

DEPARTMENT OF THE NAVY

SBIR/STTR TRANSITIONS

2017 SUMMER



FROM THE DIRECTOR

I've been wondering ... and hope you'll think with me ... about creating a great new opportunity for the SBIR/STTR community to support the fleet and force. What happened in late May is a flurry of statements here in Washington about the renewed urgency for a fresher, faster approach to new defense capabilities, based on innovative technologies from new sources. We heard it from House Armed Services Committee Chairman Mac Thornberry, we heard it from our Secretary of Defense, and on May 17, we heard it from our Chief of Naval Operations in his illuminating white paper entitled "The Future Navy."

Admiral Richardson threw down the gauntlet: he challenged us "... to get to work now to both build more ships, and to think forward - innovate - as we go. To remain competitive, we must start today and we must improve faster ... The pace at which potential competitors are moving demands that we in turn increase the speed at which we act." This challenge, as I see it, is one the SBIR/STTR community can meet and exceed with your innovative solutions and our collective emphasis

on agility and responsiveness - I welcome your ideas about fresh initiatives along with improvements to an already solid program which will demonstrate the program's value to the Department and Congress. How important do I see this opportunity for us to step up? Read on as I devote the rest of this article to this charge.

17th Annual Forum for SBIR/STTR Transition (FST)

In our second partnership with the Navy League's global Sea-Air-Space Expo this April, SBIR/STTR firms hit a home run with outstanding displays of 98 mature technologies ready for the Fleet and Force ... today and tomorrow. A steady stream of defense industry and military customers pored over the booths, jammed our "Tech Talk" presentations, and filled hundreds of one-on-one meetings. Corporate sponsors Lockheed, Raytheon, L-3, BAE Systems and Boeing pledged new SBIR/STTR engagement practices. So I thought How do we build on this energy?

Further, three great champions of small firms in the Naval SBIR/STTR Program emerged in keynote speeches by RADM Michael Manazir, Deputy Chief of Naval Operations for Warfare Systems; Mr. James Smerchansky, NAVSEA Executive Director; and Congressman Steve Knight (R-CA), the sole House member to sit on the Armed Services, Small Business and Science and Technology Committees.

From 0800 on Monday through noon closure on Wednesday, I witnessed countless serendipitous FST meetings of entrepreneurs and customers. Best of all, with four minutes left on the clock on Wednesday, VADM Matt Winter, flag officer of JPEO F-35 (and former Chief of Naval Research), steamed through the Exhibit Hall to find the one technology he needed immediately for his bird at the Prime Photonics booth. Hmmm, I wonder how to formalize such serendipitous meetings and how do I increase the opportunity for these valuable exchanges

Naval Future Force S&T Expo

Ready to take your budding tech innovation to the house? - that is, to

the Office of Naval Research and its hundreds of hard-working scientists and engineers who manage the annual \$2 billion S&T portfolio? Don't miss a golden opportunity that comes just every two years: The Naval Future Force Science and Technology Expo, held July 20-21 at the Walter E. Washington Convention Center in Washington, DC.

This is your chance to put your best quad chart (see NavyFST.com/vtm) down in front of the reigning Naval expert in your field, personally, and ask that SME, "What do you think? Do I have a shot? Have you considered?..." Building a critical professional relationship with a senior ONR project manager is a very rare opportunity, one that you can experience only at the Future Force Expo. It can be yours by visiting www.onr.navy.mil/expo, and learning about the myriad venues, panels and meetings available to you. I and my staff will be there to help make strategic introductions. Hmm, I wonder how to optimize the opportunity to connect the right people and in a timely fashion

New Directions: Pilot Explorations

I use pilot programs to experiment with SBIR/STTR improvements in cost, schedule and performance taking suggestions from small and large firms, and the Naval acquisition community. Currently, my pilots regarding Fleet readiness and sustainment, and better Primes engagement, have already been handed off to SYSCOM SBIR management – starting with NAVAIR – for deeper dives. This year, I expect to pilot an approach to engage with university innovation centers that want

to leverage SBIR/STTR to accelerate commercialization of R&D while also tapping into their bench strength of business knowledge in support of nascent small businesses.

