

2020 FALL



## **FROM THE DIRECTOR**

#### Together We'll Overcome the COVID-19 Crisis



We're moving ahead with the Department of the Navy (DoN) SBIR/STTR program despite COVID-19. Like all of you, we have experienced some frustration.

Our small businesses have the same COVID-19 concerns

Bob Smith, Director DON SBIR/STTR

as the big ones. They're still worried about the next contract. They're struggling to get people back into the office, onto the manufacturing floor or into the laboratory, and ensuring that they keep everyone safe. For the most part, they're happy we're still working with them, and they appreciate that the Navy is doing its best to support the companies so the companies can support the Navy.

That's not just SBIR; it's the acquisition enterprise working with our companies to get those contract options out, possibly extending delivery dates and making sure people get paid. We're all in this together. We can't concentrate on just one aspect of the innovation ecosystem. We have to keep every element of the SBIR process healthy to achieve success, which we measure by transitions. We want to invest in innovation and technology, but we also need the program managers and primes ready to catch that technology as it becomes available.

We talk with the acquisition community at the start of the process so we can determine the most relevant topics that support warfighter needs from the programs, fleet readiness centers and shipyards and other end users who have money to buy innovative technology. We need to keep talking with them after the selection process. Throughout the entire process, we stand by our small companies, offering support such as the DoN SBIR/STTR Transition Program (Navy STP) to help them every step along the way.

For each SBIR/STTR topic, we ask the question, "If it works, where is it going to go?" If we don't have a good answer to that question, it won't be a topic. Otherwise it's just good research. We have to have good research that transitions. We have been successful. Of the 13 federal agencies that have an SBIR/STTR program, the Department of the Navy has the best commercialization rate.

We're always looking at how we can take a great program and make it better. We never rest on our laurels, because we have Sailors and Marines deployed and at risk every day. Our mission has not changed because of COVID-19; if anything, it's become critical to get those solutions to the fleet faster. It's become more challenging, but no less urgent.

We're connecting with the NavalX TechBridges around the country to make sure they know how to engage small businesses with the Navy through SBIR. We don't want it to be a well-kept secret, and the TechBridges are our super-connectors!

## SBIR/STTR experimentation cell

We've established the DON SBIR/STTR experimentation cell (SEC), which is a group of experts who understand the naval experimentation process to help both program managers and small businesses demonstrate innovative technologies. These experts know about technology demonstrations, fleet experiments, and ship installation schedules, and they know the points of contact around the Navy who can place innovative technology into a realistic environment to see how well it performs. They know about the Advanced Naval Technology Exercises (ANTX) managed by the warfare centers and the Joint Interagency Field Exercises run by the Naval Postgraduate School in Monterey. We've briefed all of the Navy Science Advisors, who are assigned to all of the fleets and senior operational commands. The SEC can be used by a Navy STP-participating company, SBIR technical point of contact, or any SBIR company for that matter. As we move forward with SEC,

we'll make those connections to enable you to demonstrate your technology in an operational context. If a company wants to demonstrate its technology, it needs to begin the planning early. It's better to plan on success rather than be surprised by it!

## FY21 Defense Budget

We are watching the timing and impact of the continuing resolution. FY20 showed we can move more quickly and get the money out the door. But that checkbook is empty until we get a full appropriation. SBIR doesn't have its own budget per se; we have an assessment of the appropriated funds for the programs we support. So, we'll continue to help our small businesses, but we'll be hamstrung in how we can fund them until the budget is resolved.

While we don't know how or when the continuing resolution and Defense Appropriation Bill will be sorted out, we are moving forward with our pre-release of the 2021-1 SBIR/STTR solicitation in December. This is a huge solicitation, with more than 120 topics that will open on January 14, 2021.

It has been helpful to get direction from leadership to push harder and faster than we normally have, but we've always done that. How much can we influence the acquisition process? Being three percent of the acquisition funding ecosystem, the tail is not going to wag the dog. But we can make improvements. The Navy SBIR program has always embraced continuous process improvement. We continue refining those best practices we discovered through the pilot efforts. With what we've had, we've done a phenomenal job.

For example, we've seen how the contracting office at Naval Air Warfare Center Lakehurst has standardized and streamlined the process to move SBIR contracts much faster, which has helped all stakeholders. Tom Hill and his team do a great job for all of their customers, and they have been incredibly supportive of their small businesses. See the article on NAWC Lakehurst in this issue of Transitions.

# **DoN Forum for SBIR/STTR Transition (Navy FST)**

Our next DoN Forum for SBIR/STTR Transition (Navy FST) is going virtual. There are challenges, but also some great opportunities that have presented themselves in the virtual environment. Humans crave that personal interaction, and we'd all rather meet together and have these discussions face to face, but we're doing the best that we can under the circumstances. The virtual model has opened new ways to make other connections, and more of them. For example, I'm participating in three different conferences this week. That would not have been possible in person.

We're helping our companies to showcase their technologies in virtual conferences and doing our best to help connect them with both the Navy and other customers. We're saving taxpayer dollars by going virtual, but it's too early to tell if we're making stronger connections, even if we've made more of them. The "new normal" hasn't been established yet, and we still don't have a good assessment of what works best now. I do know one thing when it comes to our new normal—together we will prevail, for our Marine Corps, for our Navy, and for the country. Be safe out there.

Sincerely,

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Robert L. Smith Director DON SBIR/STTR

## **DoN SBIR Experimentation Cell**

What is the Department of Navy (DoN) SBIR Experimentation Cell (DoN SEC)?

We connect small businesses with the DoN experimentation community to deliver innovative solutions for the warfighter. Our mission is to support the SBIR community by offering facilitation, mentoring and training in all aspects of experimentation.

