SHIELD

Strategic Hub for Innovation, Exchange and Leadership in Defense

2026 SHIELD Working Group Report to the Governor

July 1, 2026

Dear Governor Maura Healey and Lieutenant Governor Kim Driscoll,

On behalf of the SHIELD (Strategic Hub for Innovation, Exchange and Leadership in Defense) Working Group, we are pleased to transmit our report and action agenda for advancing the Massachusetts Defense and National Security Ecosystem.

This report reflects the expertise of 40 Working Group members and appointees, along with over 1,000 stakeholders who contributed through the 100-plus engagements held across the state.

Massachusetts now stands at a critical decision point where economic security is national security, and economic development and national security are converging.

The mission given to SHIELD by Executive Order was clear -- "play offense on defense" by catalyzing opportunities for economic growth, job creation, talent recruitment and retention, and tech transition.

It has become abundantly clear that Massachusetts is a defense state. This is made evident through the sector's contributions to the state's economy and to safeguarding the nation. At the same time, our defense sector faces real challenges, including economic and workforce pressures, federal acquisition transformation, critical manufacturing and supply chain needs, and increasing competition from other states and countries. It is also clear that the path forward does not require creating an ecosystem from scratch. The state needs to engage the existing ecosystem more deeply, champion it more clearly, and resource it more intentionally.

We are a mature, robust, and diverse ecosystem, spanning from Boston to the Berkshires, and anchored by established defense assets and companies, disruptive new entrants, and world-class research institutions that contribute capabilities across air, land, sea, space, and cyber domains. The Northeast region has demonstrated, since the founding of our nation, that there is power in proximity and partnership. The opportunity before Massachusetts is clear; to move forward together -- ushering in a new era for the Massachusetts Defense and National Security Ecosystem.

This report was authored with consideration towards three primary audiences:

Federal Partners

The Massachusetts Defense and National Security Ecosystem is ready to usher in a new era by moving forward together with speed and at scale. We are ready to meaningfully contribute to all major defense domains, delivering critical technologies to the warfighter to ensure our nation's security through both readiness and modernization.

State Leaders

Massachusetts is a defense state, and this should be recognized and promoted loudly both inside and outside our borders. We have a strong sector supported by a world-leading innovation ecosystem, all co-located with six military installations leading critical missions. What is needed is deeper state engagement with a designated economic development champion focused on the sector with resources to realize our full potential in this new era.

SHIELD Working Group and the Massachusetts Defense and National Security Ecosystem

Massachusetts has an incredibly strong foundation to build upon. Over the past six months the SHIELD Working Group has been able to see how deep, diverse, talented, and special the Massachusetts Defense and National Security Ecosystem truly is. Our hope with this report is that you see it as we do. We recognize we are not moving forward without challenges, but the Commonwealth is ready to be a

champion and partner to establish this new era together. The $100M defense sector authorization filed in the Mass Wins Act serves as a beacon for this.

In closing, we want to thank every member of the SHIELD Working Group for their time, expertise, and commitment. Their participation in the SHIELD Days, roundtables, discussions, and drafting of this report has been incredible. The execution of the SHIELD Initiative would not have been possible without Executive Director of the Massachusetts Military Asset and Security Strategy Task Force (MASS-TF) Adam Freudberg, and the Massachusetts Technology Collaborative (MassTech) team for their substantial work and contributions. MassTech's Northeast Microelectronics Coalition (NEMC) and Center for Advanced Manufacturing (CAM) contributed greatly to organizing discussions across the state and contributing subject matter expertise.

SHIELD has been anchored by our Strategic Investment and Business Operations (StratIBO) team; an immeasurably big thank you to them, and in particular, Director of Enablement and Integration John Wetzel and SHIELD Project Manager Dr. Christy Foran, for their contributions to shape this final product. We look forward to working with you to define the next era of defense and national security for the next 250 years in Massachusetts.

Respectfully submitted,

Carolyn Kirk
Chair, SHIELD Working Group
Chief Executive Officer
Massachusetts Technology Collaborative

Ben Linville-Engler
Designated Chair, SHIELD Working Group
Deputy Director & Chief Investment Strategist
Massachusetts Technology Collaborative

SHIELD Working Group Report

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Front Cover Photo Credit: Emily Boyle, Governor's Press Office; Joshua Qualls, Governor's Press Office

Introduction

Massachusetts has deep roots in defense and national security. The state has a long and proud history as a leading defense state and continues to be a national leader supporting defense innovation, military installations, and dual-use technologies with major impacts on the Commonwealth's economy and the security of the United States. In 1777, General George Washington and Chief of Artillery Colonel Henry Knox chose Springfield, Mass., for the location of the first United States armory. The Commonwealth continued its key role with the Massachusetts Institute of Technology (MIT)[1] Radiation Laboratory that developed more than 100 radar systems including the SCR-584, which was crucial for the Allied Victory in World War II.

Today, Massachusetts continues to be a cornerstone of the United States' defense and national security foundation, driven by that same spirit of innovation, ingenuity, and service. The state's defense sector generates nearly $50 billion in annual economic output, accounting for over 7% of the statewide gross domestic product (GDP), $16.6 billion in direct Department of War[2] (DOW) spending, $15.2 billion in annual labor income, and supports more than 130,000 jobs.[3] Some of the sector's toughest technology, engineering, and manufacturing problems are being solved across the state through innovations in specialized high-tech equipment, complex systems integration, and advanced computing. These range from missile defense and advanced radar systems produced by Raytheon, an RTX business in Andover, to specialized aircraft engine components manufactured at GE Aerospace in Lynn, to critical guidance and control systems assembled by General Dynamics Mission Systems in Pittsfield, and to countless other successes across our 6,000-plus manufacturers statewide.[4] Massachusetts is home to substantial resources supporting the country's defense and national security mission. The state is home to six military installations, contributing more than $13.2 billion in total economic activity and support for more than 57,600 jobs. The Massachusetts-led Northeast Microelectronics Coalition (NEMC), established under the Healey-Driscoll Administration, is part of the DOW-funded Microelectronics Commons program, a network of regional technology hubs acting on a shared mission; to expand the nation's global leadership in microelectronics. Additionally, the national maritime industry finds strength in the state's long-standing leadership in naval research and underwater technologies. Uncrewed Aircraft Systems (UAS or "drones") and advanced aviation concepts are being developed and guided by autonomous software developed in the state. Massachusetts also leads the broader national security apparatus anchored by major global aerospace and defense firms that specialize in advanced sensors, radar, and cybersecurity while integrating diverse technological sectors including biotechnology and advanced manufacturing. For the purpose of this report, the **Massachusetts Defense and National Security Ecosystem** encompasses the portion of the Defense Industrial Base (DIB) located within the borders of Massachusetts, including the DIB's specialized subsectors, notably the Submarine Industrial Base, the Intelligence Industrial Base, and the broader National Security Industrial Base, along with the enabling technology and innovation ecosystem.

[1] See full listing of acronyms in the table at the end of this document.

[2] Department of War (DOW) is used as the name of the whole of the U.S. Military organizations, except when documents or policies were issued under the name Department of Defense (DoD).

[3] SENEDIA (2023). The Economic Impact of the Defense Cluster in New England. Associated Industries of Massachusetts (AIM) (2023).

[4] Associated Industries of Massachusetts (AIM) (2023). The Enduring Value of Manufacturing.

Despite its historic contributions in defense, the Massachusetts Defense and National Security Ecosystem is battling both legacy and emerging challenges. Nationally, the United States faces increased strategic competition from near-peer nations. China has invested heavily in domestic manufacturing and technology adoption while reducing dependence on foreign suppliers through initiatives such as Made in China 2025. The conflict in Ukraine has demonstrated the power of rapid, iterative defense system and drone innovation over legacy, exquisite, and costly defense systems as a strategic and battlefield advantage. Domestically, DOW acquisition transformation has quickly shifted focus of defense and national security programs from compliance and assurance toward accelerating technology-to-capability transition for immediate warfighter needs. All while more broadly reducing emphasis and funding for early foundational scientific research and discovery. Swift changes have also created friction within the DIB as integrators and manufacturers struggle to meet surging demand, adopt new technologies and undergo digital transformation, and employ and upskill a workforce in a competitive environment compounded by some of the highest costs for energy, housing, and labor in the nation.

With federal defense spending projected to reach a record-high of $1.13 trillion this year, the potential remains for increased economic impact as economic development and national security converge. At this convergence, it is essential for the Massachusetts Defense and National Security Ecosystem to align, ensuring it is connected to both the DOW's readiness and modernization missions in order to capture new investments in biomanufacturing, applied artificial intelligence, microelectronics, cybersecurity, advanced manufacturing, aerospace programs, air and missile defense, testing, and more. Massachusetts has the opportunity not only to remain a center of discovery, but to become the nation's leading ecosystem for mission-connected innovation, technology transition, and national security competitiveness in the 21st century.

The SHIELD Initiative

To meet this moment of opportunity, Governor Maura Healey and Lieutenant Governor Kim Driscoll convened the Massachusetts Defense and National Security Ecosystem at the Massachusetts State House in October 2025 to recognize its national significance and storied record of excellence. At the event, Governor Healey signed Executive Order No. 648, establishing the Strategic Hub for Innovation, Exchange, and Leadership in Defense (SHIELD) Initiative. SHIELD's mission is to catalyze opportunities for economic growth, job creation, talent recruitment and retention, and technology-to-capability transition in Massachusetts' Defense Sector by:

1. **Identifying key operational, technological, policy, ecosystem, and strategic challenges** facing military-installation and defense-sector participants, and establish an action agenda to address these challenges to accelerate growth, access, partnership opportunities, and funding for Massachusetts-based organizations.

2. **Promoting research and development initiatives and partnerships** that advance emerging technologies critical to economic and national security.