Cost Avoidance in Fleet Readiness Work

A 2014 NAVAIR pilot with Naval Air Warfare Center – Cherry Point proved the value of using a mature SBIR cold spray technology to repair rotorcraft blades in harsh Middle Eastern environments. NAVAIR has extended this pilot to NAWC depots in Jacksonville and San Diego. Of course, with big acquisition programs, there are roles for both government and industry. Therefore, this year, I'm already in preliminary discussions with Lockheed Martin about SBIR availability for F-35 maintenance, and with Raytheon about SBIR potential for AEGIS maintenance. I have high hopes the latter will lead to a NAVSEA pilot. I wonder where other fleet support opportunities are out there for SBIR to address....

Primes Engagement

NAVAIR has launched its Transition Planning and System Integration Pilot (TPSIP) to assist SBIR firms during the Phase I option period with Prime Integrator and OEM collaboration. It's an effort to help ensure successful integration of mature SBIR technology into Naval platforms and systems. TPSIP funding – about \$25K per project – allows the SBIR firm to sub-contract with industry for robust, focused

mentoring on adapting Phase II technology for a precise integration fit. How are the SBIR firms selected to participate in the TPSIP program? During TPOC Phase I downselect for Phase II, TPOCs assess a SBIR firm's need to team with a Prime to integrate their technology. Although it's too early to forecast results of this pilot, early responses from small firms and Primes alike are very positive.

As you can tell, I do a lot of wondering. I also do a lot of accepting that I don't have all the answers. I also know the Naval SBIR/STTR team working together will provide many of the answers. I wonder what we can do to generate more innovation. And faster! What are you thinking? Send your ideas to Bob_Smith_NavySTP@atsicorp.com.

Sincerely,



Robert L. Smith



Bob Smith, Director DON SBIR/STTR, provides opening remarks at the 2017 FST.



FST FOSTERS CONNECTIONS BETWEEN SBIR/STTR SMALL BUSINESSES AND DON ACQUISITION, WARFIGHTERS, PRIMES, AND COLLEAGUES

By Edward Lundquist

Small companies with big ideas loomed large at the Forum for SBIR/STTR Transition (FST), which was co-located with the Sea-Air-Space Expo, April 3 – 5, 2017, at the Gaylord National Resort & Convention Center. The FST showcased innovative technologies from 98 SBIR/STTR Phase II companies participating in the Department of the Navy’s SBIR/STTR Transition Program (STP). For more information on STP go to NavySTP.com.



Sea, Air & Space and FST co-location

The FST highlights the technologies and small businesses that participate in the STP Program, which helps them promote the transition of their DON-funded Phase II SBIR/STTR technologies to military systems and defense industry programs.

Introductory and keynote presentations were made by RADM David Hahn (Chief of Naval Research), RADM Michael Manazir (Deputy Chief of Naval Operations); Mr. James Smerchansky (Executive Director NAVSEA SEA OOB), and Congressman Steve Knight (R-CA).

RADM Manazir, known for his forceful “It takes too long and costs too much!” approach to Naval weapons systems, offered a strong advocacy of SBIR/STTR technologies as the solution to the Fleet’s intractable problem of timely and affordable readiness. He talked about the exponential rate of technology change along with the vital importance of a Naval service that can adapt to a dynamic strategic environment, “from the seabed floor all the way to space, from the littoral and the brown and the green water all the way to deep blue.” RADM Manazir joined 3-star Vice Admirals who spoke at earlier FSTs as senior Naval champions for the agile SBIR/STTR program.



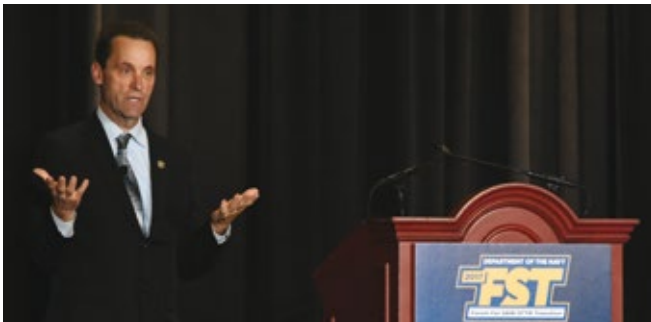
RADM Manazir presents to packed house

Mr. James Smerchansky, who worked his way up the promotional ladders at the Marine Corps and NAVSEA as a skilled integrator of SBIR/STTR tech solutions into major weapons system and battle platforms, provided a detailed accounting of SBIR/STTR problem solving for NAVSEA with significant efficiencies of cost, schedule and

FST FOSTERS CONNECTIONS... continued

performance. NAVSEA is the Navy's largest command, and is responsible for design, construction, modernization, and maintenance of systems and platforms. NAVSEA currently has 133 companies in 28 states involved with 202 Phase I and II SBIRs. "We do a lot of business with small business," Smerchansky says.

