



## Project Profile: Mississippi (University of Southern Mississippi)

### Impact Statement

The OEA Industry Resilience (IR) grant generated impacts in several areas: built awareness of and support for the defense industrial base in Mississippi; strengthened the ecosystem of support organizations and activities for defense suppliers; enhanced educational opportunities for talent interested in working in the defense sector and strengthened the pipeline of skilled workers; and promoted innovation, diversification, and expanded the business development ecosystem to increase readiness and resiliency.

### Key Project Takeaways

Through its Industry Resilience grant, the Mississippi IR team has promoted innovation, diversification, and cooperation in the state's defense community by forming the Mississippi Defense Initiative (MDI), an expansive group of partnering organizations led by The University of Southern Mississippi. The IR grant increased the state of Mississippi's understanding of the prominent role the defense industry plays in the state's economy, and enabled stakeholders and partners to work in a more coordinated and collaborative fashion using a shared strategy. The state considers the IR grant to be critical in its efforts to build a network of companies and communities interested in diversifying into new markets and creating defense industrial base resilience.

Grant activities have supported technology acceleration and innovation spinouts into commercial applications at universities, defense labs, and companies. A defense focus has been incorporated into the state's existing business assistance networks and academic curriculums, including USM's Master of Science of Economic Development program and a unique U.S. Navy Unmanned Certification program available to civilian and military students.

### Project Description

#### Rationale

Mississippi suffers from chronic poverty and has seen limited opportunities for economic growth in recent years. Complicating matters, Mississippi is largely a rural state without great concentration of wealth needed to make new business ideas a reality. Employment uncertainty has led many residents to be "entrepreneurs by necessity" to earn a living. Mississippi does have a large defense industry presence, contributing almost 5 percent to the state's economy, with two DoD research laboratories – the U.S. Army Engineer Research and Development Center (ERDC) and U.S. Naval Research Laboratory (NRL) Stennis. Given these defense industry assets and the state's economic culture, USM proposed to OEA to pursue opportunities to build collaborative partnerships between defense contractors, educational institutions, and government; provide services and resources; and more effectively disseminate defense and security technologies through the private marketplace.



## Program Activities

During Phase I of the grant, USM focused IR efforts on incorporating defense diversification assistance into the business development ecosystem; creating defense industry networks in Mississippi; and incorporating defense diversification in academic curriculums. These efforts centered around three broad economic sectors: National Security, Aerospace and the Blue Economy (a wide range of economic activity based on oceans, seas, harbors, ports and coastal zones).

Phase II continues the efforts of development and implementation including building the ecosystem and defense industry networks; incorporating diversification into academic curriculum; developing the strategic plan; and building cybersecurity assessment services. Working with a Task Force established by the Governor's Office, USM created a strategic plan for Mississippi's Defense and Homeland Security Economy to synchronize Mississippi's existing defense-related economic assets and programs in support of a statewide pro-business defense plan for the Governor. In addition, Mississippi State University's Center for Cyber Innovation (CCI) developed a DFARS Cybersecurity assistance tool for Mississippi companies. Phase II further supports the growth of MDI to maximize state assets and dual-use technologies (civilian and military applications) to strengthen and diversify companies/communities and build capacity for defense technologies.

## Resiliency Impacts

### Increasing Awareness of the Defense Industrial Base

MDI has made great strides in promoting awareness of the importance of defense contractors and the defense economy in Mississippi, issuing technical reports and creating a [website](#) to serve as a central repository for the work of the team. The website includes supply chain and asset mapping, defense contractor lists, and Mission Support. The Mission Support feature provides defense contractors with a list of service providers and contact information for six major areas: Finance; Human Capital/Workforce; Research & Development; Entrepreneurs & Business Startups; Markets; and Professional Networks/Assistance Providers. The grantee continues to add to and update the database of companies that emerged from the Mississippi Defense Assets Report and analysis. Over 150 defense-related companies have been identified, from defense contractors to Tier 1 or 2 suppliers; all have dual-use technologies or services; and include start-ups, scale-ups, and established companies. In addition to the website, MDI built two social media accounts: [Facebook](#) and LinkedIn. MDI continues to make business-to-business connections to encourage companies to diversify into new market opportunities.