3. **Building upon partnerships between military institutions, private industry, and academic research centers to strengthen public-private relationships**, ensure access for small and medium businesses to opportunities, drive innovation, and ensure the integrity of critical domestic supply chains.

4. **Supporting initiatives that enhance STEM education, workforce training, and talent retention** in defense-related fields in alignment with the Massachusetts defense sector's current and future needs.

5. **Identifying and pursuing federal and state funding opportunities** that support research, prototyping, development, technology commercialization, adoption, and deployment of technologies for defense applications and defense industrial base adoption.

Figure 1: Named SHIELD Working Group members

To drive the initiative, the SHIELD Working Group was established in the Executive Order, identifying the Massachusetts Technology Collaborative (MassTech) as Chair, and directly naming Healey-Driscoll Administration secretaries and several quasi-state economic development agency leaders as initial members with critical support being provided by the Massachusetts National Guard and the Business Executives for National Security (BENS).

Additional members were appointed by the Healey-Driscoll Administration from defense sector and ecosystem leaders spanning large defense prime contractors, family-owned manufacturers, federally funded research and development centers (FFRDCs), academic institutions, startups, nonprofit ecosystem support organizations, investors, entrepreneurial support organizations (ESO), industry trade associations, and state and federal government officials. The 23 named and designated members from the SHIELD Executive Order[5] and the 31 appointed members of the SHIELD Working Group[6] engaged in a collaborative partnership with the Massachusetts Defense and National Security Ecosystem.

[5] Named members and their designees are listed by name in Appendix B.

[6] Appointed Working Group members are listed by name in Appendix B.

Carolyn Kirk, Massachusetts Technology Collaborative (Chair)	Stacy Swider, MassVentures	Kathie Mahoney, Massachusetts Manufacturing Extension Partnership
Ben Linville-Engler, Massachusetts Technology Collaborative (Designated Chair)	Colonel Timothy Joseph Gordon, Massachusetts National Guard	Caitlin Lindsay Reimers Brumme, MassChallenge
Adam Freudberg, Military Asset & Security Strategy Task Force (MASS-TF)	Christopher Collins, Business Executives for National Security (BENS)	Peter Farkas, MassHire Hampden County Workforce Board
Eric Paley, Executive Office of Economic Development (EOED)	Kyle Peterson, Business Executives for National Security (BENS)	Katie Enos, MITRE Corporation
Zenobia Moochhala, Executive Office of Economic Development (EOED)	Mathew Correa, University of Massachusetts System	Michael G. Fantom, NE FIRST
Stephen Zrike Jr., Executive Office of Education	Elizabeth Kennedy, Activate Boston	Joseph Donovan, New England Council
Robert LePage, Executive Office of Education	Austin Gray, Blue Water Autonomy	Jennifer Hay, Northeastern University
Lauren Jones, Executive Office of Labor and Workforce Development	Debra Zides, Armed Forces Communications & Electronics Association (AFCEA), Lexington-Concord Chapter	Tim Del Giudice, Raytheon
Ken Brown, Executive Office of Labor and Workforce Development	Stephen Boyd, Boyd Biomedical	David Michelson, RE:BUILD Manufacturing
Eric Goralnick, Massachusetts Executive Office of Veterans Services (EOVS)	Paul Tessier, Cimit, Massachusetts General Hospital in Boston (DARPA Accelerator)	Sean Kelly, Solvus Global
Quentin Palfrey , Federal Funds & Infrastructure Office, Executive Office of Administration and Finance	Sarah Leeper, Draper Laboratory	Emily Knight, The Engine Accelerator
Bob LaRocca, Federal Funds & Infrastructure Office, Executive Office of Administration and Finance	Justin McKennon, Electro-Magnetic Applications, Inc.	Justin Montgomery, Perimeter Systems, Inc. (formerly Ginkgo Bioworks)
Sam Fritz, Federal Funds and Infrastructure Office, Executive Office of Administration and Finance	Laura Bukkosy Hooks, General Dynamics	Steele Divitto, BASE-X and The Steele Group
Kirk Taylor, Massachusetts Life Sciences Center	Melissa Breor, Massachusetts Association of the Chamber of Commerce	Aaron Vega, WesternMass Economic Development Council
Navjeet Bal, Massachusetts Development Finance Agency	Tonja Mettlach, Massachusetts Business Roundtable	Dr. Dennis Joseph McGillicuddy, Jr., Woods Hole Oceanographic Institution
Anne Marie Dowd, MassDevelopment	Christopher R. Anderson, Massachusetts High Tech Council	Grace Wang, Worcester Polytechnic Institute
Erik Hokenson, MassDevelopment	Ian Waitz, Massachusetts Institute of Technology (MIT)	Tuan Ho, Xfund

Table 1: SHIELD Working Group Governor-appointed members and delegates

This report responds to two sections of the Executive Order. In accordance with Section 1, all executive branch offices and agencies conducted a comprehensive review of existing programs, spanning tax incentives, STEM education, and workforce development, to identify growth opportunities for defense-related organizations.[7] The bulk of this report reflects the SHIELD Working Group's efforts to engage the larger defense ecosystem to fulfill the objectives of Section 2 of the Executive Order.

[7] Section 1 survey results and summary are contained in Appendix C.

SHIELD Ecosystem Engagement

To promote collaboration across the broader Massachusetts Defense and National Security Ecosystem, SHIELD activated defense sector leaders, small and medium enterprises, FFRDCs, academic institutions, startups, founder support organizations and nonprofits, and state and federal government officials across the state through 100-plus events and engagements, all in less than six months.

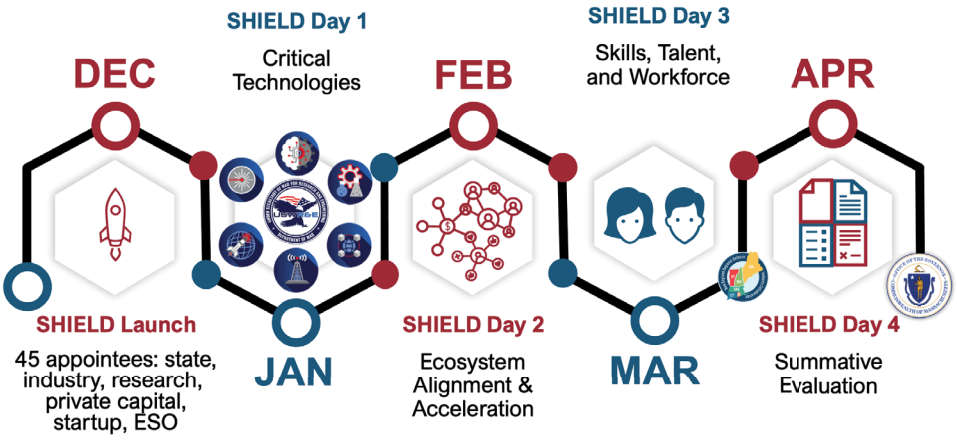
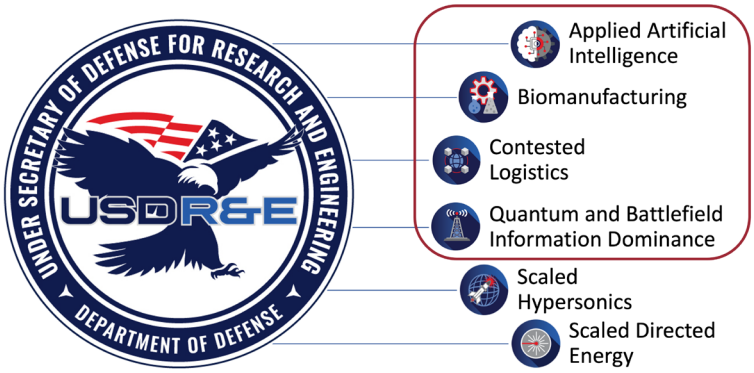


Figure 2: SHIELD Initiative Roadmap

Moving with speed and at scale, SHIELD organized and hosted outreach events and engagements to reach every part of the defense ecosystem, spanning locations from the North Shore to the Cape and Boston to the Berkshires. Three large formative events, dubbed SHIELD Days, acted as keystone convenings. MassTech hosted 300-plus individuals across these SHIELD Days held at the UMass Lowell Applied Research Center (UMLARC), Worcester Polytechnic Institute, and BASE-X over the course of early 2026 to discuss defense technology alignment, ecosystem acceleration, and workforce development. A fourth SHIELD Day, held at MITRE Corporation, engaged the SHIELD Working Group to summarize findings from the prior three SHIELD Days and prioritize challenges and action items for this report.

The first SHIELD Day grounded the strategy in four of the six DOW Critical Technology Areas, identifying and exploring Applied AI, Biomanufacturing, Contested Logistics, and Quantum and Battlefield Information Dominance as domains where Massachusetts maintains a competitive advantage. The second SHIELD Day explored the challenges across the technology transition lifecycle from discovery and innovation within academic institutions and laboratories through commercialization to privately financed startup organizations, to integration and potential acquisition by defense programs of record. These convenings revealed a persistent lack of ecosystem visibility for its participants, highlighting the absence of a central, convening entity to synchronize and align regional capabilities with ecosystem resources and federal needs.

Figure 3: SHIELD Day 1 Critical Technology Focus



The third SHIELD Day's efforts mapped challenges on skills, talent and workforce from K-12 exposure programs to vocational training, higher education, and reskilling existing workers aiming to address the shortage of technical talent and the ability to access that talent for the defense sector. The fourth SHIELD Day convened members of the SHIELD Working Group to summarize and prioritize the challenges and recommended action agenda included below.

