Project Profile: Southwest Ohio

Key Project Takeaways

Through its Industry Resilience grant, the Southwest Ohio IR team has helped to create a more vibrant ecosystem for the Dayton area entrepreneurial and startup community. A key partner, the Entrepreneur Center (TEC), provides access to technologies, investors, and commercialization resources. With funding support from OEA, TEC identified 2,400 technologies at Wright-Patterson and expanded the capacity of the region's assets to leverage them. By creating an inventory, TEC has highlighted potential technological developments that could help transform the region and provide advances for the U.S. military's military readiness. In addition, the IR grantee team is developing career pathways to ensure that DOD has access to a robust regional information technology (IT) workforce through the delivery of DODD 8570 and Security+ (Plus) certification programs, college internships, and K-12 online IT curriculum.

Project Description

Rationale

Dayton, Ohio, is home to Wright-Patterson Air Force Base (WPAFB), one of the largest and most diverse military installations in the country. More than 26,000 people work at WPAFB, representing more than 7 of all workers in the Dayton MSA. Thousands more work for private industries supporting the military through contracts. Fluctuations to the Department of Defense (DoD) budget highlighted the region's need to diversify its economy. Wright State University used DoD Office of Economic Adjustment (OEA) funding to serve as a catalyst to build a regional commercialization infrastructure and expand the existing entrepreneurial ecosystem in ways that help move technologies from Wright-Pat's research labs to private markets. DoD benefits from these efforts because the commercialization activity creates potential to leverage private markets in developing new technologies that could enhance force lethality, readiness, and resiliency.

Program Activities

To diversify its economy and support DoD's supply chain needs, the Dayton regional grantee partners focused their IR efforts on three strategies: technological development, workforce development, and entrepreneurial support.

By identifying technologies that are present in the region, the IR team has spread awareness of potential opportunities for businesses to foster emerging technologies. The IR team sought to identify and assess the market potential of technologies owned by the labs. Through the OEA grant, the Southwest Ohio IR team implemented a full range of support services and entrepreneurial opportunity programs that allowed Air Force and other researchers to move their inventions out of the lab and to either pitch their work for investment by commercial businesses or to start their own businesses. The grant helped the IR team provide a safety net for these entrepreneurs to minimize risk and encourage more innovation.

Regional leaders have also emphasized attracting new talent to Ohio to meet DoD and its contractors' needs, primarily in the IT sector, by targeting high school students for internships and training incumbent workers on DoD specialized certifications. The IR team supplemented these efforts by focusing on developing a ready workforce that could help companies accelerate the R&D commercialization and maximize the market potential as they translated available technologies into product opportunities.

Resiliency Impacts

Increasing Awareness of the Defense Industrial Base

Entrepreneurs in the region have not historically had a strong community network in the Dayton region. While the presence of Wright-Patterson AFB helps to establish the defense sector as an important local economic contributor, it is not seen widely as a source of entrepreneurial activity, and entrepreneurs are relatively disconnected from the region's ecosystem. This has limited the region's ability to develop new businesses that could contribute new ideas and products to the defense industrial base.

Through its OEA grant, The Entrepreneur Center (TEC) sought to create an ecosystem that would allow small businesses, tech startups and research institutes to build meaningful business connections and access relevant commercialization resources, especially those available at WPAFB. TEC is a facility that houses resources, such as coworking spaces, resident experts, events and collaboration opportunities. TEC also provides investors a service by aggregating potential investment opportunities. This capacity helps local entrepreneurs enhance their ability to innovate and helps them to be more productive, key characteristics that will help to sustain a vibrant local defense industrial base.

