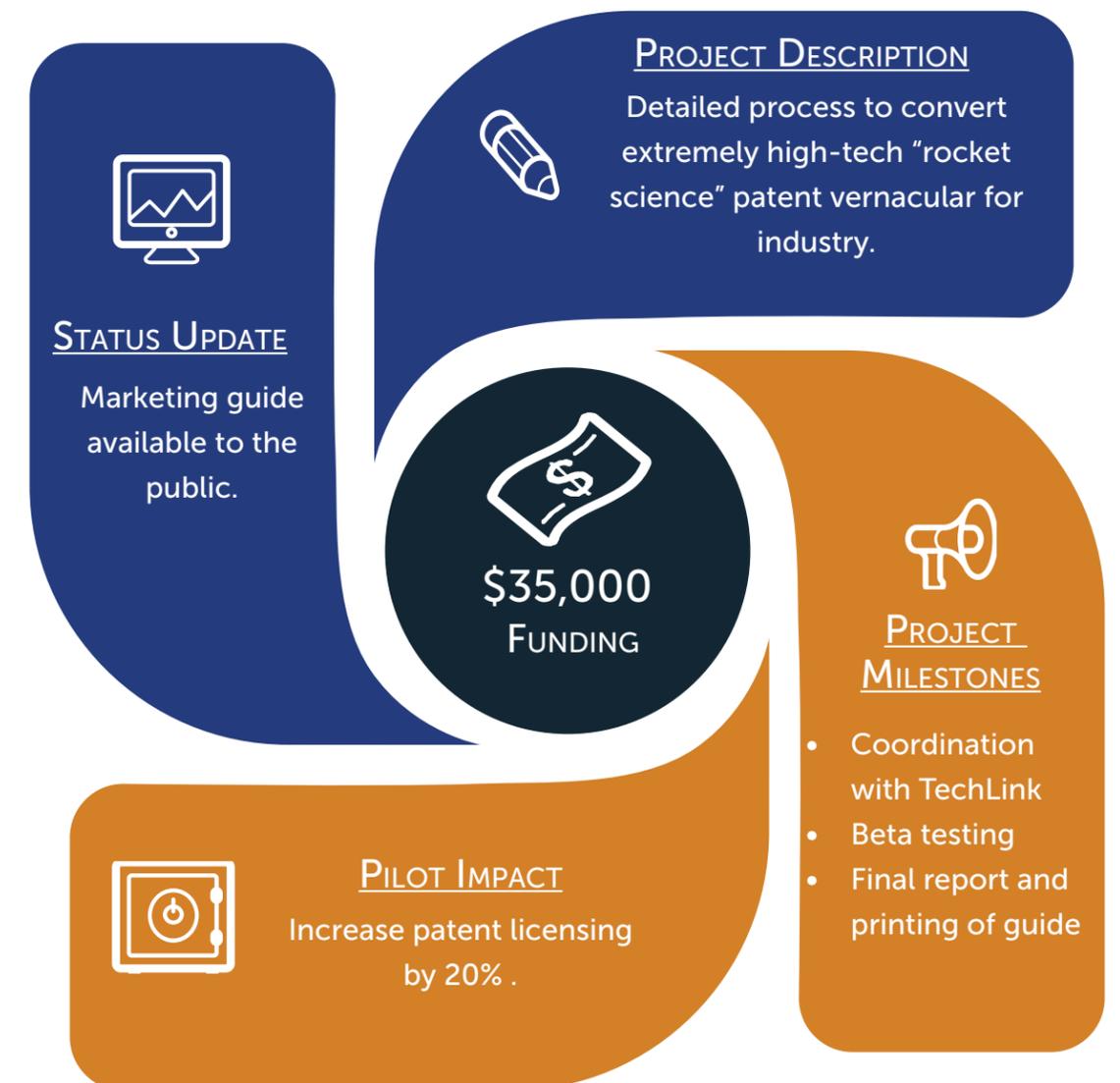


DOD PATENT MARKETING GUIDE

NAVAL AIR WARFARE CENTER WEAPONS DIVISION IN COLLABORATION WITH TECHLINK

NAWCWD and TechLink collaborated for the past two years in creating a guide to help the DoD effectively market their patents to industry. This guide assists the ORTA nontechnical staff to decipher and convert “rocket science” patent vernacular into highly effective T2 data that industry can quickly understand. Initial beta testing improved NAWCWD’s licensing results nearly 20%.

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

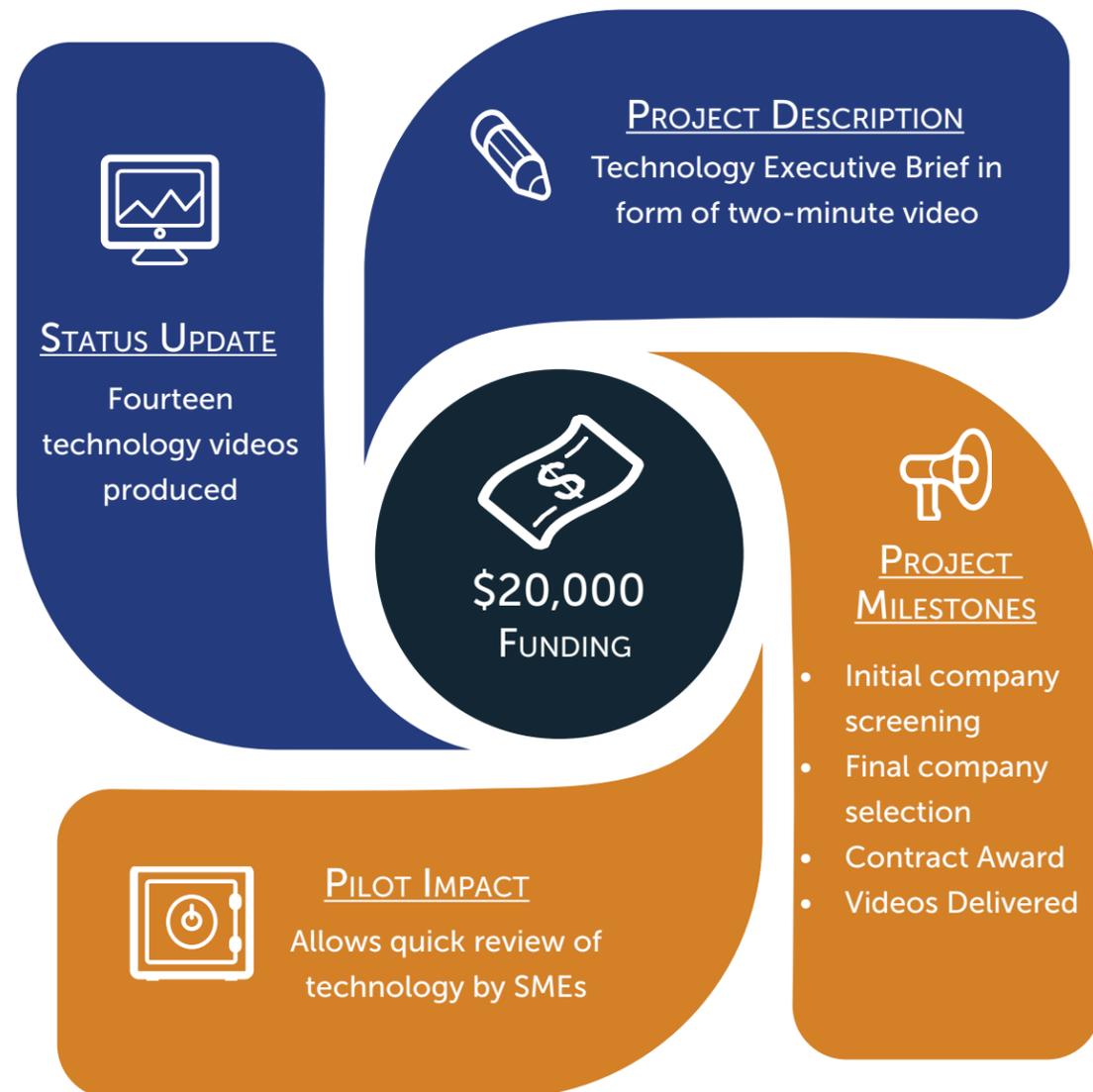


TECHNOLOGY HUNTER FOR NAVY INNOVATION

NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER

NAVFAC EXWC partnered with Economic Development Collaboration of Ventura County (EDC-VC) and Matter Labs to identify Ventura County, CA-based technology companies that are financially stable and have mature technologies that could benefit the DON. The EDC-VC produced a two-minute overview video for technologies of interest at select businesses. Then, EDC-VC hosted a one-day session with NAVFAC EXWC personnel to present its findings, review the videos, prioritize technologies with NAVFAC EXWC and naval applicability and agree on next steps. The EDC-VC also produced written company research reports to support socialization within the DON. NAVFAC EXWC funded its employees' labor from NAVFAC EXWC overhead, which made pilot funding go further.

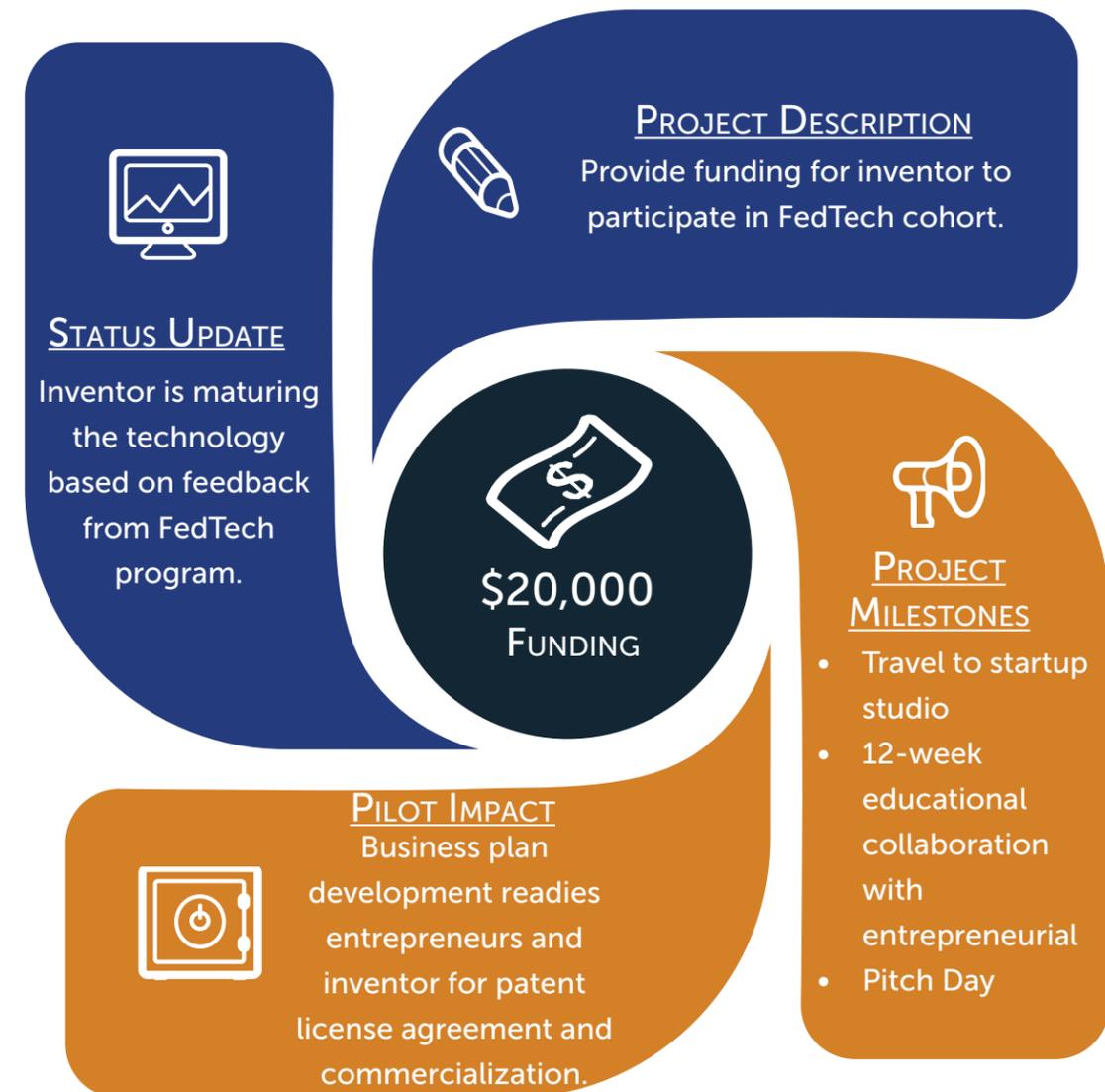
https://www.youtube.com/channel/UCTZUf0XzaWqgkg4QI5h-jWw?view_as=subscriber



FEDTECH COHORT

ENHANCED RECOGNITION & AUTONOMOUS LEARNING IN SELF-DRIVING VEHICLES: NAVAL INFORMATION WARFARE CENTER, PACIFIC

Funding was provided to NIWC Pacific to participate in the Fall 2019 FedTech Cohort. Under this program, entrepreneurs are connected to technologies developed across the DON and other government labs, top-tier universities and corporate R&D organizations. The FedTech's autonomous vehicle (AV) team is research market opportunities associated with Dr. Stuart Rubin, NIWC Pacific, fusion of multi-sensor information with operated-learned behavior for automatic and efficient recognition of objects and control of remote vehicle patent.



