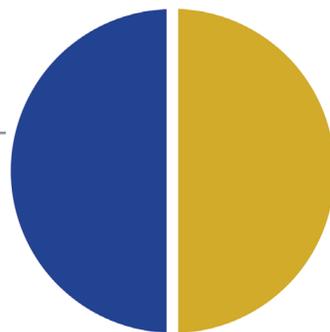




North Carolina Defense
Technology Transition Office
(DEFTECH)

YEAR IN REVIEW

2021

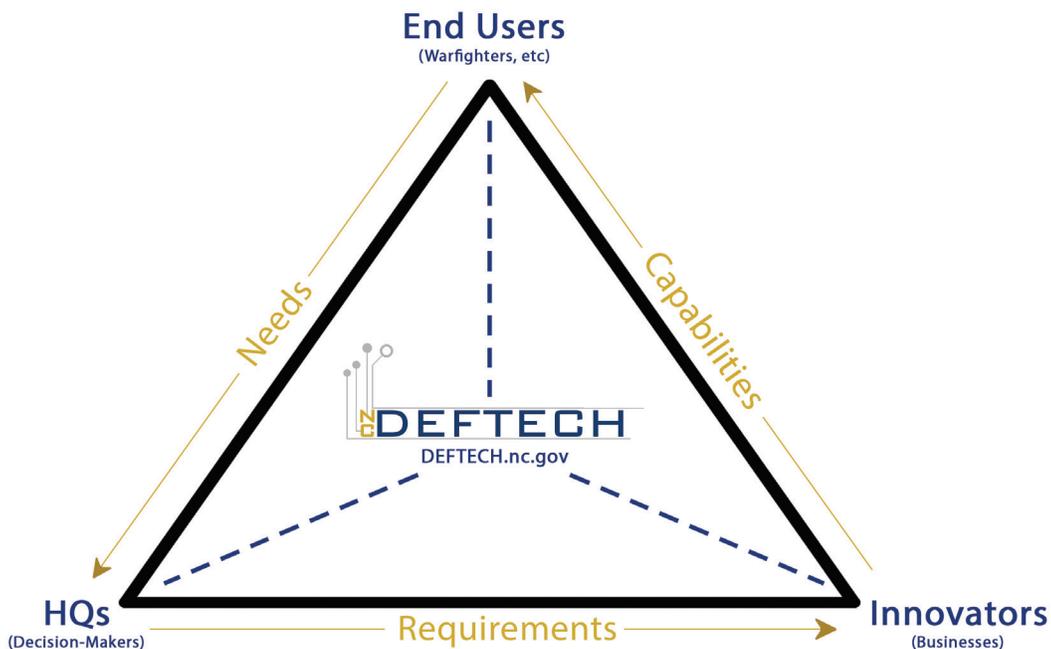


DEFTECH.nc.gov

Table of Contents

Message from the Director.....	3
Executive Summary.....	4-5
Section 1: Coffee Calls.....	6-8
Section 2: Mobilize Community.....	9
Section 3: Symposia and Seminars.....	10-11
Section 4: TIDE and FATQ.....	12-13
Section 5: Podcasts.....	14-15
Section 6: Success Stories.....	16-20
Section 7: North Carolina Military Business Center.....	21
Section 8: Partnerships.....	22-23
Section 9: Summary.....	24

The DEFTECH Model



Message from the Director



This has been a solid year for the North Carolina Innovation Ecosystem, whose members have landed more than \$10 million in defense contracts resulting from developing cutting-edge solutions for our nation's security. The Defense Technology Transition Office (DEFTECH) is privileged to have played a role in this success. We aim to educate, inform, increase collaboration, and connect research, development, and game-changing technologies to meet the needs of our warfighters, law enforcement and first responders.

DEFTECH is fortunate to be part of a collaboration that fosters cooperation among members of this ecosystem. First, thank you to our innovators in business, academia, public-private partnerships, and investors who develop and fund the technologies that address critical needs for our nation's defense. DEFTECH also wants to acknowledge our many North Carolina partners. These organizations provide mentorship, support, collaboration and extend our outreach to innovators throughout the state and the country. DEFTECH is grateful for the active participation in our events by Defense and Homeland Security innovation and outreach offices. Their leadership, inclusive outreach initiatives and willingness to partner with DEFTECH allows us to provide another conduit between their teams and innovators in our network.

I also want to recognize and thank my DEFTECH colleagues: Bob Burton (retired Army Special Operations Command Sergeant Major), Rob Robinson (retired Army 82nd Airborne Division and Ranger Lieutenant Colonel), Mickey Finn (USMC, Vietnam), and Kim Kotlar (retired Naval Officer and NSA Executive). Your DEFTECH team brings more than 150 years of military and defense industry experience, know-how, connections, and passion for helping get innovative solutions into the hands of our nation's defenders.

We look forward to another great year building and collaborating to deliver superior capabilities to enable our troops. Because of you, your innovative technologies, your willingness to partner, and your tireless support for our Warfighters, law enforcement, and first responders, North Carolina is the Frontline of the Future!

To learn more about us visit <https://deftech.nc.gov/> to get the latest news, current opportunities, and technology updates.

Denny Lewis
Colonel, USA Retired
Director, North Carolina Defense Technology Transition Office

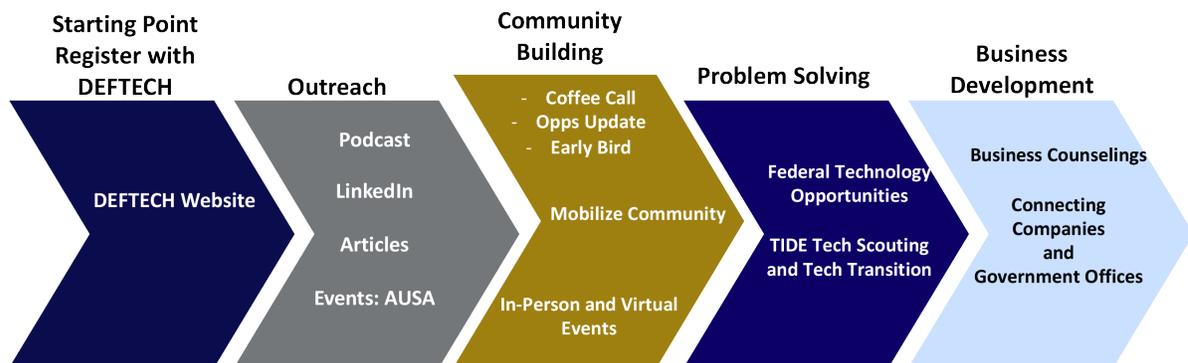
Executive Summary

The North Carolina Defense Technology Transition Office (DEFTECH) is a state-funded entity and a component of the North Carolina Military Business Center (NCMBC) headquartered and supported at Fayetteville Technical Community College. Through education, outreach, networking, and liaison, DEFTECH enables the North Carolina innovation ecosystem elements to address complex national security problems and increases economic opportunities for businesses in the state. DEFTECH serves the Department of Defense (DoD), Department of Homeland Security, and other federal agencies in the innovation ecosystem by scouting the state for breakthrough technologies; coaching industry to help them identify defense applications for commercial technology; communicating federal technology needs that may position businesses to meet requirements; representing North Carolina to federal customers; conducting emerging technology forums and serving as the North Carolina liaison to federal innovation offices.