Other SHIELD outreach engagements included industry sector and regional roundtables conducted at the Berkshire Innovation Center (BIC), Solvus Global, Ginkgo Bioworks (now Perimeter Systems), Woods Hole Oceanographic Institute (WHOI), The Engine, and Custom Machine. Roundtables and engagements were aligned to geographic industry clusters, such as western, central, and northeastern Massachusetts-based manufacturers, and defense-aligned arenas such as biosecurity, startups and entrepreneurial support, UAS and counter UAS, and shipbuilding and maritime autonomous systems. The SHIELD Working Group also conducted site visits to academic and research laboratories, major defense primes, and startups; hosted biweekly coordination sessions, conducted industry surveys, engaged Northeast regional partners, and spoke with many organizations.

SHIELD, through the support of MassTech and its Northeast Microelectronics Coalition (NEMC), sponsored, attended, and participated in several major events and conferences that occurred during its activation period.[8] In March, Lieutenant Governor Driscoll and the SHIELD leadership held a panel at the Armed Forces Communications and Electronics Association Lexington-Concord Chapter's New Horizons Conference focused on accelerating software deployment ("Code to Combat Power") for integrated defense. In the same month, the MITRE Corporation hosted a comprehensive Air and Space Forces Center Industry Day, inviting ecosystem partners to meet with Portfolio Acquisition Executives (PAE) located at Hanscom AFB and potential industry collaborators. In April, SHIELD conducted a panel on "The State of Defense Tech in Massachusetts" at the student-led Harvard-MIT Technology and National Security Conference. Also in April, SHIELD members presented at the National Defense Industrial Association (NDIA) New England Chapter Annual Cyber Event focused on regional cyber resilience and the protection of the defense industrial base. In May, venture investment firm Andreessen Horowitz hosted an inaugural Boston Tech Week which included several defense and dual-use events sponsored by JP Morgan's Innovation Economy Technology Group, Base-X, and Pryzm, among others. In June, Hanscom Air Force Base hosted a major innovation symposium at the UMLARC Northstar campus to highlight its Lantern Innovation program. The sheer volume and speed of execution, as well as the countless offers to assist and engage, reflects the pent-up demand and potential energy in the Massachusetts Defense and National Security Ecosystem for this level of state convening and the strong desire for it to continue. Altogether, SHIELD reached well over 1,000 stakeholders across the state in roughly six months.

[8] NEMC, a division of MassTech, is funded through the DOW Microelectronics Commons Program. A portion of its funding designated for ecosystem engagement has been used to fund SHIELD activities.

A New Era for the Massachusetts Defense and National Security Ecosystem

Despite its outsized economic impact, the perception among many stakeholders is that Massachusetts has not garnered broad appreciation or recognition of its strong, vibrant, and dynamic defense and national security ecosystem compared to other geographies. This recognition gap stands as a key point of distinction from the well-known origin story of the state's life sciences sector. The Massachusetts Defense and National Security Ecosystem is ready for its story to be told. It's ready to demonstrate its economic impact now, and into the future, with the state serving as a champion of the defense sector through direct engagement, intentional support, and dedicated resources.

With the submission of this report, the Healey-Driscoll Administration stands at a critical decision-point. A point where economic security is national security, and economic development and national security are converging. The SHIELD Working Group recommends that the state move forward with bold leadership and support through organizational infrastructure, resourcing, investment and action to establish a new era for the Massachusetts Defense and National Security Ecosystem.

The Massachusetts Defense and National Security Ecosystem is a microcosm of the national ecosystem in terms of the depth and breadth of its contribution. The major activities, milestones, investments, and events that occurred across the state during the period of the SHIELD Working Group's efforts alone tell an impactful story spanning four aspects of the technology-to-capability lifecycle: (1) Research, Discovery, and Technology Transfer; (2) Commercialization and Defense Transition Support; (3) Scaled Manufacturing and Systems Integration; and (4) Department of War Acquisition and Operational Readiness.

(1) Research, Discovery and Technology Transfer Milestones

MIT Lincoln Laboratory finalized a contract with Boston-based WHOOP to integrate physiological monitoring wearables into the U.S. Navy's Command Readiness, Endurance, and Watchstanding (CREW) program, focusing on warfighter performance optimization, readiness and fatigue management. WHOI hosted SHIELD's Shipbuilding and Autonomous Maritime Systems event that included presentations on advancements in autonomous underwater vehicles (AUVs) that leverage the region's MarineTech and ocean science foundation to support DOW surface and undersea dominance. The Commonwealth committed $25 million in matching state funds to support the construction of a regional, shared-use, state-of-the-art Quantum Systems Laboratory (QSL) at MIT; the facility is designed to integrate high-performance quantum computing arrays with advanced quantum sensors in a stabilized, vibration-isolated experimental environment.[9] Lastly, NEMC received an additional $22.5 million to advance four DOW Microelectronics Commons Projects for a second year of implementation, bringing its total DOW funding to over $120 million.

[9] https://quantumcomputingreport.com/massachusetts-commits-25-million-to-anchor-mits-landmark-quantum-systems-laboratory/

(2) Commercialization and Defense Transition Support Milestones

NEMC announced a partnership with Draper to provide specialized chip design and packaging services to its members accelerating lab-to-fab technology transitions for startups and small companies looking to field microelectronics. Boston-based Pryzm secured a $12.2 million seed round led by Andreessen Horowitz's American Dynamism fund. Through a $60 million funding round, Perimeter was launched as a standalone company from Ginkgo Bioworks to advance its integrated biosecurity infrastructure platform, designed to detect, identify, and analyze biological threats in real time. Two Massachusetts-based companies, Robinson Unmanned and GreenSight, participated in DOW's competitive $1.1 billion Drone Dominance program focused on delivering 300,000 drones in the next two years. MassVentures opened a new round of its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) support program (START). Lastly, MassChallenge launched its 2026 North Atlantic Treaty Organization Defence Innovation Accelerator for the North Atlantic (NATO DIANA) Cohort, hosting and supporting eight startups.

(3) Scaled Manufacturing and Systems Integration Milestones

Raytheon invested over $45 million to expand their Atom to Array advanced manufacturing of next generation military radars in Andover, Mass. GE Aerospace invested $42 million in its Lynn, Mass., manufacturing plant, a milestone that secures the facility's role in producing next-generation defense engines. An agreement between GE Aerospace and Shield AI has the companies opening their HQ2 in Massachusetts and collaborating on the use of the F110-GE-129 engine, featuring the advanced Axisymmetric Vectoring Exhaust Nozzle (AVEN), for Shield AI's X-BAT, an AI-piloted vertical take-off and landing (VTOL) jet.[10,11] Draper advanced the development of its new Integrated Microelectronics Production & Advanced Chip Technology (IMPACT) Center in Lowell for high-mix, low-volume microelectronics packaging production by securing the land with the city and is anticipating breaking ground in late 2026. Enigma Aerospace established a Memorandum of Understanding (MOU) with Re:Build Manufacturing to develop, manufacture, and field their Phoenix P-1000 autonomous logistics Unmanned Aircraft System (UAS) at scale. Blue Water Autonomy began production of its Liberty Class autonomous vessel in March, while Electro-Magnetic Applications expanded its Space Environment and Radiation Effects Lab in Pittsfield, Mass., to test system resilience against electromagnetic pulse threats while also teaming up with the National Aeronautics and Space Administration (NASA) and Synopsys, Inc. to push the boundaries of how to mitigate charging and electrostatic risks for spacesuits on the lunar surface during NASA's Artemis missions. Phoenix Tailings, headquartered in Burlington, announced a $500 million conditional commitment from the Office of Strategic Capital for the construction of the Freedom Facility, a fully integrated domestic rare earth separation and metallization platform built to secure critical supply chain in the U.S.

[10] https://shield.ai/ge-aerospace-and-shield-ai-to-collaborate-on-propulsion-for-x-bat-vehicle-program/

[11] https://www.geaerospace.com/news/press-releases/ge-aerospace-and-shield-ai-collaborate-propulsion-x-bat-vehicle-program

(4) DOW Acquisition and Operational Readiness Milestones

The state and the military installations within the Commonwealth furthered critical partnerships to advance defense. The Department of the Air Force and the Massachusetts Military Asset and Security Strategy Task Force (MASS-TF) signed a landmark MOU to evaluate strategic real estate opportunities at Hanscom Air Force Base, optimizing the base footprint, preserving and enhancing the mission and jobs on base, and seeking to unlock land for aligned regional economic and technological innovation. US Army Combat Capabilities Development Command (DEVCOM) executed an MOU between MassTech and the Natick Soldier Systems Center (NSSC) establishing the BioNexus program which will leverage $3 million in state funding to mobilize the biodefense ecosystem[12] towards addressing DOW bioindustrial manufacturing challenges. Funding for this program, supported by the Massachusetts Federal Funds and Infrastructure Office (FFIO) and MASS-TF, was announced at the Governor's October convening event.

This six-month snapshot makes it clear – establishing a new era for the Massachusetts Defense and National Security Ecosystem does not require building something from the ground up. Rather, it requires the state to continue to serve as an active partner that will directly engage with, champion, support, and invest in the strong foundation that already exists and help lead it to the next level.

Immediate Next Steps – The Critical Path for SHIELD

Through SHIELD, the Massachusetts Defense and National Security Ecosystem, state executive offices and quasi-governmental agencies have established cohesive collaboration with a mission to catalyze economic growth, job creation, talent recruitment and retention, and technology-to-capability transition. Keeping the SHIELD community active is a critical element for this path to lead to successful outcomes. The SHIELD Initiative was established by executive order without any dedicated resources, and operational resources are needed to execute the four critical action items and enable the institutional resources necessary for the SHIELD Action Agenda presented in this report. There are four immediate actions needed to maintain momentum and enable execution of the SHIELD Action Agenda put forward in this report:

1. Recognize and **promote the Massachusetts Defense and National Security Ecosystem** and its contributions to U.S. economic and national security.