#### Why DoN SEC?

- Aid small business innovation to speed technology transition
- Expand DoN's access to innovators to grow warfighter advantage
- Evolve and overcome the challenge of maintaining warfighter decisive edge
- Enable faster responses from industry to emerging naval requirements

#### What are DoN SEC goals?

- Empower the SBIR community to become a more effective transitioning agent for naval technologies
- Enhance SBIR transitioning of technological innovations through effective and relevant experimentation efforts to solve warfighting problems
- Increase awareness of experimentation opportunities for industry and naval research scientists
- Simplify experimentation processes with an informative guidebook

## Navy Offers SBIR Companies Facilitation, Mentoring and Training to Engage with Experimentation

**DoN SBIR Experimentation Cell Connects Innovators, Experimentation Community** By Edward Lundquist

The Department of Navy (DoN) Small Business Innovation Research (SBIR) Experimentation Cell (DoN SEC) connects SBIR innovators with the DoN experimentation community to deliver innovative solutions for the warfighter.

"Our mission is to support the SBIR community from successful proof of concept to experiment execution by offering beginning-to-end facilitation, mentoring, and training in all aspects of experimentation," said Scott Bartlett, the DoN SEC program manager.

Naval experimentation can validate or inform concepts of operations, operational plans and doctrine, and ultimately how the Navy and Marine Corps fight. The magnitude and focus of naval experimentation events range from small limited technology demonstrations to large scale naval exercises. "Finding a fit and function where small businesses can insert their technologies and prove their warfighter capability is extremely challenging. In addition to these challenges, small businesses have limited exposure and lack of understanding of naval experimentation processes and are logistically challenged by security and engineering processes encompassing numerous organizations," said Bartlett.

"We understand many of the capabilities, entry criteria, analytical rigor and fundamental requirements that are available within the huge dynamic that is naval experimentation," said Chris Dillman, the DoN SEC's lead planner. "Specifically, we know where we can include SBIR initiatives, and we can mentor our SBIR companies and facilitate their inclusion in appropriate experimentation opportunities. Most of these experimentation events are planned a year in advance, if not more. We can work with our small businesses to help them find the right venue and time to potentially include their technology in existing Navy experimentation events."

#### **TPOCs** are the key

"We're able to inform the larger community, such as the government program managers and TPOCs [technical points of contact] about the various technologies being developed with SBIR investments, so there is an appetite to include them in these events," said Dillman.

According to Bartlett, the TPOC is absolutely the key. "They sit in an acquisition command. If you want something bought and fielded, the TPOC is in the right position to be the champion and move it all forward."

But, he said, TPOCs don't necessarily know about experimentation. "The ultimate plan is to teach the TPOC how to utilize these experimentation opportunities. We want them to understand how to manage all of the timelines, as well as the intellectual property issues, safety guidelines, frequency and airspace requests. They need to be starting this a year before the event. We can build their participation in an experimentation event as part of their Phase II contract in order to validate their technology in an operational environment. We want to teach the TPOC that there are these opportunities available to them, and lay out the roadmap and show them how it's done," said Bartlett. "What the DoN SEC wants to do is lower the pain threshold for that TPOC and show them the step by step process to succeed. We want to lower the barrier for all of the stakeholders to get our SBIRs involved in the naval experimentation opportunities."

Dillman said the DoN SEC team has contacts with the experimentation communities and the systems commands and their range and testing facilities, and knows the processes involved with engaging in experimentation or testing opportunities.

The DoN SEC is developing a guidebook entitled *The 101 Basics of Experimentation*, tailored for the SBIR community, and focused on government sponsors and experimentation venue owners to encourage and help them bring SBIR companies into their experiments.

"SBIRs are one piece of that much bigger puzzle, but they can be one of the most important pieces," Dillman said. The DoN SEC team leverages off of other Navy efforts such as the ONR Global Experimentation and Analysis, which is focused on providing data to Naval Research Enterprise (NRE) leadership to support recommendations for technology investment, further development, transition or divestiture of emerging technologies and concepts.

#### **Exercising experimentation**

The team has historical pedigree, involvement, and maintains direct communications through the U.S. Navy's Fleet Experimentation (FLEX) program. The FLEX Program, executed by Navy Warfare Development Command (NWDC), is sponsored by Commanders of U.S. Fleet Forces (USFF), Naval Forces Europe-Africa, (CNE-CNA), and U.S. Pacific Fleet (PACFLT). "We have past experience working very closely with the operating forces, such as the U.S. Fourth Fleet, where we've used available assets such as the USNS Spearhead, an expeditionary fast transport (EPF) as a vessel of opportunity to test various unmanned systems and adaptive force packages to provide intelligence, surveillance and reconnaissance," Dillman said. "We can help make those kinds of connections."

More often, the experimentation occurs in a large planned event. The Navy and Marine Corps are planning an ambitious array of exercises in the months and years ahead, including Trident Warrior, RIMPAC, Sea Dragon, Bold Alligator, Valiant Shield, Valiant Blitz, and Large Scale Exercise 2021, along with Advanced Naval Technology Exercises (ANTX) and Joint Interagency Field Exercises (JIFX).

Originally planned for this year, Large Scale Exercise 2021 will leverage new operational concepts such as Distributed Maritime Operations (DMO), Expeditionary Advanced Base Operations (EABO), and Littoral Operations in a Contested Environment (LOCE), naval operational architecture, and command and control in a contested environment to develop and test alternative warfare concepts.

RIMPAC, the biennial Rim of the Pacific Exercise, is the world's largest international maritime warfare exercise, with participation from a number of navies from around the Pacific and beyond. Led by the United States Indo-Pacific Command, RIMPAC is a unique training opportunity that promotes interoperability among Pacific Rim armed forces as a means of promoting stability in the region to the benefit of all participating nations. The next one is scheduled for 2022. Where RIMPAC is primarily a training event that involves some experimentation, Trident Warrior is an annual large-scale, at-sea field experiment where the Navy selects potential initiatives that address capability gaps and provide inventive solutions in an operational environment. Trident Warrior initiatives focus on maritime domain awareness, networks, information operations, and command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) technologies. Bray said ANTX has a low barrier of entry for industry partners. "We provide the environment; we provide the warfighters; and industry and the labs bring the technology. We put the technology in the hands of the Sailors and Marines, and we let them run it in the actual environment—with rain, heat, salt water—and we see how it performs."

"We provide direct feedback on what worked and what didn't work in the technology. I think it's a very powerful event," Bray said.