Rep. Steve Knight, who provides Floor advocacy for SBIR/STTR solutions to the House Armed Services, Small Business, and Science & Technology committees, spoke in depth about SBIR/STTR's effective role in Congressional work on defense acquisition reform. Rep. Knight discussed how innovation makes platforms, systems, networks and processes more effective, efficient and affordable. Knight told the attendees he was a big supporter of SBIR/STTR. "I see the benefits on a daily basis." All three keynoters spoke to packed rooms, with comments from many participants about the value of such senior leadership advocacy.



Congressman Knight talks about the importance of SBIR/STTR

In addition to these Naval and Congressional leaders, FST witnessed visits by more than a dozen senior flag officers to the Exhibit Hall, where they lingered over technologies of greatest interest and priority. JPEO Joint Strike Fighter Director VADM Matt Winter, who entered the hall five minutes before closing, quickly found a Prime Photonics technology suitable for current transition to the F-35.

"The volume and quality of new leads, as well as, booth visits of those familiar with our dive system were extremely gratifying," said Dennis Williams of Paragon Space Development Corporation, which was exhibiting its Paragon Dive System for use by divers in contaminated water and hazardous environments. "There was a wide spectrum of marketing to drive

traffic, including collaborating with Navy League. The speakers for plenary sessions were excellent."

According to Lyn Merritt of Anchor Technologies of Titusville, Fla, which has developed a design tool for shipboard fluid and power distribution systems, the FST was an opportunity to meet with high-level individuals in key positions within the Navy that would have been very difficult to reach otherwise.

Merritt was reluctant to get involved with the STP program because she knew it was going to be a lot of work, but was impressed with the professionalism of the STP team. "From the kickoff, our STP business consultant kept us focused on the FST as our capstone event." Merritt said the effort was well worth it. "It helped us to develop the right materials and to think in terms of commercialization and working closely with our customer."

Because it was co-located with Sea-Air-Space, Merritt said the FST enabled Anchor Technologies to meet with several primes and other companies.

Lore-Anne Ponirakis, who manages the \$45M SBIR Program at the Office of Naval Research, says the tendency is to measure success of an event like the FST by how many people visit the exhibits, but the real value, she says, is in the connections. "At the FST, small businesses were able to get exposure to primes and acquisition program managers, as well as each other. Some of these companies are potential competitors, but also potential collaborators. The FST allowed them to network with their peers in the small business world. They could meet with colleagues, counterparts, competitors and collaborators. The connections were right there in front of them."

Participating small companies had a booth and the opportunity to present their technology in a Tech Talk. 119 Tech Talks were presented by the 98 Small Businesses exhibiting at the FST. The Tech Talks were clustered together around different overarching technologies - such as batteries, shipboard systems, advanced materials, or vehicle technologies, to name a few -- and moderated by an expert in that area. "The facilitator was able to encourage a dialogue between



the participants and attendees,” says Ponirakis. “This helped make connections that might not have occurred if we didn’t group the presentations and have someone to guide the discussion. I saw these connections take place in each of the sessions I attended.” In the end, 2,519 people attended Tech Talk sessions.

Other collaboration efforts introduced FST exhibitors to interested industry attendees and a variety of Navy SYSCOM representatives. Industry prime contractors and other potential partners/clients were able to view FST exhibitor information, and set up 1-on-1 meetings via the Virtual Transition Marketplace—an online searchable database highlighting STP participants. Over 120 industry meetings were arranged. In addition SBIR exhibitors were able to arrange 250 “speed dating”-type meetings with NAVSEA, NAVAIR, USMC, SPAWAR, NAVSUP, and NAVFAC representatives of their choosing.