FEDTECH COHORT

COMMERCIALIZATION INVESTIGATION OF IN-THEATER MANUFACTURING: NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION

Pilot funding was provided to NSWC Carderock to participate in the Spring 2019 FedTech Cohort. Under this program, entrepreneurs are connected to technologies developed across the DON and other government labs, top-tier universities and corporate R&D organizations. NSWC's goal was to identify multiple companies that were interested in its new emerging technology of spray casting sea worthy autonomous logistics vessels "on the beach". It is expected that several new CRADA partners will be identified, new IP in the form of patents or trademarks will be generated and new suppliers for components of this new manufacturing system will be identified.

STATUS UPDATE
GGB Solutions, Inc. was formed by the entrepreneurs. License in negotiation.

PROJECT DESCRIPTION
Provide funding for inventor to participate in FedTech cohort.

\$15,000 FUNDING

PROJECT MILESTONES

- Travel to startup studio
- 12-week educational collaboration with entrepreneurial
- Pitch Day

PILOT IMPACT
Commercialize rapid construction technology to help with disaster relief efforts.



DON T2 TRAINING



TRAINING

FY19 DOD T2 TRAINING WORKSHOP

Annually, the DoD T2 community puts on a “DoD T2 Training Workshop”. It assembles T2 professionals, including ORTAs, IP attorneys, and supporting T2 staff to participate in developing new strategies, training, sharing lessons learned and best practices, resolving T2 problem areas, and developing a consensus on issues of concern. The 2019 workshop was held in Pittsburgh, Pennsylvania on 9-11 July 2019.

Session topics included:

- Best Practices in T2 and Transition as seen through the lens of the NAWCAD Patuxent River success in developing and licensing new coating technologies
- What Can Go Wrong with a CRADA or a PLA
- Partnership Intermediary Use
- Role of Government Purpose Licenses in Technology Transition
- Trademarks and Trademark Licensing
- T2 and Sustainment
- Export Control Considerations in T2
- Software Licensing in Light of Recent Service Policies

FY19 NAVY ORTA/LEGAL WORKSHOP

On 6-7 November 2018, the ONR held its tenth Navy T2 ORTA/Legal Workshop at the Naval Postgraduate School in Monterey, California. This event provided a forum for Navy T2 professionals from the ORTA and legal communities to exchange ideas and address topics of mutual interest relevant to the Navy’s T2 efforts. The workshop contained in-depth discussions between the two communities as well as networking among new and veteran T2 professionals who would not otherwise have this opportunity.

Highlights of the topics presented during the two-day agenda include the following:

- Integrating the SBIR Program with T2
- How ORTAs and Legal Departments Facilitate Agreement Reviews
- Establishing Shipyards as ORTAs
- Innovations in Marketing, Licensing, Training and Promoting T2 Successes
- A three-hour facilitated discussion by Association of University Technology Managers on branding the Navy’s T2 Program, the Value Proposition, and T2 lead generation
- Basics of IP

There was also a dedicated track for T2 IP attorneys and general counsels. This track included discussions on:

- Indemnification, Sovereign Immunity, and Liability in T2 Agreements
- Practical Aspects of Patenting Software
- Negotiating IP Rights Under 10 U.S.C. 2539b Agreements
- ANTX Special CRADAs



**DOMESTIC
PREPAREDNESS
SUPPORT INITIATIVE
(DPSI)**

DOMESTIC PREPAREDNESS SUPPORT INITIATIVE (DPSI)

The DoD DPSI 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 US Dollars 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 ORTA representatives. FY19 funds went to demonstrate NSWC IHEODTD "Silent Spring" liquid-saving product, previously discussed, for domestic first responders.

During FY19 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 FY20 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 PO and SBIR and Small Business Technology Transfer (STTR) programs, the ONR, and marine robotics company Hydronalix.

The technology in EMILY followed a long road over its eighteen 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 the 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.





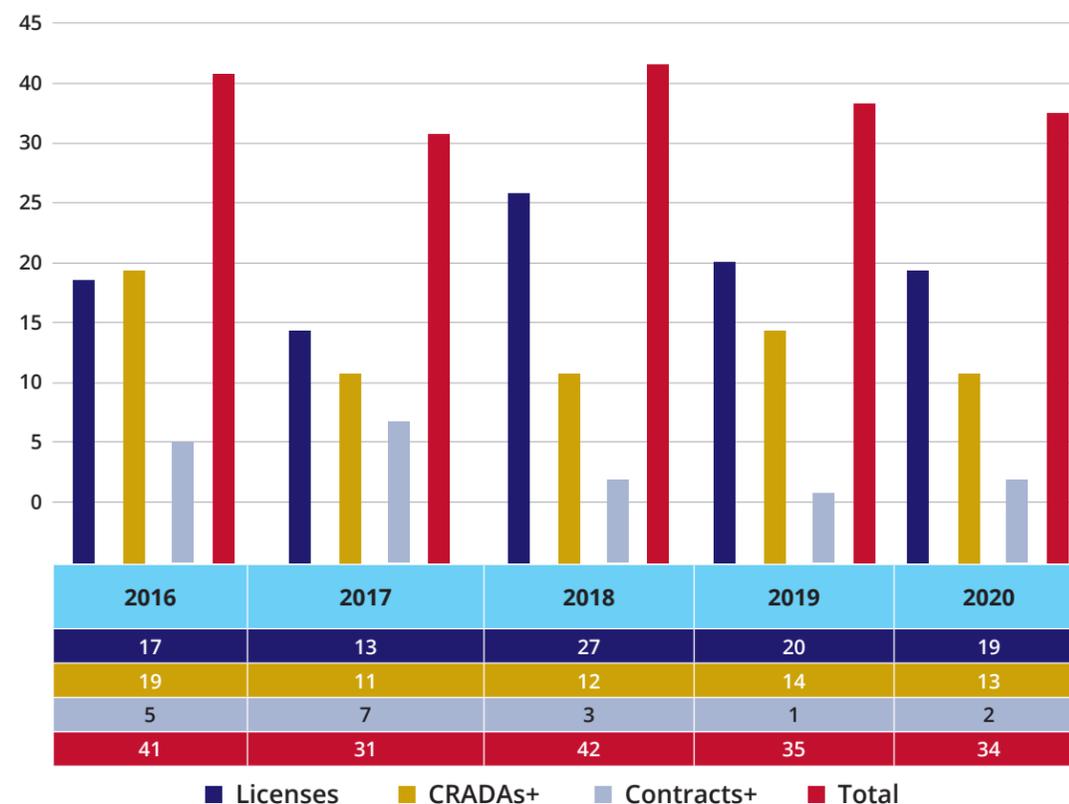
OUR FEDERAL PARTNERS

HOW TECHLINK PARTNERS WITH T2

<http://www.techlinkcenter.org>

TechLink is one of the DoD's national PIA for T2. They have been helping the DoD to establish licensing and other T2 agreements with U.S. industry since 2000. These agreements transfer DoD inventions to industry, enabling companies to create new products and services, and stimulating economic development. In FY19, TechLink assisted DON T2 with 36 agreements.

Located within Montana State University's Office of Research and Economic Development, TechLink serves as the university's main outreach arm to the high-tech sector in the state, region, and nation. Below is a snapshot of TechLink's contribution to Navy T2.



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.

The DoD T2 national PIA established in 2004 focuses on leveraging the NIST Manufacturing Extension Partnership for T2 as well as cost, design, engineering samples, tech scouting, manufacturing, manufacturability and vendor capability.

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

In FY19, DON T2 made up 27 percent of MilTech's contracts (projects listed below).

FY19 NAVY T2 PROJECTS

- NAVClean Dry - NAWCAD
- Project Red Team - NAVSEA
- Ammunition Backpack - NSWC Crane
- Lasercom - NRL
- Greenstick - Naval Special Warfare, Expeditionary use of UAV
- EPIC - MARCOSYSCOM
- Scalable Load Cartridge Reverse Engineering and Refinement - MARCOSYSCOM
- Enhanced Combat Health Repair Kit - MARCOSYSCOM
- Lightweight Polymer-Cased Caliber .50 Ammunition - MARCOSYSCOM
- AR Bolt Cleaning - MARCOSYSCOM
- Glider - Marine Corps Weapons Laboratory - MCWL
- Tech Scout 17 - MCWL
- Augmented Reality Monocle - MCWL

FEDERAL LABORATORY CONSORTIUM FOR TECH TRANSFER (FLC)

www.federallabs.org

The FLC community is comprised of more than 300 federal laboratories, facilities and research centers and their parent agencies. Members include world-renowned scientists, engineers, inventors, entrepreneurs, academia, 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

2019 NATIONAL MEETING

Hundreds of the nation's top T2 professionals, including DON T2 personnel, convened in Orlando, Florida, 23-25 April for the 2019 FLC for T2 National Meeting. Hailed as one of the most anticipated events in the T2 community, the meeting offered three days of T2 training, best practice strategizing sessions, expert public- and private-sector speakers, and networking opportunities designed to appeal to a diverse audience of technology and business professionals.

The meeting kicked off with a full day of training where attendees can strengthen their T2 skills while earning valuable continuing education units. Training course topics included: T2 for Beginners, IP for T2 Professionals, CRADAs, and Licensing and Negotiation workshops. Additional training course selections covered Technology Valuation & IP Portfolio Management and an American Management Association course titled "Developing Your Staff Through Teaching."

FLC BUSINESS TOOL TIPS

In July, the FLC introduced new tool tips to the FLC Business platform designed to improve both tool navigation and data search results that meet both the laboratory and their partner's R&D needs. The site includes two "tours" to help familiarize the T2 professional with this one-stop shop, federal laboratory resource platform. The tours include: FLC Business Search Tour and Laboratory Profile Tour.

NEW FLC EDUCATIONAL VIDEO SERIES

This year, the FLC created a new educational video series aimed at examining fundamentals of innovation rights. This new tool is designed to equip the T2 professional with the key IP knowledge needed to protect themselves and their innovations.

Video series topics include:

- Understanding IP
- Understanding Trademarks
- Understanding Copyrights
- Understanding Trade Secrets
- Understanding Patents

The videos are available to view on demand in the FLC Educational Video Series gallery.