### Advanced Naval Technology Exercises (ANTX)

The Naval Research & Development Enterprise (NR&DE) and acquisition community run a series of events called Advanced Naval Technology Exercises "We've been instrumental in transitioning technologies and solutions from small companies and those that have not traditionally worked in the defense sector."

Raymond R. Buettner Jr., PhD., Director, JIFX One upcoming ANTX will focus on naval integration in a contested environment. ANTX NICE 2021 is being held in April at Camp Lejeune, N.C., to explore naval integration in a contested

(ANTX), which are not tied to fleet events.

With ANTX, the Navy and Marine Corps are bringing the warfighter together with the engineer to address an operational problem, said Bill Bray, DASN RTD&E. "It could be agile, resilient logistics; or moving data from one place to another; or a specific mission area, such as ship-to-shore maneuvers. Working with our warfare centers, we bring in the operators to help us state the problem and look at the technologies that are out there. We then put out an offering to industry to ask them if they think they have technologies that would work and help the warfighter in that particular space. To bring it forward, we'll assess it, and then we'll actually take it into the field and run an exercise."

environment. "NSWC Crane is one of the sponsors, and working with Crane, we identified 48 SBIR technologies they were interested in, and came up with four or five that might be a good fit for the ANTX. We're trying to get the systems command program managers, the prime contractors and the TPOCs to involve their small companies and want to include them in these experimentation opportunities. In the case of this ANTX, we found both a sponsor and a TPOC that are very interested in bringing a particular SBIR company, Utopia Compressions, into the experiment," Dillman said. "Utopia Compressions is an opportunity for us in the learning process as we go through this effort so we can teach other TPOCs how to do this.

#### Joint Interagency Field Experimentation

"We've been instrumental in transitioning technologies and solutions from small companies and those that have not traditionally worked in the defense sector," said Prof. Raymond R. Buettner Jr., PhD., the Director, Joint Interagency Field Experimentation (JIFX) at the Naval Postgraduate School (NPS) in Monterey, Calif. "Students, academics and industry representatives gather together—in person and virtually—to watch and witness demonstrations and experimentation."

Buettner said the JIFX work at NPS is not funded by the basic education mission, but he said it's a good fit. According to Buettner, JIFX works in both directions. "We bring in this work through research and working with other partners, such as our sponsor, the DoD Rapid Reaction Technology Office (RRTO). The students and faculty benefit because they participate in it, but the JIFX purpose and mission is to enhance our ability to identify commercial technology that we can adopt or adapt for the warfighter.

"We create an environment in which the government can learn about these new and emerging technologies. And we give the technologists in those companies and organizations the chance to learn about what it will take to make that a government program."

For companies not used to working with the

armed forces, there are some big advantages in participating in JIFX. "At JIFX, we brought out a Cyber Vulnerability Assessment Team. The benefit to these companies is that we will assess their technology, and they learn how the government is going to evaluate their technology to make sure it will meet the cyber security guidelines. If they want to sell their technology to the government down the road, they understand at the early prototyping level what it's going to take to do that. We will assess their tech, and they can see how we look at it."

The JIFX team manages all of the regulatory functions, including permission to fly manned and unmanned aircraft in restricted airspace, and obtaining authority to transmit on certain radio frequencies.

Buettner said his team generally conducts four events a year (although COVID-19 has had some impact on the schedule), focused on the priorities set by the Navy. "The stakeholders identify technologies that are proposed by companies. If any of the stakeholders believe that technology can address a national security problem, we invite that company out to JIFX."

The DoN SEC is the connector, leading SBIR companies along the path to work well with the DoN experimentation community and deliver innovative solutions for the warfighter as quickly and efficiently as possible.

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## From Torpedoes to Health Care Workers: PEI Protects What's Important

By Jennifer Reisch, Navy STP Managing Editor The COVID-19 pandemic has made 2020 anything but business as usual. But Pacific Engineering, Inc.'s president, Rear Admiral Osie V. Combs Jr., USN Ret., has found his technology development philosophy of "Build–Test–Build– Test–Deploy" still applies.

PEI took technology developed under Department of Navy (DoN) SBIR projects to build cannisters to house and protect torpedoes and transformed them into safe and transportable COVID-19 testing pods that protect healthcare workers and their patients.

"PEI has designed and manufactured a portable point-of-care medical platform for high volume virus testing, safe vaccine and therapeutics distribution, and medical support, using PEIdeveloped composite technology from our Navy SBIR projects," said Dexter Myers, the company's vice president.

The company designed and builds a Rapid On Demand-Portable Medical Platform<sup>™</sup> (ROD-PMP). The platforms allow patients to meet with health care professionals and receive a limited-contact COVID-19 test. The ROD-PMP can also be used for self-administered COVID-19 tests without direct physical contact. The health care worker can observe and coach the patient through proper use of the kit.

The units are portable and created to fit in a standard parking spot, according to Myers. "The lightweight composites allow the ROD-PMP to be mobile and easily transported while ensuring long service life. The design and materials also provide a secured container to store medical supplies and diagnostic equipment.

"A torpedo needs to be maintained in a certain environment so it's in a ready-to-fire condition. That's related to temperature and other environmental factors. Now we are providing environmental protection to health care workers while they're providing COVID tests. Now instead of protecting torpedoes we're protecting health



Image provided by Pacific Engineering, Inc.

care workers," Myers explained. PEI's sandwich composites have low heat transfer and are more insulating than metal structures.

In 2014 PEI was awarded the prestigious Tibbetts Award from the Small Business Administration for their work developing and delivering the composite cannisters. In between the torpedo cannister and the medical platform, PEI used that same SBIR technology to design a reconfigurable Marine Corps vehicle trailer bed.

The sandwich composite floor of the trailer readily led to the design of portable platform floors and walls and ceilings. "Just stand it up!" Combs teased, continuing to follow his Build—Test— Build—Test—Deploy philosophy.

