



Project Profile: New England

Impact Statement

The New England Regional Defense Industry Collaboration utilized Industry Resilience funds to improve the resiliency and the cybersecurity preparedness of the New England defense industrial base. Many suppliers in the region currently lack the processes to supply a broader range of DoD missions. By forming a New England Defense Supplier Network to facilitate the adoption of Industry 4.0 technologies and skills by New England defense suppliers, it enables these suppliers to continue to increase the DoD's capacity to respond to adverse actors and maintain the nation's technological superiority. Additionally, the grant increased the cybersecurity preparedness of the DoD by supporting the adoption of cybersecurity controls by suppliers and increasing the capacity of New England MEPs to deliver cybersecurity services.

Key Project Takeaways

The New England Regional Defense Industry Collaboration (NERDIC) received support from the Office of Economic Adjustment (OEA) Industry Resilience (IR) program to increase the resiliency and cybersecurity preparedness of the New England defense industrial. Many of the region's suppliers lack the modern processes and workforce skills to support a broad range of DoD missions, and supply chains in the region are interconnected across states. The partnership identified the adoption of Industry 4.0 technologies and workforce skills as a critical need for the region's defense suppliers with the potential to convene defense suppliers, OEMs, state and local officials, workforce development assets, and R&D assets. This supports the resiliency of the DoD by focusing regional support assets on the needs of these suppliers. NERDIC recently issued a request for proposals to find a regional facilitator to form a New Defense Industry Network around the adoption of Industry 4.0 technologies and skills by the region's manufacturers, with the potential to improve the readiness of the DoD. This pivot to focus on Industry 4.0 readiness, and the overwhelming endorsement by industry representatives, is a key project takeaway. The issue of adaptability, resilience and future readiness as recognized by industry as emerging top priorities to secure effective supply chains.

NERDIC also awarded CONNSTEP, the Connecticut MEP Center, with funds to provide cybersecurity implementation and awareness training to the region's defense suppliers. CONNSTEP is also developing a new in-house training model to provide cybersecurity services that MEP centers in the other five states are adopting. These activities both increase the likelihood that regional defense suppliers will become compliant with DFARS cybersecurity regulations and increase the capacity of regional service providers to deliver cybersecurity training to defense-related businesses.

Project Description

Rationale

In FY 2017, New England-based contractors and military personnel received 7.7% of all DoD expenditures, ranking the region only below the states of Texas, Virginia, and California in the share of



total U.S. spending on Defense.¹ Within New England, defense contracting is most prominent in Connecticut and Massachusetts, which rank 7th and 12th in their share of total received defense spending, respectively. The entrepreneurial ecosystems in these states, along with Rhode Island, feature strong linkages to defense contracting opportunities, especially supporting the General Dynamics, Sikorsky, and Pratt & Whitney supply chains. Despite the concentration of defense spending in Southern New England, the Regional Aerospace & Defense Exchange (RADE), analysis of the Connecticut defense supply chain (conducted with support from the Connecticut Industry Resilience grant), found defense supply chains extend beyond Southern New England and into Maine, New Hampshire, and Vermont. Workers at defense manufacturers often commute across state lines and defense manufacturers source critical parts from suppliers across the region.

Each of the six states in New England have identified the importance of DOD contractors to their economic base and have participated in the OEA Industry Resilience program since about 2015. They also recognized a need to work together and long sought a sustainable way to do so. The RADE initiative was integral to the Connecticut proposal and set the stage for collaboration. In August 2017, OEA and Connecticut invited the chief executives or their designate from the six New England state economic development agencies with OEA grants and a defense contractor representative from each state to participate in a working session in Devens, MA, to develop just such a model. During the session, the private sector leaders laid out their concerns and needs and the executives from Connecticut's Department of Economic and Community Development, the Massachusetts Development Finance Agency, Maine's Department of Economic and Community Development, New Hampshire's Office of International Commerce, the Rhode Island Commerce Corporation and Vermont's Agency of Commerce and Community Development agreed to jointly apply for support from the Office of Economic Adjustment (OEA) to support a New England Regional Defense Industry Collaboration (NERDIC). The project sought to foster greater awareness about cybersecurity concerns, develop a system for expanding the trusted supplier networks of key defense contractors, and build a sustainable model to encourage long term regional collaboration in support of the New England defense industrial base.

NERDIC received support through the Industry Resilience program, with the State of Vermont serving as the fiscal agent for a partnership representing the New England states. During 2018 and 2019, regional stakeholders, facilitated by Future iQ, conducted scenario-planning exercises that examined issues that might affect the supply chains and regional industry eco-systems of key DoD programs such as the Virginia Class Submarine, Black Hawk Helicopter, and the F135 engine utilized in several models of the F-35 Joint Strike Fighter. This analysis found the region lacked collaboration and a shared capacity to support manufacturers, resulting in a potential threat to the resiliency of these critical supply chains. These cross-state supply chains face shared threats, including from cyber-attack, workforce skills gaps, and a lack of resiliency due to single source contracting. The New England partnership formed in

¹ https://www.oea.gov/sites/default/files/fy2017-r2/FY2017_Defense_Spending_by_State_Report_Web_Version_20190315.pdf



response to these threats to provide an equitable level of support for the resiliency of the six states' defense industrial base, ensuring regional defense suppliers' continued ability to support critical DoD missions.