<http://connect.federallabs.org/flc-educational-video-series-video-gallery>

FY19 FLC NAVY OFFICERS

During the 2019 FLC National Meeting held 23-25 April in Orlando, Florida, Consortium Representatives whose memberships are registered with the Consortium Recording Secretary voted for elected officials at the national and regional level.

This year, FLC members voted for the Chair and Vice-Chair positions in addition to three Members-at-Large. Elections also took place for the Northeast, Southeast, and Mid-Continent regions. These officers will serve two-year terms at the start of the new fiscal year beginning 1 October 2019.

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



John Dement,
NSWC Crane
FLC Chair



Jenna Dix,
NSWC Crane
Midwest Regional
Coordinator



Michael Merriken,
NIWC Atlantic
Southeast Regional
Coordinator



Valerie Larkin,
NUWC Division
Newport
Northeast Regional
Coordinator



Cheryl Monzon,
NAVFAC EXWC
Far West Regional
Coordinator (Acting)

DON T2 ORTAS DEMONSTRATE LEADERSHIP IN THE FLC

The FLC is a congressionally-mandated, nationwide network of more than 300 federal laboratories, facilities and research centers that promote and facilitate the movement of research and technology into commercial products for the global marketplace. Annually, DON ORTAs and T2 personnel attend the FLC National Meeting to share T2 best practices, to train, and to be trained. At the FY19 FLC National Meeting NSWC Crane Division's John Dement was elected FLC Chair. He will serve a two-year term during FY20 and FY21. The DON had also the honor of winning four FLC Excellence in Technology Transfer awards, FLC Representative of the Year, and 2019 FLC Rookie of the Year.



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 Port Hueneme



2019 FLC Representative of the Year
Elizabeth (Brooke) Pyne
NSWC Crane Division



2019 FLC Rookie of the Year
Jenna Dix
NSWC Crane Division

LABTECH AT HOME

LabTech at Home is the first virtual environment of LabTech in Your Life. Learn the story behind how the technologies you use every day made their way to the marketplace and into your home! You'll discover nearly 50 federally developed commercialized technologies from 7 federal agencies, displayed throughout 7 different tour stops.

Each technology represents years of federal laboratory R&D and demonstrates successful technology transfer (T2) partnerships in a wide range of scientific areas. A list of the agencies and technologies featured throughout the LabTech home are listed below. We encourage you to explore, discover, and experience all our virtual environment has to offer.

This environment can be viewed by desktop, smartphone or virtual reality headset.

<https://federallabs.org/successes/labtech-in-your-life>



FLC TRAINING SESSIONS

ELEVATE KICKOFF SESSION: CREATING AN "INNOVATION GREENHOUSE" IN YOUR DEFENSE LABORATORY

Elevate is a year-long training series designed by Fed Tech to grow the capability of DoD laboratory personnel to interact with industry, non-traditional partners and the venture community. The goal of the training series is to strengthen the connection between DoD laboratories and partners in order to more effectively transition technologies to the warfighter and commercial markets.

Kicking off on 15 January 2019 in Washington, D.C., the session featured a day-long training on how to create an "innovation greenhouse" around your laboratory and featuring world renowned innovation and creativity expert Dr. Oliver Schlake, University of Maryland Robert H. Smith School of Business.

NATIONAL SECURITY INNOVATION NETWORK (NSIN) & FEDTECH

<http://www.fedtech.io>

NSIN is an unrivaled problem-solving network that adapts to the emerging needs of those who serve in the defense of our national security. NSIN is dedicated to the work of bringing together defense, academic and entrepreneurial innovators to solve national security problems in new ways.

The NSIN Defense Innovation Accelerator (DIA), powered by FedTech, was developed to find breakthrough DoD lab technology and leverage it to solve the real-world problems of DoD and commercial customers. Teams of entrepreneurs, working with DoD lab scientists and technologists, assess the market viability and transition potential of DoD lab technologies.

In partnership with NSIN, FedTech collaborates with DoD laboratories to identify inventors, inventions and research projects to identify technologies with the strongest potential to become thriving dual-use ventures.

Offering broad, industry-specific experience and perspective, NSIN and FedTech brought to the table seasoned entrepreneurs, technical experts, early-stage startup investors, advisors and mentors, as well as former U.S. government leaders in the rapid innovation space, including former CXOs.

The following is a list of collaborations between the DON T2 program and FedTech, and NSIN in FY19:

- Ping-based communication system (NIWC Pacific)
- Enhanced Recognition and Autonomous Learning in Self-Driving Vehicles (NIWC Pacific)
- AI Learning and Education Tool (NIWC Pacific)
- 4G/5G Algorithm Portfolio (NIWC Pacific)
- Rapid Drying Foam for Autonomous Vehicle Manufacturing (NSWC Carderock)
- Energy Harvesting from a Data Bus (NAWCAD Lakehurst)





@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
MCSC	Marine Corps System Command
MCAS	Marine Corps Air Station

ACRONYMS (CONT.)

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
NMCS	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 IHEODTD	Naval Surface Warfare Center, Indian Head Explosive Ordnance Disposal Technology 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 & 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 & Intermediate Maintenance Facility
R&D	Research & Development
RDT&E	Research, Development, Test & 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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APPENDIX A FY20 EXECUTED CRADAS

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION, PATUXENT RIVER

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Arevo, Inc.	LP-CRADA-NAWCADPAX-20-399	Transfer of Fiber Steered Composite Laminate Preform Material for Evaluation
Aurora Flight Sciences Corporation	NCRADA-NAWCADPAX-20-387	Development of Autonomy Capabilities Using the Cooperative Operations in Denied Environments (Code) Open Architecture
BedRock Systems, Inc.	NCRADA-NAWCADPAX-20-410	Use of Secure Hypervisor with Active Security in Avionics in Demonstration of Robust Embedded Cyber Security
The Boeing Company	NCRADA-NAWCADPAX-20-384	Air-to-Air Refueling Collaboration
Chemeon Surface Technology, LLC	LP-CRADA-NAWCADPAX-20-386	Transfer of Electrolytic Process for Deposition of Chemical Conversion Coatings Panels
Cobham Mission Systems Orchard Park, Inc.	NCRADA-NAWCADPAX-20-389	Navy In-Mask Expired Gas and Pressure Data Collection
Collins Aerospace	NCRADA-NAWCADPAX-20-383	Time Difference of Arrival Training
Corrdesa, LLC	NCRADA-NAWCADPAX-20-401	Optimization of Aluminum-Rich Primer Performance Against Corrosion
Coventya, Inc.	LP-CRADA-NAWCADPAX-20-394	Transfer of Electrolytic Process for Deposition of Chemical Conversion Coatings Panels
Darwin Deason Institute for Cyber Security at Southern Methodist University	NSCRADA-NAWCADPAX-20-393	Data Science and Engineering R&D
Eckart America Corporation	LP-CRADA-NAWCADPAX-20-381	Transfer of Aluminum Anode Alloy
General Atomics Aeronautical Systems, Inc.	NCRADA-NAWCADPAX-20-403	Sense and Avoid Civil Certification Assessment for Due Regard Operations
General Atomics Aeronautical Systems, Inc.; and Air Anti-Submarine Warfare Systems Program Office (PMA-264)	NCRADA-NAWCADPAX-19-362	MQ-9 Acoustic Sonobuoy Dispensing, Monitoring and Control
Impossible Objects, Inc.	LP-CRADA-NAWCADPAX-20-400	Transfer of Composite-Based Additive Manufacturing Test Parts and Coupons for Evaluation
InTech Environmental Canada	LP-CRADA-NAWCADPAX-20-388	Transfer of Nav-Family Corrosion Protection Technologies Samples

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION, PATUXENT RIVER (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Lockheed Martin Rotary and Mission Systems; PMA-299; Telephonics Corporation	NCRADA-NAWCADPAX-18-337	Sierra Radar Evaluation on MH-60S
Thales Defense & Security, Inc.; PMA-299; Thales Defense Mission Systems; and Eaton Aerospace, LLC, through its Fuel and Motion Control Systems Division	NCRADA-NAWCADPAX-19-370	AQS-22 (ALFS) Reeling Machine Equivalent Industrial Servo Valve
Magni Industries, Inc.	LP-CRADA-NAWCADPAX-20-409	Transfer of Corrosion Inhibitors Technology
Perspecta Labs, Inc.	NCRADA-NAWCADPAX-20-404	Demonstration of 1553 Databus Defensive Solutions Utilizing the Multilayered Obstructed Brokered HUB
Psionic, LLC	NCRADA-NAWCADPAX-20-382	Navigation in Global Positioning System Environment and Shipboard Recover
Raytheon Corporation	NCRADA-NAWCADPAX-19-379	Additive Manufacturing Production and Digital Thread
SRC, Inc.	NCRADA-NAWCADPAX-20-411	Unmanned Air Systems/ Counter Unmanned A/C Systems Experimentation Effort
Tetramer Technologies, LLC	LP-CRADA-NAWCADPAX-20-395	Transfer of Fiber Optic Splice Technologies Samples
Ultra Communications, Inc.	NCRADA-NAWCADPAX-20-408	Fiber Optic Cable Tester Demonstration

NAVAL AIR WARFARE CENTER TRAINING SYSTEMS DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Diamond Visionics, LLC	LP-CRADA-NAWCTSD-20-024	Material Transfer of NPSI Data to Diamond Visionics from NAWCTSD
NVIDIA Corporation	NCRADA-NAWCTSD-20-070	Collaboration on Near Eye Display Systems Roadmap
Scalable Network Technologies	NCRADA-NAWCTSD-20-072	Capture-the-Flag-in-a-Box Cyber Security Training Exercise Capability
TRU Simulation + Training, Inc.	NCRADA-NAWCTSD-20-071	Adaptable Mission Trainer for F/A-18 FAC(A)

NAVAL AIR WARFARE CENTER WEAPONS DIVISION, CHINA LAKE

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
The Boeing Company	NCRADA-NAWCWDCL-19-289	F/A-18E/F and EA-18G Flight Plan Collaboration
Cambium Biomaterials, Inc.	NCRADA-NAWCWDCL-20-290	Development, Prototyping and Scale-Up of Next Generation Polymers, Polymer Composites and Advanced Materials for Enhanced Land, Air and Sea Warfighter Performance and Protection
Ernest Orlando Lawrence Berkeley National Laboratory	LP-CRADA-NAWCWDCL-20-295	Material Transfer of Bio-Derived Materials
Northrop Grumman Systems Corporation, acting through its Grumman Defense Systems Sector	NCRADA-NAWCWDCL-20-297	Energetic Material Research, Development and Manufacturing for Highly Loaded Grain Technology and Burn Rate Enhancement Technology
Raytheon Company	NCRADA-NAWCWDCL-19-287	Energetics and Ordnance Technology Design, Development and Engineering
Technology Holding, LLC	NCRADA-NAWCWDCL-20-292	Synthesis and Characterization of High Performance Bio-Based Fuels and Development of Advanced Biosynthetic Materials
Zymergen, Inc.	LP-CRADA-NAWCWDCL-19-291	Transfer of Zym-901 Biobased Epoxy Hardener

NAVAL AIR WARFARE CENTER WEAPONS DIVISION, POINT MUGU

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
BNNT, LLC	NCRADA-NAWCWDPM-19-288	Boron Nitride Nanotubes to Enhance Composite Materials for Warfighter Capabilities
Kaman Aerospace Corporation, Kaman Precision Products Division	NCRADA-NAWCWDPM-20-293	Fuzing, Safe-Arm and Ignition System Devices

NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Electric Power Research Institute, Inc.	NCRADA-NAVFAC-EXWC-20-001	Adaptive Microgrid with Energy Storage, Synchronous Condenser and AC and DC Outputs