"You build a torpedo canister out of sandwich composite structure. It has an application. You then design a lightweight flatbed trailer. Sandwich composite has another application. You learn. You test the technology. You improve the technology and build an all-terrain ruggedized trailer. Then you improve the technology and build something else. Through using SBIR awards over the years we can design technology, improve on that technology, and apply the technology." As the pandemic affected the United States, PEI wanted to do something to help. "We wanted to apply our military knowledge and technology to the civilian world. We have the expertise and knowledge and said, 'Let's apply that to doing something that can benefit others.' That's the attitude that we went into this with. What could we do to engage in combatting COVID? We know we are going to need something for shelter for health care workers. We know it needs to be deployed rapidly. We know weight is important. You start thinking of those things just like when designing and building for a military application and apply that technology and that knowledge toward combatting COVID. That was our purpose," Combs said.

Some of the skills Combs and Myers built through the Navy's transition assistance program, the DoN SBIR/STTR Transition Program (Navy STP), helped get the medical pods into the field. According to Combs, "STP gets you in the mindset that you have to commercialize the technology. You can't just do SBIR development. What's the end goal? You have to have somewhere to go. One of the biggest benefits of STP is talking about your potential markets. Where are you going to take this technology? Who are you going to sell to? STP is designed to help small companies grow to be bigger. You've got to get it out there. It sounds good to you, but is it marketable and can you sell it?" Fallout from COVID-19 has affected work at PEI even as they are working to help others. "In a manufacturing facility we can't always get the materials we need on schedule. When you can't get workers in, you can't get materials out. Everything has slowed down and it's hard to hold to a schedule. No one can predict when a whole manufacturing plant might shut down. It took a while to understand the new rhythm to working effectively. It's life. We're all human. You have to adjust. Everybody slowed down but we've learned to use technology better. Hopefully we've learned a better way of doing things going forward," Combs said.

"We have to think about what's coming and look ahead. Winter is coming. Tents aren't going to work when it gets really cold and windy. People don't want to go to a hospital for a vaccine—they don't want to get sick there. We can adapt these medical platforms to do other things." PEI's medical platforms allow for specimen collection in all seasons and in all locations. The platforms will withstand 120 mph wind gusts, and snow loads.

"The SBIR program forces you to be on the front end of thinking. It's innovative research. That by definition means you are on the front end, trying to come up with new and better solutions. That's why we do this. SBIR and STP get you out front. You have to think ahead," Combs said.



Image provided by Pacific Engineering, Inc

# With NAWCAD Lakehurst Contracting Team, Productivity is Up, Processing Time is Down

By Edward Lundquist

The procurement division at Naval Air Warfare Center Aircraft Division (NAWCAD) at Lakehurst, N.J., established a dedicated SBIR/STTR contracting team with standardized procedures to meet a growing workload and accelerate the processing time. Their experience and expertise have paid off.

"While our numbers have increased, the time to process those contracts has come down," said Tom Hill, NAWCAD Lakehurst director of contracts.

Hill said his team is primarily an in-house NAWCAD Lakehurst asset to support internal programs, including local SBIR and STTR contracts. Gradually, the Lakehurst team came to provide that support to the other Naval Air Warfare Center sites.

including Patuxent River, Orlando and China Lake.

"We got to be pretty good at doing the contracting for those SBIR and STTR programs. The Office of Naval Research took a look at "Our SBIR/STTR workload has grown from 270 Phase I contracts in 2017 to 405 Phase I contracts year-to-date, but we've reduced average processing time from 23 days to 13."

Tom Hill, Director of the Procurement Division Lakehurst at Joint Base McGuire-Dix-Lakehurst, N.J.

our effectiveness, quality and processing times for contracts, and after conducting a pilot, began to send all of their Phase I and II contracts to us. Then NAVSEA

programs that have migrated to us. We buy everything from hardware to IT support services. Our SBIR/STTR workload has grown from 270 Phase I contracts in 2017

observed this development, and they wanted to match up those same processing times that NAVAIR and ONR were getting, so they also became a committed customer."

Those three

Tom Hill is director of the Procurement Division at Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst at Joint Base McGuire-Dix-Lakehurst, N.J. (U.S. Navy Photo)

organizations, ONR, NAVSEA and NAVAIR, represent the largest activities in the Navy SBIR/STTR world.

"We are now also supporting some contracts for Naval Supply Systems Command, Naval Facilities Command and the Strategic Systems Programs Office—about 20 activities altogether," Hill said. "We support a number of to 405 Phase I contracts year-to-date, but we've reduced average processing time from 23 days to 13."

Hill points to standardization as a way to be faster and more efficient. "We developed and use templates for our solicitations, clearances, negotiations and awards; we have a cadre of core personnel to process this work while rotating other personnel through that office to develop expertise and potential surge capacity; and we socialize, through consistent communication with our vendor base, our expectations of proposal submittals, cost element justifications and terms and conditions of an eventual award."

The Lakehurst contracting team currently has 108 personnel assigned; 24 of them are dedicated to the Navy SBIR/STTR program. "In the case of SBIR/STTR contracting for Phase I and IIs, we have separate teams supporting ONR, NAVSEA and NAVAIR. We have aligned the smaller customers to teams where staffing is available," said Hill. "There are some slight differences for NAVSEA and NAVAIR contracts, but we know what those are, and we accommodate them. We have a separate team that manages Phase III contracts."

Hill said that SBIR/STTR has some peculiarities, but it isn't really that different from other Navy contracting. "We follow the same basic practices. The SBIR/STTR is not a normal competitive source selection process, but the result of a peer review. The selection committee is looking at a proposal and determining if it solves a problem for the Navy that was published in the broad agency announcement, and if the Navy is willing to invest in it. That's why we advise small businesses to focus on a capability, not a product. I ask them, 'What do you have that you think the Navy needs?' Then we can guide them to the right program office. The program offices are extremely helpful."

Small companies have various levels of sophistication. "They need to have some fundamental understanding of business, finance and accounting, especially if they're going into Phase III," Hill said. "We recognize the need to foster those good business practices to help vendors to be successful. If they're successful, and we've solved a problem for the Navy, then we've helped the warfighter."