Program Activities

With support from an Industry Resilience grant and the fiscal agency of Vermont's Agency of Commerce and Community Development, NERDIC contracted with Future iQ to manage the six-state New England partnership. The goal of Future iQ's work is to develop a sustainable, multi-disciplinary collaboration in support of New England defense suppliers. By developing the systemic relationship across the six states, NERDIC hopes to offer shared services through multiple components of the regional manufacturing ecosystem such as the Procurement Technical Assistance Centers, the Manufacturing Extension Partnership Centers, the Small Business Development Centers, Universities, Community Colleges, and state and local government entities.

Through their discussions, the partners identified the adaptation of Industry 4.0 technologies and skills as a significant need for aerospace and defense manufacturers across the region. Industry 4.0 technologies, such as additive manufacturing, require new skills and approaches not widely found in the current New England workforce, presenting opportunities for multi-disciplinary support from across the manufacturing ecosystem. Additionally, NERDIC partners identified cybersecurity preparedness as a key area of concern shared by manufacturers seeking to contribute to the defense industrial base. The introduction of new DoD cyber-preparedness requirements emerged as a shared opportunity for the region's MEP Centers to expand their capacity to support the adoption of enhanced cybersecurity controls. To realize these goals, the Collaboration identified several projects in support of the adoption of Industry 4.0 technologies and cybersecurity controls among defense suppliers:

- Provide **cybersecurity assistance** to defense suppliers, including the delivery of awareness workshops and training sessions; NIST 800-171 cybersecurity control assessment and implementation services to increase compliance with DFARS 252.205.7012; and developing shared-capacity among the region's MEP Centers to provide in-house training to manufacturers.
- Implement a **New England Regional Defense Supplier Network** project that develops a regional industry ecosystem response around Industry 4.0 technologies to help small and medium defense manufacturers support DoD and OEM requirements. The coordinator for the Network will facilitate the convening of existing regional assets, innovations, programs and technologies around Industry 4.0; develop Industry 4.0 educational programming for businesses and the workforce; and facilitate the development and implementation of best practices in Industry 4.0 technologies across the New England defense manufacturing supply chain.

In 2019, NERDIC awarded CONNSTEP, the Connecticut MEP Center, resources from the NERDIC OEA grant to provide cybersecurity awareness and controls implementation training to businesses across the region. CONNSTEP, working in partnership with Centers in the other five states, hosted several



awareness training sessions for businesses prior to COVID 19. NERDIC additionally tasked CONNSTEP with growing the in-house capacity of MEP centers to deliver cybersecurity services through the development of a classroom training model.

NERDIC released a request for proposals (RFP) on June 15, 2020 for a regional facilitator for NERDIC's New England Regional Defense Supplier Network. The primary goal of the network is to increase the number of small-and medium-sized manufacturers capable of meeting OEM requirements in supporting DoD contracts through facilitating the adoption of new a relevant technologies and standards. By helping defense suppliers build competitiveness around new technologies, this effort increases the "future readiness" of the supply chain. While the RFP leaves flexibility in a delivery-method, proposed models include leveraging laboratories at technical colleges to train workers and businesses in Industry 4.0 technologies. The RFP specifically requests the contractor convene existing players in the regional ecosystem; focus on industry readiness in Industry 4.0 technologies; link best practices across the ecosystem; create a regional industry portal and business intelligence dashboard; and create a long-term funding stream to support the Regional Defense Supplier Networks beyond the period of OEA support.

The regional intermediary would facilitate efforts to evaluate the current readiness to meet supply chain requirements; create methods to identify capability gaps in the supply chain; partner with MEPs to provide services to businesses aimed at improving their capacity in areas such as cybersecurity, additive manufacturing, artificial intelligence, robotics, and more; coordinate with regional educational providers to train the workforce in these skills; coordinate with PTACs to identify defense-contracts; and develop increased knowledge throughout the supply chain. If successfully implemented, the Regional Defense Supplier Network continually evolves to support new capabilities of DoD suppliers as needed. This provides the DoD with a long-term partnership focused on the continual support and improvement of the resiliency and readiness of the New England defense industrial base. Proposals to the RFP are due July 9, 2020.