As DEFTECH adapted to the conditions of our changing environment, we used the opportunity to deepen our relationships and expand our virtual offerings to serve a wider community. In place of in-person gatherings, we hosted virtual events, including 48 coffee calls with 1,864 attendees (total) and 8 online or in-person symposiums that showcased DoD officials as well as members of our business and academic communities. Because of these initiatives, DEFTECH membership grew about 30% to 320 innovation companies and 31 government personnel representing a dozen DoD and federal agencies.

DoD is adopting more dual-use commercial technologies and best practices from the private sector. This year DEFTECH aligned with techniques used by venture capital firms and incubators to create new opportunities for our companies to briefly “pitch” their products, services, and ideas to potential DoD customers during online Federal Advanced Technology Quarterly (FATQ) reviews as part of our new Technology Innovation Demonstration and Experimentation (TIDE) Program. These companies receive immediate feedback and often additional contacts for their business development.

DEFTECH Value Proposition



In another new concept to promote our innovative organizations, DEFTECH initiated a Podcast series called “Defense Technology Talks” with experts in business and technology from our region. To date, 10 Podcasts are available to a global audience, garnering more than 3,000 impressions. The audience is expected to grow as more sessions are posted.

DEFTECH established a Mobilize Community networking site that allows our companies to promote their offerings, search for partnerships, and share best practices. In less than a year, Mobilize has grown to 327 participants. In addition to sharing federal technology opportunities, events, and announcements via our traditional channels, these offerings were also listed in Mobilize.

The DEFTECH Team issued 393 federal technology opportunities, and announcements and held more than 200 one-on-one discussions with innovators to help them better position themselves for winning new business. After all, increasing defense business in North Carolina is one of our bottom lines. Based on voluntary reporting, companies in the DEFTECH network have won contracts with a value exceeding \$10 million. DEFTECH’s outreach also includes companies and individuals from outside the state to facilitate business teaming and partnerships to further North Carolina’s defense economy.

We innovate better when we innovate together, and entities throughout North Carolina are known for mutual support. This year DEFTECH collaborated with many of our existing partners and developed new partnerships. Additionally, DEFTECH assisted other organizations by promoting, co-hosting, and attending their events, and we are grateful for the support and expertise we receive from each of them. DEFTECH maintained and cultivated key partnerships with organizations such as Office of the Secretary of Military and Veteran Affairs, the Military Affairs Commission (MAC), the North Carolina Department of Commerce (NCDOC), the Economic Development Partnership of North Carolina (EDPNC), First Flight Venture Center (FFVC), the Defense Alliance of North Carolina (DANC), NC Biotech Center, NC Center for Optimizing Military Performance (NC-COMP), the UNC University System and Duke University. Moreover, DEFTECH would not be possible without the support provided by the North Carolina Military Business Center (NCMBC) and Fayetteville Technical Community College (FTCC).

Additionally, DEFECH strengthened relationships with several DoD innovation elements, including the DIU, SOFWERX, AFWERX, DARPA, NavalX Bridges, SVIP, MCWL, Army Futures Command, Army Research Office, and others. Representatives from several of these entities regularly attend DEFTECH events, and we believe these collaborations serve to promote the North Carolina Defense Innovation Ecosystem further and help DoD explore new technologies. What follows in our report are summaries of services provided, metrics, and partner success stories in some of the key activities outlined in this Executive Summary. DEFTECH welcomes your feedback and support. Together we contribute to *making North Carolina the Frontline of the Future* for innovation to ensure our military has the tools, techniques, and technologies to fight and win our nation’s wars.

Section 1: Coffee Calls

DEFTECH initially began weekly “Coffee Calls” in 2020 as an informal meeting to share information and ideas among North Carolina defense innovators during the COVID-19 Pandemic. It has grown in popularity to become one of our signature events. In 2021, “Coffee Calls” expanded topic areas, attracted more innovators in government, academia, and industry – within NC and out of state. Coffee Calls maintain an informal atmosphere where participants bring their ideas in an open, relaxed setting to develop new collaborations and partnerships while addressing concerns and ideas about innovation, technology, and leadership challenges.

DEFTECH also showcases government partners who share insights into their innovation needs, North Carolina companies that offer information about their work or best practices for engaging vendors, local academics who provide expertise on emerging issues or technologies of interest, and other speakers who present insights into larger DoD and governmental topics. Participants also learn about federal technology requirements and business opportunities and how their innovation and technology can be applied to solve national security problems. In 2021, DEFTECH hosted and moderated 48 coffee calls.

Coffee Calls kick off every Friday, from 8:00 to 8:30 a.m., when participants gather in an Early Bird session. DEFTECH leaders share calendar updates about ongoing defense and industry events. This informal gathering is helpful for companies interested in taking a deeper look into emerging federal opportunities in a small group setting. Companies often ask questions of the DEFTECH team about government agencies and opportunities. The Early Bird session also promotes an environment that encourages teaming with other companies to create competitive submissions.

Then, from 8:30 to 9:00 a.m., DEFTECH leaders who have researched and scouted for national security opportunities, highlight those potential advanced technology business prospects for the NC Innovation Ecosystem, adding insights for attendees. The more formal portion of the call occurs between 9:00 and 10:00 a.m. when DEFTECH arranges speakers on relevant current topics. After a brief presentation, participants engage with speakers to ask questions specific to their interests and often obtain additional information and connections to DoD organizations that may have an interest in their ideas and technologies. In addition to industry, government partners from organizations including the Defense Innovation Unit, AFWERX, ARO, and Army Futures Command often attend to share information and learn more about what North Carolina innovators have to offer the defense community. Academics from state and out-of-state universities also regularly attend, as do innovators from around the country.

Coffee Call registration is available on the [DEFTECH website](#). The formal portions of the call are recorded, and DEFTECH members may access the content on the DEFTECH Mobilize platform.