Hill's team is still doing all the other contracting for NAWCAD Lakehurst, and that work has also grown tremendously. "A number of programs have migrated to us over the years. Twenty years ago, we were a \$300 million a year contracting shop, apportioned at 90% hardware and 10% services. Last year, we obligated \$2.45 billion, and that breaks out notionally as 40% hardware, 38% research and development (R&D), and 22% services. The R&D work includes SBIR/STTR, but we have other R&D work as well. We're just short of 20,000 transactions in support of the SBIR/STTR program, and since we started tracking it, we've awarded approximately \$5.4 billion in obligations. About half is for the research and development phases, but

nearly half is for production, and that's the metric that tells the Navy that the program is getting product out to the warfighter." "After that many transactions you become pretty proficient," Hill said.

## NAWCAD Lakehurst Boosts Small Companies

According to Dawn Chartier, NAWCAD Lakehurst's small business deputy director, the small business community represents an agile, technically sound, cost effective, and responsive partner when proceeding to implement a solution.



Dawn Chartier, deputy director, Office of Small Business Programs at NAWCAD Lakehurst, speaks at the 2019 Lakehurst Small Business Roundtable Industry Day Oct. 30 at the Ocean County Library in Toms River, N.J. (U.S. Navy photo)

The participants in the NAWCAD Lakehurst Small Business Roundtable are mutually supportive. "At their events we talk a lot about the SBIR program, and how we can connect companies with program representatives and resources to help them compete and win SBIR awards. Some of our small companies only do research and development (R&D); and others only do the manufacturing, but not the R&D. We help these companies to team up," said Chartier.

"In addition to our annual industry day, we have training sessions throughout the year. We meet with our program officers about any trends they are seeing, and we can bring in speakers to help address those issues," Chartier said.

"We also help to ensure a good dialog with the government's technical point of contact (TPOC) and the company's principal investigator," Chartier said.

The premise behind SBIR is that it's dual-use technology. Commercial investment is what's going to eventually drive the technology forward, and it will ultimately keep costs down for the government.

"The objective of the program is to get their technology into production, and into the hands of the warfighter," Chartier said. "There are great solutions to existing problems that can be readily achieved through the SBIR/STTR Program."

In addition to the SBIR/STTR Program, NAWCAD Lakehurst considers small businesses when determining its procurement strategies.

"The past few years we have exceeded 50 percent of our total obligations available to small businesses being awarded to small businesses. Fiscal year 2019 obligations to small businesses exceeded \$900 million," Chartier said.

For information about NAWCAD Lakehurst's small business programs, contact:

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## **Composite Powders Enhance Cathode Performance for Essential Devices**

Source: Brian Mackey, Chief Executive Officer, Engi-Mat

For many decades, conventional thermionic cathodes have been used in diverse applications across the U.S. Navy. The growing demand for enhanced cathode performance by the vacuum electron devices (VEDs) which incorporate these standard cathodes requires a novel solution. Now, a Navy STTR project is funding a successful development effort to translate capabilities previously seen only at laboratory scale to manufacturing in the large volumes required to fulfill the needs of the U.S. Navy.

"The core concept of the program is based on the academic findings that indicate improved cathode performance for VEDs can be attained using scandia/tungsten powders. The anticipated performance improvement had not been consistently observed and demonstrated in volume quantities sufficient for the Navy and others," said Brian Mackey, Chief Executive Officer at Engi-Mat.

Engi-Mat, which has focused on nanotechnology for over 25 years, has developed a scandia-doped tungsten powder to extend the life and increase the power of cathodes in VEDs, and, along with its partners, cathode manufacturer 3M/ Ceradyne and the University of Kentucky, has demonstrated the ability to provide volume quantities of the high-performance product necessary to translate small-scale results into commercial production.

Engi-Mat, which is ISO9001:2015 certified for the design and production of nanopowders, will provide high-quality scandia/tungsten composite powder to cathode manufacturers. The scandate cathodes will function as replacements for the current M-type cathodes. Radio frequency (RF) systems that incorporate these cathodes, such as satellites and communications systems, will be able to



Image provided by Engi-Mat

operate at higher power, expanding the boundaries of their operational performance. Scandate cathodes will also enable smaller cathode designs at the same cathode loading. Additionally, the extended life span of the cathode will reduce downtime and costly repairs of critical systems.

"Many existing naval weapon systems, including radar and electronic warfare (EW) systems, rely on microwave vacuum electronics (microwave tubes) as the primary source of RF power. Future RF sensors will require unprecedented performance in output power and bandwidth," explained Mackey. Microwave tubes will exist in naval systems for many decades to come due to the sustainment of legacy systems, and in the deployment of future systems for which size, weight, and power make vacuum electronics the only viable option. Mackey added, "Engi-Mat's production of scandiadoped tungsten powder for use in advanced high current density thermionic cathodes supports these requirements."

Compared to conventional M-type cathodes, the scandia/tungsten composite materials

developed in this program are expected to enable 10 times longer cathode operational life cycles by lowering the required operating temperature, or enable higher cathode loadings (five times the power) for applications such as THz generation and millimeter wave. Despite the significant improvement in performance, the cost increase of the fully configured device is expected to be small.

Through the Navy STP program, Engi-Mat was able to better understand the applications within the U.S. Navy where the improved cathode performance is critical. These applications vary widely across diverse Navy systems, so the increased exposure afforded by the Navy STP was very valuable, Mackey said. In August, Engi-Mat fulfilled its first commercial purchase order for this high-performance powder. Transition opportunities include any users of systems incorporating cathode devices and VEDs, including communications, radar, and other systems. The U.S. domestic vacuum electron device industry also supplies products for a variety of commercial applications, including fusion research, microwave heating, and satellite uplink stations. Mackey concluded, "We're very excited about the technical success we've achieved during this STTR project. As a small company, it's very rewarding to provide a solution that supports the long-term objectives of the U.S. Navy."

## **2020 Small Business Profiles for Congressional Districts**

The U.S. Small Business Administration Office of Advocacy released its 2020 Small Business Profiles for the Congressional Districts series. The congressional district profiles are part of Advocacy's state profile series, which provides snapshots of national, state, and congressional district small business statistics.