Resiliency Impacts

Enhancing Force Multipliers to Support the Defense Industrial Base

Traditionally, the Southern New England states of Connecticut and Massachusetts hosted a strong and visible defense industrial base, while there is less state-wide and regional awareness of the defense industrial base in Rhode Island, Vermont, New Hampshire and Maine. Previous defense supply chain mapping studies developed by RADE identified that despite the low visibility of the defense supply chain in New England's smaller states, these manufacturers play a vital role in supporting the regional defense industrial base. Without the capacity among business service providers to support defense suppliers equitably throughout the region, the Southern New England defense industrial base suffers. This could result in further shocks to the DoD supply chain due to an inability to source or multi-source parts.



A multi-state Regional Defense Supplier Network, as proposed by NERDIC, provides the opportunity to connect regional innovation and workforce development assets with defense suppliers that previously lacked connections with the region's highly regarded educational institutions and supply chain assets. Through a request for proposals (RFP), NERDIC is seeking to create or enhance a regional intermediary invested in raising the capacity of the defense industrial base in all six states, not just southern New England. Through a region-wide survey, NERDIC revealed interest from OEMs in raising the competitiveness of the entire New England defense supply chain. This new entity would help bring OEMs together in supporting the competitive advantage of the region's entire defense industrial base. Through the RFP award, NERDIC also seeks to highlight the most valuable Industry 4.0 technologies for the region's defense suppliers and develop a regional collaboration to support adapting technologies among defense workers. A key advantage of the regional partnership is its ability to leverage state-programs and assets from across the region. Southern New England hosts world-renowned research institutions and the New England states each developed expanded capacities including export, additive manufacturing, entrepreneurship, and cybersecurity support programming through individual Industry Resilience grants.

At the beginning of this process, the NERDIC partners saw creating a Trusted Supplier Network as an opportunity to vet defense suppliers for OEMs. However, as the project matured, the team realized that this is a costly and burdensome process that simply maintains existing siloed supply chains, rather than raising the capacity of regional suppliers to compete for business in multiple defense and commercial supply chains. Additionally, a contractor vetting service did not attract the interest of prime defense contractors in companies based outside southern New England or apart from those already in the existing defense supplier network. Investing in the capacity of the entire New England defense industrial base and workforce ensures the continued ability of regional suppliers to support critical DoD missions including the F-35 and Virginia Class Submarine. Helping suppliers introduce improved processes through the adoption of Industry 4.0 technologies has additional potential to benefit DoD lethality through the creation of new technologies, and readiness through production improvements to support a wider range of DoD missions.

Cybersecurity Preparedness

NERDIC awarded the Connecticut MEP Center, CONNSTEP, support from the IR grant to deliver cybersecurity assistance services and develop the capacity of cybersecurity training providers across New England. The New England defense industrial base has key deficiencies both in its understanding of the cybersecurity controls associated with DFARS 252.204.7012 and its ability to source cybersecurity solutions or guidance to increase compliance with DFARS. To achieve these ends, CONNSTEP both directly provides cybersecurity assessment and implementation services to businesses and is developing an in-house cybersecurity teaching capacity that MEP Centers across the New England region can adapt. These activities both grow the security of the New England defense industrial base, and the capacity of regional service providers to deliver cybersecurity services to defense suppliers.



CONNSTEP initially planned to deliver cybersecurity assessment and implementation services to 60 companies. By utilizing in-house training sessions, the organization estimated it could deliver NIST 800-171 cybersecurity controls implementation services to an additional 20 businesses, totaling a planned 80 businesses receiving cybersecurity assistance. Under this project, each of the six New England MEP centers (working as partners with CONNSTEP), will provide implementation services to five businesses (30 total), with an additional 20 projects provided on a first-come, first-serve basis across the region. In addition, CONNSTEP plans to deliver services to another 30 businesses through 3 in-house training sessions (10 businesses per session). The in-house training method to deliver cybersecurity services represents a new capacity for New England MEP centers.

CONNSTEP also developed criteria to guide cybersecurity services delivery for small-to-medium sized manufacturers in the defense supply chain. CONNSTEP requires all companies to provide matching funds when receiving cybersecurity services, after experiencing through the RADE grant that companies with a financial investment in changing their cybersecurity practices implemented controls at a higher rate. The primary goal of these sessions is to help companies implement NIST 800-171 "0" level policies. These policies help defense suppliers begin the process of implementing higher-level NIST 800-171 controls that require knowledge of a company's systems. Trainings are divided into four sequential sessions: "Executives and Cybersecurity"; "Hands-On: Creating a Cyber Risk Management Plan"; "Policies and Procedures: HR, Operations, and IT focus"; and a final session aimed at implementing specific "Configurations for IT Professionals". Each training addresses a different set of controls and the staffing-team tasked with implementing those controls. Prior to COVID-19, CONNSTEP aimed to deliver all trainings by November 2020.