2. **Establish the MassTech Collaborative as the economic development home** for the Massachusetts Defense and National Security Ecosystem.

3. **Identify resources to initiate immediate execution of the SHIELD Action Agenda** with operating and capital budget funding for defense-focused programming, capital investments, and ecosystem support.

4. **Conduct proactive outreach to the Massachusetts Defense and National Security Ecosystem** on eligible programs, including ensuring that the Commonwealth's economic development programs prioritize defense technologies and strengthening the engagement with federal defense and security personnel operating in the region.

[12] The companies, laboratories, and service providers that develop and produce biological systems of importance to national security including biosecurity, biological data protection, warfighter performance, and bioindustrial manufacturing.

These immediate actions establish a pathway forward to: (i) continue to move with speed and at scale, and (ii) continue the work initiated by the SHIELD Working Group and advance critical activities within the Massachusetts Defense and National Security Ecosystem:

1. Recognize and promote the Massachusetts Defense and National Security Ecosystem contributions.

The Healey-Driscoll Administration has a unique opportunity to unify the federal technology-to-capability transition mission of NEMC with the state's economic development mission of SHIELD while further supporting national security, deepening Massachusetts' leadership in the sector and region. The perception of many stakeholders is that Massachusetts has not garnered broad appreciation or recognition of its strong, vibrant, and dynamic defense and national security ecosystem compared to other geographies resulting in a disadvantage for Massachusetts as a defense state essential to U.S. economic and national security. Ecosystem members stress that being proud of and celebrating the defense and national security missions being led across Massachusetts will create a more supportive atmosphere for regional growth and collaboration with federal partners. Advancing our defense ecosystem will require communication and cohesive coordination within and beyond the state's borders. Additionally, a lead organization that collects, coordinates, and prioritizes responses to federal opportunities would raise awareness and help promote cooperation and partnerships across the ecosystem and the region.

2. Establish MassTech as the economic development home for the Massachusetts Defense and National Security Ecosystem.

Through the SHIELD Initiative, MassTech has provided the activation energy and structure needed to convene our defense ecosystem and create cohesive collaboration across the Commonwealth. Going forward, MassTech should be codified as the home for continued SHIELD efforts. SHIELD ecosystem participants highlighted the strength of a single point of contact and enhanced coordination and customer service provided by a designated lead for efforts to advance the defense ecosystem. Strategically, MassTech should build upon the organizational infrastructure, operating model, and regional mandate of the DOW-funded NEMC. In doing so, the Healey-Driscoll Administration can unify the federal and state missions through NEMC while leveraging the additional strengths of its portfolio across advanced manufacturing, cybersecurity, AI, digital health, and emerging technologies to move beyond microelectronics. Through continued collaboration with state executive offices and quasi-state agencies, MassTech can build on the momentum from the SHIELD Initiative to take the Massachusetts Defense and National Security Ecosystem to the next level.

3. Provide resources to initiate immediate execution of the SHIELD Action Agenda with operating and capital budget funding for defense-focused programming, capital investments, and ecosystem support.

The SHIELD Initiative created value in connectivity and cohesion that grew out of the rapid, centralized, and recurring engagement with the Massachusetts Defense and National Security Ecosystem. To meet the moment and realize the full economic potential of **The Massachusetts Opportunity**, implementation of the SHIELD Action Agenda needs to move forward immediately to avoid lost momentum. Sufficient operating resources are needed to begin the work across all fronts of the SHIELD Action Agenda in partnership with industry, government, academia, and regional partners. It is recommended that operating funds be sought in the next supplemental budget filing in 2026, and for long-term sustainability, in the Governor's 2027 H.1 in early 2027, or an alternative identified source. In addition, should the Mass Wins Act (which includes a $100M authorization for SHIELD) be enacted by the Legislature, the FY27 capital budget should include capital investment programs to support SHIELD.

4. Proactively reach out to the Massachusetts Defense and National Security Ecosystem on eligible programs.

Any available program, incentive, or initiative identified by executive branch agencies as eligible to support defense sector growth should be leveraged accordingly, starting with proactive outreach. The $100 million authorization included in the recently filed Mass Wins Act is a powerful signal. However, an entire suite of incentives, some stemming from the Mass Leads Act, including operating and capital expenditures, tax incentives, subsidies, and designations have been identified in accordance with Section 1 of the Executive Order and should be made available, or more visible, to support defense sector growth.

The SHIELD Initiative has unlocked the pent-up demand of the Massachusetts defense sector for state-level convening. SHIELD has established trust and cohesive collaboration with the state. This SHIELD Report serves as the next step to boldly establish a new era for MA Defense and National Security Ecosystem. This is a critical pivot point, transitioning from assessment to action. The SHIELD Report sets the Action Agenda, while initial identified resources enable immediate forward progress on several fronts. The SHIELD Action Agenda is framed across seven categories:

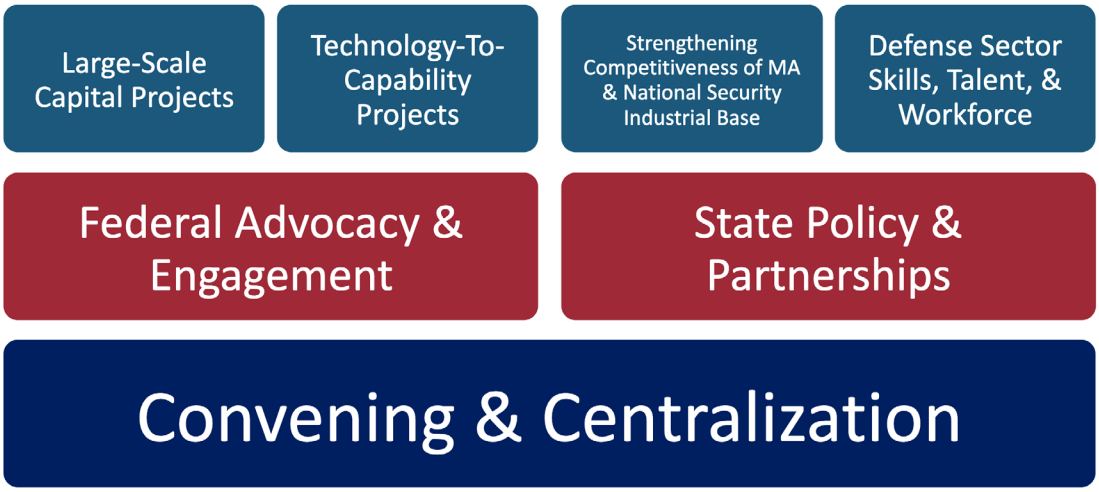


Figure 4: SHIELD Action Agenda Framework

The SHIELD Action Agenda resulted from the efforts in response to Section 2 of the Executive Order.

SHIELD Findings

The Federal and State Baseline

The Massachusetts Defense and National Security Ecosystem serves as a vital engine for both national security innovation and regional economic stability, functioning as an ecosystem that unites world-leading research institutions, innovation and investment, with advanced manufacturing.[13] The sector is a cornerstone of the Commonwealth's economy, contributing nearly $50 billion to the statewide economy in fiscal year 2024.[14] This investment accounted for 7% of the state's GDP and supported a total of 139,102 jobs, driven by a powerful multiplier effect where every 100 direct defense positions generated an additional 125 roles in other regional industries.[15] The state distinguishes itself as a premier national hub for innovation, with 19% of its defense allocations dedicated specifically to R&D,[16] nearly double the national average. Beyond high-tech research, the sector maintains a robust manufacturing footprint, with 58% of contract funding directed toward supplies and equipment, including major investments in military engine production and maritime technologies. Furthermore, Massachusetts fosters a highly competitive small business ecosystem, securing the highest per capita rate of SBIR awards in New England. SBIR/STTR alone awarded $1.4 billion to small firms over the last five years.[17] Lastly, direct DOW spending over the past five reported fiscal years is $88.5 billion. The $16.6 billion reported in FY2024 is equivalent to $2,300 per capita where National Institute for Health (NIH) funding is comparatively $500 per capita.

Massachusetts has had recent and significant success in partnering with its defense sector on a high-priority DOW initiative. After almost two years of convening and planning, NEMC was selected in September 2023 by the Office of the Undersecretary of War for Research and Engineering (OUSW(R&E)) as one of eight national Microelectronics Commons regional hubs. With DOW's appropriated funding from the CHIPS and Science Act, NEMC was formally established as a division at MassTech with the mission to create a vibrant, well-connected ecosystem that meets the needs of the DOW, while fostering genuine engagement across the region to provide sustainable lab-to-fab enablement of next generation microelectronics and simultaneously strengthening the domestic workforce and value chains. Today, NEMC stands as the only state-led Hub with its network of 320-plus member organizations, including commercial and defense companies, leading academic institutions, FFRDCs, and startups concentrated in the Northeast. The NEMC Hub Advisory Group is comprised of representatives from Applied Materials, Analog Devices, BAE Systems, Columbia University, MIT, MIT Lincoln Laboratory, MITRE, NextFlex, and Raytheon.

[13] See Appendix A for additional details.

[14] Office of Local Defense Community Cooperation (OLDCC) (2025) Defense Spending by State, Fiscal Year 2024.

[15] SENEDIA (2023). The Economic Impact of the Defense Cluster in New England.

[16] OLDCC (2025). Defense Spending by State, Fiscal Year 2024.

[17] Downloaded on 17March2026 from: https://www.sbir.gov/awards using DoD as a filter.