Each profile focuses on the impact of small businesses in the 436 congressional districts in the 50 states and District of Columbia. Within, readers can find the congressional district's total number of small employers and their industry breakout, plus the number of workers employed and payroll expended by small businesses. Additionally, the profiles provide a map showing the total number and distribution of self-employed workers across the district.

The profiles are based on data from the U.S. Census Bureau, using the latest small business economic data available at the congressional district level from government sources.



However, the data were collected before the COVID-19 pandemic.

Business profiles by state are available at the following link:

https://advocacy.sba.gov/2020/08/25/2020small-business-profiles-for-congressionaldistricts/



# NAVY'S SBIR Investment in SoS Integration Expands to Benefit the Army, Air Force, NATO and Commercial Sector

Source: Sonya Hand, Director, Skayl

The integration of disparate technologies and capabilities in Systems of Systems (SoS) is complex, costly and resource intensive. Skayl provides interoperability solutions, including automated integration products designed for large, complex SoS with a need for integration scalability, flexibility, dependability, and security, supporting real-time, mission-critical environments.

According to the DoD Defense Acquisition Guidebook (DAG) [2008], an SoS is "a set or arrangement of systems that results when independent and useful systems are integrated into a larger system that delivers unique capabilities."

The Navy designs, delivers, and sustains complex SoS in environments within individual fleet assets and capabilities, across battle groups, strike groups, and theater-wide situational command and control (C2) while facing rapidly changing environments, tight budgets, and aggressive schedules. While commonality is ideal for fixed, tightly coupled systems, true SoS integration requires scalability, flexibility and adaptability. SoS integration is one of the most significant challenges facing today's systems engineers. With the development of each new system, there is a combinatorial expansion in the integration effort; the projected integration cost of these disparate systems could exceed the cost of the systems themselves. Therefore, a scalable user-friendly approach for system integration to increase integration efficiency and save time and money is needed.

Current integration is powered by repeated labor intensive, error prone human capital. As systems become larger and more complex, programs cannot execute integration with the precision and velocity required to provide and maintain offset advantage. Skayl's technology solution leverages advanced semantic data models to address data and transport protocol mediation, significantly improving exponential technology growth, bringing value to the warfighter through rapid fielding and integration of warfighting capabilities and cyber updates within and across combat systems.

Skayl's PHENOM + CinC (Configurable infrastructure Capability) provides integration scalability, flexibility, dependability, security and value. PHENOM is a software-based integration ecosystem providing interoperability solutions for mission-critical, real-time data communication, including aviation, C2, medical devices, and smart cities. PHENOM's advanced semantic architecture enables automated data discovery and a unique, fully configurable integration infrastructure.

PHENOM + CinC provides a portal for collaborative data architecture management, providing intuitive visualization, navigation, editing, tracing, testing, and code and artifact generation. The PHENOM ecosystem contains a collection of collaborative integration tools as well as large, robust, pre-built conformant data models. PHENOM supports multiple data-centric interfaces and integration patterns with various optimization constraints. Optimized protocol mediation enables interoperability across technologies and message formats. The technology relies on mathematical algorithms and advanced modeling and documentation approaches that support scalable, configurable infrastructure and automatically generate optimized products that integrate directly into a client's runtime code. The technology is accessed through simple graphical configuration management software that also assists system integrators in mediating protocol, visualizing data models, identifying incompatibilities between data models, checking for conformance, and combining message models to create or enhance a system.

One of the biggest benefits of participating

in Navy STP for Skayl was the Navy Forum for SBIR/STTR Transition (Navy FST) at the Sea-Air-Space Exposition. Presentation of their technology at the Navy FST exposed the company to several potential business development opportunities, including both government and prime personnel.

Skayl's Navy-funded technology applies far beyond Navy SoS. In addition to Skayl's NAVAIR Phase II "Scalable Model-Driven Protocol Mediation & Systems Integration" and NAVSEA Phase II "Leveraging a Robust Data Architecture for Rapid Combat System Integration, Testing & Certification," the company has ongoing contracts and integration product subscriptions serving the Navy, Army, Air Force, NATO, and multiple primes. Skayl is currently the contract prime in the role of architect on the Army's Joint Multi-Role Technology Demonstrator (JMR TD) Mission Systems Architecture Demonstration (MSAD) Capstone Demonstration. The company is also currently working with Army Integrated Mission Equipment (IME). The company, headquartered in Maryland, is currently seeking commercial transition partnerships, particularly with programs involved in systems integration in aerospace, public safety, healthcare and medical devices.

PHENOM + CinC provides a framework upon which capabilities can be developed, enhancing affordability and speed to fleet by reducing integration and testing time, decreasing errors, and eliminating duplication of effort. Skayl's technology is revolutionizing integration, cutting costs, reducing timelines and increasing system scalability.



The Role of a Configurable Infrastructure in Integration

# NAVSEA Receives DoD SBIR Vanguard Award

By Tara M. Clapper

The DoD awarded the Naval Sea Systems Command (NAVSEA) Small Business Innovation Research (SBIR) team with its SBIR/STTR Vanguard Award in September in recognition of NAVSEA's outstanding work in FY2019.

The team received the award for focusing on the Department of Navy's (DoN's) broader stated goal: to rapidly and adaptively procure innovative technologies from small businesses. The NAVSEA team accomplished this by accelerating the SBIR submission and awards processes as well as streamlining the submission forms, evaluation, and approval methods and timeframes.

Specifically, the team reduced the average contract award timeline from 143 days to 59 days. Pleased with the process, SBIR small businesses reported enthusiasm about applying for SBIRs in the future.

Phase I improvements focused on reducing applications from 20 pages to five.

NAVSEA implemented an SBIR/STTR Phase II pilot, the Accelerated SBIR/STTR Acquisition Program (ASAP), which reduced technology development timelines from six years to three while providing the same amount of funding as a typical Phase II to accelerate development and get funding to the small businesses more quickly.