Coffee Call Highlights

Several highlights from the 2021 Coffee Calls include:

- **Government Speaker: Carl J. “Jeff” Worthington, Colonel, US Army, Deputy Director of Project Ridgway, and Special Assistant to the Chief of Staff, XVIII Airborne Corps at Fort Bragg, North Carolina.**

Topic: Colonel Worthington provided insights into how the Army is working to help Soldiers learn about and use Artificial Intelligence (AI). During this call, Col Worthington highlighted the XVIII Airborne Corps Project Ridgway: “Build an AI-Ready Corps Through Education, Resourcing, Authorities, Training, and Experimentation.” Project Ridgway is built around four lines of effort: 1. culture change, 2. upskilling data, 3. tech literacy using data, and 4. building an AI-enabled infrastructure. Project Ridgway develops artificial intelligence tools that will confer a military advantage. (February 12, 2021)

- **Government Speaker: Ms. Jennifer Thabet, Defense Advanced Research Project Agency (DARPA) Program Director Small Business Programs (SBPO)**

Topic: Ms. Thabet shared information to help businesses work with DARPA. The SBPO serves the small-business community by creating an environment within DARPA that considers small-business concerns as a primary source of innovative solutions. SBPO helps expand relationships and training opportunities within the DoD and other federal agencies and enables the small-business community to create and transition revolutionary, game-changing technologies that benefit national security, the federal government, and the commercial marketplace. (April 30, 2021)

- **Government Speaker: Mr. Darshan “Dash” Divakaran, AFWERX Senior Operations Research Analyst.**

Topic: Mr. Divakaran discussed how members of the North Carolina Innovation Ecosystem can engage with AFWERX in “Demystifying AFWERX: Understand, Navigate, Submit!” AFWERX is a United States Air Force program that fosters a culture of innovation within the service. Encompassing several programs supported with relatively small funding, the initiative is intended to circumvent bureaucracy and engage new entrepreneurs in Air Force programs. (October 8, 2021)

- **Government Speaker: Ms. Patricia “Anne” Bannister and Ms. Kimberly Vallone from the Small Business Program Office, Naval Sea Systems Command (NAVSEA).**

Topic: Discussions centered on the innovation needs and how to do business with the Naval Sea Systems Command. (August 20, 2021)

- **Government Speaker: Mr. Paul Ward, Deputy Director, Office of Small Business Programs for the U.S. Special Operations Command (USSOCOM).**

Topic: Discussions centered on engaging with the U.S. Special Operations Command (USSOCOM) and “Tips & Tricks for Doing Business with the Department of Defense.” (September 10, 2021)

Section 1: Coffee Call Highlights

Continued

- **Government Speaker: Colonel Elizabeth Sweet, the Defense Engagement Lead for the Defense Innovation Unit (DIU); and Chief Medical Officer Niels Olson, the DIU RATE Program Manager.**

Topic: The Defense Innovation Unit (DIU) Team discussed the Rapid Assessment of Threat Exposure (RATE) human performance wearables program. With early detection, DIU hopes it can help stop the spread of infection within the military. Called Rapid Analysis of Threat Exposure (RATE), the project is being developed with the Defense Threat Reduction Agency (DTRA) and Philips North America. (October 22, 2021)

- **Government Speaker: John Hardin, Ph.D. Executive Director for the North Carolina Board of Science, Technology & Innovation.**

Topic: Discussions centered on the study results by the Defense Innovation Task Force, highlighting how to help innovators win more SBIRS and rapid prototyping opportunities. (November 12, 2021)

- **North Carolina Industry Speaker: Mr. Mark Nichols, President of Spanalytics.**

Topic: Mr. Nichols explored Bluetooth's proliferation, vulnerabilities, and protective measures. Bluetooth touches many aspects of daily lives and will likely be prevalent on the future Internet of Battlefield Things. Although Bluetooth is convenient for productivity and comfort, it can also present significant security risks. (January 15, 2021)

- **North Carolina Industry Speaker: Mr. John Bridge, Executive Vice President, Government | Trust Stamp.**

Topic: Mr. Bridge discussed lessons learned as his company navigated conducting business with the Department of Homeland Security (DHS) and their recent win with Immigration and Customs Enforcement (ICE). Mr. Bridge shared how NC leads with the North Carolina Blockchain Initiative that explores unique attributes and uses-cases of Blockchain technology and highlighted the importance of the North Carolina Regulatory Sandbox Act passed in October 2021. (October 29, 2021)

- **North Carolina Academic Speaker: Mr. Adam Curry, Innovation Ecosystem Director, North Carolina State University**

Topic: Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies ASSIST focuses on creating self-powered sensing, computing, and communication systems to enable data-driven insights for a smart and healthy world. Mr. Curry provided an overview and how the organization uses deep learning architectures to process biosignals. (April 2, 2021)

Section 2: Mobilize Community

This year, DEFTECH added a private community and information sharing platform as an additional tool to keep participants updated on DEFTECH events, activities, business opportunities, and programs related to federal emerging technology requirements. The Mobilize platform allows DEFTECH members (industry, academia, and government) to collaborate; share knowledge; advertise business opportunities related to emerging federal technology requirements; create teaming opportunities and inform best practices.

Interested businesses may join the DEFTECH Mobilize Community, at no charge, by signing up here: <https://nc-defense-technology-transition-office.mobilize.io/registrations/groups/45515>. Mobilize is easy to use and may be accessed through the mobile app for smartphones. The Mobilize community has a variety of specialized channels to meet member needs. To date, 326 members are participating in this virtual collaboration community.

The Community Lounge serves as a virtual team room for collaboration and content. Coffee Call recordings are shared here and can be viewed on the Mobilize mobile app or computer browser. We ask community members to upload their pictures and create a virtual business card profile to connect with others. The informal and friendly atmosphere encourages companies to seek teaming and partnership opportunities.

The Company Registry allows members to create “baseball cards” to highlight their organization’s brand and value proposition, core competencies, website, and social media links. The registry is akin to a virtual exhibit hall highlighting our community organizations and capabilities.

The Opportunities Channel serves as a technology scouting page and another location for companies to discover and track emerging federal technology opportunities related to innovation, research, and development. This page also encourages users to ask questions and find potential teaming partners.

The DEFTECH TIDE Channel offers another location for technology developers to enter information used in the TIDE (Technology, Innovation, Demonstration, and Experimentation) Program.