At the same time, the state benefits from a research engine that drives advances across a diversity of sectors – healthcare, life sciences, manufacturing, energy, autonomy, ocean sciences, and more. The Massachusetts TechHubs Program, established under the Mass Leads Act and administered by MassTech's Innovation Institute, is a compelling recent demonstration of statewide innovation strength. Modeled after federal initiatives like the Economic Development Agency Tech Hubs and the National Science Foundation Regional Innovation Engines, the TechHubs program bridges regional disparities by funding large-scale infrastructure and commercialization assets that build on a specific region's technology-connected economic development strengths and goals. Through this regional capacity building, the program's Transformation Grants explicitly accelerate dual-use technologies that map directly to the DOW's modernization and readiness missions across three distinct regional nodes.

- In the western part of the state, the Pittsfield Advanced Optics TechHub, led by the BIC, utilizes its designation to expand precision infrastructure for advanced optics, photonics, and sensor systems. General Dynamics has seen great benefit in leveraging the BIC facility and network for defense-related programming and potential supply chain relocation and expansion.

- Centrally, the Worcester Bioindustrial Manufacturing TechHub, anchored by Worcester Polytechnic Institute and the Massachusetts Biomedical Initiatives (MBI), scales non-therapeutic bioindustrial manufacturing assets to accelerate the development of agrifood, chemicals, materials, and energy that could support forward-operating base readiness and logistics.

- On the southeast coast, the New Bedford Marine TechHub, led by the New Bedford Ocean Cluster, expands testing assets and digital supply chain capabilities for marine technology, giving dual-use innovators access to real-world maritime environments to accelerate the operational readiness of Unmanned Underwater Vehicles (UUVs) and secure undersea communications.

Other state-funded efforts aim to address systemic vulnerabilities in the domestic value chains. The Massachusetts Life Sciences Center's (MLSC) BioBoost Manufacturing Scale-Up program provides capital funding to life science and medical technology companies expanding their advanced manufacturing footprint within the state. Targeted research areas for MLSC's grants align with the national security focus areas of antimicrobial resistance, microbiome science and therapeutics, cognition, mental health, non-opioid pain therapeutics and medical devices. Additionally, MLSC's investments in centralized, standardized biobanking infrastructure accelerate translational medicine research, offering a foundational resource for organizations analyzing human performance and other related applications. Similarly, the Massachusetts Clean Energy Center (MassCEC) has committed over $11 million to expand a network of open-water, shallow-water, and dockside test beds across the state, including sites in Cape Cod, New Bedford, and Bourne. These pre-permitted environments allow defense technology firms to test Unmanned Underwater Vehicles (UUVs), autonomous surface vessels, maritime communication arrays, and ruggedized oceanographic sensors under rigorous, real-world conditions without navigating multi-year federal regulatory hurdles, vastly accelerating the deployment of autonomous systems. MassTech has also committed to building statewide physical and digital infrastructure necessary to support programs both in cybersecurity, specifically the MassCyberCenter investments supporting Cyber Trust Massachusetts' Security Operations Center and Range Initiative, and in AI, through the Mass AI Hub's $31 million grant supporting AI Compute Resources at the Massachusetts Green High-Performance Computing Center in Holyoke, Massachusetts.

At the federal level, the DOW has initiated an acquisition transformation initiative focused on speed, scalability, and technological dominance to outpace near-peer adversaries.[18] Strategic shifts include a move toward a preparedness posture characterized by direct investments in manufacturing capacity and national mobilization to bridge asymmetry gaps against low-cost threats.[19] Defense procurement across all services has shifted. The Army, Navy, Air Force, and Space Force are all increasing their focus on commercial viability to increase pace of technology maturation and adoption, requiring more upfront solution development. Acquisition processes are undergoing fundamental reforms to shrink decision timelines from years to as few as 90 days, prioritizing rapid fielding through Commercial-Off-The-Shelf (COTS) components,[20] decentralized production,[21] and the expanded use of Other Transactional Authorities (OTAs).[22] Furthermore, the DOW recast its critical technologies list, identifying six priorities: (i) Applied Artificial Intelligence (AAI), (ii) Biomanufacturing, (iii) Contested Logistics, (iv) Quantum and Battlefield Information Dominance (Q-BID), (v) Scaled Hypersonics and (vi) Scaled Directed Energy.[23] At the same time, DOW is mandating increased supply chain transparency to eliminate foreign dependencies.

Massachusetts is well-positioned to support New England and the greater Northeast's defense mission across land, air, sea, space, and cyber domains. Although Massachusetts is a smaller state by geography and overall population, it ranks 10th among the states in total defense spending. Additionally, the New England states combined as a group rank third in defense spending, coming in at second overall when including New York and New Jersey.[24] Although Massachusetts is not the primary location or hub for shipbuilding, there are key submarine and maritime industrial base activities throughout the region, such as General Dynamics Electric Boat in Connecticut. With NEMC as an established convener in the region, the state can provide leadership, coordination, and support growth through partnership across New England and the Northeast corridor.

The Commonwealth's defense sector benefits from mature engineering and production capabilities and capacities of strong incumbent defense contractors with deep state and regional supply chains. At the same time, opportunities for new entrants with focused defense and dual-use business models are coming from the state innovation ecosystem. The high concentration of defense-related R&D, engineering, integration, as well as test and evaluation activities in Massachusetts generates substantial technological spillovers that has fueled commercial innovation and GDP growth.[25] With defense spending projected to reach $1.13 trillion in 2026[26] and a federal shift toward a preparedness posture, strengthening this sector ensures Massachusetts remains a central node in the domestic production of complex systems.

[18] Additional detail about changes to the DIB extracted can be found in Appendix A.
[19] NDIA (2026). Vital Signs 2026.
[20] White House. (2025). Executive Order 14265: Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base.
[21] National Security Committee on Emerging Biotechnology (NSCEB). (2025). NSCEB: The Future of Science.
[22] White House. (2025). Executive Order 14265: Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base.
[23] Office of the Under Secretary of War for Research and Engineering (OUSW R&E). (Undated). Critical Technology Areas, website.
[24] OLDCC (2025). Defense Spending by State, Fiscal Year 2024.
[25] OLDCC (2025). Defense Spending by State, Fiscal Year 2024.
[26] TD Economics. (2025). The Economic & Fiscal Impacts of U.S. Defense Spending in 2026 and Beyond

Executive Branch Program Review

For over a decade, the state has strategically supported Massachusetts-based military bases, installations, assets, missions, and service men and women through the MASS-TF. However, the Commonwealth does not currently have a comprehensive, coordinated economic development strategy to support the defense sector. Defense applicants have been eligible for opportunities through existing state incentives through programs targeted at related industry sectors such as advanced manufacturing or technology-first programs like robotics. For example, MassTech has taken a defense-integrated approach across its portfolio of emerging technologies, advanced manufacturing, workforce development, and more by leveraging funding through programs such as the Innovation Institute's Collaborative R&D Grant Matching program as well as Center for Advanced Manufacturing's (CAM) Massachusetts Manufacturing Innovation Initiative (M2I2) and Advanced Manufacturing Workforce Training (AMTG) programs. Similarly, the Commonwealth Federal Matching and Debt Reduction Fund is the federal matching fund administered through FFIO at the Executive Office for Administration and Finance (EOAF) that has supported defense and national security related proposals and applications to federal funding opportunities. FFIO provides an active partner for DOW opportunities that rely on matching funds. Additionally, workforce development programs have indirectly targeted some defense-related applicants, such as veteran workforce programs under the Executive Office of Veteran Services.

SHIELD marks a turning point for the state by asking the questions, "What existing or planned programs, initiatives, and incentives are available to support defense sector growth?" and "Are they currently being leveraged or marketed to accelerate defense sector growth?" Per Section 1 of the Executive Order, SHIELD worked with each of Massachusetts Executive Offices and their agencies to inventory and assess the applicability of the Commonwealth's existing tools. More than 170 existing programs, incentives, or initiatives were evaluated and over 100 were identified as applicable to the defense sector where they were previously not directly marketed as such.[27] Most initiatives are, at least, potentially relevant to defense-sector organizations. However, the programs lacked deliberate engagement, explicit eligibility pathways, and sustained outreach to the Massachusetts Defense and National Security Ecosystem. Before SHIELD, EOED Assistant Secretary for Business Growth estimated that more than 30 Commonwealth agencies are working in some way with the defense sector. Some programs already see a majority of grants awarded to defense-oriented companies, including the Massachusetts Manufacturing Accelerator Program (MMAP). Other MassTech grant programs, like those provided through NEMC, were awarded entirely to defense-focused organizations. The opportunity is now to create a single front door to access these programs.

The state's well-developed initiatives in applied AI, advanced computing, robotics, healthcare, life sciences, energy systems, and innovation infrastructure can support the defense sector. Additionally, some of the Commonwealth's economic development programs, specifically the deep technology venture fund, START programs from MassVentures, M2I2's competitive grant program, and EOED's business development incentives, can prioritize defense technologies as they have done for these other critical sectors. There are more potential gains when these incentives are combined with the state's strengths in workforce development, testing infrastructure, and business support and integration.

[27] Programs listed in Appendix C.

By improving outreach and aligning programs around dual-use innovation, workforce development, and infrastructure, the Commonwealth can integrate an established set of initiatives into a cohesive and nationally competitive defense-sector strategy. As an initial step, Governor Healey announced at the start of the SHIELD initiative, that the Business Front Door program under the Executive Office of Economic Development (EOED) would be identifying defense sector organizations explicitly and guiding them towards applicable programs and opportunities.