According to Craig Owens, who co-manages SBIR programs for Lockheed Martin with Orysia Buchan, the FST is important for technology firms and large prime contractors looking for the next breakthrough to enhance their platforms and programs. “For a large prime, the FST is an incredibly cost-effective

environment to learn about an array of technologies in a short amount of time.”

Buchan added that Lockheed Martin had representatives from all of the company’s business areas at the FST. “If one individual found a company’s technology of interest, he or she was able to make further introductions to others from our company who may have a similar or greater interest.”

“The FST is the best opportunity available for small businesses to market their innovations and company to such a wide variety of potential end-users,” Owens said. Trung Nguyen of Norwood, Mass.-based EIC Labs agrees. “We learned a great deal and met a lot of people that we wouldn’t have been able to meet otherwise.”

EIC Labs has developed a compact wearable battery to power the many devices that ground troops have to carry. “The FST was wonderful for a small company like ours,” says Nguyen. “It was the perfect match for us to find customers. It gave us a wider platform to showcase our batteries.”

Louisville, Colo.-based QuSpin has developed a compact magnetic anomaly detector that can find objects like mines



Rear Admiral David J. Hahn provides opening remarks to the exhibitors of the 2017 DON Forum for SBIR/STTR Transition (FST).

FST FOSTERS CONNECTIONS... continued

and submarines underwater, even from an aircraft. QuSpin's Jeffrey Orton says his company's product is much smaller than existing systems, and more sensitive. The technology was originally developed for medical scanners. Through SBIR, QuSpin has been able to adapt the technology to meet an urgent Navy warfighting requirement.

"The FST gave us a platform to demonstrate how our magnetometers could be integrated with various systems and platforms, and it allowed other people to see our technology to suggest applications that we had not thought of," says Orton. "It provided us with a lot of contacts we're pursuing."

NAVSEA SBIR coordinator Dean Putnam said the 2017 FST was even better than last year, with substantial traffic and a broader audience in the exhibit hall.

"The FST was a great opportunity for small businesses to present their technology to the acquisition community," says Putnam. "I've heard a lot of positive feedback from NAVSEA SBIR/STTR contractors that participated in the event. Phase II companies were very pleased to discover other potential customers and the opportunity to expand their business."



See the 2017 FST re-cap video:

[YouTube.com/watch?v=VYMSLe78-MI](https://www.youtube.com/watch?v=VYMSLe78-MI)



SPAWAR COMBINES SBIR AND RIF TO OFFER MORE PATHWAYS TO TRANSITION

By Edward Lundquist

While most Systems Commands have separate offices to manage SBIR and the Rapid Innovation Program known as RIF, the Naval Space and Warfare Systems Command (SPAWAR) has found that it makes sense to bring the two programs together and manage them both in the same office to realize the SPAWAR mission.

"It's a natural progression," says Shadi Azoum, SBIR and RIF program manager for SPAWAR. "Many RIF

candidates were previously funded through SBIR. And as SBIR projects come to an end, there may not be the right people working together to help transition that technology."

This alignment, Azoum says, gives SPAWAR an advantage in getting capability to the warfighter.

SBIR and RIF are two distinct programs, and they do not compete with each other, Azoum says. But his team finds that both SBIR and RIF focus on connecting



innovative technology with an acquisition program that has a need.

According to the Naval RIF webpage (www.onr.navy.mil/en/Science-Technology/Directorates/Transition/Rapid-Innovation-Fund-RIF), the RIF program is a “point of entry for small businesses to win research and acquisition contracts with the DON. RIF refines technology from military science and technology investments and adapts commercially available technology, funding the final maturation, testing, certification and/or integration needed to ensure that the products successfully make it to operational users.” The ONR website has basic information about the RIF program.

RIF provides project funding up to \$3 million for not more than two years, with the average award being about \$2 million. While RIF funding is not restricted to small businesses, there is a source selection preference for small companies, and up to 90 percent of RIF awards have been to small businesses, with most of them having had a previous SBIR relationship.

Azoum says SPAWAR executes about \$20M/year in RIF with current execution at \$45M. “A third of our RIF portfolio comes from SBIR,” he says.

BAAs are released annually on FedBizOpps around late Q2 or early Q3 of the fiscal year. “There is a Navy annex that contains SPAWAR requirements. If they specify those SPAWAR requirements, then it will fall under SPAWAR for evaluation”, says Azoum.