Because of the OEA grant, TEC and other partners are transforming how the region's start-up ecosystem functions. The partners are engaging entrepreneurs that could potentially create new products or deploy new technologies for DoD. One way, TEC helps to build vibrancy is through series of events designed to bring entrepreneurial minds together. Examples include:

- Pints and Preneurs allows entrepreneurs to find a support system for creating startups. The average attendance is about 45 people per month. Although the IR grantees have not been tracking the specific proportion, a sizable share of current and former WPAFB personnel and contractors are regular part of this network as they explore opportunities to create or scale-up companies.
- Early Risers allows business owners to pitch their ideas to other business for connections. So far, 58 companies have pitched their product or company. TEC counsels those that are making a pitch to clearly articulate their "ask" and at least one of those asks must be for something other than capital. An estimated 92% achieve at least one of their goals. The Entrepreneurship Center counsels members through tactical sessions on a variety of issues such as new regulations about websites. In addition, WBI recently held an event to pair people inside the fence at WPAFB and outside the fence interested in learning more about licensing technologies. The goal was to introduce potential innovators to the WPAFB license office or technology developers operating inside the base.

- Startup Week allows entrepreneurs to share ideas, advancements, and challenges associated with starting a new business. The goal is to create an ecosystem of entrepreneurs willing to give advice to new entrepreneurs. This year, Startup Week had over 900 people in attendance, an increase of 50% from last year. Those who attended showed interest in finding a major bank, medical technology opportunities and help in technology development.

Enhancing Force Multipliers to Support the Defense Industrial Base

TEC developed an application named TNEBULA, a new virtual marketplace for lab generated inventions, that captures an inventory of technologies, capacity, and actionable intelligence about technologies, as well as the health of intellectual property (IP) portfolios. Navy's SBIR/STTR program has demonstrated a strong interest in the platform as a way to advance their product patents. The OEA grant allowed TEC to develop a Commercialization Readiness Program designed to demystify, discover, and develop technologies. Through these efforts, the IR team identified more than 2,400 technologies in the region, of which about 1,200 technologies are from the Air Force Research Laboratory. With the OEA funding, the team examined the gap between the current state of the technology and its market potential. In doing this assessment, the team found many technology opportunities, but the region did not have enough entrepreneurs to commercialize the technologies.

The IR team piloted three assessment cohorts to assess technologies that were identified by subject matter experts in the region. The IR team was able to use this information to understand potential products that could come from these technologies. The team identified 5 product opportunities, including sensors, aerosol slob, and materials, that might have commercial market potential and/or might help the warfighter gain an advantage in the field of operations.

Commercial Diversification of Defense Companies to Sustain the Industrial Base

Wright State established a development plan to identify regional organizations impacting the technology development ecosystem and collaborated with partners to identify players within the technology development ecosystem. These resources were compiled into a web portal, www.daytontechguide.com, that houses information on 100 local startups and scalable resources. The Southwest Ohio IR team also developed the Asset Management Platform, www.ampdayton.xinspire.com, to be the digital connective tissue for Dayton's entrepreneurial ecosystem. The tool connects entrepreneurs with resources, mentors, financial partners, and business service providers. The Asset Platform project will increase the awareness of regional talent, expand the level of collaboration within targeted industries and increase mentorship opportunities for business startups.

Cost Savings to DoD through Business Diversification or New Products/Customers

Through its work with companies and entrepreneurs, the Southwest IR team has helped to advance several technologies of value to DoD. One example involves IR funding support for Battle Sight, a company that has identified a significant market opportunity with glow stick products for military use. Battle Sight identified a technology that could replace currently used glow sticks with a new glow stick marker that can be reused. Soldiers, police officers, and first responders currently use glow sticks to mark rooms that have been cleared. These glow sticks are inefficient (because they cannot be reused)

and unpredictable (because the mark can easily be detected by adversaries with widely available night vision technologies). Battle Sight uses Marking Appliance Reusable Chemiluminescence – Infrared (MARC IR) technology, which is a pressure-activated chemiluminescence writing instrument that works well in low-light and no-light conditions. It also has the capability to be invisible to enemy combatants. The MARC IR improves communication, increase speed when every second counts, reduce weight and waste, and minimize cost. This technology increases safety and gives an advantage to warfighters, law enforcement officers, and first responders by making a clear way for those who follow them. Battle Sight has licensed this technology with the Air Force Research Laboratory at WPAFB.