Top Challenges

An essential initial step of the SHIELD Initiative was to identify key challenges existing defense sector participants face in Massachusetts, as well as those potential new entrants encounter.[28] MassTech, in its role as SHIELD chair, documented the challenges surfaced by ecosystem participants and then organized and prioritized the challenges with the full SHIELD Working Group at SHIELD Day 4. Notably, the Massachusetts Defense and National Security Ecosystem is large and includes everything from mature participants traversing academic institutions and laboratories conducting early research and discovery to early-stage startups commercializing technologies, manufacturing companies scaling prototypes to production, and legacy defense contractors integrating components into finished systems for defense acquisition and warfighter needs. As such, the feedback targeted challenges at different technological stages: addressing the "lab-to-fab" gap when moving beyond discovery, navigating the "resource maze" in commercialization, modernizing infrastructure of small enterprises in scaled manufacturing, and streamlining the fragmented demand signal of federal acquisition for both capability modernization and readiness missions. The prioritized challenges in each group are included later in the report.[29]

Viewed in their entirety, the challenges[30] reveal both systemic inefficiencies and economic pressures that disadvantage the state's competitive position in relation to other states and slow growth for defense ecosystem participants. Massachusetts has demonstrated a track record of direct and consistent state support, notably in the life sciences and clean energy sectors. The sprawling defense sector is ready and primed for this moment of leadership and support. At the same time, the federal government is the primary customer and compliance arbiter for this sector, adding complexity to the market dynamics. Some defense industry participants shared their perspective that Massachusetts needs to more actively drive legislation, programming, and funding on behalf of the Massachusetts Defense and National Security Ecosystem. The State of Indiana was highlighted as exemplary for microelectronics, biomanufacturing, hydrogen, and drone related federal funding wins aligned with national security priorities. The disadvantage created by insufficiently representing Massachusetts strengths and commitment to supporting the US economic and national security mission leads to fragmentation and inadequate coordination. Massachusetts has the talent and capacity to address the critical needs of the warfighter for core, existing or developing, novel capabilities and the associated funding opportunities. With no clear statewide home that can provide a single-entry point for curated collaboration, Massachusetts lacks opportunities for companies, researchers, investors, and government partners to find each other and align on defense needs or partner on new opportunities.

[28] Commonwealth of Massachusetts (2025). Executive Order No.648: Establishing a Strategic Hub for Innovation, Exchange and Leadership in Defense.

[29] All identified challenges are included in Appendix D.

[30] For SHIELD's purposes, a challenge is defined as a specific technical, structural, or regulatory barrier that prevents the seamless movement of innovation from laboratory research to scaled defense production and operational use by DOW. Additionally, challenges are presented separately from opportunities, which are the focus of the Action Agenda.

Beyond statewide connection, several challenges were isolated to individual stakeholder groups or at inflection points along the technology-to-capability lifecycle. For example, small enterprises face outsized burdens to modernize facilities and satisfy rising security and cybersecurity compliance requirements. New entrants often struggle to identify qualified partners as well as identifiable pathways to transition promising technologies into defense programs. Even when early prototypes succeed, many efforts stall amid often-difficult handoff from proof-of-concept to scalable, repeatable, modern manufacturing due to limited capital, infrastructure, and operational support. Compounding these barriers, manufacturers report persistent difficulty recruiting, training, and retaining the skilled workforce required to expand capacity and compete for defense production. Actionable information about the needs, interests, and struggles of the members of the Massachusetts Defense and National Security Ecosystem remains limited and out of reach without coordinated, structured engagement at the state level. Ultimately, these hurdles have resulted in a partially disjointed innovation pipeline that limits the full potential of the state's defense sector and slows domestic value chain creation.

Many of these challenges are not isolated to Massachusetts, nor are they limited to the defense sector. Some of the identified challenges, such as costs to businesses, are felt across industries but may be amplified in defense-related sectors due to additional economic pressures. Other challenges, such as compliance requirements, are specific to the defense industry and create widespread bottlenecks slowing acceleration and growth. The good news is that there are opportunities to address and mitigate many of these challenges with action, intervention, and leadership. The maturity and complexity of the Massachusetts Defense and National Security Ecosystem require a well-coordinated, multifaceted approach to enable growth.

Research, Discovery and Technology Transfer Challenges

Academic laboratories and research institutions face a deteriorating landscape for basic research funding and experimentation. Recent shifts in federal priorities have challenged academic institutions to justify funding for developing proofs-of-concept into field-testable prototypes as DOW acquisition transformation shifts towards emphasizing speed-to-capability and fielded systems. While the Commonwealth remains home to world-renowned universities and DOW University Affiliated Research Centers (UARC), such as MIT's Institute for Soldier Nanotechnologies, SHIELD industry participants cited fundamental translation gaps between warfighter needs, domestic manufacturing and production considerations, and existing research and discovery. No single entity maintains responsibility for bridging research initiatives to DOW acquisition priorities which can result in academic institutions and principal researchers being disconnected from DOW requirements. Where partnerships between research and industry exist, participants cited disconnection between complementary or parallel lines of research creating identical technologies, sometimes within close geographies and partner institutions. Additionally, intellectual property (IP) negotiations are often highly complex and are shaped by the needs, constraints, risk tolerances, and objectives of all parties involved, thus sometimes resulting in a lengthy process in order to ensure the best outcome for everyone involved.

Commercialization and Defense Transition Support Challenges

New entrants, including startup companies and academic laboratories, face a sprawling and complex ecosystem without the larger and legacy organizations' networks and experience to navigate and find appropriate resources at the right time. New entrants report challenges partnering with established defense contractors for solution alignment to DOW and large-integrator requirements. While the Commonwealth has successfully championed other industries like biotechnology, the absence of cohesive, statewide storytelling and support disproportionately affects new companies, diminishing the perceived value to investors and masking defense sector role in the state's economy. Business support

programs and entrepreneurial support organizations, notably including The Engine, Massachusetts Manufacturing Extension Partnership, and MassChallenge, provide vital support to these emerging companies. However, SHIELD participants from small and startup businesses report extraordinary time and resources to navigate the copious organizations, similar nomenclature, and complex support environment. State-based resources, such as the Business Front Door and the state economic development quasi-agencies, can assist in navigation but can face difficulties in brokering introductions between participants across converging sectors and technologies. Meanwhile, the federal defense acquisition processes, systems, and organization structures are exceedingly difficult for new companies to understand as they undergo rapid transformation and can require deep relationship capital.

Scaled Manufacturing and System Integration Challenges

Small and medium manufacturers (SMM) struggle with a combination of risky and rising compliance costs and structural economic pressures for Massachusetts manufacturers. SMMs regard costs for infrastructure to modernize and meet accelerating and costly compliance requirements such as Cybersecurity Maturity Model Certification (CMMC) and DOW facility security clearance requirements as existential threats and often prohibitive. These outlays, estimated at a minimum between $100,000 and $500,000, represent a high-risk gamble because they must be made without guaranteed federal contracts and traditional lending institutions are often ill-equipped to finance specialized defense-related requirements. Economic pressures such as rising insurance premiums and wages, while imposed on manufacturers nationwide, impede Massachusetts companies more severely owing to higher-than-average costs of energy and housing compared to other states and regions. Compounding fiscal challenges, defense manufacturers across the state struggle to hire and develop a manufacturing workforce to keep up with accelerating demand, particularly in key categories such as microelectronics assembly, welding, computer numerical control (CNC) machining, quality assurance and testing roles. Most defense contractors are now competing with the commercial sector for talent across New England from AI and computer scientists to radio frequency (RF) engineers and electrical engineers necessary to keep up with established contracts, in addition to accelerating demand. Manufacturing today requires multi-skilled staff and reliance on electronic tools and processes, making on-boarding challenging and time consuming. While workforce challenges were reported across companies, SMMs workforce challenges amplified fiscal challenges. Many companies in defense contracting supply chains, especially those with 100 or fewer employees, report severe – even desperate – financial conditions as they struggle to manage workforce and compliance burdens simultaneously with sometimes limited access to operating capital. The sum of these challenges leads to the real possibility that many SMMs may leave the defense sector entirely or look to operate or grow beyond the state's borders.

Acquisition and Operational Readiness Challenges

Defense prime contractors and large integrators interact with academic institutions and laboratories, new entrant startups companies, and manufacturers of all sizes while facing challenges unique to their size, scale, and proximity to the Pentagon. Prime contractors may experience friction from DOW mandates to maintain production of legacy and exquisite systems while simultaneously scaling new and modular capabilities. Defense company partnerships with academic research institutions can be mismatched when academic laboratories focus on performance breakthroughs while DOW acquisition executives prioritize operational readiness and system-level outcomes. Defense prime contractors may view startup defense technologies and products as lacking design considerations, such as manufacturing capabilities or suppliers, and face challenges identifying defense-ready shops for small-batch prototyping or design maturation with digital simulation, AI, or other modern tools. Defense industry participants may target necessary innovation through activation of pre-existing suppliers and national networks rather than prioritizing local supply chain providers. While manufacturers

face a growing deficit of skilled labor, state-led training programs remain fragmented and difficult for employers to navigate. Furthermore, the talent pipeline is restricted by a misalignment in vocational education; many students enter technical programs without an interest in manufacturing careers, and additional work is necessary to keep young talent in the defense ecosystem workforce following graduation.

The Massachusetts Opportunity

Unifying the Massachusetts Defense and National Security Ecosystem on a mission-connected model to align and accelerate its contributions to national security is the opportunity that stands before the Commonwealth. The transition from a laboratory breakthrough to a warfighter's hands is rarely a straight line, and the speed at which these transitions occur has never been faster. Transitions require a complex convergence of enabling skills and technologies that must survive a rigorous engineering and integration phase to reach operational maturity and to be manufactured at scale, over shrinking timeframes. Further, at this moment, there is a concerted shift toward requiring commercial viability as a precondition for defense adoption to ensure long-term sustainment. This means that industry is being asked to absorb an increased amount of the burden of up-front solution development cost.