MDI proposed to Mississippi Governor Phil Bryant to establish a Task Force to take a holistic look at Mississippi's defense economy. The Governor's Mississippi Defense Initiative Task Force was created in May 2018 to grow the defense industry's presence in Mississippi, and to ensure Mississippi is fulfilling its role in leveraging military assets to alignment with the National Defense Strategy (See Governor's Executive Order 1401). The Task Force, consisting of over 70 key defense-related stakeholders including all the Mississippi congressional offices, developed the Strategic Plan 2019-2023 to inform the state's decision makers and leaders how to support and grow the defense industry within Mississippi. Members of the Task Force include small and large businesses, research labs, universities, military installation



commanders, the Adjunct General of Mississippi, and non-profit entities. It also defines a continuous process of convening stakeholders to review, refine and improve the state's ability to compete in the national defense economy. Each of the nine strategic goals is a key driver that requires unified actionable objectives and tasks through programs, partnerships or initiatives to accomplish the state's full potential. Collectively, the goals and objectives provide a holistic plan to improve Mississippi's long-term defense diversification strategy. A desired outcome for the Governor's Mississippi Defense Initiative Task Force is the proposed establishment of a state of Mississippi office to act as a statewide advocate for defense and national security matters.

The Governor has embraced the plan and its implementation has driven support for armed forces and the defense industry in Mississippi and enhanced awareness of proposed and existing efforts. A Working Council, comprised of MDI, Mississippi Development Authority (MDA) leaders and selected senior members of the Defense Initiative Task Force, is engaged to implement the plan and address topics of common interest. MDA is providing \$250,000 in state funds over 18-months to support implementation activities not funded by OEA, such as conducting an analysis of spouse licensure opportunities and barriers; formalizing the relationship of MDI to Commander's Roundtable and the MS Military Communities Council; and addressing workforce needs. MDI has been coordinating with the incoming Governor, Tate Reeves, to continue to focus on the defense economy.

MDI, through the Mississippi Gulf Coast Initiatives, is helping to build the ecosystem along the Gulf Coast to expand defense related economic activity, connecting businesses-to-businesses and business-to-government networking to encourage public-private partnerships and innovation. This is in partnership with [SeaAhead](#) and Mississippi Enterprise for Technology (MSET). MDI is providing support to public-private partnerships focused on Blue Economy to develop dual purpose technologies and innovations. This effort includes hiring a consultant to facilitate discussions and planning as a sub-component of an operational plan being formalized by USM, U.S. Navy, National Oceanic and Atmospheric Administration (NOAA), and Port of Gulfport. The goal is to make the Gulf Coast a world-class center for dual-use unmanned maritime systems (UMS) and ocean technology testing and development.

MDI has partnered with NAVAIR, the Defense Logistics Agency (DLA), and the Strategic Port of Gulfport to increase the efficiency and lower the costs for shipping military sales to foreign allies. MDI has hosted meetings, provided research, made connections, and marketed the opportunities for moving more defense products through the Gulf Coast. Numerous foreign defense sales are now going through Mississippi including the V-22 to Japan. This effort was formalized through objective 3d of the state plan which is to use the strategic Port of Gulfport as an entry port for foreign military sales.

#### [Commercial Diversification of Defense Companies to Sustain the Industrial Base](#)

Helping DoD sustain businesses and retain workers promotes both state resilience and strength across the nation's defense industrial base. MDI supported resilience by using OEA funds to establish a Gap Fund to further the commercial potential of early-stage dual-use technologies and innovations. Technologies and innovations were submitted to the USM Office of Technology Development for review and funding in the form of "innovation vouchers" that could be used with USM or USM-approved



vendors. This requirement limited options for participating companies (see “Lessons Learned”); nevertheless, more than a dozen startup businesses took advantage of the Gap Fund.