NAVAL INFORMATION WARFARE CENTER ATLANTIC

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Astrapi Corporation	LP-CRADA-NIWC LANT-20-002	Enhanced Telecommunications Using Continuously-Varying Amplitude
iXblue Defense Systems, Inc.	NCRADA-NIWC LANT-19-003	Fiber-Optic Inertial Navigation System R&D Evaluation and Improvement
North Carolina State University	NCRADA-NIWC LANT-19-001	Ultrafast Laser Spectroscopy and Pulse Shaping
Old Dominion University	NCRADA-NIWC LANT-19-006	Sensors, Actuators and Power Sources for Naval Applications
RGB Spectrum	LP-CRADA-NIWC LANT-20-001	CANES VDS Exploration of RGB Spectrum's Zio Line

NAVAL INFORMATION WARFARE CENTER PACIFIC

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
9163-2935 Quebec, Inc. dba OptoElectronic Components	LP-CRADA-NIWC PACIFIC-20-365	R&D for Quantum Entangled Memory System Integration
BAE Systems Information and Electronic Systems Integration, Inc.	LP-CRADA-NIWC PACIFIC-20-375	Evaluation of Cross-Domain Solution Equipment
Cellco Partnership, a Delaware Partnership dba Verizon Wireless	NCRADA-NIWC PACIFIC-20-366	Installation neXt Verizon Wireless 5G Authorization for Facility and Services Project
Disruptiv Technologies, LLC	NCRADA-NIWC PACIFIC-20-382	Correlation and Analysis of Navy Data to Improve Decision Making
DSI, LLC	NCRADA-NIWC PACIFIC-19-359	Coupled EFDC+ Hydrodynamic and Propeller Wash Model
Envistacom, LLC	NCRADA-NIWC PACIFIC-20-377	Development of Ultra Wide-band Laser Induced Plasma Antenna
Epoch Concepts, LLC	LP-CRADA-NIWC PACIFIC-20-381	Evaluation of Virtual Distance Support Physical Appliance
Fenix Group, Inc.	NCRADA-NIWC PACIFIC-20-378	Integrated High Bandwidth LTE Communications System for Intelligence, Surveillance, and Reconnaissance
Fuse Integration, Inc.	NCRADA-NIWC PACIFIC-20-374	Understanding Tactical Integration and Interoperability of Core Technology

NAVAL INFORMATION WARFARE CENTER PACIFIC (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Georgia Tech Applied Research Corporation	LP-CRADA-NIWC PACIFIC-20-372	Development and Implementation of Open Unmanned Undersea Vehicle Command and Control Standards and Techniques
Gigamon, Inc.	LP-CRADA-NIWC PACIFIC-20-367	Packet Reduction Efficacy Verification Testing
International Association of Oil and Gas Producers	NCRADA-NIWC PACIFIC-19-357	Growth and Recovery Functions for the Auditory Effects of Intermittent Impulse Noise on Cetaceans
Phillips Corporation; U.S. Army Combat Capabilities Development Command Chemical Biological Center	NCRADA-NIWC PACIFIC-20-370	Screening and Selecting Candidate Parts for Additive Manufacture and Enterprise Adoption
Pictorvision, Inc.	LP-CRADA-NIWC PACIFIC-20-360	Visual Information Camera Tracking and Optical Recognition
Polaris Alpha Advanced Systems, Inc.	LP-CRADA-NIWC PACIFIC-20-362	Transfer and Use of AVAA for Government Purposes
Qualcomm Technologies, Inc.	LP-CRADA-NIWC PACIFIC-20-368	Evaluation and Loan of Neural Network Hardware and Software
The Regents of the University of California, on Behalf of its San Diego Campus; Marine Corps Systems Command	NCRADA-NIWC PACIFIC-20-373	UCSD 3D Printing Support for COVID-19
Santa Clara University	NCRADA-NIWC PACIFIC-20-361	Wideband Antenna Time-Domain Transmitters Research Collaboration
Scriptatech, LLC	NCRADA-NIWC PACIFIC-20-363	Energy Storage and Distribution for Expeditionary Energy Systems
SEAS Societe de L'eau Aerienne Suisse S.A.	LP-CRADA-NIWC PACIFIC-20-371	SEAS Air to Water Project
Silvus Technologies, Inc.	NCRADA-NIWC PACIFIC-20-364	Allied Interoperability RIMPAC 2020 Experimentation Collaboration
Swiss Federal Institute of Technology, Lausanne	LP-CRADA-NIWC PACIFIC-20-369	Sensor Data Fusion Application for Evaluation and Demonstration
Tresys Technology, LLC	LP-CRADA-NIWC PACIFIC-20-379	Evaluation of Cross Domain Solution for High Threat Network
Undersea Sensor Systems, Inc.	LP-CRADA-NIWC PACIFIC-20-376	T&E of Hyperspike Equipment
University of Massachusetts Amherst	NCRADA-NIWC PACIFIC-20-323	Autonomous Cyber Defense

NAVAL MEDICAL CENTER, PORTSMOUTH

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Biom'Up France SAS	NCRADA-NMCP-19-422	Nonclinical Efficacy Assessments of HEMOBLAST Bellows for Use in Trauma
Boston University; NMCP; NMCS; American College of Radiology; WRNMMC; and HJF	NCRADA-NMCP-20-464	DECAMP-1 PLUS: Prediction of Lung Cancer Using Noninvasive Biomarkers
The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.	NCRADA-NMCP-19-430	Children's Oncology Group Sponsored Research Protocols
Johns Hopkins University	NCRADA-NMCP-19-444	Advancing Knowledge of Congenital Infection Through a Strategic Partnership: A Proposed Murine Model of CMV
LifeNet Health	NCRADA-NMCP-19-434	Placental Membrane for the Treatment of Urethral Strictures in a Rabbit Model
Mary Hitchcock Memorial Hospital on Behalf of Itself, Dartmouth Hitchcock Clinic	NCRADA-NMCP-19-449	NRG Oncology Sponsored Research Protocols
Mead Johnson Nutrition	NCRADA-NMCP-19-442	Medical Research Agreement
Radboud University Medical Center	LP-CRADA-NMCP-20-463	CHD3 Gene Data Transfer
Trustees of Boston College; NMCS; American College of Radiology; WRNMMC; The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.	NCRADA-NMCP-20-465	Detection of Early Lung Cancer Among Military Personnel Study 2 (DECAMP-2): Screening of Patients at High Risk for Developing Lung Cancer
Trustees of Boston University; NMCS; American College of Radiology; Walter Reed National Military Medical Center; The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.	NCRADA-NMCP-19-443	DECAMP-1, Diagnosis and Surveillance of Indeterminate Pulmonary Nodules; and DECAMP-2, Screening of Patients at High Risk for Developing Lung Cancer
University of Louisville	NCRADA-NMCP-19-435	Development of Dried Blood for Prolonged Field Care in Austere Environments
University of Pittsburgh	NCRADA-NMCP-19-445	Use of Transcutaneous Bilirubin as a Screening Tool in DAT Positive Infants
University of Pittsburgh; NMCL, in Association with NMCP	NCRADA-NMCP-20-471	Randomized Controlled Trial of Precision Vestibular Rehabilitation in Military Personnel with mTBI
University of Washington; Naval Medical Center Camp Lejeune	NCRADA-NMCP-18-411	Military Continuity Project

NAVAL MEDICAL CENTER, PORTSMOUTH (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Vanderbilt University Medical Center	NCRADA-NMCP-19-438	Vanderbilt Center for Asthma Research Collaboration
XaTek, Inc.	NCRADA-NMCP-19-447	Validation of ClotChip for Diagnosis of Trauma-Induced Coagulopathy

NAVAL MEDICAL CENTER, SAN DIEGO

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Grand Strand Regional Medical Center	NCRADA-NMCSD-20-531	CIP# S-20-003; The Effect of Tranexamic on Crotalidae Induced Consumption Coagulopathy in Rabbits
Intuitive Surgical, Inc.	NCRADA-NMCSD-20-530	CIP# NMCS.D.2019.0061; Tele-mentoring, Tele-presence and Tele-surgery Utilizing Robotic Surgery in a Virtual Medical Center
University of Pittsburgh; NHRC; and WRNMMC	NCRADA-NMCSD-18-513	CIP# NMCS.D.2018.0034; Resolving the Burden of Low Back Pain in Military Service Members and Veterans: A Multi-Site Pragmatic Clinical Trial

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
3i Diagnostics, Inc.	NCRADA-NMRC-20-10959	Virus Detection and Identification Using Infrared Molecular Profiling Technology
Aaron Diamond Aids Research Center, Columbia University Irving Medical Center	NCRADA-NMRC-20-10928	Identify and Utilize an Adjunct to Enhance Immunogenicity of Infectious Disease Vaccine (Including Malaria and COVID-19)
Adaptive Phage Therapeutics, Inc.	NCRADA-NMRC-20-10850	Development of Phage Base COVID-19 Vaccine Constructs and Subsequent Safety and Immunogenicity Testing in Rabbit Models and Assays
Alpha-O Peptides	NCRADA-NMRC-20-10982	Development and Evaluation of SAPN-PfE140 as an Immunotherapeutic Immunoprophylactic and Research Tool for Malaria

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Altec Inc.	NCRADA-NHRC-20-10938	Altec, Inc. and NHRC PhyCORE Collaborative Assessment of Wearable Physiologic and Movement Monitoring
Anastasia Mosquito Control District	NCRADA-NECE-19-10743	To Test and Evaluate Pest Management Materials Included but not Limited to Pesticides, Repellents, Pesticide Application Equipment and Mosquito Surveillance Equipment
Aristeia	NCRADA-NAMRU-SA-20-10632	Aristeia AS Extremity Tourniquet Prototype
The Bill & Melinda Gates Foundation	NCRADA-NMRC-19-10746	Physiological Markers of Malaria Infection in the CHMI Model
The Bill & Melinda Gates Foundation	NCRADA-NMRC-20-10517	Global Health Vaccine Accelerator Program
Biobridge Global and its Subsidiaries	NCRADA-NAMRU-SA-20-10873	Cellular and Tissue Derived Therapies for Trauma and Disease
Biomeme, Inc.	LP-NCRADA-NAMRU-6-19-10720	Transfer of Biomeme Thermocycler and Phone to Navy
BIOQUAL, Inc.	LP-CRADA-NMRC-20-10911	Testing Human-Immune-System DRAGA Mice for SARS-CoV-2 Infection
Bluejay Diagnostics, Inc.	NCRADA-NMRC-18-10534	Development of a Rapid Test for the Detection of Borrelia and Other Tick-Borne Antigens
Bond University	NCRADA-NHRC-19-10738	To Enhance Soldier Mobility, Communication, Situational Awareness, Protection, Survivability and Training
Brown University	NCRADA-NMRC-20-10901	Development of Malaria Vaccine Using Prokaryotic Viral Vector (Lambda bacteriophage)
Cepheid	LP-CRADA-NMRC-19-10735	Transfer of Infectious Diseases Isolates to Cepheid for Assay Development
Cerus Corporation	NCRADA-NMRC-20-10908	Evaluation of INTERCEPT System for Scale-Up Production of Inactivated Virus Vaccine Candidates, Including SARS-CoV-2 (COVID-19)
Cornell University	NCRADA-NAMRU-6-20-10801	Patterns of Aedes aegypti Movement by Boat and Implications for Insecticide Resistance and Fitness Along the Amazon River
Dr. Clifton McKee	NCRADA-NAMRU-6-20-10889	Bartonella Species Naturally Infesting Sand Flies and Other Arthropods in Ecologically Distinct Regions of Peru
Dr. Clifton McKee	NCRADA-NAMRU-6-20-10889	Bartonella Species Naturally Infesting Sand Flies and Other Arthropods in Ecologically Distinct Regions of Peru