RIF seeks to accelerate the integration or insertion of a specific technology into an existing acquisition program that needs that technology. In effect, RIF awards are “last mile” Phase III funding to extend or complete a SBIR project. A technology readiness level (TRL) of at least 5–6 is required at project inception; and a TRL of 7–9 is desired at completion.

For SBIR, success could include adoption by a program or a prime, licensing or other form of commercialization of the technology, or even acquisition of the company. RIF has a more stringent requirement for transition that is determined by a project execution plan developed by the POR PM. “The only real measure of success for RIF is if the technology transitions to a program of record and is adopted by the government. That execution plan affirms the path forward to continue the work that they’re doing,” Azoum says.

An SBIR Phase II can come to a conclusion without transitioning. But there may be programs with a need or interest in that particular technology or solution. Azoum says his team looks for those potential opportunities and helps communicate the SBIR-developed capabilities with a program that needs it. Choosing between proceeding with SBIR or RIF depends on the maturity of the technology and whether or not the program has the sustainment funds for the project.

“RIF gives firms an extra chance with a more formal path to move forward,” Azoum says. “We can continue the work provided there is a program office committed to transitioning it.”

“Because SBIR and RIF work together in our office, you don’t have to talk to a separate group of people,” he says.

“And it’s good to represent a ‘centralized front’ when we talk to government technical points of contact (TPOCs), because we can recommend the most appropriate approach, or move from SBIR directly into RIF.”

For information about the SPAWAR SBIR and RIF programs, contact Shadi Azoum (shadi.azoum@navy.mil).

UNIVERSITY-BASED APPLIED INNOVATION CENTERS

By Allen Baker

A new resource for R&D commercialization by entrepreneurs – including SBIR as well as STTR awardees – is emerging in American universities scattered across the nation. Applied innovation centers, sometimes called “innovation hubs”, offer new models for R&D commercialization that are both regional and collaborative across business, science and engineering disciplines. Innovation centers, often open to entrepreneurs who aren’t students or faculty in the host university, rarely offer sophisticated SBIR/STTR support. But that is beginning to change, and they have other very attractive features:

- A network of mentors from academia, industry, government, and investor communities.
- Available common space (virtual or physical) through which knowhow and talent flow in accord with “open innovation” sharing practices.
- A support toolbox for entrepreneurs, from technology testing facilities to business plan review.
- Governance that encourages – and actively enables -- both independence and collaboration.
- Emphasis on applied R&D and commercialization, not fundamental research.
- Exposure to an emerging regional innovation technology district or corridor that needs entrepreneurs’ agility and inventive skills to penetrate emerging markets.
- Technology specialization to ensure the smooth connection back to research activities performed by the host university.

Mid-tier universities in seven states provide a spectrum of new collaboration models to partner university and small business resources, and are hungry for small business participation:

Massachusetts

The Massachusetts Institute of Technology is perhaps the most fertile, and oldest, source of innovation centers

ranging from its Deshpande Center for Technological Innovation to its Industrial Performance Center. But there’s an exciting new player in The Bay State:

U. of Massachusetts –Lowell’s RURI center. That’s the **Raytheon-University Research Institute**

(<https://www.uml.edu/Research/PERC/RURI/org>),

an 84,000 s/f facility leveraging the school’s strengths in printed electronics and nanotechnology – including links to the Flexible Electronics Manufacturing Institute – that align with Raytheon’s strategic technology needs such as high-frequency printed conformal antennas, carbon-based transistors and photonic devices. RURI management hopes to tap regional SBIR/STTR businesses to grow RURI commercialization potential.

Nevada

The state’s Desert Research Institute – an arm of the Nevada System of Higher Education – founded an **Applied Innovation Center for Advanced Analytics** (<https://www.dri.edu/applied-innovation-center.org>) to promote global collaborations to commercialize data mastery innovations in the fields of informatics, climate science and bioscience. Following the successful German innovation model of the Fraunhofer Institutes, AICAA partners with small and large firms that are able to sell contract innovation services based on DRI data analytics inventions.