MDI is referring defense contractors to many existing business assistance services in the state. Mississippi State University’s Center for Advanced Vehicular Systems (CAVS) is one important contributor to these direct services. CAVS meets the needs of Mississippi’s manufacturers by providing technical expertise in the areas of product and process improvement, education, and advanced engineering tools. Another example is their sponsorship of the Marine Technology Society’s Oceans in Action 2019 conference in Gulfport, MS. The Society provides members of academia, government and industry a forum to exchange information and ideas and to discuss the latest advancements and applications of marine technology. MDI showcased defense contractors and Gap Fund participants at booths during the conference to help with matchmaking.

MDI partnered with MDA to provide business and technical assistance through the Procurement Technical Assistance Center program and International Trade Bureau, strengthening the existing economic ecosystem. To encourage technology transfer, innovation, commercialization, and entrepreneurship, MDI provided workshops to connect business to federal programs such as Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

MDI continues to leverage its relationship with Camp Shelby to bring the USM National Center for Spectator Sport Safety and Security (NCS4) into the Department of Homeland Security (DHS) program as a partner. NCS4 and DHS work closely in many aspects and both are concerned about the use of UAVs during mass crowd events. The partnership between NCS4 and DHS presents an opportunity for Mississippi aerospace/UAV/sensor companies to expand beyond defense into national security work. Hyperion, At The Table Productions, Global Training Institute, and Health Integrated Rescue Operations Telemedicine Systems (HiRO) are among the technology-based defense contractors introduced to NCS4’s team. Additionally, MDI continues to assist Camp Shelby in marketing available land and facilities to government entities and private businesses associated with the DHS UAV program. Close working relationships between Camp Shelby and the DHS UAS program led to a Capabilities Briefing by one of the MDI companies with expertise in civilian disaster relief, HiRO, to Camp Shelby. HiRO provides rapid access via life-saving medical supplies and specialized expertise to critically injured personnel in remote, dangerous or hostile environments and allows a remote physician to triage a disaster in real time. HiRO requested to use Camp Shelby assets (air space and facilities) and asked for assistance in working with DHS and MEMA. Camp Shelby agreed to host a drone demonstration and operational evaluation for the innovative product.

Examples of company assistance provided by MDI to companies within the network are:

- Hyperion Technology Group has two technologies developed with support from Ole Miss tech transfer activities: a device that helps persons who stutter to communicate more effectively, and a collision monitoring mouth guard targeted to the youth sports market. MDI introduced them to multiple entities on the USM campus and they are currently engaged in discussions



regarding testing and research opportunities, seeking assistance in improving the materials or design of the mouth guard, and rapid prototyping.

- 911 Security is an established drone detection / mitigation company that is expanding operations into Mississippi. They are currently moving into phase 2 of an Air Force SBIR and reached out to MDI for assistance. MDI linked 911 Security with all military air bases and airport locations in the southern half of the state (and Stennis NASA Space Center). They are currently talking to Keesler AFB, Stennis NASA Space Center and Gulfport-Biloxi International Airport/Combat Readiness Training Center about partnering/assisting with the SBIR. Several more locations have expressed interest in the drone detection system and SBIR.
- AQST is a space technology company that is opening a manufacturing operation in Mississippi. MDI met AQST in spring 2019 and coordinated meetings with Stennis NASA Space Center, MDA and the Hancock County Port and Harbor Commission to discuss how Mississippi could support a space tech company interested in manufacturing and space launch/recovery operations. In September, MDI facilitated meetings where AQST and NASA Stennis agreed to locate a manufacturing operation in an under-utilized building on NASA Stennis. AQST's plans are to locate their U.S. and International Headquarters to Mississippi to manufacture rocket engines and satellites from the Stennis location (within the next 6 months) and to expand the manufacturing operations to space rovers and reusable space vehicles (manned and un-manned). The Hancock County Port and Harbor Commission owns Stennis International Airport and will support the space vehicle recovery operations (once it is licensed as a space port) for AQST. AQST stated that support from MDI has saved an estimated two years in moving operations and millions of dollars by by partnering with NASA, thereby not having to build their own testing and launch facilities
- Taylor Defense Products is a defense-focused spinout of an established Mississippi business (Taylor Group of Companies) that provides material handling equipment and power generation equipment to defense customers. They have received a potential 10-year, \$84M contract to help the U.S. Navy and Marine Corps extend the operational life of military all-terrain cranes. MDI assisted Taylor Defense in connecting with potential defense customers and ensuring that they get notified of the many defense opportunities in Mississippi. An example is Taylor Defense's participation in Oceans In Action 2019 where MDI facilitated business to business (B2B) meetings with the ship builders along the Mississippi Gulf Coast (Ingalls and V.T. Halter) to discuss Taylor Defense making shipboard material handling equipment.
- Safran Aerosystems (formerly Zodiac Aerospace) has been introduced to several opportunities by MDI. MDI connected Safran with the Gulf Coast Aerospace Alliance and Airbus (Mobile AL location). This resulted in ongoing talks of a multi-million-dollar contract for parachutes and safety systems. MDI also connected Safran with AQST to produce the retardation systems for their reusable space vehicles. Additionally, MDI connected Safran with a defense company out of Huntsville looking for a manufacturer for a revolutionary single-use cargo parachute that they developed for the military.