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Dr. Michael Kosoy	NCRADA-NAMRU-6-20-10900	Bartonella Species Naturally Infesting Sand Flies and Other Arthropods in Ecologically Distinct Regions of Peru
Duke University	LP-CRADA-NMRC-20-10958	Antibodies that will be used for the Development of Immunoassays for COVID-19
Duke University	NCRADA-NAMRU-6-20-10831	Characterization of Leishmania and Malaria Vectors in High and Low Jungle Regions in Peru
Ecoplanet Environmental, LLC Corporation	LP-CRADA-NMRC-20-10836	Transfer of Sx Volatile Organic Compounds for Bioactivity Testing Involving Minimal Inhibitory Concentrations Against a Panel of Enteropathogens and ESKAPE Wound Pathogens
Emory University; Uniformed Services University of the Health Services; The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.; the Walter Reed National Military Medical Center; Duke University; and DecisionQ	NCRADA-NMRC-19-10718	Surgical Critical Care Initiative
FMC Corporation	LP-NCRADA-NECE-19-10656	Evaluate the Efficacy of Fyfanon EW Against Mosquitoes
George Washington University	LP-CRADA-NMRC-20-10920	Transfer of COVID-19 Patient Samples
Georgia Tech Research Corporation	NCRADA-NMRC-19-10663	Integration of Antimicrobial Agents into Synthetic Biomaterials for Treatment of Polymicrobial Wound Infections
GoDx, Inc.	LP-CRADA-NMRC-20-10800	A Rapid and Highly Sensitive, Point-of-Care, Simple, Paper-Based Sepsis Test
Health ResearchTX, LLC	NCRADA-NSMRL-20-10807	Partnership Between NSMRL and Health ResearchTX, LLC
Hudson Institute of Medical Research	NCRADA-NMRC-20-10814	Transfer of Campylobacter jejuni Research Materials: Purified Plasmid DNA for Recombinant Histag cdt Subunits and Polyclonal Antisera for cdt Subunits
ICAHN School of Medicine at Mount Sinai	LP-CRADA-NMRC-20-10902	Expression and Purification of Spike and RBD SARS-CoV-2 Proteins for Military Workforce ELISA Testing
ICAHN School of Medicine at Mount Sinai	NCRADA-NMRC-20-10904	COVID-19 Health Action Response for Marines Study at Parris Island
Institut Pasteur	LP-CRADA-NAMRU-6-11006	Transfer of Biological Materials

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Institut Pasteur	LP-CRADA-NAMRU-6-19-10781	Transfer of Biological Materials
Institute of Pathology and Molecular Immunology, University of Porto; ICAHN School of Medicine at Mount Sinai	NCRADA-NMRC-19-10658	Identifying a Minimally Invasive Predictive Biomarker of IBD Through the Identification of a Change in IgG Glycome Signatures
Komfo Anokye Teaching Hospital	LP-CRADA-NMRC-20-10980	Characterization of Environmental Isolates in Soil from Ghana
La Jolla Institute for Immunology	LP-CRADA-NMRC-20-10865	SARS-CoV-2 CD4 and CD8 Peptide Mega Pools
London Foggers	LP-NCRADA-NECE-19-10724	Effectiveness of the Colt-4 to Determine Durability and Suitability in Military Operational Environments
London School of Tropical Medicine & Hygiene	NCRADA-NAMRU-6-20-10830	Development and Testing of Serological Tools for Malaria Sero-Surveillance
Lysando AG	LP-NCRADA-NMRC-20-10970	In Vivo Testing of Artilysin for Promotion of Wound Healing and Control of Wound Infections
The MacFarlane Burnet Institute for Medical Research and Public Health, Ltd.	LP-NCRADA-NMRC-20-10936	Evaluating E140 Antibodies for Functional Activity
Mayo Clinic	LP-CRADA-NMRC-19-10697	Physiologic Monitoring and Modeling in Animal Models
Me Biosciences	NCRADA-NHRC-20-10943	Me Biosciences - Food Technology for the Warfighter
Metis Foundation	NCRADA-NAMRU-SA-20-10862	Development of Nanopharmaceutical Therapy for Combat-Related Proliferative Vitreoretinopathy
NA Vaccine Institute	NCRADA-NMRC-20-10816	Facilitate Implementation and Execution of Pacific Northwest Tech Bridge
National Taiwan Normal University	LP-CRADA-NMRC-19-10782	Morphological and Molecular Characterization of Ticks and Other Ectoparasites and Associated Pathogens
NOCTEM	NCRADA-NHRC-20-10875	Optimizing the Scalability of Evidence-Based Behavioral Sleep Medicine Practices with NOCTEM
Novartis Institute for Biomedical Research, Inc.	NCRADA-NAMRU-6-19-10690	Development of Novel Anti-Malarial Interventions Against Plasmodium vivax
Oregon Health & Science University	NCRADA-NAMRU-6-19-10696	Study of Malaria Parasites in vitro and in vivo

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Orion Integrated Biosciences; EpiVax; EpitepeRX	NCRADA-NMRC-20-10858	Development of Phage Base COVID-19 Vaccine Constructs and Subsequent Optimization of Phage Based COVID-19 Vaccine Formulation, Purification, Manufacturing and Large-Scale Production Processes of Various GMP Grade Lambda Phage Vaccine Constructs
Pimera, Inc.	LP-CRADA-NMRC-20-10899	Evaluating RNA Polymerase 1 Inhibitors Including PMR-116 as Potential Antivirals
Pontificia Catholic University of Peru	NCRADA-NAMRU-6-20-10810	Collaborative Analysis on Human and Animal Samples Shared for Research Purposes
Premium Vitamins and Supplements, LLC dba Nugevity	NCRADA-NAMRU-D-20-10955	Characterizing and Understanding Radiation Injury and Oxidative Stress in Space
Prevent Biometrics	NCRADA-NHRC-20-10905	Impact Monitoring Mouth-Guard as a Monitoring Device for Acceleration and Blast Exposure
Rector and Visitors of the University of Virginia	LP-NCRADA-NMRC-19-10803	Transfer of Blast-Exposed Materials/ Animals
Rector and Visitors of the University of Virginia; National Institute of Nursing Research; and U.S. Special Operations Command	NCRADA-NMRC-20-10825	Transfer of Human Material
The Regents of the University of California, Davis	NCRADA-NAMRU-6-20-10799	Data Analysis of Vector-Borne Diseases and Product Development
The Regents of the University of California, University of California San Diego	NCRADA-NMRC-19-10703	Sero-Surveillance of Rickettsial and Rickettsial-like Pathogen Specific Antibodies in People Who Inject Drugs in Tijuana, Mexico
Rockwell Collins, a Collins Aerospace Company; Air Force Research Laboratory; and Warfighter Medical Optimization Division	NCRADA-NAMRU-D-19-10734	Human Performance Optimization and Aviation Mishap Prevention
Stalin Vilcarrromero	NCRADA-NAMRU-6-20-10832	Arbovirus Surveillance Data Analysis
Taconic Biosciences, Inc.	NCRADA-NMRC-20-10932	Establishing a Bioluminescent Campylobacter jejuni Small Animal Colonization Model Using Humanized Microbiome Mice
Texas Tech University Health Sciences Center	LP-CRADA-NMRC-20-11004	Dispersion of Bacterial Biofilm to Enhance Phage Therapeutic Efficacy for Rapid Wound Healing

NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Trustees of Dartmouth College	NCRADA-NHRC-19-10753	Using Geographic Variations to Improve Quality and Reduce Costs in the Military Health System
University of Florida Board of Trustees	LP-CRADA-NMRC-20-10759	Detection of B. pseudomallei Capsule in Potential Melioidosis Patient Samples
University of Florida Board of Trustees	LP-CRADA-NMRC-20-10770	Polyclonal Rabbit Antisera Against CfaE for Performing Western Blots
University of Maryland	NCRADA-NMRC-20-10823	Preparation, Conduct and Sample Evaluation for a Controlled Human Infection Model with C. jejuni to Evaluate LMN-101
University of Massachusetts as Represented by MassBiologics of the University of Massachusetts Medical School	NCRADA-NAMRU-6-20-10871	Efficacy of Human IgA Anti-ETEC Antibodies
University of Southern California	NCRADA-NHRC-19-10655	Investigation of Cardio Metabolic Health Outcomes in Adults
University of Texas Health Science Center at Houston	LP-CRADA-NMRC-20-10846	Development of Combination Antibiotic Therapy with Phage
University of Utah	NCRADA-NMRC-20-10965	Development and Evaluation of SARS-CoV-2 Vaccine Using Prokaryotic Viral Vector (Lambda bacteriophage)
University of Washington: Seattle Children's Research Institute	LP-CRADA-NMRC-20-10863	Inducing Durable, Protective Immune Memory Against Malaria
Vanderbilt University Medical Center	NCRADA-NMRC-19-10716	Testing the Hypotheses H. pylori Exposure (Hp+) Protects Against IBD; and the Inverse Association Between H. pylori and IBD is Mediated by Host Response(s) to Strain-Specific Constituents (Proteins)
Washington University	NCRADA-NAMRU-SA-20-10835	Evaluation of Hemorrhage and Resuscitation Research
Zoll Medical Corporation	LP-NCRADA-NMRC-19-10742	Transfer of Transport Ventilator to Navy for Aeromechanical Evacuation Studies

NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
AquaBotix Technology Corporation	SP-NCRADA-CNMOC-20-07	2020 Advanced Naval Technology Exercise, AquaBotix Technology Corporation
Atlas North America, LLC	SP-NCRADA-CNMOC-20-09	2020 Advanced Naval Technology Exercise, Atlas North America, LLC
HySky Technologies, Inc.	SP-NCRADA-CNMOC-20-05	2020 Advanced Naval Technology Exercise, HySky Technologies, Inc.
Intellisense Systems, Inc.	SP-NCRADA-CNMOC-20-01	2020 Advanced Naval Technology Exercise, Intellisense Systems, Inc.
iXBlue Defense Systems, Inc.	SP-NCRADA-CNMOC-20-04	2020 Advanced Naval Technology Exercise, iXBlue Defense Systems, Inc.
Klein Marine Systems	SP-NCRADA-CNMOC-20-12	2020 Advanced Naval Technology Exercise, Klein Marine Systems
Saildrone, Inc.	SP-NCRADA-CNMOC-20-06	2020 Advanced Naval Technology Exercise, Saildrone, Inc.
Subseasail, LLC	SP-NCRADA-CNMOC-20-10	2020 Advanced Naval Technology Exercise, Subseasail, LLC
Teledyne Webb Research	SP-NCRADA-CNMOC-20-08	2020 Advanced Naval Technology Exercise, Teledyne Webb Research
Woolpert, Inc.	SP-NCRADA-CNMOC-20-02	2020 Advanced Naval Technology Exercise, Woolpert, Inc.
WT Industries, LLC	SP-NCRADA-CNMOC-20-11	2020 Advanced Naval Technology Exercise, WT Industries, LLC

NAVAL POSTGRADUATE SCHOOL

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
AeroVironment, Inc.	LP-CRADA-NPS-20-0107	Ground Station and Tactical Networking Equipment for Working with Cubesat Node
AT&T Mobility, LLC	NCRADA-NPS-20-0243	Highly Secure Tactical Maritime 5G Cellular Mobile Communications Service
FABA Protection, Inc.	LP-CRADA-NPS-20-0104	Ceramic Sphere Armor Testing
Fidelis Cybersecurity	LP-CRADA-NPS-20-0101	Layering Randomized Defense: Deception with Decoys
FTL Labs Corporation	NCRADA-NPS-20-0235	Development of the Bubblespoo Remote Pressure Mine Triggering System - Phase I