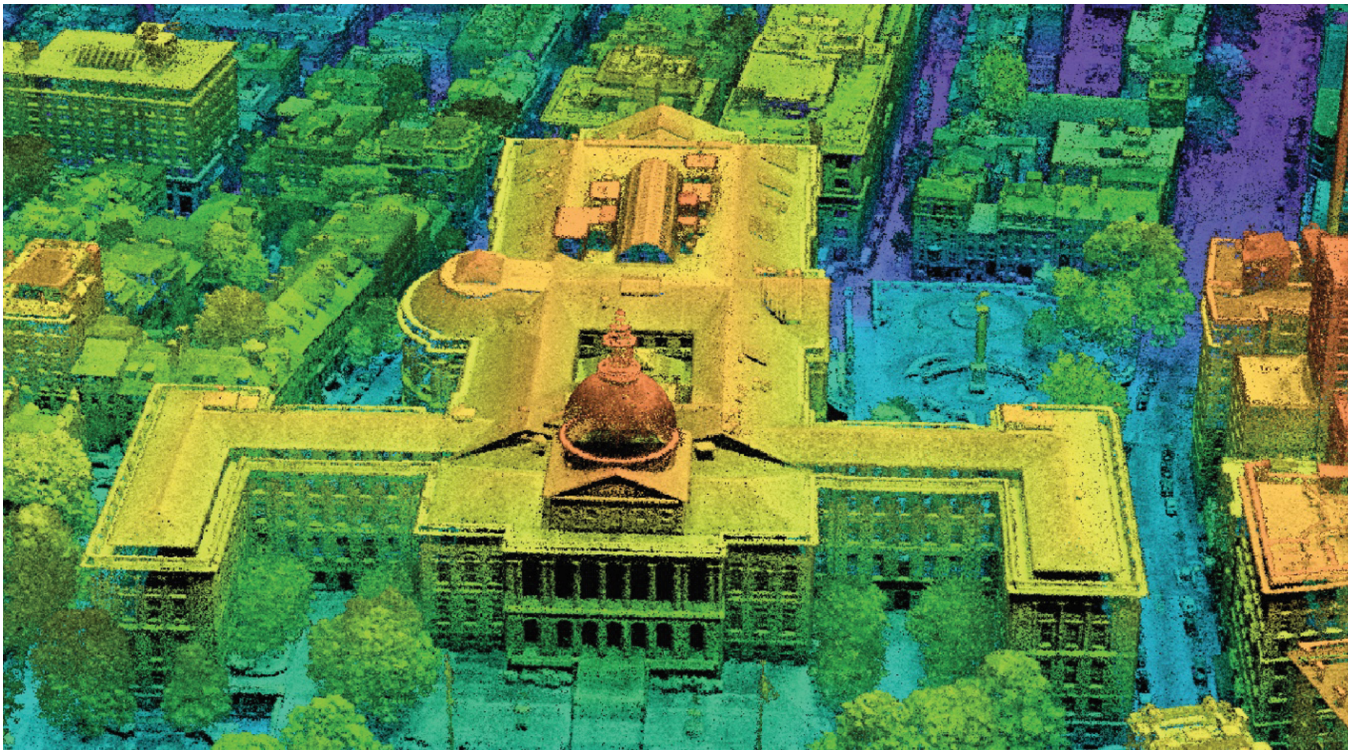


Figure 5: 3D Laser Radar Image of the Massachusetts State House (provided by MIT Lincoln Laboratory)

For Massachusetts, a vital and achievable strategic opportunity lies in moving beyond the state's traditional reputation as a peerless research hub while amplifying and orchestrating the statewide ecosystem to become the nation's premier innovation engine for rapid and efficient technology-to-capability transition. While the Commonwealth's academic and service labs remain foundational pillars of the nation's security engine, they represent only one piece of a much larger industrial puzzle. To fully realize this potential, the ecosystem must align behind a mission-connected approach that spans the lab to the field. That approach requires DOW use cases and warfighter needs to serve as a primary input at every stage, from basic science to system sustainment. Massachusetts-based defense primes

have active programs of record where they are demonstrating mission focused design; many of those programs require scaled production capacity and significant workforce increases. State government can help enable this mission-connected framework by organizing the ecosystem across the entire state, working with defense primes, connecting startups to investors, inviting DOW partners in, and helping them all navigate the complexity of the Massachusetts ecosystem while keeping up to date on top national priorities and challenges.

Mission-Connected Framework

Understandably, the different stakeholders that make up the Massachusetts Defense and National Security Ecosystem contribute different capabilities and capacities across the technology-to-capability lifecycle. Massachusetts' strong defense sector has been built over decades, anchored by defense primes such as General Dynamics Mission Systems in Pittsfield, Raytheon in Andover, and GE Aerospace in Lynn, with supply chains that stretch from Boston to the Berkshires. Newer entrants to the defense ecosystem contribute both novel solutions for 21st century challenges, such as unmanned aerial systems and autonomous maritime systems, as well as performance and capability improvements to legacy systems such as domestically manufactured microelectronics components. A Northeast Drone Innovation & Response Center has been proposed at Fort Devens with academia, local/state agencies, federal law enforcement, and DOW to develop a secure, scalable venue for unmanned aerial systems operations, detection, and counter-systems integration. Scientific advancements and technologies are developed at academic institutions, FFRDCs, and within industry specifically for defense applications. Still, other technologies are developed with other sectors in focus, such as biotechnology, human performance, AI, or climate resilience, but may have specific applications for defense. Whether novel capabilities or accelerated legacy production, Massachusetts contributes mission-connected capabilities across the spectrum of warfighter needs, but it can do more.

The mission-connected framework on the following page is illustrative. It showcases the convergence of several technologies that are actively being developed within Massachusetts-based research institutions or commercialized through newly formed startups. Outputs from this research, whether from healthcare and life sciences or advanced manufacturing and robotics, can then follow a technology-to-capability transition pathway that is mission-connected wherein a new capability emerges through convergence and integration. However, the capability can only fully meet the DOW readiness or modernization mission needs if it can be produced at the scale required for acquisition and sustainment. It is at this point where significant economic development outcomes can be achieved, currently demonstrated by the scale of employment, manufacturing, and supply-chain spend of defense primes across the state. This mission-connected framework is intended to be used as a guide, to help stakeholders and organizations understand their position and role relative to the broader ecosystem in the context of delivering on the DOW's missions. Significant funding opportunities within the services acquisition portfolios are not fully represented; however, DOW leaders can similarly utilize a mission engineering perspective[31] that cuts across science and technology, critical technologies, and mission capabilities.

[31] Office of the Under Secretary of War for Research and Engineering (OUSW R&E) (Undated). Critical Technology Areas, website.

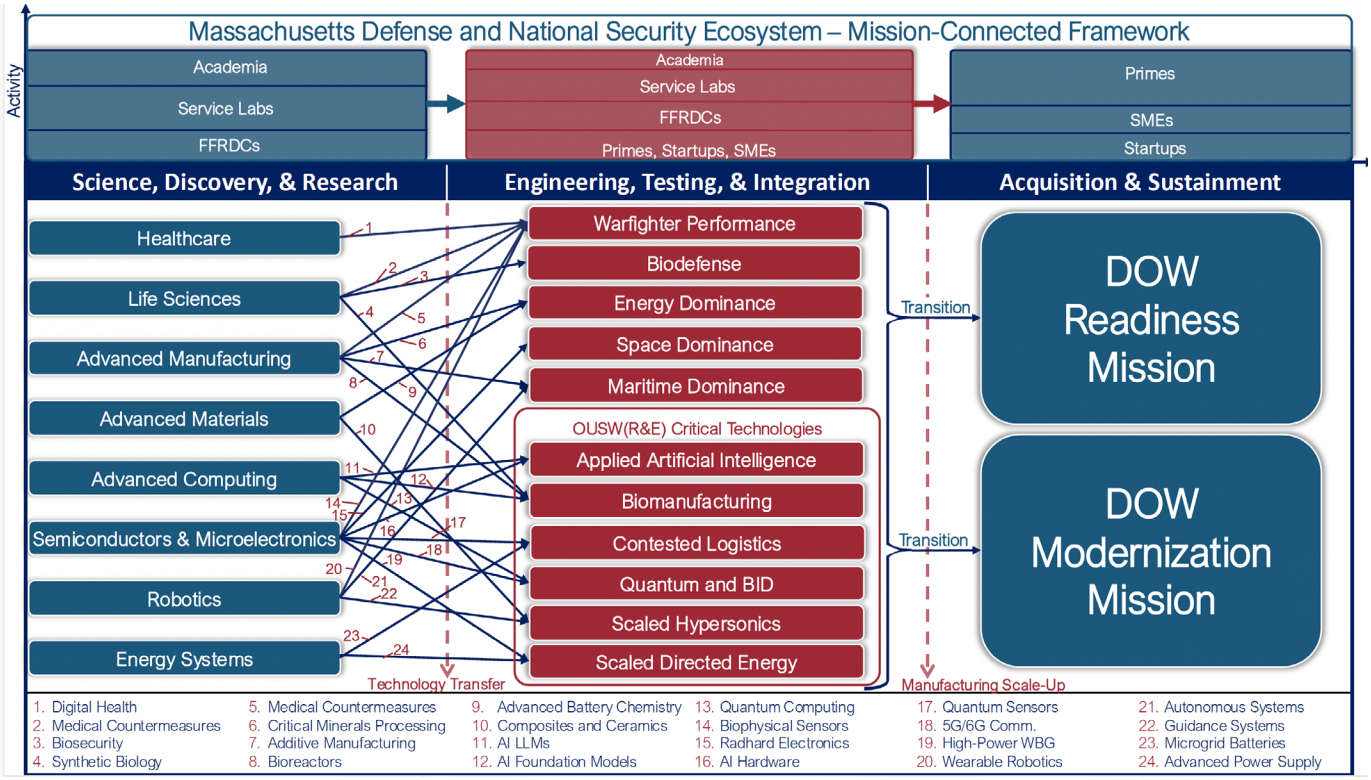


Figure 6: Mission-Connected Framework

This shift toward mission directionality is at the core of the SHIELD Action Agenda. By injecting real-world defense and national security use cases into the early stages of research and at key steps from the lab to the field through stronger engagement with DOW and mission partners, SHIELD can bridge the gap between discovery-led science and needs-led engineering while also addressing manufacturing scale-up and system integration challenges. The resulting transition pathway is not just mission-pull but mission-connected throughout, and created through partnership and collaboration across the Massachusetts Defense and National Security Ecosystem. This alignment is critical because transition failures occur where a technology's push and a mission's pull are misaligned due to a lack of a clearly defined and well-understood operational context or capacity requirements that establish the scale of the capability need. This missing context can lead to innovations that lack ruggedization or interoperability and slow the transition to operability, production, and fielding.