MDI has further promoted commercial diversification through various reports, webinars and analyses produced. For example, *Defense Technologies for the Safety and Security of Commercial Sports and Entertainment Facilities* detailed that safety and security for commercial sports and entertainment facilities is a large and growing global industry. Technology developed to meet the needs of defense often can be directly applied to the needs of sport and event security. This report highlighted some of the key commercial facility sector security technologies and defense technologies that meet these needs. NCS4 collaborated on this report and has since received a DoD contract to identify gaps in security, develop innovative security and safety technologies, and commercialize the technologies for use at venues across the U.S. Since security is often perceived as an extra cost, the industry tends to be price sensitive. The industry has its own trade shows, trade journals, and certifications that defense contractors need to adopt. The event safety and security industry may present significant diversification opportunities for defense technology, but first the specialized nature of the industry must be understood.

MDI researchers have presented their research and published numerous reports to better understand the defense economy. Some of these reports include: *Military Unmanned Aerial Vehicles and Diversification Opportunities* with 1,024 reads on ResearchGate, *Defense Labs Best Practices in Technology Transfer and Community Engagement* with 308 reads on ResearchGate, and *Mississippi Cybersecurity Labor Market Analysis* with 50 reads on ResearchGate. OEA-supported research has been presented at the American Society of Public Administration (ASPA) and the National Academy of Sciences Transportation Research Board (TRB). Through dissemination of research and exposing students to the defense economy, OEA-sponsored research has helped develop the body of knowledge needed to build resilience and strong community connections for the DoD.

#### [Cost Savings to DoD through Business Diversification or New Products/Customers](#)

MDI has developed a partnership with International Programs Office of the Naval Air Systems Command (NAVAIR) and the Defense Logistics Agency (DLA) targeted at reducing transportation and logistics costs for defense. NAVAIR and DLA instituted a program beginning in Gulfport, MS where defense contractors can use DLA warehousing and shipping services. The team coordinated and scheduled a trip around the state with NAVAIR and DLA representatives to showcase the new DLA pilot program. According to NAVAIR estimates, the pilot program saved the defense contractors between 70% and 90% of the cost for logistical services. MDI also assisted NAVAIR and DLA in promoting the use of the Gulfport DLA warehouse for defense contractors involved in Foreign Military Sales (FMS). The Gulfport DLA warehouse located on the Seabee Base is now referred to as the NAVAIR International Logistics Support Center (ILSC). This MDI partnership has resulted in realized and future potential cost savings for DoD. The savings to DoD came with the increased usage of DLA assets, leading to reduced logistical costs for DoD customer entities. Potential future savings are associated with having a centralized storage and shipping point located in a low cost of business area (Gulf Coast region vs East or West coast) with easy access to air, rail, road and water for distribution. The MDI team also coordinated for Camp Shelby to act as a storage point for FMS related equipment (arms and explosives) that could not be stored in the ILSC.



MDI also assisted NAVAIR in finding a home for its FMS training program for the V-22 Osprey. NAVAIR, in partnership with Boeing and Tyonek, have begun outfitting FMS V-22s for foreign customers at Stennis International Airport in Hancock County, MS. This outsourcing helps NAVAIR overcome a training and outfitting capacity shortfall. NAVAIR will open another aviation FMS program at Stennis International in early 2020. MDI is assisting NAVAIR in locating other sites in MS to outsource FMS programs. This will reduce the stress on US Navy and USMC stateside training locations and bring much needed economic activity into the state.