NAVAL POSTGRADUATE SCHOOL (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
FTL Labs Corporation	NCRADA-NPS-20-0244	Botswain USV Wave Risk Assessment System
Gantz-Mountain Intelligence Automation Systems, Inc.	LP-CRADA-NPS-20-0106	Artificial Intelligence and Behavior Analysis at the Tactical Edge for National Security Applications
General Atomics	NCRADA-NPS-19-0234	Technologies to Dominate Contested Domains
GeoSpectrum Technologies Inc.	NCRADA-NPS-20-0239	NPS-GTI Collaboration on Sensor Development and Implementation
Hood Technology Corporation	NCRADA-NPS-20-0242	Flying Launch and Recovery System (Flares 2.0) to Provide VTOL Capability for Scan Eagle
Houston Mechatronics, Inc.	NCRADA-NPS-20-0238	Orbital 1 Management Information Base Supporting Network Management for Control Mesh Networks from Low Earth Orbit
The Mitre Corporation	NCRADA-NPS-20-0246	Contract Protest Risk Management Tool
More Cowbell Unlimited, Inc.	LP-CRADA-NPS-20-0102	Complex Temporal Ecosystem Process Discovery and Elucidation
Northwestern University	NCRADA-NPS-20-0237	Study of Parenthood, Health and Work Outcomes in the DoD
Optimal Synthesis, Inc.	NCRADA-NPS-20-0241	High-Performance Monte-Carlo Modeling System for Real-Time Fire Control Schedulers
Opto-Knowledge Systems, Inc.	NCRADA-NPS-20-0236	XM1155 Seeker Performance Trade Study
Primer Technologies, Inc.	LP-CRADA-NPS-20-0100	Artificial Intelligence and Language: Applications for National Security
Schott North America, Inc. Lighting and Imaging Division	LP-CRADA-NPS-20-0105	Underwater LED-Based Communications Link
Soar Technology, Inc.	NCRADA-NPS-20-0245	Cyber Course of Action Analysis Tool
TerraTracker, Inc.	LP-CRADA-NPS-20-0103	Adaptable Radiation Area Monitor for Mesh Networking Based Geographically Distributed Situational Awareness
TM, LLC	LP-CRADA-NPS-20-0108	Design Methodologies for Integrating AI and Small Unit Maneuver
Woods Hole Oceanographic Institution	NCRADA-NPS-20-0240	EPIC-DAUG: An Enhanced Propulsion Integrated Capability - Deep Autonomous Underwater Glider for Shore Launch/Recovery and High-Endurance Unattended Mapping

NAVAL RESEARCH LABORATORY

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Clemson University	NCRADA-NRL-20-719	Multiaxial Material Testing System Design, Prototyping and Verification
CMSoft, Inc.	NCRADA-NRL-20-741	Algebraic Abstractions and Categorical Metacomputing for Directly Computable Multiphysics Models
Foothold Labs	NCRADA-NRL-20-734	Integrating Electrochemical Water Analysis and Cloud Based Machine Learning
General Electric Company, acting through GE Global Research	NCRADA-NRL-20-735	High-Speed Additive Manufacturing Using a Rotating Metal Powder Bed
Georgetown University	NCRADA-NRL-20-730	Anonymous Communication Experimentation Framework
GeoSystem Research Corporation	NCRADA-NRL-19-694	Development of Profiling Trawl Resistant Bottom Mount System for Commercial Applications
Google, LLC	NCRADA-NRL-20-718	Pulsed Power and Experiment Design for Greenhouse-Gas-Free Nuclear Fusion Energy Technology
Intraband, LLC	NCRADA-NRL-20-724	High-Speed Resonant-Cavity Infrared Detector Arrays for Free Space Communications
Mirios, Inc.	NCRADA-NRL-20-725	Quantum Cascade Laser Array with Integral Wavelength Beam Combining
Mirios, Inc.	NCRADA-NRL-20-728	Multispectral Mid-Infrared Laser
Nanoarmor, LLC	NCRADA-NRL-20-729	Additively Manufactured Thermal Protection/Thermal Management System for Hypersonic Flight
Nanocrine, Inc.	NCRADA-NRL-20-733	Functional Substrates for Live Cell Adhesions, Migration and Secretion
NEC Corporation	NCRADA-NRL-20-716	NEC Vector Engine Performance Evaluation
Powerhouse Consulting Group, LLC	NCRADA-NRL-19-709	Metal Oxide Ceramic Fabrication
Powerhouse Consulting Group, LLC	NCRADA-NRL-20-744	Scale-Up of Triggerable Chemical Threat Protection System on Fabric Coated with Switchable Polymers
Q-Peak, Inc.	NCRADA-NRL-20-732	All-Fiber Wavelength Independent Beam Homogenizer
Q-Peak, Inc.	NCRADA-NRL-20-740	Tm-Nanoparticle Doped Fibers

NAVAL RESEARCH LABORATORY (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Radiation Monitoring Devices	NCRADA-NRL-20-713	Transparent Si Seeker Windows
Raytheon Company	NCRADA-NRL-20-711	Filters Incorporating Rare Earths
RDRTec, Inc.	NCRADA-NRL-20-721	Inverse Synthetic Aperture Radar Imaging in the Presence of Electronic Attack
RDRTec, Inc.	NCRADA-NRL-20-722	Lowering the Probability of an Adversary Recognizing Inverse Synthetic Aperture Dwells While Maintaining Vessel Classification Capabilities
RMA Armament, Inc.	NCRADA-NRL-20-720	Development of Advanced Armor Systems
Rutgers, The State University of New Jersey	NCRADA-NRL-20-727V	Non-Standard Navy CRADA Between NRL and Rutgers, The State University of New Jersey (Visiting Federal Scientist)
Texas A&M Engineering Experiment Station	NCRADA-NRL-20-726	Characterization of Additively Manufactured Nickel-Titanium and Naval Steels
Thorlabs, Inc.	NCRADA-NRL-20-714	Pr-Nanoparticle Doping for Active Fibers
Toray Advanced Composites	NCRADA-NRL-20-723	Phthalonitrile Composites for High Temperature Applications
University of Florida	NCRADA-NRL-20-743	Fundamental Studies and Modeling of Radiation Effects in β -Ga ₂ O ₃
University of Maryland	NCRADA-NRL-20-710	Mediated Electrochemical Probing: A New Approach to Reveal Global Redox Signatures

NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Coda Octopus Products, Inc.	LP-CRADA-NSWCCA-20-416	3D Imaging Sonar
Galvion, Ltd.	NCRADA-NSWCCA-20-402	Lithium-Ion Battery Safety
iXblue Defense Systems, Inc.	LP-CRADA-NSWCCA-20-418	GPS Denied Vessel Navigation with High-End iXblue DS INS
Kymeta Corporation	LP-NCRADA-NSWCCA-19-397	SATCOM On The Move
The Lincoln Electric Company	NCRADA-NSWCCA-20-399	Modeling and Simulation Based Welding Filler Materials Design and Rapid Prototyping
MarkForged, Inc.	NCRADA-NSWCCA-19-341	Fused Deposition R&D
Mirion Technologies, Inc.	NCRADA-NSWCCA-19-395	Direct Ion Storage Dosimeters
NVIDIA Corporation	NCRADA-NSWCCA-20-403	R&D of AI for Naval Applications
Sea Machines Robotics, Inc.	LP-NCRADA-NSWCCA-19-394	AI Enabled Situational Awareness
Solid Power, Inc.	LP-CRADA-NSWCCA-20-411	Battery R&D
Sonardyne, Inc.	LP-CRADA-NSWCCA-20-417	Vigilant Forward-Looking Sonar
Ullman Dynamics, LLC	LP-NCRADA-NSWCCA-19-396	3D Shock Mitigation Seats
Virginia Commonwealth University	NCRADA-NSWCCA-20-406	R&D of Aerogel Materials for Increased Battery Safety

NAVAL SURFACE WARFARE CENTER, CRANE DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
BAE Systems Information and Electronic Systems Integration, Inc.	LP-CRADA-NSWCCD-19-352	Material Exchange and Assessment
BAE Systems Information and Electronic Systems Integration, Inc.	LP-CRADA-NSWCCD-20-360	Security and Reliability of BAE Devices
The Board of Trustees of the University of Arkansas acting for and on behalf of the University of Arkansas, Fayetteville	NCRADA-NSWCCD-20-365	Investigation of Novel Infrared-Red Materials for Higher Operating Temperature Sensors
Booz Allen Hamilton	NCRADA-NSWCCD-20-362	Trusted Microelectronics and Technology Protection
CM Engineering	LP-CRADA-NSWCCD-20-364	Printed Personal Protective Equipment
Drone Defense Ops, Inc.	NCRADA-NSWCCD-19-356	DDO-NSWC Crane Armed Unmanned Air Systems

NAVAL SURFACE WARFARE CENTER, CRANE DIVISION (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Electroninks Inc.	NCRADA-NSWCCD-19-357	EI-NSWC Crane Armed Unmanned Air Systems
Fiber Sensys, Inc.	NCRADA-NSWCCD-20-377	Sensor Security Qualification
Flex Force Enterprises, Inc.	NCRADA-NSWCCD-20-366	ASP Stabilized Crew Served Weapon Mount
Forcyte, LLC	LP-CRADA-NSWCCD-20-380	Material Transfer in Support of PLA-NSWCCD-20-060
Greene County General Hospital	LP-CRADA-NSWCCD-20-376	Equipment Transfer in Support of Efforts to Utilize U.S. Patent Application Number 63/044,091, entitled, Sensor Agnostic Febrile Detection Systems
GT Aeronautics, LLC	NCRADA-NSWCCD-19-347	GT Aeronautics - NSWC Crane Armed Unmanned Air Systems
Gyre Engineering Management, LLC	LP-CRADA-NSWCCD-20-373	Underwater Communications Buoy
IPGARD; NIWC ATLANTIC	NCRADA-NSWCCD-20-371	High Assurance Interface Protocols: KVM
Lockheed Martin Corporation	NCRADA-NSWCCD-20-358	Radiation Assessment of NRAM
Lockheed Martin Corporation Missile and Fire Control	LP-CRADA-NSWCCD-19-353	Material Exchange and Assessment
Mercury Systems, Inc.	LP-CRADA-NSWCCD-19-351	Material Exchange and Assessment
Northrop Grumman Systems Corporation	LP-CRADA-NSWCCD-20-359	Security, Radiation Hardness Testing and Accelerated Adoption
Purdue University	NCRADA-NSWCCD-20-368	Quantum Materials R&D
RAVN Ventura Group, LLC	LP-CRADA-NSWCCD-20-374	Transfer of Material in Support of Commercialization of U.S. Patent Application Number US20190067812
Rose-Hulman Institute of Technology	LP-CRADA-NSWCCD-20-378	Rose-Hulman Senior Design Project
The Trustees of Indiana University	LP-CRADA-NSWCCD-20-363	Sensor Integration and Data Collection for Cognitive Research
The Trustees of Indiana University	NCRADA-NSWCCD-19-349	Electromagnetics & Wireless Power R&D
The Trustees of Indiana University	NCRADA-NSWCCD-19-354	Experimentation for Quantum Simulation, Sensing and Illumination
The Trustees of Indiana University	NCRADA-NSWCCD-20-361	Trusted and Assured Microelectronics
University of South Carolina	NCRADA-NSWCCD-20-370	Real-Time Validation of Additively Manufactured Polymers (ReVAMP)
West Virginia University Research Corporation	NCRADA-NSWCCD-19-355	Modeling and Simulation of Low Dimensional Materials and Interfaces

NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
National Strategic Research Institute; NSWC IHEODTD	NCRADA-NSWCDD-20-274	Chemical and Biological Defense Technologies for Combating Weapons of Mass Destruction
Skayl, LLC	NCRADA-NSWCDD-20-269	Data Model Driven Integration with the Future Airborne Capability Environment Data Architecture