The CyberChat Channel was created for use by the Cybersecurity Maturity Model Compliance (CMMC) North Carolina Cyber Compliance Group. This channel provides North Carolina companies with a collaborative resource to connect with and develop a cybersecurity compliance program to meet Department of Defense regulations. Participants learn about the CMMC and Defense Federal Acquisition Regulations (DFARS) cybersecurity requirements to secure the Defense Industrial Base (DIB).

Section 3: Symposia and Seminars

Larger symposia, seminars, and webinars are other vehicles DEFTECH uses to inform and support North Carolina defense-related technology industries. In 2021, DEFTECH hosted 8 events. Recordings of past events can be found on the [NCMBC website](#). In 2022, DEFTECH hopes the environment will permit additional in-person events and will continue to use virtual opportunities to work with innovation thought leaders in government, academia, and industry.

SUMMARY OF 2021 EVENTS

- The *Department of Defense's Joint Artificial Intelligence Center (JAIC) – How to Make AI Real (March 18, 2021)*: Mr. Nand Mulchandani, Chief Technology Officer of the U.S. Department of Defense Joint Artificial Intelligence Center, discussed how the DoD is transforming from a hardware-centric to a software-centric force that uses Artificial Intelligence (AI) capabilities to solve large and complex problem sets that span multiple services. Mr. Mulchandani addressed how commercial industry and academics can partner in JIAC's efforts. He also offered a question and answer session.
- *Advanced Research Project Agency-Energy Open 2021 Funding Opportunity Briefing (March 22, 2021)*: Anyone interested in energy technology research, application, and cutting-edge innovation and the application of energy technology to military field operations was invited to learn more about how the U.S. Department of Energy (DOE) funds some of its R&D efforts. Dr. Mark Johnson, a former professor of Material Science at North Carolina State University, current professor at Clemson, who spent several years at DOE evaluating potential research programs offered his insights on how DOE evaluates these proposals.
- *Defense Advanced Research Program Agency (DARPA) Virtual Industry Outreach (April 1, 2021)*: During a 4 ½ hour session, DARPA Deputy Director, Dr. Peter Highnam, and other members of the agency's leadership and program managers conducted an information session on the agency's current and future research needs. This webinar served to educate and inform the North Carolina Innovation Ecosystem of ongoing and future research and how to work with DARPA.
- *US Marine Corps Combat Development Command Future Requirements (April 8, 2021)*: LtGen Eric Smith is the Commanding General, Marine Corps Combat Development Command, and the Deputy Commandant for Combat Development and Integration. He presented an overview of future Marine Corps requirements and how his command assesses the environment, develops, and validates concepts, identifies capabilities, and develops solutions to ensure Marine Corps operating forces have needed capabilities and took time to respond to audience questions.

- 19th Annual North Carolina Defense Trade Show (DTS) and Cybersecurity Forum (August 4, 2021):*** Co-hosted by Senators Richard Burr and Thom Tillis, FTCC and NCMBC, this event included a one-day trade show, networking opportunities, live vendor demonstrations, and government workshops for prospective and current federal contractors. Mr. Denny Lewis moderated the panel with Senators Tillis and Burr, North Carolina Secretary of State Elaine F. Marshall, and President FTCC President Dr. J. Larry Keen. DEFTECH also provided briefings to senior officials and North Carolina companies on its TIDE Program.
- Medical, Biomedical & Biodefense: Support to the Warfighter Symposium (September 29-30, 2021):*** DEFTECH led a portion of the NCMBC's North Carolina Medical Biomedical Biodefense Support to the Warfighter Symposium. In collaboration with the NC Center for Optimizing Military Performance (NC-COMP), DEFTECH offered a track to showcase companies with Human Performance Optimization (HPO) advanced technologies. The DoD is interested in ways to improve all components of HPO, including data-driven solutions that can interface with physical infrastructure to improve the efficiency of training programs and servicemember health and performance for the duration of their careers.
- Army Applications Laboratory (AAL) of the Army Futures Command "Ask Me Anything" (December 2, 2021):*** Army Applications Laboratory (AAL) of the Army Futures Command presented an "Ask Me Anything" session. AAL implements new ways for the Army and industry to work together. They work behind the scenes to show Army problem owners how to apply and adopt new ways of working and connect the military with commercial problem solvers. Mr. Brance Hudzietz and Mr. Art Trevethan provided an AAL overview, with information on AAL operations, current topics of interest to the Army, and how companies can engage. They also addressed the current environment for venture capital funding within the defense sector and engaged the audience for a candid question and answer session.
- Southeastern Opportunities in Aerospace Regional Summit (SOARS) Technology Panel (December 9, 2021):*** A panel at this NCMBC co-hosted event addressed innovation technology needs and trends that offer business development opportunities (S&T, R&D, Other Transaction Authority) within the Department of Defense and the aerospace industry. Panel members included: Eddie "Jamaine" Clemmons, Advanced Technology & Innovation (ATI) Team Lead, FRC-East; Captain Torrence (Tad) Wilson, Commanding Officer, USCG Aviation Logistics Center; Dr. Ali Karimoddini, NC A&T Autonomy; and Darshan Divakaran, Senior Operations Research Analyst, AFWERX.

Section 4: TIDE and FATQ

TECHNOLOGY, INNOVATION, DEMONSTRATION and EXPERIMENTATION (TIDE) PROGRAM

Trade shows and other opportunities to engage in person with potential DoD customers and decision-makers were nearly non-existent during most of the past 18 months. DEFTECH moved out smartly online and, in mid-2021 developed a new model and opportunity for government Science and Technology (S&T) representatives and commercial innovators to meet and discuss areas of mutual interest, concerns, and needs. The TIDE model is easily adaptable to in-person meetings once we move to a more permissive environment.

DEFTECH's intent with the TIDE program is to help North Carolina businesses win awards with DoD and the national security community. TIDE serves as a technology scouting and a technology transition acceleration model for later-stage research and development at or near prototype (TRL 5 and 6) while accepting TRL 4 submissions. TIDE consists of four phases and culminates in quarterly Technology Solutions Brief (TSBs) and an annual opportunity for technology developers to demonstrate and experiment with new and evolving technological capabilities in operationally relevant environments.

As a state government organization, DEFTECH has successfully obtained federal government participants in these events. These leaders often share insights into federal technology gaps and emerging needs. The program is modeled after how DoD innovation organizations engage with potential industry partners.



TIDE

Phase 1: DEFTECH issues a request for information and submission of a simple PowerPoint chart and 1-page whitepaper that allows interested companies to explain their technology and its application to a DoD problem set. The purpose is to canvas NC companies for novel technologies that address complex national security problems at a Technology Readiness Level (TRL) 4 or higher maturity levels. DoD considers TRL 4 a component and/or breadboard validation in a laboratory environment.