The MARC IR product gives DoD a potential cost savings of about 80-90%. For safety reasons, glow sticks currently in use are used only once. DoD buys 15.6 million individual glow sticks at an estimated unit price of $1.72. A single reusable MARC IR, at a price of $69 per glow stick, and that unit would replace about 200 individual glow sticks. In addition to the cost savings for the product, it also reduces waste from disposed glow sticks by 99.9%[1] and reduces the costs associated with glow stick waste management.

Lethality Impacts

Innovation through the Development of New Intellectual Property or New Technologies

Another company assisted through the IR investment, GlobalFlyte, is a community-focused enterprise, building on close collaboration with multiple emergency management communities in Ohio. This technology improves emergency response operations by providing unparalleled communications, imaging and data technologies on an integrated platform to save lives, protect property and minimize loss from disastrous incidents.[2] While the technology is currently being tested for civilian emergency management, it also has potential uses in military operations.

GlobalFlyte provides a multi-modal communication solution, developed by the Air Force Research Laboratory, that provides 3D separation of radio channels and offers simultaneous audio transcription with comprehension rates of 70 percent. The technology is being developed in partnership with ESRI (using their base map) and Minute Man application (to provide a smartphone application that makes the technology available for use in the field of operations). The user has the control to choose keywords-such as mayday, bomb, house fire, traffic accident, to significantly decrease time delays and improve situational awareness. This application addresses major concerns during combat, where multiple parties may be talking simultaneously, which can cause dialog to become indistinguishable, resulting in time wasted by constant repetition, potential communication misunderstanding, and the potential loss of critical data.

Improving 'Force Overmatch'

The Battle Sight product, MARC IR, provides U.S. forces with a technological superiority because it offers combatants the capability of writing messages on objects that are invisible to the naked eye or to any

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[1] https://battlesighttech.com/products/
[2] https://globalflyte.com/

other technology that is not within infrared spectrums read by R night vision goggles. This puts the U.S. war fighter at an advantage to mark doors to rooms that have been cleared, providing a clear and safe form of communication with those who follow any first responding operations team. The product also reduces the number of glow sticks that the war fighter needs to carry in the field and can help to reduce the time required to clear and mark a room by 7 seconds – a number than can add up quickly to many minutes in urban buildings.

Readiness Impacts

Training and People support

The IR grant assisted the Southwestern Ohio Council for Higher Education (SOCHE), a nonprofit collaborative consortium that works with 23 colleges and universities to transform their communities and economies. SOCHE develops faculty and staff through professional development for the member institutions, while engaging students through internships. These internships are all paid and catered to students from high school to post-doctorate. At one time, SOCHE had 300 students in active internships. Furthermore, every summer over 600 students apply to internships in Dayton, Ohio from 34 U.S. states, primarily focused on STEM. The region is working to retain these students who can contribute to their workforce significantly.

With support from the OEA grant, SOCHE is helping its Dayton area partners to understand the information technology workforce needs in the Southwest Ohio region. SOCHE was able to leverage a Regional Alliances and Multi-stakeholder Partnerships to Stimulate (RAMPS) grant from NIST to work with a team in developing develop a report on the regional IT supply and demand and its potential pathways to address the shortcomings of available talent in the region. The team included Wright State University, University of Dayton, Cin-Day Cyber Corridor, Technology First, and SOCHE.

The RAMPS grant report found an underrepresentation of computer programmers, computer network architects, computer hardware engineers, and information security analysts in the 16-county JobsOhio region. The report also suggested better curriculum alignment among local institutions. The work to implement this recommendation brought to light the need for DoD certifications, such as the DoDD 8570 Certification, and Security-Plus Certification. The region is now focusing on attracting individuals to the region through direct targeted marketing, upskilling the incumbent workforce, and infusing IT curriculum into K-12 through virtual classrooms. These efforts will also build the capacity of the workers who can work on future DoD contracts.