California

State sponsorship of an innovation hub model competition among U. of California system campuses has resulted in progressive regional partnerships such as UC Irvine’s **Applied Innovation** (<http://innovation.uci.edu>) center. This large campus-within-a-campus brings university R&D in several tech sectors together with Orange County’s vibrant business community to support job creation and economic growth. Applied Innovation facilitates business-university collaboration by helping entrepreneurs seeking access to university inventions and talent, large corporations looking to tap the



school's research capabilities, and investors wanting to financially support promising new companies. Applied Innovation has best practice "accelerator" features such as its "Cove" incubation center, S&T commercialization mentors, and on-site investment specialists. Additionally, UCI Applied Innovation is working to cultivate an "innovation district" in the heart of Orange County, producing more start-ups, more scale-ups, and, ultimately, a world-class entrepreneurial ecosystem. Irvine, CA is the site of an SBA SBIR Road Tour in September, 2017, and is exploring a stand-alone SBIR/STTR capability through Applied Innovation.

Kansas

Wichita State University's **Innovation Campus** (<http://wsuinnovationcampus.org>) pools an array of academic resources to support R&D commercialization forays into digital manufacturing for the aerospace industry – long the region's economic core – and healthcare. Situated on 120 acres, the Innovation Campus is a live-work community of partnership buildings where businesses, large and small, establish operations and tap university R&D resources, including laboratories designed to give students the accelerated training needed for internships with Innovation Campus businesses. Airbus is an anchor tenant, and Innovation Campus investor. In effect, the Innovation Campus is a community makerspace that gives both students and non-students access to the technology and services that helps facilitate productization of promising R&D for commercial and defense aerospace applications.

Pennsylvania

University City Science Center (<http://sciencecenter.org>) is a powerful Philadelphia economic growth engine. Over 350 bioscience and other emergent technology firms sprouted from this Drexel University collaboration with a regional hospital, Wexford Science and other regional businesses, large and small. Originally an R&D facility, the 17-acre campus now houses a large business accelerator with 100 tenants in bioscience (diagnostics, therapeutics, medical devices, healthcare systems, bioinformatics, and cognitive science), information technology infrastructure, interactive media, nano-scale imaging, novel materials and clean energy technology. The accelerator's entrepreneurship investment backbone is the QED Proof of Concept

Program, a multi-million dollar funding and business development program for Greater Philadelphia-area entrepreneurs, which leverages significantly higher private equity investment. SBIR/STTR awards are critical seed-funding for Science Center entrepreneurs.

South Carolina

University-led innovation initiatives in the Palmetto State derive from the state's key industries – automotive and aerospace. Clemson University's **International Center for Automotive Research (ICAR)** provides automotive engineering relevance. ICAR continuously analyzes the auto market and surveys state stakeholders including Mercedes-Benz, Daimler and Volvo to determine their technology and R&D focus. ICAR then partners with small businesses on SBIR/STTR contracts to leverage auto industry opportunities. The University of South Carolina **McNAIR Center for Aerospace Innovation** supports this booming industry by offering aerospace education, research, outreach, and economic engagement. USC McNAIR creates opportunities for investment and collaboration through the services they provide and the products and technology they develop with industry through partnering on SBIR/STTR contracts.

Florida

The **Florida High Tech Corridor Council (FHTCC)** was formed in 1999 as a catalyst for innovation in Central Florida, with two dozen regional economic development organizations, 14 community colleges, numerous large corporations and three universities: U. of Central Florida, U. of South Florida and the U. of Florida. The FHTCC focuses on ten technology sectors: agritechology, aviation and aerospace, digital media / interactive entertainment, financial services, information technology, life sciences / medical technologies, microelectronics / nanotechnology, modeling simulation and training, optics and photonics, and sustainable energy. Dozens of companies across the 23-county Corridor participate in the Matching Grants Research Program to leverage their R&D budgets with academic partnerships to develop commercially applicable emerging technologies. Some industry principals, however, have said that better Corridor performance would come from more small business participation.