Phase 2: DEFTECH collaborates with federal innovation outreach offices to catalog and share technology approaches to increase federal awareness of capabilities within the NC Innovation Ecosystem. During this phase, DEFTECH often aligns TIDE Events with Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) phases and schedules for federal agencies to help build predictability and select submissions for further consideration. Initial feedback is presented to the submitting company, and DEFTECH selects a small subset of companies to participate in Phase 3.

Phase 3: TSBs. Every quarter DEFTECH hosts Technology Solution Briefs (formerly called FATQs) that highlights several innovative technologies with the potential to solve current or emerging critical requirements. Companies present their technology in a “Shark Tank” like environment to a panel of government experts and receive additional feedback. Each selected company has 30 minutes to present and discuss its technology or product. One goal is to help satisfy emerging federal requirements, emphasizing an advanced technology that may serve “dual-use” commercial and military purposes. TSBs also serve as forums for additional dialogue among and between government entities and businesses.

Phase 4: Annual TIDE. DEFTECH hosts a larger annual event that allows companies to demonstrate/experiment in an operationally relevant environment with military operators to obtain their feedback. Due to COVID restrictions, TSBs were held virtually using Microsoft Teams, October 20, 2021. The following companies participated and received helpful feedback:

1. Medical: “DREAMIES for Premies” – Brain wave monitoring with PTSD, Stroke, and TBI utility. Presenter: Edward Thear, Founder & Business Development Executive, MBA, NEATCap Medical, LLC.
2. Force Protection and Medical: “Innovative New 3D Carbon Nanotube based X-Ray systems for EOD and Maintenance Applications” Presenter: Phillip Wise, NCX Tech
3. Medical: “Prohuman Therapeutic Sleeves” Presenter: Justin Dues, Founder, Prohuman Technologies.
4. Additional TSBs and TIDE events are being planned for 2022.

Section 5: Podcasts

Podcasts continue to gain popularity for various reasons. Listeners can multi-task, save time, and gain knowledge across a broad array of topics. To keep pace with our audience and given the global reach that this medium offers, in 2021, DEFTECH added a regular Podcast series to its information and education services. Rob Robinson, Strategic Industry and Technical Advisor and DEFTECH's Podcast host, completed and posted 10 Podcast interviews with thought leaders in the government, local experts, and others in the North Carolina innovation ecosystem.

These sessions continue to gain popularity over time as new interviews are posted. Beginning with only 3 followers, we now have 223 Linked In followers. Moreover these podcasts have reached audiences throughout the country resulting in more than 3,770 overall impressions (*impressions are confirmation that at least 60 seconds of audio was sent to a requesting player*). DEFTECH Podcasts can be found on the DEFTECH website.

SUMMARY OF EPISODES:

- **North Carolina Technology Growth:** Dr. John Hardin, North Carolina Department of Commerce, Office of Science Technology, and Innovation, provided an insightful discussion about the wide variety of technology partnerships and why NC is a great place to do business. He also highlighted activities on the millennial campuses.
- **AI for the Warfighter:** Army Chief Warrant Officer Marc Losito discussed the challenges and opportunities for DoD to truly reap and sustain the benefits of this ubiquitous technology that has the potential to revolutionize the military. He also showcased his “Commander’s AI Smartcard,” which provides a practical user’s guide and common lexicon to help military leaders and AI businesses communicate to help ensure military requirements are fulfilled. This PODCAST was particularly popular among DoD practitioners, university and private sector AI researchers, and product and service providers. AI for the Warfighter continues to be one of the most popular PODCASTS.

North Carolina Military Business Center: LTC (Ret) Scott Dorney, Executive Director, North Carolina Military Business Center (NCMBC), explained the vital mission of the NCMBC to leverage military and other federal business opportunities, expand the economy, grow jobs, and improve quality of life in North Carolina. NCMBC is a state-wide business development and technology transition entity of the North Carolina Community College System, headquartered at Fayetteville Technical Community College.

- **TIDE Strategic Overview:** Mr. Bob Burton, DEFTECH Senior Manager, described DEFTECH's new Technology, Innovation, Demonstration, and Experimentation Program (TIDE), created to showcase local companies with innovative technologies that have the potential to apply to DoD. The Program uses brief white papers and concise presentations that align with DoD processes and reduce the burden on participating businesses. Most often, government and DEFTECH feedback is provided to participants.

- ***Innovation in NC's Rich Academic Community:*** Ms. Kathie Sidner, North Carolina University System Director of Defense and Military Partnerships, and Ms. Melissa Vetterkind, Assistant Vice President, Duke University Office of Government Relations, echoed a common NC theme, “We innovate better when we innovate together.” These academic leaders discussed the innovation opportunities, partnerships, and activities within their respective institutions and DoD’s varied research and educational opportunities.
- ***CMMC and Cybersecurity:*** As a member of the NCMBC’s business development team, Ms. Laura Rodgers (<https://www.linkedin.com/in/lauradrodgers/>) identified future and current federal prime and subcontracting opportunities, and explained how she engages and provides one-on-one assistance to North Carolina companies helping them understand, bid, and win contracts, focusing on the national defense contractors. Additionally, Ms. Rodgers manages the North Carolina Interagency Cybersecurity Coordinating Committee (I3C) (information can be found at cybernc.us) and is an expert in the DoD Cybersecurity Maturity Model Certification.
- ***Financial Technology (FinTech):*** Dr. Jimmie Lenz, Duke University, is an internationally known expert, lecturer, and scholar in the field of banking, capital markets, and FinTech. He demystified some of the concepts and terms in the technology and policy area related to financial regulation, cryptocurrency, and other related topics.
- ***Army Research Office:*** Dr. Stephen Lee, Chief Scientist with the U.S. Army Research Office, Research Triangle Park, <https://www.arl.army.mil/who-we-are/aro/> and a long-standing DEFTECH partner, explained the mission of his organization. He also discussed his commitment to the Army R&D and his willingness to engage with companies that may offer solutions to improve soldier capabilities.
- ***Perspectives on Defense Business in North Carolina:*** Mr. Dan Barkin is a long-time and noted business reporter for the “News and Observer” and now writer for the Business North Carolina Magazine. Dan shared his perspectives on growing North Carolina as the “Frontline of the Future” in military innovation. He also opined about potential growth areas for North Carolina and areas where we are doing well. He also offered advice on how businesses can take full advantage of state-wide opportunities.
- ***Defense Innovation Unit (DIU):*** U.S. Army Colonel Beth Sweet is a member of a novel DoD organization that seeks to help the U.S. military make better and faster use of emerging commercial technologies. She highlighted some critical “dual-use” technologies needed by the military and how to work with DIU. Col Sweet also explained how small businesses can get involved with DIU and potentially transfer technology into defense applications and how North Carolina can continue to support the military.