Regarding Phase III contracts, the team took an alternative approach to transition, working directly with the General Services Administration (GSA). Instead of the typical 10-18 months expected for Phase III transition, the team narrowed the timeline to 190 days. The award-winning NAVSEA SBIR team includes:

- Dean Putnam, NAVSEA SBIR/STTR Program Manager
- Bob Mitchell, PEO Ships SBIR/STTR Technology Manager
- Douglas Marker, PEO IWS SBIR/STTR Technology Manager
- Denitra Carter, SEA 05T Financial Management Analyst
- Brad Goodrich, PEO USC Innovation Technical Director
- Richard Park, PEO Carriers SBIR/STTR Technology Manager
- Patrick Tyler, PEO Submarines Deputy Program Manager, SEA 07
- John Vlattas, Deputy Undersea Warfare Chief Technology Officer & Program Manager
- Brian Quarles, PEO Submarines SBIR/STTR Technology Manager

Various contractors also contributed to the work.

The DoD presents this award to a team that "exemplifies excellence in government service and has achieved outstanding results implementing innovative solutions across all phases of the SBIR program, from initial topic development to successful transition of technologies to a program of record."

In addition to a congratulatory message from DoN SBIR/STTR Program Director Bob Smith, the NAVSEA SBIR team received a commendation from NAVSEA Division Director Jeffrey Brewer.

Brewer stated, "This award recognizes the defense acquisition workforce's collaborative

commitment to creating small business opportunities and maximizing small business contributions to support the department's mission."

Recognized formally by the DoD, the team's commitment to innovation and development continues to exemplify success that propels the DoN forward by harnessing technological advancements produced by small businesses to meet emergent government needs in a competitive global seascape. By reducing the amount of administrative paperwork required for transition, creating more accessible and streamlined documentation for small businesses, and working directly with the GSA and other participating agencies, the NAVSEA SBIR team can and will continue to save time and innovate on a tighter timeframe, contributing to the overall technological advantage the United States Navy holds over adversaries.

# VTM Connects Navy Customers with Technology

Take a look at the Navy Phase II SBIR/STTR technologies on the Navy's premier small business technology showcase, the Virtual Transition Marketplace (VTM). The current class of over 140 new Navy STP Navy-funded technologies will be available on the VTM in December to help solve technical problems.

Each entry contains a technology abstract, quad chart, company capability brochure, and ways to contact the small business developing the technology. Several entries will also include a recording of the company's Tech Talk presentation.



To explore these innovative Phase II technologies, go to the VTM at: www.navyfst.com/vtm.

- Click the "By Categories" filter box, and select a technology category
- If you like what you see, add the company to your briefcase (this requires you to generate a password)
- Use the arrows to scroll through other technologies in this category

# Four Navy FST Events Scheduled through March

By Jennifer Reisch, Navy STP Managing Editor

Department of the Navy (DoN) Forum for SBIR/STTR Transition (Navy FST) events are now "on the road," showcasing DoN SBIR/ STTR Transition Program (Navy STP) Phase II companies' technologies at multiple events throughout the year. Focused technology events that showcase Navy STP participants' technologies provide a more precise way to connect the small business innovators with Navy decisionmakers and industry across the country. Attending more localized events focused on specific technologies increases opportunities for small businesses to identify transition possibilities.

The Navy FST promotes companies participating in the Navy STP based on their Navy/ Marine Corps sponsored SBIR/STTR Phase II awards. Navy FST events connect these small businesses with government and industry personnel through Tech Talks, Meet the Experts one-on-one meetings, and an enhanced online presence via the Virtual Transition Marketplace (VTM). All events provide exposure of promising SBIR-developed technologies to Navy acquisition decision makers and primes to facilitate transition.

Four Navy FST events are scheduled in the next three months.

### NAVSEA Days

Our next focused technology event for the current program year will be Naval Sea Systems Command (NAVSEA) Days, held virtually 27-28 January 2021.

Each small business will have the opportunity to present a 10-minute Tech Talk, which will be available during the remote event and on the VTM.

Technology categories include:

- Autonomy
- Cyber
- Electronic Warfare (EW)
- Exploration and Production (E&P) Technology
- Sensors

## WEST 2021

The Navy FST scheduled for WEST 2021 in San Diego has been postponed by the event organizers. The new dates have not yet been determined.

There will be a Navy FST booth with a presentation area for Tech Talks, and a booth for Meet the Experts one-on-one meetings after each Tech Talk for additional discussions and interaction with those interested in learning more about small businesses and their technology.

Technology categories include:

- Air Platforms
- Autonomy
- Command, Control, Communications, Computers and Intelligence (C4I)
- Cyber
- Electronic Warfare (EW)
- Exploration and Production (E&P) Technology
- Sensors

## NAVAIR Days

The third Navy FST event will be Naval Air Systems Command (NAVAIR) Days, held virtually 16-17 March 2021.

Each small business will have the opportunity to present a 10-minute Tech Talk, which will be available during the remote event and on the VTM.

Technology categories include:

- Advanced Electronics
- Air Platforms
- Cyber
- Electronic Warfare (EW)
- Exploration and Production (E&P) Technology
- Materials & Manufacturing Processes (M&MP)
- Sensors

#### LMUA and Demo Week

The following week, the fourth Navy FST event will take place at the Marine Corps Limited Military Utility Assessment (LMUA) and Demo Week, held at the Marine Corps Systems Command Parade Field, Quantico, Va, on 22-25 March 2021. This event was originally scheduled for November 2020 but has been rescheduled.

There will be conference rooms for Tech Talks and Meet the Experts one-on-one discussions. An area with tabletop posters on the parade field will allow for introductions and for additional discussions and interaction with those interested in learning more about small businesses and their technology. Technology categories include:

- Advanced Electronics
- Biomedical
- Command, Control, Communications, Computers and Intelligence (C4I)
- Ground and Sea Platforms

See the article in the <u>Summer Transitions</u> issue for more details on the LMUA.

For updates on showcased technologies, upcoming opportunities, and newly scheduled Navy FST events, visit: www.NavyFST.com.