UNIVERSITY-BASED... continued

Upper-tier science and technology universities with substantive footprints on the nation's innovation landscape include:

- **Arizona State University Arizona Technology Enterprises** – ranked as America's "most innovative university" in 2015 and 2016, ahead of Stanford and MIT, AzTE bundles knowledge enterprise development, research infrastructure investment, and a strong entrepreneurship support system. AzTE's lab-to-market focus is enabled by venture and SBIR funding and commercial collaborations, with mission-driven federal Agencies as customers.
- **U. of Chicago Polsky Center for Entrepreneurship and Innovation** – Polsky Center drives venture creation and technology commercialization within the University of Chicago and the Great Lakes region. Its top-ranked accelerator program, the Edward L. Kaplan New Venture Challenge, has helped launch more than 160 companies worldwide that have gone on to achieve more than \$4 billion in mergers and exits, and raised over \$575 million in funding. The Polsky Center helps students, faculty, staff, alumni, researchers and local entrepreneurs navigate the start-up challenge with its 34,000 s/f facility.
- **Georgia Tech Institute for Electronics and Nanotechnology (IEN)** – Established as an Interdisciplinary Research Institute (IRI) with the goals of providing a central entry point for interdisciplinary training, education, and research in partnership with industry and labs, IEN provides a formidable professional support team and physical infrastructure. IEN also enables research for individual Principal Investigators in addition to several fundamental applied research centers, engineered systems laboratories, and strategic research programs. IEN is the southeastern's regional hub for the National Science Foundation's (NSF) National Nanotechnology Coordinated Infrastructure (NNCI).



U. of Massachusetts's Raytheon-University Research Institute (RURI), Lowell, MA.

- **New Jersey Institute of Technology Innovation Institute** – this unique non-profit corporate venture focuses on agility in helping regional entrepreneurs transform intellectual invention into successfully marketed products. The agility derives from parallel "Innovation Labs" serving individual market verticals to follow industry-led agendas. Core industries include healthcare delivery, bioscience, civil infrastructure, defense and security, and financial services.

Taking a broader, and longer view, numerous mid-level universities across America have or are embracing innovation architectures – only a small sample of which are cited in this article. Can your small business help us expand this inventory? Please let us know, and a future Transitions article will publish your contribution. Let us know at : NavySTP@atsicorp.com.



HOW CAN TECHNOLOGY TRANSFER HELP SBIR COMPANIES AND NAVY LABS?

By Sylvia Jacobs

Recent legislation that improves access to the Naval Technology Transfer or “T2” program provides opportunities for small businesses to improve their SBIR/STTR technologies by taking advantage of world-class expertise and facilities at Naval laboratories. Much of the research, development, test and evaluation at Navy and Marine Corps laboratories involves leading-edge technologies in a wide array of technical disciplines with potential for commercial applications. Moreover, the equipment and facilities available to test this research are often unique and cannot be replicated in the commercial workplace. SBIR/STTR awardees are often unaware of their ability to access T2 technologies.

The federal T2 program has been in place since the mid-1980s. Its purpose is to facilitate the transfer of federally developed technologies to the private sector as well as academic institutions and state or local governments. Navy and non-Navy partners (including small businesses) can work together on mutually beneficial research through the DON T2 Program using Legal Instruments called “Cooperative Research and Development Agreements” or CRADAs. CRADAs are an essential T2 partnering tool, and small businesses can easily learn how to use CRADAs, with help from the Naval T2 Program Office.

One legislative change is particularly relevant to CRADA use: in 2014, the Small Business Administration (SBA) SBIR Policy Directive amended its policy regarding the use of SBIR funds with a CRADA by no longer requiring a waiver. Per Section 9(e)(5) of the Policy Directive, “an agency may issue an SBIR funding agreement to a small business concern that intends to enter into an agreement with a Federal laboratory to perform portions of the award or has entered into a Cooperative Research and Development Agreement (see 15 U.S.C. § 3710a(d)) with a Federal laboratory...” Restrictions are listed in Section 9(e)(5)(i) to (vi).

Partners working through a CRADA may contribute personnel, services and property. However, Navy and Marine Corps labs cannot contribute funds to the effort. One advantage for a small business is that it may receive a license for any inventions made during the performance of the CRADA effort. Moreover, any data generated under the CRADA may be protected from public discussion for up to five years. The process for entering into a CRADA with a Naval lab begins by contacting the DON T2 Program Office at Navy_Tech_Transfer@navy.mil. Detailed information about facilities and expertise at Navy labs or who to contact about entering into a CRADA, can also be found at <https://flcbusiness.federallabs.org/#/>.