Section 6: Success Stories

DEFTECH serves a diverse population and does not have a formal mechanism to track when the services it provides contributes to a company obtaining government funding. However, based on feedback from partners, we estimate that DEFTECH provided value-added information, facilitated access to DoD stakeholders, engaged in one-on-one counseling, or shared other unique insights with its clients. In 2021, at least 12 companies in the DEFTECH network obtained more than \$10M in federal funding.

Another important measure for DEFTECH is how well we support and facilitate the achievements of our member companies in pursuit of business opportunities with the national security community. This year, various companies and organizations shared their success and the role that DEFTECH played in supporting them.

Highlights include:



Trust Stamp (Hillsborough, NC), a global provider of AI-powered trust and identity services used across multiple sectors, won a \$3.9 million contract with U.S. Immigration and Customs Enforcement (“ICE”), a federal agency under the U.S. Department of Homeland Security, in September 2021. Trust Stamp will provide mobile biometric services centered around the Company’s privacy-preserving data tokenization technology.

“Bob Burton spent a great deal of time explaining how we should navigate government contracts and provided resources that helped inform our preparation for applying for this contract”
- John Bridge, Executive Vice President,
Government



Revware (Raleigh, NC) creates precision measurement solutions for CAD and Reverse Engineering. Revware, Inc. Raleigh, NC was selected as a winning solution of the AFWERX Enabling Technologies for Reverse Engineering and Additive/Agile Manufacturing Showcase. This provided inclusion in a Commercial Solutions Opening available throughout the Air Force.

“NC DEFTECH is a valuable and consistent source of insight, introductions, and support for pursuing recognition of my company’s offerings and capabilities within the North Carolina military/business ecosystem,”
- Tom Welch, President



WISER Systems (Raleigh, NC) provides real-time asset tracking in any environment. The company developed its cutting-edge Redundant Radio Localization and Tracking (RRLT) technology to deliver best-in-class precision, scalability, and reliability in indoor-outdoor positioning. Located in Raleigh, NC, WISER is a DBE-certified woman-owned small business and continues to win contracts and innovation awards.

In 2021 Wiser won:

- prestigious NC Tech Award in Digital Transformation
- US Marines Palmetto Tech Bridge prize challenge in the Positioning, Navigation, and Timing (PNT) category

Other accolades include Phase I and II SBIR awards from the United States Air Force and the USDA. The company also won Phase I, II, and III awards in the inaugural Army xTechSearch competition. WISER demonstrations have been featured at joint-command Trident Spectre events, including most recently in 2021. WISER also won a proof-of-concept contract with the Naval Supply Systems Command (NAVSUP).

“We so appreciate DEFTECH and all of your support for small businesses with Defense applications. We enjoy all of your high-quality events and notifications and have found your work to be extremely helpful and valuable in building our business.”

- Elaine Rideout, Founder/CEO



Attollo, LLC (New Bern, NC) is an innovative company that leverages the rapid advancement of high-fidelity sensors, and drones are becoming the go-to platform for all mapping needs. Attollo utilizes the latest technology for a multitude of industrial and commercial services. They provide precision mapping, high-resolution video, or data. Attollo recently won a Naval Undersea Warfare Center sole source award following a successful Other Transactional Authority contract to provide test, evaluation, and engineering services in support of the Decision Authority Delegation that seeks to leverage AI and machine learning to automate the allocation of unmanned vehicles across the air, surface, and subsurface domains.

“NC DEFTECH has been a fantastic resource that Attollo leverages regularly. The DEFTECH team’s weekly coffee call has become a constant, reliable source of information, collaboration, and debate that has led directly to increased relationships with government and industry allies that have the same bias for action and appetite for small businesses teaming as Attollo. Thank you for providing a great resource to NC’s defense industry,”

-Guy Nelson, Partner

Section 6: Success Stories

Continued



Advanced Hydrogen Technologies Corporation (AHTC) (Morganton, NC), has launched Sabertooth Solutions for the commercialization of its first product, a tungsten carbide tip bonded to a steel chisel for use in hydraulic breakers in the mining and excavation industries. AHTC's high-velocity impact-bonding process produces cutting tools with 100 times more wear resistance. Other applications for AHTC's process of molecularly joining dissimilar metals and ceramics include lightweight armor and propulsion for long-range munitions.

"DEFTECH has had a profound influence on AHTC which resulted in winning:

- \$65,000 matching funds from North Carolina Department of Commerce One North Carolina SBR/STTR Phase I Matching Funds Program Grant;
- \$1,302,500 from NSF SBIR Phase I/B & II/B: Impact Bonding of Near Net-Shaped Ceramics To Metals; \$16,000 xTech-Search 1.0 Phase I & II, 2.0 Phase I, II & III winner for Lightweight, Advanced Projectile Neutralizing Armor for Next-Generation Combat Vehicles (NGCV); and \$50,000 NC IDEA Foundation."

- Pete Lohr, President



SECMATION

Secmation (Raleigh, NC) is a rapidly growing small business specializing in cybersecurity R&D and product development. In 2021, Secmation received:

- \$1M Phase II SBIR award from the Office of Naval Research to develop a modular cyber-secure unmanned aerial systems platform Securing Modular Unmanned Systems.
- Part of the \$18.8M four-year base contract to provide unmanned maritime systems support for the Naval Information Warfare Center, Pacific's ISR Department with Applied Research Associates (ARA)
- Prime position on the Navy's SeaPort-NxG Indefinite Delivery Indefinite Quantity. SeaPort-NxG is the Navy's electronic platform for acquiring support services.

"Secmation is an active and proud member of DEFTECH. A critical component of small businesses advancing R&D for the Defense Department, particularly in early-stage technology development, is pushing that new technology beyond the early stages and into the hand of practitioners. Small businesses often need robust partnerships and assistance in transitioning their mission-critical technology that meets the evolving needs of their customers. Technology transition is a complex environment, and DEFTECH serves as a vital resource by being a strategic partner and innovative asset to advance technology from concept to reality,"

- Hal Aldrige, CEO



Bionica Lab's (Raleigh, NC) subsidiary, NIRSense LLC, builds wearable cerebral and somatic oximeters. NIRSense won a DIU CSO for Physiological Monitoring of aircrew during tactical jet flight, an MTEC OTA for enhanced aircrew cerebral oximetry monitoring, and AFWERX SBIRs focused on traumatic brain injury and deep tissue oximetry for lactate monitoring. Bionica Labs is currently supporting seven simultaneous CRADAs with military medical collaborators.