NAVAL SURFACE WARFARE CENTER, INDIAN HEAD EXPLOSIVE ORDNANCE DISPOSAL TECHNOLOGY DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
908 Devices, Inc.	NCRADA-NSWC IHEODTD-20-203	Handheld Portable Mass-Spec
Aerojet Rocketdyne, Inc.	NCRADA-NSWC IHEODTD-20-186	Warhead and Propulsion Systems Design and Prototyping
Applied Research Associates, Inc.	NCRADA-NSWC IHEODTD-20-211	Investigations into Energetic Materials
Blue Dyer Distilling Company	NCRADA-NSWC IHEODTD-20-200	Manufacturing Expertise and Practices for Urgent National Needs
Chemring Energetics Devices, Inc.	NCRADA-NSWC IHEODTD-20-215	Development of Improved Design, Production and Component Availability for CAD/PAD Applications
EaglePicher Technologies	NCRADA-NSWC IHEODTD-20-157	Qualification of Aces II Mortar Cartridge and Initiator Sub-Component
First Line Technology, LLC; NSWCDD	NCRADA-NSWC IHEODTD-20-204	Dahlgren Decontaminant
Grey OPS; and Novel	NCRADA-NSWC IHEODTD-20-181	Unmanned Systems Development
JWK Holdings Corporation dba JWK Corporation	NCRADA-NSWC IHEODTD-20-174	Advanced Energy and Propulsion R&D
MBDA, Inc.	NCRADA-NSWC IHEODTD-20-177	Development and Demonstration of Advanced Warhead and Solid Propellant Propulsion Technologies
Memsel Manufacturing, Co.; United States Bomb Technicians Association	NCRADA-NSWC IHEODTD-20-212	Anti-Chemical/Biological/ Bacterial/ Viral Materials Development
Mistral, Inc.	NCRADA-NSWC IHEODTD-20-202	Development of JSEOD/First Responder Tools and Technologies
Pacific Scientific Energetic Materials Company	NCRADA-NSWC IHEODTD-20-164	Starter Cartridge Propellant Development

NAVAL SURFACE WARFARE CENTER, INDIAN HEAD EXPLOSIVE ORDNANCE DISPOSAL TECHNOLOGY DIVISION (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Pendar Technologies	NCRADA-NSWC IHEODTD-20-206	Handheld Standoff Detection
Simmonds Precision Products, Inc. a Collins Aerospace Company	NCRADA-NSWC IHEODTD-19-166	Low Cost Air-Dropped Munition (LCAM) Fuze
Task Aerospace, Inc.	NCRADA-NSWC IHEODTD-20-216	NSWC CAD/PAD Technical Review and Support
TDW Gesellschaft Fur Verteidigungstechnische Wirksteme MBH	NCRADA-NSWC IHEODTD-20-189	Development and Demonstration of Advanced Warhead Technologies
United States Bomb Technicians Association	NCRADA-NSWC IHEODTD-20-183	Application of JSEOD Tools and Technologies to First Responder Requirements
Zero Point, Inc.	NCRADA-NSWC IHEODTD-20-210	Assessment and Improvement of EOD Tools

NAVAL SURFACE WARFARE CENTER, PANAMA CITY DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Cerulean Sonar, LLC	NCRADA-NSWCPCD-20-003	Unmanned Systems Sonar Integration
Halcyon Manufacturing	LP-CRADA-NSWCPCD-20-01	Equipment Transfer of LED Air Warning System Prototype for Familiarization Dive Testing
Iowa State University of Science and Technology	NCRADA-NSWCPCD-19-002	Degradable Microfluidic Electrochemical Sensors
Microsoft Corporation	NCRADA-NSWCPCD-20-005	Tactical Data Center
The Regents of the University of California on Behalf of its Santa Barbara Campus	NCRADA-NSWCPCD-20-001	Organic Bio-Fuels Unmanned Systems Sensing
Sciperio, Inc.	NCRADA-NSWCPCD-20-002	Electric Ventilator Assist Sensor/ Feedback Ventilator

NAVAL SURFACE WARFARE CENTER, PHILADELPHIA DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Johns Hopkins University/Applied Physics Laboratory	NCRADA-NSWCPD-20-001	Integrated Navigation and Radar System Simulator, Software Enhancement

NAVAL SURFACE WARFARE CENTER, PORT HUENEME DIVISION

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Transshield	NCRADA-N63394-20-0001	Research Suitability of Advanced Protective Covers for Electromagnetic Spectrum Utilization

NAVAL UNDERSEA WARFARE CENTER, DIVISION KEYPORT

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Georgia Tech Applied Research Corporation	NCRADA-NUWCDIVKPT-19-003	Undersea Technology Development
Montana State University Norm Asbjornson College of Engineering	NCRADA-NUWCDIVKPT-19-004	Naval Applied Non-Invasive Human Subjects Research and Capstone Collaborations
University of Alaska Fairbanks	NCRADA-NUWCDIVKPT-20-002	Alaska COVID-19 Response Support

NAVAL UNDERSEA WARFARE CENTER, DIVISION NEWPORT

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Applied Acoustic Engineering	NCRADA-NUWCDIVNPT-20-1902	Low Frequency Acoustic Sparker Technology
Applied Ocean Sciences	LP-NCRADA-NUWCDIVNPT-19-1824	Topside C3 TM
Aquabotix Technology Corporation	NCRADA-NUWCDIVNPT-19-1757	Experimental Coordination with Swarms
ChemFoundry, Inc.	LP-CRADA-NUWCDIVNPT-20-1897	Engineered Fluids Dielectric Coolants - ElectroCool and AmpCool
Dive Technologies, Inc.	NCRADA-NUWCDIVNPT-19-1653	Large Diameter Underwater Vehicle Technologies
GeoSpectrum Technologies, Inc.	NCRADA-NUWCDIVNPT-19-1835	GeoSpectrum Sensor Mount Design and Calibration
Lifespan	NCRADA-NUWCDIVNPT-20-1878	Research into Improved Manufacturing and Design for Virus Mitigation
MITRE Corporation	NCRADA-NUWCDIVNPT-20-1885	MITRE/NUWC Naval Research Accelerator
Polaris MEP	LP-CRADA-NUWCDIVNPT-20-1877	Transfer of Intubator Boxes

NAVAL UNDERSEA WARFARE CENTER, DIVISION NEWPORT (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Raytheon Integrated Defense Systems	NCRADA-NUWCDIVNPT-19-1728	Topics in Undersea Warfare
The Regents of the University of California, on Behalf of its Davis Campus	NCRADA-NUWCDIVNPT-19-1701	Durability and Structural Health Monitoring of Composite Materials
Rite-Solutions	NCRADA-NUWCDIVNPT-19-1784	Machine Learning for Network Data
Rite-Solutions	NCRADA-NUWCDIVNPT-19-1791	Machine Learning for Visual, EW and Radar Sources
SeeByte, Inc.	LP-NCRADA-NUWCDIVNPT-20-1854	Topside C3
Sonardyne, Inc.	NCRADA-NUWCDIVNPT-20-1904	Passive Detection Capability of UUVs
Steller Systems, Ltd.	NCRADA-NUWCDIVNPT-20-1852	Inflatable Structures for Marine Surface and Undersea Applications
Teledyne Benthos, a Business Unit of Teledyne Instruments, Inc.	NCRADA-NUWCDIVNPT-20-1906	Harbor/Range Security
ThayerMahan, Inc.	NCRADA-NUWCDIVNPT-20-1882	Persistent Maritime Surveillance and Seabed Survey
University of Rhode Island	NCRADA-NUWCDIVNPT-19-1819	Development of Semiconductor Sensor Arrays & Read Out Circuitry
University of Rhode Island, Narragansett Bay Campus	LP-NCRADA-NUWCDIVNPT-19-1838	Sea Glider System

PORTSMOUTH NAVAL SHIPYARD

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Androscoggin Valley Hospital	LP-CRADA-PNS-20-0418	Additive Manufacturing (Medical PPE)
Augusta Fire & Rescue	LP-CRADA-PNS-20-0420	Additive Manufacturing (Medical PPE)
Bath Fire & Rescue	LP-CRADA-PNS-20-0426	Additive Manufacturing (Medical PPE)
Berwick Police and Fire Department	LP-CRADA-PNS-20-0519	Additive Manufacturing (Medical PPE)
Boston Children's Hospital	LP-CRADA-PNS-20-0603	Additive Manufacturing (Medical PPE)

PORTSMOUTH NAVAL SHIPYARD (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Boston Medical Center	LP-CRADA-PNS-20-0413	Additive Manufacturing (Medical PPE)
Catholic Medical Center	LP-CRADA-PNS-20-0411	Additive Manufacturing (Medical PPE)
Dahl-Chase Diagnostic Services	LP-CRADA-PNS-20-0416	Additive Manufacturing (Medical PPE)
Fish River Rural Health	LP-CRADA-PNS-20-0409	Additive Manufacturing (Medical PPE)
Franciscan Children's Hospital	LP-CRADA-PNS-20-0524	Additive Manufacturing (Medical PPE)
Frisbie Memorial Hospital	LP-CRADA-PNS-20-0412	Additive Manufacturing (Medical PPE)
Granite State Adaptive	LP-CRADA-PNS-20-0430	Additive Manufacturing (Medical PPE)
Greater Seacoast Community	LP-CRADA-PNS-20-0604	Additive Manufacturing (Medical PPE)
Huggins Hospital	LP-CRADA-PNS-20-0427	Additive Manufacturing (Medical PPE)
Lamprey Health Care	LP-CRADA-PNS-20-0504	Additive Manufacturing (Medical PPE)
Lawrence General Hospital	LP-CRADA-PNS-20-0506	Additive Manufacturing (Medical PPE)
Maine Veterans' Homes	LP-CRADA-PNS-20-0424	Additive Manufacturing (Medical PPE)
MaineHealth	LP-CRADA-PNS-20-0403	Additive Manufacturing (Medical PPE)
Milton Fire & Rescue	LP-CRADA-PNS-20-0522	Additive Manufacturing (Medical PPE)
Penobscot County Sheriff's Office	LP-CRADA-PNS-20-0406	Additive Manufacturing (Medical PPE)
Piper Shores	LP-CRADA-PNS-20-0419	Additive Manufacturing (Medical PPE)
Piscataquis County Sherriff's Office	LP-CRADA-PNS-20-0432	Additive Manufacturing (Medical PPE)
Portsmouth Regional Hospital	LP-CRADA-PNS-20-0405	Additive Manufacturing (Medical PPE)
Sagadahoc County	LP-CRADA-PNS-20-0422	Additive Manufacturing (Medical PPE)
Seacoast Dermatology, PLLC	LP-CRADA-PNS-20-0408	Additive Manufacturing (Medical PPE)
Sturdy Memorial Hospital	LP-CRADA-PNS-20-0608	Additive Manufacturing (Medical PPE)
Topsham Fire & Rescue	LP-CRADA-PNS-20-0428	Additive Manufacturing (Medical PPE)
UMass Memorial Health Care	LP-CRADA-PNS-20-0503	Additive Manufacturing (Medical PPE)

PORTSMOUTH NAVAL SHIPYARD (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
United Way of Kennebec Valley	LP-CRADA-PNS-20-0614	Additive Manufacturing (Medical PPE)
United Way of Mid-Coast Maine	LP-CRADA-PNS-20-0607	Additive Manufacturing (Medical PPE)
United Way of the Tri-Valley Area	LP-CRADA-PNS-20-0613	Additive Manufacturing (Medical PPE)
University of Maine	LP-CRADA-PNS-20-0417	Additive Manufacturing (Medical PPE)
Wentworth-Douglass Hospital	LP-CRADA-PNS-20-0401	Additive Manufacturing (Medical PPE)
Worcester Polytechnic Institute	LP-CRADA-PNS-20-0407	Additive Manufacturing (Medical PPE)
York County Sheriff's Office	LP-CRADA-PNS-20-0435	Additive Manufacturing (Medical PPE)
York Hospital	LP-CRADA-PNS-20-0301	Additive Manufacturing (Medical PPE)
York Village Dentistry	LP-CRADA-PNS-20-0431	Additive Manufacturing (Medical PPE)

PUGET SOUND NAVAL SHIPYARD & INTERMEDIATE MAINTENANCE FACILITY

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
Harrison Medical Center	LP-CRADA-PSNS&IMF-20-01	Additive Manufacturing (Medical PPE)
Kitsap Transit	LP-CRADA-PSNS&IMF-20-02	Additive Manufacturing (Medical PPE)
Olympic Medical Center	LP-CRADA-PSNS&IMF-20-03	Additive Manufacturing (Medical PPE)

UNITED STATES NAVAL ACADEMY

INDUSTRY/NON-FEDERAL PARTNER	CRADA NUMBER	SUBJECT
North Carolina State University	NCRADA-USNA-20-NAOE015	Erosion Study for a North Carolina Department of Transportation, Transportation Plan



APPENDIX B FY20 EXECUTED PIAS

NAVAL AIR WARFARE CENTER TRAINING SYSTEMS DIVISION

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
University of Central Florida Research Foundation, Inc.	PIA-NAWCTSD-20-001	Promote Cooperative Activities Between NAWCTSD and Small Business Firms and Educational Institutions Served by University of Central Florida Research Foundation, Inc.

NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
Regional Defense Partnership for the 21st Century	PIA-NAVFAC EXWC-20-001	Develop a Technology Transfer Program

NAVAL INFORMATION WARFARE CENTER ATLANTIC

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
South Carolina Research Authority	PIA-NIWC ATLANTIC-20-001	Palmetto Tech Bridge

NAVAL INFORMATION WARFARE CENTER PACIFIC

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
CONNECT Foundation	PIA-NIWC PACIFIC-20-001	PIA in Support of NavalX SBIR/STTR

NAVAL POSTGRADUATE SCHOOL

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
DefenseWerx	PIA-NPS-20-0001	Promote Cooperative Activities among NPS and Small Business Firms and Educational Institutions Served by DefenseWerx

NAVAL SURFACE WARFARE CENTER, CRANE DIVISION

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
NineTwelve Institute, Inc.	PIA-NSWCCD-20-043	Tech Transfer Partnership
Purdue Research Foundation	PIA-NSWCCD-19-042	Promote Cooperative Activities Between NSWCCD and Corporate and Small Business Firms and Educational Institutions Served by Purdue Research Foundation

NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
757 Accelerate, Inc.	PIA-NSWCDD-20-004	Promote Cooperative Activities Between Mid-Atlantic Tech Bridges Partners and Small Business Firms and Educational Institutions Served by 757 Accelerate, Inc.
Gangplank VA, LLC	PIA-NSWCDD-20-003	Promote Cooperative Activities Between Mid-Atlantic Tech Bridge Partners and Small Business Firms and Educational Institutions Served by Gangplank VA, LLC
Stafford County Economic Development Authority	PIA-NSWCDD-20-002	Promote Cooperative Activities Between NSWCCD and Small Business Firms and Educational Institutions Served by Stafford Economic Development Authority

NAVAL SURFACE WARFARE CENTER, INDIAN HEAD EXPLOSIVE ORDNANCE DISPOSAL TECHNOLOGY DIVISION

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
The Charles County Economic Development Department	PIA-NSWC IHEODTD-20-003	Partnership Intermediary Agreement with Charles County
Charles County Military Alliance Council	PIA-NSWC IHEODTD-20-004	Partnership with the Charles County Military Alliance Council
Energetics Technology Center, Inc.	PIA-NSWC IHEODTD-20-002	Promote Cooperative Activities Between NSWC IHEODTD and Small Business Firms and Educational Institutions Served by Energetics Technology Center, Inc.
United States Bomb Technicians Association	PIA-NSWC IHEODTD-20-183	Partnership Intermediary Agreement with United States Bomb Technicians Association

NAVAL UNDERSEA WARFARE CENTER, DIVISION KEYPORT

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
Impact Washington	PIA-NUWC DIVKPT-19-001	Facilitate Implementation and Execution of Pacific Northwest Tech Bridge

NAVAL UNDERSEA WARFARE CENTER, DIVISION NEWPORT

INDUSTRY/NON-FEDERAL PARTNER	PIA NUMBER	SUBJECT
Venture Cafe Providence	PIA-NUWC DIVNPT-20-1879	Undersea Technologies



APPENDIX C FY20 EXECUTED EPAS

FLEET READINESS CENTER SOUTHWEST

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
The Regents of the University of California, on Behalf of its Irvine Campus	EPA-FRCSW-20-003	STEM Partnership

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION, LAKEHURST

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Ocean County College	EPA-NAWCADLK-20-006	STEM Partnership
Rowan University	EPA-NAWCAD-20-005	STEM Partnership

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION, PATUXENT RIVER

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Bowie State University	EPA-NAWCADPAX-20-001	STEM Partnership
New York University Tandon School of Engineering	EPA-NAWCAD-20-009	STEM Partnership
Stevens Institute of Technology	EPA-NAWCAD-20-002	STEM Partnership

NAVAL AIR WARFARE CENTER, TRAINING SYSTEMS DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Old Dominion University	EPA-NAWCTSD-20-ODU	STEM Partnership
University of Florida Board of Trustees	EPA-NAWCTSD-20-UF-1	STEM Partnership

NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
kidSTREAM Children's Museum	EPA-NAVFAC EXWC-20-001	STEM Partnership

NAVAL INFORMATION WARFARE CENTER, ATLANTIC

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Charleston County School District	EPA-NIWC LANT-20-CHARLESTON CO	STEM Partnership
The Citadel: the Military College of South Carolina	EPA-NIWC ATLANTIC-20-CITADEL	STEM Education
University of South Carolina	EPA-NIWC ATLANTIC-20-USC	STEM Partnership

NAVAL MEDICAL CENTER, PORTSMOUTH

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Duke University School of Nursing; Naval Hospital Beaufort	EPA-NMCP-20-468	Graduate Nursing Research and DNP Project
Governor School for Science and Technology	EPA-NMCP-19-440	Research Colorectal Cancer Screening
Jacksonville University; Naval Hospital Jacksonville	EPA-NMCP-20-458	Graduate Nursing Research
Thomas Edison State University	EPA-NMCP-19-451	Graduate Nursing Research

NAVAL POSTGRADUATE SCHOOL

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
San Jose State University	EPA-NPS-20-001	STEM Partnership

NAVAL RESEARCH LABORATORY

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
The Infinity Science Center at Stennis Space Center	EPA-NRL-19-050	Promote STEM Program

NAVAL SURFACE WARFARE CENTER, CORONA DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Chaffey Community College District	EPA-NSWCCORDIV-20-0018	Enhance Studies in Scientific Disciplines at Chaffey College

NAVAL SURFACE WARFARE CENTER, CRANE DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Dugger Union Community Schools	EPA-NSWCCD-20-0951	STEM Partnership
Ohio State University	EPA-NSWCCD-20-0952	STEM Partnership
The Trustees of Indiana University	EPA-NSWCCD-19-0943	STEM Partnership

NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Germanna Community College	EPA-NSWCDD-20-009	STEM Partnership
Johns Hopkins University	EPA-NSWCDD-20-003	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
Langston University	EPA-NSWCDD-20-011	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
Old Dominion University	EPA-NSWCDD-20-001	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas

NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION (CONT.)

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Purdue University	EPA-NSWCDD-20-013	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
South Dakota School of Mines and Technology	EPA-NSWCDD-20-005	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
Texas A&M University at Kingsville	EPA-NSWCDD-20-010	STEM Partnership
University of Cincinnati	EPA-NSWCDD-20-008	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
University of Minnesota	EPA-NSWCDD-20-002	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
University of North Carolina at Charlotte	EPA-NSWCDD-20-014	Mutually Beneficial Innovative Projects and Activities in all NSWCDD Technical Capability Areas
University of South Carolina	EPA-NSWCDD-20-004	STEM Partnership

NAVAL SURFACE WARFARE CENTER, INDIAN HEAD EXPLOSIVE ORDNANCE DISPOSAL TECHNOLOGY DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
New Mexico Institute of Mining and Technology	EPA-NSWC IHEODTD-20-001	Development and Demonstration of Advanced Warhead & Solid Propellant Propulsion Technologies

NAVAL SURFACE WARFARE CENTER, PANAMA CITY DIVISION

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Gould Academy	EPA-NSWCPCD-20-013	STEM Partnership

NAVAL UNDERSEA WARFARE CENTER, DIVISION KEYPORT

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Montana State University, College of Engineering	EPA-NUWC DIVKPT-20-05	Engineering, Ocean Science, Computer Science and Information Technology
North Kitsap School District	EPA-NUWC DIVKPT-20-08	STEM Partnership
Oregon State University for its College of Engineering	EPA-NUWC DIVKPT-20-06	Engineering, Ocean Science, Computer Science and Information Technology
University of New Hampshire	EPA-NUWC DK-19-UNH	Engineering, Ocean Science and Information Technology
University of Northern Iowa	EPA-NUWC DIVKPT-20-03	Engineering, Ocean Science and Information Technology
University of Washington	EPA-NUWC DK-19-UW	STEM Partnership
Washington State University	EPA-NUWC DIVKPT-20-04	STEM Partnership
Western Washington University	EPA-NUWC DIVKPT-20-07	STEM Partnership

NAVAL SURFACE WARFARE CENTER, DIVISION NEWPORT

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
Integrated Day Charter School	EPA-NUWC DIVNPT-20-1849	STEM Partnership
IYRS School of Technology & Trades	EPA-NUWC DIVNPT-18-1579	Composites Technology
Massachusetts Institute of Technology	EPA-NUWC DIVNPT-19-1738	Undersea Technology
Michigan Technological University	EPA-NUWC DIVNPT-19-1724	Undersea Technologies
Our Sister's School	EPA-NUWC DIVNPT-20-1848	STEM Partnership
University of Tennessee, Knoxville	EPA-NUWC DIVNPT-19-1725	Undersea Technologies

PEARL HARBOR NAVAL SHIPYARD & INTERMEDIATE MAINTENANCE FACILITY

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
University of Hawaii	EPA-PHNSY&IMF-18-01.7	Markforge Metal X System
University of Hawaii System	EPA-PHNSY&IMF-18-01.4	Create PHNSY&IMF Supported Projects Within the Senior Design Course for the University of Hawaii at Manoa Mechanical Engineering Students for Spring 2020 Semester
University of Hawaii, Manoa, College of Engineering	EPA-PHNSY & IMF-18-01.8	Internship Opportunity
University of Hawaii, Manoa, College of Engineering	EPA-PHNSY&IMF-18-01.10	Senior Design Projects for Mechanical Engineering Students at the University of Hawaii, Manoa, College of Engineering
University of Hawaii, Manoa, College of Engineering	EPA-PHNSY&IMF-18-01.5	Create an Internship Opportunity for University of Hawaii at Manoa Mechanical Engineering Students for the Spring 2020 Semester
University of Hawaii, West Oahu, Business Administration Division	EPA-PHNSY&IMF-18-01.6	Create Unpaid Internship Opportunities for University of Hawaii, West Oahu, Business Administration Students for the Spring 2020 Semester

PORTSMOUTH NAVAL SHIPYARD

INDUSTRY/NON-FEDERAL PARTNER	EPA NUMBER	SUBJECT
University of Massachusetts, Lowell	EPA-PNS-20-0201	Innovative Maintenance Technologies



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