Another example of efficiencies that lead to cost savings for defense is an effort that allows military installations to share information, common use facilities, and joint training resources. MDI facilitates local ad hoc discussions for installation commanders from Camp Shelby, Keesler Air Force Base, Combat Readiness Training Center-Gulfport, the 1108th Theater Aviation Sustainment Maintenance Group, Naval Construction Battalion Center-Gulfport, military entities at Stennis Space Center, and the U.S. Army Corps of Engineers' Vicksburg District. Additionally, MDI has invited local leaders and economic developers to be a part of these discussions to ensure community support and engage non-military assets.

## Readiness Impacts

### Training and People Support

OEA grant funds supported the creation of a new course within the Master in Economic Development program at The University of Southern Mississippi. The course ED 711: Economic Development for Defense Communities, is a fully on-line 10-week summer course that can be taken for academic credit or for professional development. The course has been offered three times with more than 45 graduate level students successfully completing the course. The new course uses data analytics (e.g., EMSI Labor Market Analytics) to understand the defense industry and how to diversify local economies. Course topics include military in the national economy; social, economic and community impacts of the defense industry; defense contractors and the DoD procurement process; shifts in defense procurement; tools for measuring economic impact and supply chain mapping; and case studies of successful diversification.

Hacking for Defense (H4D) is another new course that provides students with hands-on experience working with the Defense, Homeland Security, and Intelligence Community on real-world problems. The course has been offered three times and student teams have worked on nine different current military problem sets.

Technical reports and data analysis generated by MDI targeted improved readiness impacts for the state. For example, researchers at the Trent Lott National Center for Economic Development and Entrepreneurship prepared a report on unmanned maritime systems academic programs and unmanned aerial systems programs in Mississippi. The report identified existing academic programs offered to Mississippi students to determine opportunities and gaps in academic programs for community college transfers to transition into USM academic programs. In response, USM partnered with the U.S. Navy to create the unique Unmanned Maritime Certification program available to both civilian and military



students. It includes three courses: a semester-based civilian course and an intermediate and advanced course for the U.S. Navy.

The grant has funded graduate research assistants from the MSED program to conduct research and provide staff support who have gone on to use their defense experience in their economic development careers. The experience these students gained on the OEA project will have lasting benefits for the defense communities where they go to work.

The Center for Manufacturing Excellence at University of Mississippi (Ole Miss), through MS Forge, is developing curricula to enhance the versatility and flexibility of current and potential defense industry workers. MS Forge is a holistic approach to addressing workforce needs specific to the defense contractor manufacturing sector in the state. Defense contractors will have the opportunity to identify gaps with employee education and training needs which will drive the development of curriculum specifically designed to benefit the defense industry workforce and support the war fighter.

### Cybersecurity Preparedness

USM, through CAVS-Extension and the Center for Cyber Innovation, developed a 5-module course to help companies assess cyber risks and satisfy the DFARS Cybersecurity Requirement. The course complements the Department of Homeland Security's Cyber Security Evaluation Tool (CSET). Mississippi State University (MSU) used the MEP network in the state to provide feedback during the process to build the tool. MSU CCI designed the NIST Controls Awareness Training (NCAT) to be used in conjunction with the Cybersecurity Evaluation Tool. CSET provides the capability to organize and perform a self-assessment. However, there was a need for those with non-cybersecurity backgrounds to understand some basic concepts before the tool could be used properly. NCAT was created to meet this need by providing basic background information to help users understand DFARS clause 252.204-7012. With this knowledge users can make informed and cost-effective decisions such as determining what tasks can be satisfied with internal staff and which will require external service providers to be DFARS 252.204-7012 compliant.

NCAT included five learning modules plus links to key resources that provide a deeper understanding of DFARS clause 252.204-7012 and other NIST support documents to help with the compliance process.