“NC DEFTECH has been instrumental in connecting Bionica Labs to the military’s innovation ecosystem. The DEFTECH staff is always available to answer questions and make introductions to experienced advisers and teaming partners and has often encouraged us to pursue opportunities we might not have otherwise pursued, which we have subsequently won. Their informal collaborative style makes integration with military innovation seamless. Their continued success integrating operational military users in conferences, webinars, and pitch events clearly show their ability to build and maintain a bimodal “marketplace” of military innovators. Thanks for the continued engagement and support.”
-Casey Boutwell, CEO



Murano Corporation (Research Triangle Park, NC), uses Supply Chain Artificial Intelligence to help organizations predict future Supply Chain disruptions using its multi-tenant cloud Supply Chain Manager, which combines operational (including ERP), supply chain, analytical, predictive, and Big Data in a single cloud platform to help reduce inventory costs, invoicing errors and defects. Since 2020, Murano Corporation has been awarded 2 Phase I SBIRs (Navy, Air Force) and a Navy Phase II SBIR more recently.

“These awards would not have happened without the support of multiple North Carolina-based organizations, including DEFTECH. Denny Lewis and Bob Burton increased our awareness of Department of Defense opportunities using multiple channels and mediums. They organize weekly Friday coffee calls for North Carolina small businesses with guest speakers who further enlighten us. DEFTECH Friday coffee calls have been priceless for us! Their contributions have indirectly led to five new hires with advanced degrees for us and the state. They are truly passionate about and committed to increasing DoD small business opportunities for this state”
- Sree Rajagopalan,
President and Chief Executive Officer

Section 6: Success Stories

Continued



Ravensafe/ULP (Charlotte, NC) is an innovative manufacturer specializing in research and development, engineering design, prototyping, and lean manufacturing of patented backup power storage systems company. Chris Patrella, Operations Manager, learned about an AFWERX opportunity through DEFTECH and subsequently won a \$50,000 SBIR/STTR award for phase one research into portable power for battlefield operations.

“Thank you for all the help your office provided to the project manager,”

-Chris Patrella, Operations Manager



mesur.io (Raleigh, NC) uses AutoML to solve complex problems with environmental causes.

The Earthstream platform from mesur.io continuously monitors, forecasts, and models for climate, disease, and environmental changes, enabling users to understand how they will be affected by those changes and what they can do about emerging risks. Mesur.io supports US DHS especially in the area of food traceability and safety for US CBP, and in disease emergence and spread analysis for the National Biosurveillance Integration Center.

“NC DEFTECH has provided invaluable insights and support for mesur.io especially in regards to understanding opportunities for working with the federal government as a commercial focused business.”

-Mike Prorock, CTO & Founder

Section 7: NC Military Business Center

DEFTECH is the federal technology transition business development entity for the State of North Carolina. DEFTECH is a component of the Military Business Center (NCMBC).

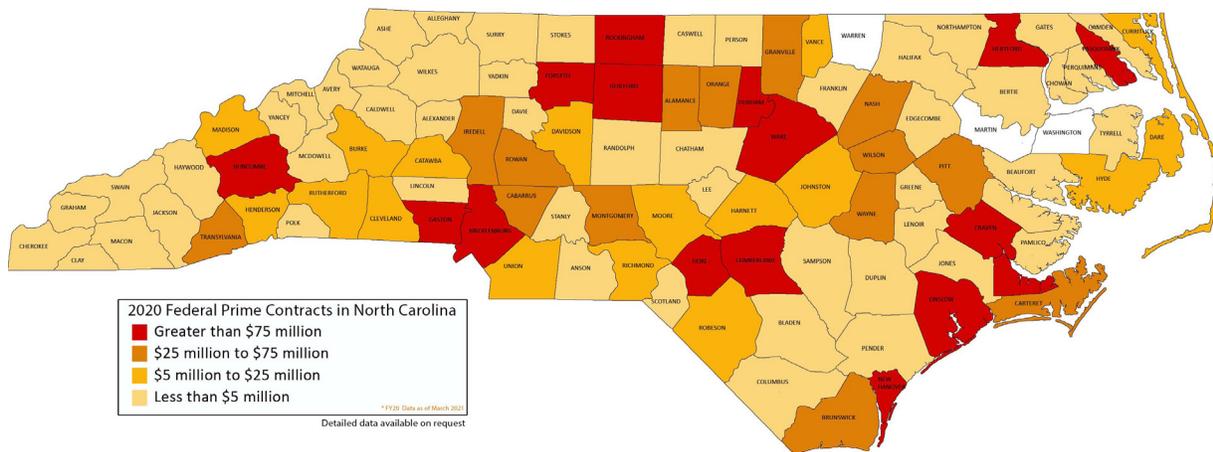


The NCMBC, headquartered at Fayetteville Technical Community College serves businesses in 100 North Carolina counties from offices at community colleges statewide.

The mission of the NCMBC is to leverage military and other federal business opportunities to expand the economy, grow jobs and improve quality of life in North Carolina. The NCMBC is a key component of the unique statewide innovation ecosystem and the best infrastructure in the country to help businesses start, leverage new markets and grow jobs. The only entity of its kind in the country and the premier resource to help existing businesses grow the defense economy, the NCMBC has assisted clients in winning at least 4,272 contracts valued at a minimum of \$16.74 billion.

The NCMBC's Business Development and Strategic Industry Teams include experienced business and federal contracting professionals operating from 13 community colleges across the state. These professionals identify the most lucrative federal contract opportunities (prime and subcontracts), notify and pre-position firms for specific opportunities, and assist firms with federal solicitations, proposals and successful execution of federal contracts. Additionally, MatchForce.org automatically matches 23,000 NC businesses daily to all federal contract opportunities.

In 2020, NCMBC professionals focused on contract opportunities in targeted industry sectors - each with growing DoD demand and with significant business capacity in North Carolina - with a special emphasis on: construction & infrastructure; aerospace systems; medical, biomedical & biodefense; cybersecurity; energy & environmental; subsistence; and textiles & soldier systems.



Section 8: Partnerships

DEFTECH is built on cultivating and maintaining trusted partnerships with government entities in the national security research, development, and technology community. In addition to long-standing relationships, including the Army Research Office, and the Defense Advanced Research Projects Agency, the military continues to create new organizations to bring innovative technology to the warfighter. DEFTECH has introduced many of these innovation teams to counterparts in the North Carolina Innovation Ecosystem, including DIU, AFWERX, AFC, and the Marine Corps Warfighting Laboratory, to the benefit of all. Using DEFTECH as a focal point, this one-stop-shop makes it easy for DoD entities to learn about novel technologies, ideas, and research performed by North Carolina companies. In turn, North Carolina innovators hear first-hand about DoD needs and requirements.