Date	Event & Link	Location
Jan. 11-15	AIAA SciTech Forum https://www.aiaa.org/SciTech	Virtual
Jan. 17-20	IEEE Radio & Wireless Week https://www.radiowirelessweek.org/	Virtual
Jan. 27-29	14th Operational Energy Summit https://www.idga.org/events-tacticalpowersourcessummit/	Virtual
Jan. 31-Feb 4	Space Flight Mechanics Meeting http://space-flight.org/docs/2021_winter/2021_winter.html	Virtual
Feb. 8-12	45th International Conference and Expo on Advanced Ceramics and Composites (ICACC2021) https://ceramics.org/event/45th-international-conference-and- expo-on-advanced-ceramics-and-composites	Virtual
TBD	WEST 2021 https://www.westconference.org/West21/Public/Enter.aspx	San Diego, CA
Feb. 23-24	2021 Military Additive Manufacturing Summit http://militaryam.dsigroup.org/	Tampa, FL
Feb. 24-26	2021 Aerospace Warfare Symposium https://www.afa.org/events/calendar/2021-02-24/aerospace- warfare-symposium	Orlando, FL
March 1-3	2021 Tactical Wheeled Vehicles Conference https://www.ndia.org/events/2021/3/1/2021-tactical- wheeled-vehicles-conference	
March 2-30	2021 Human System Digital Experience https://www.ndia.org/events/2021/3/2/2021-human-systems- digital-experience	Virtual
March 6-13	International IEEE Aerospace Conference https://aeroconf.org/	Virtual

## **Upcoming Events**

## **Unique Entity Identifier Will Replace DUNS® Numbers**

Source: GSA.gov

The U.S. government is moving to a new L non-proprietary unique entity identifier (UEI) for federal awards management, including contracts, grants, and cooperative agreements. The UEI will "ultimately become the primary key to identify entities throughout the federal awarding lifecycle, in SAM.gov, other IAE systems, on required forms, and in downstream government systems," according to a General Services Administration (GSA) press release. While the DUNS® number will be phased out as the entity identifier for entity records within SAM. DUNS® numbers already assigned to records will be retained for historical search and reference purposes following the transition.

The UEI will be requested in, and assigned by, the System for Award Management (<u>SAM.gov</u>). Originally slated to transition in December 2020, the deadline has been changed to a future yet-to-be-determined date.

According to the GSA, a UEI "is a unique number assigned to all entities (public and private companies, individuals, institutions, or organizations) who register to do business with the federal government." Entities will use the UEI in the same way that they currently use their DUNS® number.

On the GSA resource page for the UEI it says, "The US Federal government has used services from Dun and Bradstreet to both identify (using the DUNS® number) and validate/ verify federal contractors since 1978. In 1998, entities were required to get a DUNS number by the Federal Acquisition Regulation (FAR). In 2008, this requirement expanded to federal financial assistance, affecting over 630,000 public and private entities seeking federal contracts and/or grants."

During the transition, the government will phase out the DUNS number and introduce the

new UEI, generated in SAM.gov, as the official identifier for doing business with the federal government. It will also transition to Ernst & Young (EY) as the service provider to validate entity uniqueness.

The GSA says the "definition of entity uniqueness is not changing." Uniqueness is still "based on an entity being a separate legal entity and/or associated with a separate physical address."

The new system will make it easier to request a UEI to do business with the government "by streamlining the request and ongoing management process." At SAM.gov, entities will request a UEI and register to do business with the federal government as well as make any updates to legal business names and physical addresses associated with the UEI.

Until transition is complete, the DUNS® number will remain the official identifier for doing business with the government, and entities must continue to register in SAM.gov using the DUNS® number assigned by Dun and Bradstreet.

Once transition is complete, the SAMgenerated UEI will be the official identifier for doing business with the government. Existing entities will automatically be assigned a new UEI within SAM.gov.

More information is available at:

#### gsa.gov/entityid

Questions related to government implementation can be directed to:

entityvalidation@gsa.gov

To submit an article idea, make comments or ask questions about this newsletter, e-mail: navystptransitions@atsicorp.com



## DEPARTMENT OF THE NAVY FORUM FOR SBIR/STTR TRANSITION (FST)

## Learn more about our FST Events at <u>www.NavyFST.com</u>

	Virtual Event
NAVSEA FST Day	Focus on Navy STP SBIR technologies advancing maritime systems and warfighting capabilities in the areas of Autonomy, Cybersecurity, Electronic Warfare, Sensors, Ocean Battlespace Environments, Modeling and Simulation Technology, Sustainment, and Additive Manufacturing
27-28 January 2021	* Invite only, requires security pre-screen
WEST 2021 West 2021 TBD	San Diego Convention Center San Diego, CA Focus on Navy STP SBIR technologies displaying leading edge technologies supporting C4ISR, Air Platforms, autonomy, combat systems, Ocean Battlespace Environments, Modeling and Simulation Technology, and Sustainment Learn more about West 2021 at: <u>https://www.westconference.org/West21/</u> <u>Public/Enter.aspx</u>
NAVAIR FST Day 16-17 March 2021	Virtual Event Focus on Navy STP SBIR technologies advancing all things aviation, including Advanced Electronics, Air Platforms, Cybersecurity, Electronic Warfare, Sensors, and Additive Manufacturing * Invite only, requires security pre-screen
SeaAirSpace The Navy League's Global Maritime Exposition SEA AIR SPACE Symposium 1-4 August 2021	Gaylord National Resort & Convention Center National Harbor, MD Focus on Navy STP SBIR technologies advancing maritime systems and warfighting capabilities in the areas of Aviation & Avionics Enhancements, EO/ IR & Electronic Warfare Systems Support, Logistics & Maintenance, UUV/USV & Undersea Warfare, and Warfighter Tools & Support Learn more about Sea Air and Space at: <u>https://seaairspace.org/</u>
MSCS Limited Military Utility Assessment and Demo Week 22-25 March 2021	Marine Corps Systems Command Parade Field Quantico, VA Focus on Navy STP SBIR technologies advancing Marine Corps systems and warfighting capabilities * Invite only, requires security pre-screen

\* Contact <u>navyfst@atsicorp.com</u> if you are interested in receiving an invitation to a SYSCOM FST event