CONNSTEP additionally partnered with the Michigan MEP, the recipient of a \$1 million DoD grant, to deliver cybersecurity awareness services to defense suppliers. CONNSTEP adapted the Providence Cybersecurity Awareness Workshop hosted by the Michigan MEP into a 2-to-4-hour awareness session. Prior to COVID-19, CONNSTEP aimed to roll out this model in Manchester, New Hampshire.

The development of an in-house training model enables New England MEP Centers to support a larger share of the defense industrial base. CONNSTEP identified the in-house training model after finding that by delivering cybersecurity assessment and implementation sessions in a classroom, with homework in between sessions, it could provide services to a greater number of businesses. CONNSTEP is currently in the product development phase to identify the best NIST 800-171 in-house training service delivery model for different markets across New England and defense suppliers. With large numbers of small- and medium-sized defense suppliers struggling to adopt NIST 800-171 controls, increasing the number of service providers to address this critical need is critical for maintaining DoD information security.

Although the primary goal of CONNSTEP's program is to grow the security of the New England defense industrial base through increased adoption of NIST 800-171 cybersecurity controls, CONNSTEP found inadequate regional capacity in delivering cybersecurity assessment and implementation services as a major concern. The CMMC Advisory Board, overseers of the review of NIST 800-171 compliance,



estimated it needs roughly 10,000 auditors to service the defense industrial base. If MEP centers serviced 10% of all assessments, the MEP network would require 1,000 auditors, a capacity that currently does not exist in the MEP network nor among New England MEPs.

Delivering cybersecurity services also presents an economic opportunity for MEP Centers. CONNSTEP estimates an individual MEP Center could earn \$75,000 in revenue from the delivery of cyber-services. Thus, part of CONNSTEP's mission in support of defense suppliers is to also help MEP centers identify the business opportunity in delivering cybersecurity services and develop the adequate capacity to assist businesses' adoption of enhanced cybersecurity controls.

Other Community Benefits

Alignment with State Programs

While NERDIC contracted CONNSTEP with coordinating the delivery of cybersecurity services across the region, each New England MEP delivers cybersecurity services through their own program to meet their respective state's needs. Connecticut and Rhode Island deliver services through in-house staff, Massachusetts uses a 3rd party-provider, and the three Northern New England states are still seeking the best model to deliver cybersecurity services, a key task for these MEP Centers during the period of OEA support under NERDIC. Work to explore best practices in delivering cybersecurity services supported by this grant will inform the design and improvements to these models in each state.

CONNSTEP is responsible for sharing best practices in delivering cybersecurity services to businesses across the MEPs and helping MEPs reach a similar capacity-level to delivery cybersecurity awareness, assessment and implementation services. This especially benefits the MEP centers that otherwise lacked experience in providing cybersecurity services to businesses and were not aware of the market opportunities to deliver cybersecurity services in their state. By engaging other New England states' MEP centers in sharing CONNSTEP's experience, developing best practice, and growing provider-capacity, MEP centers are better positioned to deliver cybersecurity services to their state's businesses without external support.

Lessons Learned

Most Important Lessons Learned

A key lesson learned for CONNSTEP from its experience under the previous RADE grant managed through Connecticut is that businesses need to have a financial stake in adopting cybersecurity controls and need more guidance to successfully implement the NIST 800-171 controls. Connecticut provided a fully subsidized one-day gap analysis to 42 businesses under RADE, of whom only 25% began to implement improved cybersecurity controls afterwards. In this round, businesses are being asked to help shoulder the costs, and they are taking the responsibility seriously.

NERDIC also faced several challenges to collaboration early in the grant. Trust issues pervaded the partnership early as the defense industrial base in Connecticut and Massachusetts was highly visible and



the other states worried about the potential for their needs to dominate the collaborative. In the same vein, the nature of the collaborative evolved. It started with the goal of developing an inventory of trusted suppliers, but it transformed to a goal of increasing the Industry 4.0 readiness of the New England defense industrial base ecosystem. This moved the focus away from well-known defense supply chains in Southern New England to include lower-tier suppliers located across the region. This focus includes mapping Industry 4.0 relevant assets, innovations, programs and collaborative approaches and the development of a long-term partnership to address defense industrial base readiness.

Through the planned selection of a regional coordinator for the Regional Defense Supplier Network, NERDIC seeks to support the growth of an organization invested in developing an Industry 4.0 consortium across New England. NERDIC hopes the coordinator can help manage the Industry 4.0 assets by coordinating PTACs, States, MEPs, and educational institutions. The Coordinator will help develop the capacity among MEP and other service organizations to provide capability to at least one Industry 4.0 technology to start, building the foundation for collaborations around the adaptation of other manufacturing-centric technologies. These technologies address key capabilities of defense suppliers that increase their competitiveness in obtaining new contracts from the DoD and as a supplier of OEMs. Future iQ helps build the foundation to sustain collaboration that will create systemic change across New England.