DEFTECH also regularly hosts DoD entities who educate our business and academic communities on processes and procedures for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. These programs encourage small businesses to engage in other federally funded research and development with the potential for commercialization through a competitive awards-based program. DEFTECH offers additional assistance to North Carolina small businesses interested in applying for these programs. DEFTECH also maintains collaborative relationships with other academic and commercial partners in the North Carolina Innovation Ecosystem.



US Army Research Office (Raleigh, NC):

"...I've been involved with NC DEFTECH for some time. I encourage many businesses in the state of North Carolina to participate. Often, I'll be on the coffee calls on Fridays and when there are special symposia...I think that DEFTECH is very important, along with many other organizations in the state that support ideas and innovation. And that role is only going to grow. I think we're going to start seeing an increase in the amount of small business innovative research funding that's being spent in the state because of the investment by DEFTECH and bringing people together,"

- Dr. Stephen Lee, Senior Scientist for Interdisciplinary Sciences

BARDA DRIVeAccelerator

(Research Triangle Park, NC):

"That's one of the beauties of the DoD, is there is so much breadth there that if you are a company in the technology space then there is a pretty good probability that you may have some applicability in the Department of Defense space. Now, I can turn to my friends over at DEFTECH and say something like, 'I've come across a company that's creating a really interesting fabric that's able to do something entirely different than we've thought of before.' Having gotten into that sphere and understanding just how much DEFTECH is doing and how many connections that they have in the DoD world was truly illustrative in terms of their outreach into that community and their knowledge of that ecosystem.

That, to me, is the value. That's one of the great values of the partnership — I don't have to know everything. I just have to know them."

- Emil Runge, Program Manager



North Carolina State University (Raleigh, NC):
“As we bring to close an upside-down, disruptive 2021 and reflect on things special to us this year, our NC Defense Technology Transition Community comes first to mind. Friday mornings have become a joy. Our community from academia, industry, state government create dreams of a bright tomorrow and the pathways to get there. Thanks to all of you who have shared a cup of coffee with me each Friday morning for stimulating a thousand ideas, sharing hundreds of both small and large successes, and your vision of a bright tomorrow. DEFTECH Team, thanks for leading the way!”
 - Major General (USA, Ret) Nickolas Justice,
 Senior Advisor of National Security
 and Special Research Initiatives



Business North Carolina Magazine (Charlotte, NC):
“As someone who has been writing about the military innovation economy, DEFTECH has been a valuable source in helping me understand the complex defense acquisition and R&D ecosystem in North Carolina and beyond. The weekly DEFTECH “Coffee Call” is a graduate-level seminar with some of the top experts in the military’s rapidly evolving technology needs,”
 - Dan Barkin, Journalist



Duke New Ventures (Durham, NC):
“We are grateful to be able to partner with DEFTECH and similar organizations working to demystify the military’s processes for testing and procuring new technology in the service of both the Warfighter and new technology entrepreneurs that can potentially provide a military edge,”
 - Jeff Welch, Ph.D., Director



First Flight Venture Center
 (Research Triangle Park, NC):
“DEFTECH is an outstanding partner in the NC innovation and entrepreneurial ecosystem. We frequently highlight the funding opportunities they share. The weekly coffee calls provide tremendous networking opportunities and excellent presentations from funding agencies and other ecosystem partners. DEFTECH and First Flight are aligned on supporting the start-ups in our ecosystem. In particular, DEFTECH helped to amplifying our outreach for SBIR/STTR and other non-dilutive funding educational and grant opportunities. Our role in engaging companies and research teams in national health security complements the work of DEFTECH. Due to the overlapping interests, First Flight was able to reach out to our BARDA DRIVe network based on potential funding opportunities from the DOD.”
 - Krista Covey, President



Defense Alliance of North Carolina
 (Pinehurst, NC):
“DEFTECH is leading the charge in providing information to industry on emerging military requirements, processes, and procedures. Members of the DANC rely heavily on this data for business development, relationship building, knowledge, awareness, and teaming. These areas of interest and defense sector trends help shape our forums and provide actionable information to leaders from NC’s business, academic, government, and military communities. DEFTECH’s efforts align with the mission of DANC to grow NC’s defense economy in a way that creates new long-term investment opportunities. It is partnerships like this that continue to make North Carolina the Frontline of the Future,”
 - Tammy Everett, DANC Executive Director

Section 9: Summary

DEFTECH serves the Defense Innovation Ecosystem through collaboration, education, and engagement. In 2021, DEFTECH expanded efforts that assisted NC businesses reap more than \$10 million in national security contracts. DEFTECH offered new methods to learn about military requirements and opportunities in research, technology, and development. At the same time, DEFTECH deepened and expanded the network of government participants and other partners who brought unique insights and knowledge to companies to help them gain success in the federal marketplace.

Supported by a growing economy and business-minded leadership, North Carolina boasts one of the top technology workforces and innovative ecosystems in the nation. North Carolina continues to attract new enterprises that are at the cutting edge of technologies for the future. Some of the research, development, and early-stage products benefit both commercial and military customers. The Department of Defense has increased efforts to partner with small firms with great ideas. North Carolina has the right ingredients to support economic growth and military needs, and DEFTECH will continue to serve as a conduit to do just that.

Business entrepreneurial spirit and innovative solutions have significantly contributed to this success and in making North Carolina the #1 State for Business (Forbes) 4 years running; ranked #2 and #3 for innovation of the nation's 110 major metro areas; and #6 and #7 for overall technology supply, tech demand, and innovation indexes according to the NC Tech Association, Tech Innovation Index National Metro Comparison 2021.

DEFTECH sincerely thanks the government, industry, and academic partners for your leadership, participation, support, and encouragement. Our collective efforts will help ensure that America retains the technological edge required to keep us strong into the future. As DEFTECH looks forward to 2022 and growing our value to you, we always think of the needs of our men and women in uniform and those who keep us safe at home and abroad. Together we will continue to advance North Carolina as **THE FRONTLINE OF THE FUTURE!**

CONNECT WITH DEFTECH: DEFTECH.NC.GOV



Director

Denny Lewis
703-217-3127
lewisd@ncmbc.us



Senior Manager

Bob Burton
910-824-9609
burtonr@ncmbc.us



Strategic Innovations

Rob Robinson
706-761-4232
robinsonr@ncmbc.us



Strategic Consultant

Kim Kotlar