The Naval Research Laboratory (NRL) uses Phase I and Phase II SBIR funds to support collaborative research through CRADAs. In both FY15 and FY16, SBIR-funded CRADAs represented approximately 20% of new CRADAs in each of those years. This represents a great partnership opportunity that is being leveraged by NRL in support of the small business community.

Small businesses working under a Phase I or II contract are now able under a CRADA to use a portion of their SBIR funding to access a Naval lab’s test and evaluation capabilities. As an example, through a Phase II SBIR award, Flex Force Enterprises is working on a line of stabilized weapon platforms that, if successful, will dramatically increase the accuracy of crew-served weapons. Recognizing that both Naval Surface Warfare Center (NSWC) Crane and Flex Force Enterprises have unique experience in the stabilized weapons platform field, the two organizations are utilizing a CRADA to work collaboratively to further develop the technology.

The CRADA allows for the exchange of information, intellectual property, guidance and ideas on how to provide improved accuracy of stabilized weapon platforms. The CRADA supports the Army’s Phase III SBIR for an

HOW CAN TECHNOLOGY... continued

agile, small-deflection, precision motion base (ASP) system development effort, and Flex Force Enterprise's commercialization of the core ASP technologies. Additionally, the CRADA provides benefit to NSWC Crane and the DON by supporting efforts to test and evaluate stabilized mounts for use on various DoD combat platforms.

Another example of how a CRADA was used in conjunction with a Phase II SBIR grant recipient is provided by the Naval Medical Center in San Diego. The CRADA partners were the Naval Laboratory and, a California-based small business. The small business used the facilities and expertise at the Naval Medical Center to advance the technology and develop a clinically useful tool that could benefit patients with amputations in gait training.

Another type of CRADA that small businesses can use is a limited-purpose CRADA. These are often used by Naval laboratories as a means to quickly collaborate with a non-Navy partner to exchange existing equipment or material when both parties have a mutual interest in the research outcome.

Leveraging SBIR with technology transfer can also prove beneficial to lab scientists and engineers interested in obtaining significant commercial and military benefits

for their programs. Two engineers at NSWC Crane have leveraged several technology transfer tools with SBIR to successfully transfer ultrashort pulse lasers to military and commercial users. Ultrashort pulse lasers deliver electromagnetic pulses measured in femtoseconds, a time span so brief that the pulses alter the way light interacts with matter. One of the key attributes of these pulses is that, unlike conventional lasers, they produce no heat and do not damage the targeted material beyond the intended extent. This capability enables ultrashort pulse lasers to remove material more cleanly and precisely than ever before possible.

An education partnership agreement, a partnership intermediary agreement, and at least five CRADAs were established to help outside partners gain access to lasers and other specialized expertise, equipment, and facilities at NSWC Crane. These mechanisms were supported by nearly \$16 million in more than 34 SBIR/STTR and other awards to support the work of small businesses engaged in the development, refinement, and commercialization of new ultrashort pulse laser applications. To date, this ongoing, multi-year technology transfer/SBIR activity has resulted in the start-up of two new businesses and the development of novel applications in both the commercial and military sectors.

UPCOMING EVENTS

July 11-13	Automated Vehicles Symposium 2017 www.automatedvehiclessymposium.org/home	San Francisco, CA
July 20-21	2017 Naval Future Force Science and Technology (S&T) EXPO www.navalengineers.org/Symposia/2017-Naval-Future-Force-Science-and-Technology-Expo	Washington, DC
July 21	2017 Federal SBIR Road Tour & Annual KY Conference https://events.r20.constantcontact.com/register/eventReg?oeidk=a07ee2hooj09b10b32b&oseq=&c=&ch=Expo	Lexington, KY
August 14-18	DoD SBIR Beyond Phase II & Mentor Protege Training Week Conference www.icoast.com/news/2017/02/17/sbir-sttr-news/save-the-date-dod-sbir-beyond-phase-ii-mentor-protege-training-week-conference/	Chicago, IL
August 22-23	2017 Department of the Navy Gold Coast http://navygoldcoast.org/	San Diego, CA
September 18-19	Biennial Hawaii SBIR/STTR Conference http://www.htdc.org/index.html	Hawaii

For comments/questions about this newsletter, send e-mail to: NavySTP@atsicorp.com