During the development process, the MSU CAVS team piloted the tool with key information technology and cybersecurity leaders of five companies in Mississippi: Vertex Aerospace, Raspet Flight Research Laboratory, Taylor Defense, Kopis Mobile, and Raytheon Aerospace. The pilot partners provided diverse perspectives on how NCAT could be improved. Positive feedback ranged from suggestions on content layout and flow, to granular details where additional background information was added to better explain controls.



Mississippi Manufacturing Extension Partnership (MEP) staff were trained to use NCAT to support manufacturing companies within the MEP network. Participating MEP centers are CAVS Extension, Itawamba Community College, Mississippi Polymer Institute, and community college representatives. Feedback from the MEP Center leaders was that cybersecurity assessments are cost-prohibitive, although the situation could change in the future, with stronger reinforcement of the regulations and additional DOD auditing resources. The current demand from DOD contractors and suppliers in Mississippi is not significant, and sufficient federal funding is not available to provide assistance at a reduced cost to potential clients. Referral to third-party companies that do provide this service would be the initial approach to client requests for cybersecurity assessment support, based on current funding. Cybersecurity awareness workshops are being held for companies in the MEP network in Mississippi, at The University of Southern Mississippi (central MS), Itawamba Community College (Northeast MS), and Stennis Space Center (MS Gulf Coast).

### Other Community Benefits

MDI supports the Mississippi Gulf Coast Initiatives with the Naval Air Systems Command, Defense Logistics Agency, Port of Gulfport and Mississippi Enterprise for Technology to expand defense related economic activity along the Mississippi Gulf Coast, as well as the development of public-private partnerships related to the Blue Economy. These initiatives promote information exchange to encourage diversification through business-to-business and business-to-government networking and increase innovation through partnerships. Additionally, USM created a partnership with the University of Mississippi's Center for Manufacturing Excellence to provide technical and business assistance to Mississippi's aerospace industry. Also, MDI is partnering with the City of Gulfport and other local entities to create an operational plan in support of a Blue Economy Innovation District in downtown Gulfport that will house concentrations of innovative firms and entrepreneurial activity.

### Lessons Learned

#### Greatest Challenge

Industry Resilience (IR) needs to be part of business, retention and expansion (BRE) strategies for state, regional and local efforts. However, BRE programs are often non-existent or deficient, in part because attraction of new business receives more resources than programs supporting existing business. It is difficult to incorporate industry resilience for the defense sector until economic development routinely addresses BRE needs. Defense industry and military installation concerns should be integrated into overall economic development efforts consistent with the significant contribution the sector makes to the local economy.

Implementing the DFARS cybersecurity requirements is difficult for defense contractors/suppliers and is, therefore, a challenge for service providers such as MDI to provide technical support. Developing a cybersecurity tool, assessing cyber risks in companies, identifying needed cyber services, addressing those risks, and identifying partner intermediaries with expertise in cybersecurity are all steps in the process that are complex. While the goals set forth in this grant were accomplished for developing an assessment tool, deploying the tool, and providing technical assistance, this activity has encountered



difficulties. Some of the most likely reasons for the underperformance include: challenges identifying an effective and cost-effective learning management system; employers' concerns about security and compatibility; inadequate demand among small defense suppliers to justify setting up a service delivery network; no easy access to enough technical experts who can deliver services reliably; and the lack of a business model for deploying cyber services that fits the Mississippi context.

The Gap Fund process used to develop early stage technologies was met with some challenges related to how innovation vouchers could be used. Because the vouchers awarded to defense suppliers could only be used with USM or USM-approved vendors, this limited the program's flexibility and the ability of the companies to spend the vouchers. More than half (\$134,000 of \$224,000) of the vouchers awarded remained unspent at the end of the grant period. Nevertheless, the Gap Fund process itself led to new technologies potentially benefitting DoD and the warfighter.

#### Sustainability

MDI has created a statewide defense ecosystem that is now recognized as a positive economic force for the state largely due to the work accomplished under the OEA grant. MDI anticipates that support will continue because of greater awareness of the importance of defense and homeland security sectors in Mississippi. The state defense strategic plan was designed to occur over five years and to provide continuity for state leadership. Additional financial support is being provided by the state in the amount of \$250,000 for implementation of the plan.