Success in this sector requires more than just scientific excellence. It demands an integrated environment where private and risk capital are mobilized beyond traditional venture investments in startups. There is a real opportunity to direct capital toward the physical and digital infrastructure of the defense industrial base, specifically in manufacturing scale-up and the strengthening of small- and medium-sized manufacturers, through strategic designations of opportunity and maritime prosperity zones that take into account defense and national security.

Massachusetts already has a demonstrated, state-led example of this kind of ecosystem orchestration with a proven track record. NEMC has established a transition-focused operating model with funding from DOW for this critical technology, including strong, lab-to-fab pathways that ensure academic prototypes in AI hardware and secure edge computing that have clear transition pathways supported by domestic value chains. For its startup members, NEMC provides the directionality required to

link developmental roadmaps to high-priority DOW missions and system integration pathways. This structured support allows small innovators to navigate the complex engineering phases where stakeholder contributions from prime contractors and FFRDCs typically peak.

NEMC's multi-state regional effort has achieved a deep alignment with the current national surge in defense and science funding that spans the lab-to-field lifecycle reflected in the Mission-Connected Framework. Similar federal programs, such as the Department of Energy's (DOE) $300 million Genesis Mission and the Pentagon's roughly $24 billion budget for initial Golden Dome acquisition programs, and anticipated future investment in orbital warfare readiness, demonstrate strong impetus for warfighter-aligned, mission-connected solutions. By leveraging national programs like these and establishing strategic New England or Northeast regional partnerships, Massachusetts can transform its research strengths into the modern defense industrial powerhouse mandated by the 2026 National Defense Strategy.

The Convergence of Economic Development and National Security

A key part of **The Massachusetts Opportunity** is further leveraging what it has under a unified defense sector strategy. The state boasts a robust network of quasi-state economic development agencies that can serve as powerful force multipliers for national security priority areas spanning emerging, advanced manufacturing, and deep technologies; life sciences; clean energy; industrial finance; and venture capital. While these agencies possess broad technology, sector, and capital missions, their specialized programs, infrastructure, and services indirectly support the defense sector in a fragmented way, as evidenced in SHIELD's executive branch defense program review. The agencies do drive ecosystem mobilization, capacity building, and critical technology enablement through the deployment of both dilutive and non-dilutive strategic capital. The defense sector benefits from their investments in early-stage commercial innovation, advanced manufacturing, and testing infrastructure. Also, these agencies bridge critical gaps between laboratory concepts and operational deployment. They provide a vital state-level engine that can be further focused and coordinated to contribute to the long-term modernization goals and immediate operational readiness requirements of the DOW while helping companies bridge the gap between prototype and commercially viable products. The defense sector support provided by the quasi-state economic development agencies can be further amplified and made more intentional; they form a strong foundation to unify under a mission-connected strategy.

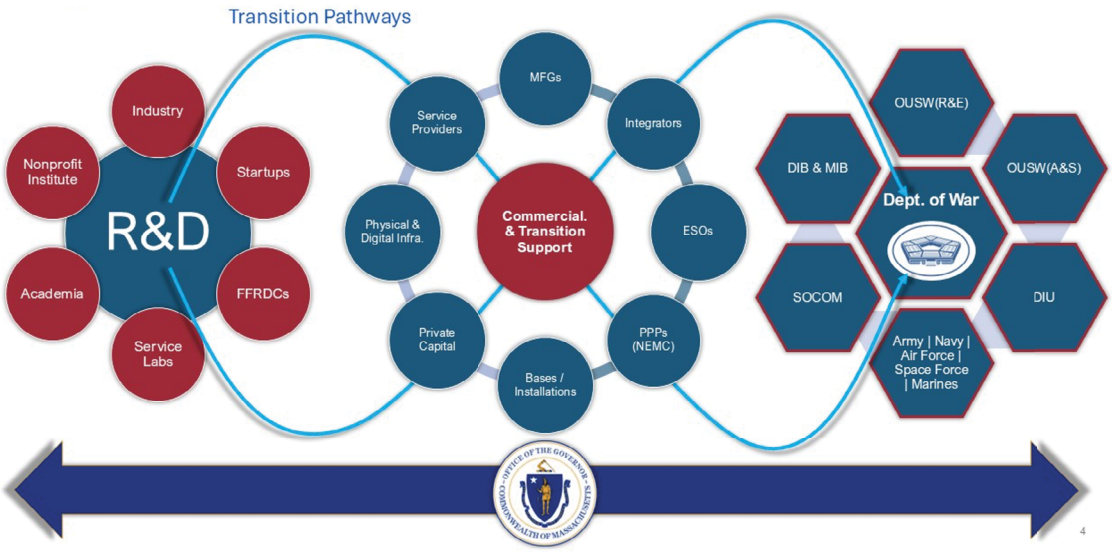


Figure 7: Ecosystem Alignment for Technology-to-Capability Transition

Ecosystem mobilization, capacity building, and critical technology enablement are core parts of MassTech, MLSC, and MassCEC, operating as primary institutional architects for specialized portions of the state's innovation economy, including life sciences, energy systems, emerging technologies (e.g. quantum, robotics, AI), marine tech, advanced manufacturing, biomanufacturing, cybersecurity, healthcare, and more. These agencies build interconnected ecosystems and administer grant programs that can lower the barriers to commercialization. Each targeted ecosystem bridges the gap between advanced R&D, engineering and integration, and manufacturing while enabling access to critical enabling and resiliency resources. Aligning existing and future efforts across these agencies under a unified mission-connected approach can ensure that regional infrastructure, advanced workforce training, and targeted capital pools align with DOW's long-term modernization priorities and immediate operational readiness mandates. The mission-connected approach ensures that private and third-party capital can quickly find potential investment opportunities.

Access to strategic capital through venture funding, commercial financing, equipment loans, and loan guarantees empower organizations within the Massachusetts Defense and National Security Ecosystem to make forward progress. MassVentures and Massachusetts Development Finance Agency (MassDevelopment) currently administer investments and programs across this financial instrument spectrum and should be included as part of a cohesive state-wide defense-sector strategy. In addition to seed-stage venture investments, MassVentures administers the SBIR Targeted Technologies (START) program, which provides sequential, non-dilutive matching grants to Massachusetts companies that have already secured federal Phase II SBIR or STTR awards from components like DARPA, AFWERX, or the Army. MassDevelopment leverages tailored commercial financing, equipment loans, and loan guarantees to secure the physical infrastructure underwriting the defense industrial base, enabling sub-tier defense suppliers to rapidly upgrade to advanced CNC machinery, robotics, and secure IT infrastructure necessary for compliance. Beyond industrial finance, MassDevelopment's stewardship and redevelopment of 4,400 acres of Devens, Mass., with 5,000 acres remaining in service for the Devens Reserve Forces Training Area, into an innovation and manufacturing hub, showcases a unique model of public-private collaboration and opportunity for future growth. Another potential source of funding that is strategically important and of great interest to DOW as they increase spending is the state's the Commonwealth Federal Matching and Debt Reduction Fund ("Federal Matching Fund"), administered by FFIO, that the state has leveraged for federal funding pursuits spanning transportation infrastructure, veteran support services, CHIPS and Science Act proposals, and more.

Ultimately, the goal of the SHIELD Action Agenda ensures that the Commonwealth's contribution to defense and national security do not stop at discovery or at the state border. Strengthening national security reinforces the Commonwealth's overall security nor economic security; that strength is driven by all phases of the defense technology lifecycle and the domestic value chains that support them. Moving forward, it is critical to leverage existing strengths, resources, and ecosystem partners through a fully mission-connected lifecycle. The SHIELD approach intends to build a pathway that increases and accelerates meaningful contributions to DOW readiness and modernization missions from across the state and the region. Massachusetts can secure its role as a vital node in the national DIB, foster ecosystem alignment, and provide clear, directional pathways while leveraging state funding through federal and private capital to advance its economic development mission and our defense sector as a whole.

This is **The Massachusetts Opportunity**.

SHIELD Action Agenda

The SHIELD Action Agenda presented in this report aims to exceed the mission conveyed by the Executive Order, by not only playing offense on defense, but winning. To meet the convergence of economic development and national security head on and catalyze economic growth, job creation, talent recruitment and retention, and technology-to-capability transition. To achieve this, priority recommendations span support for ecosystem alignment, strategic investments, and deeper federal engagement. This agenda takes advantage of the co-location of Massachusetts' world-class innovation ecosystem and military personnel, as well as its close relationship to the Pentagon. The SHIELD Action Agenda is organized into seven areas as thematic pillars, inclusive of the priority recommendations detailed below and additional individual recommendations.[32] Each of these areas identify a set of actions which contribute to advancing Massachusetts Defense and National Security Ecosystem priorities. An iterative process ensured action items mapped to the ecosystem challenges that were surfaced through SHIELD's engagements. Taken as a whole, the recommendations are intended to enable cohesive collaboration for ecosystem participants to leverage the strengths and contributions of organizations across the state and accelerate technological and economic success within the Commonwealth.

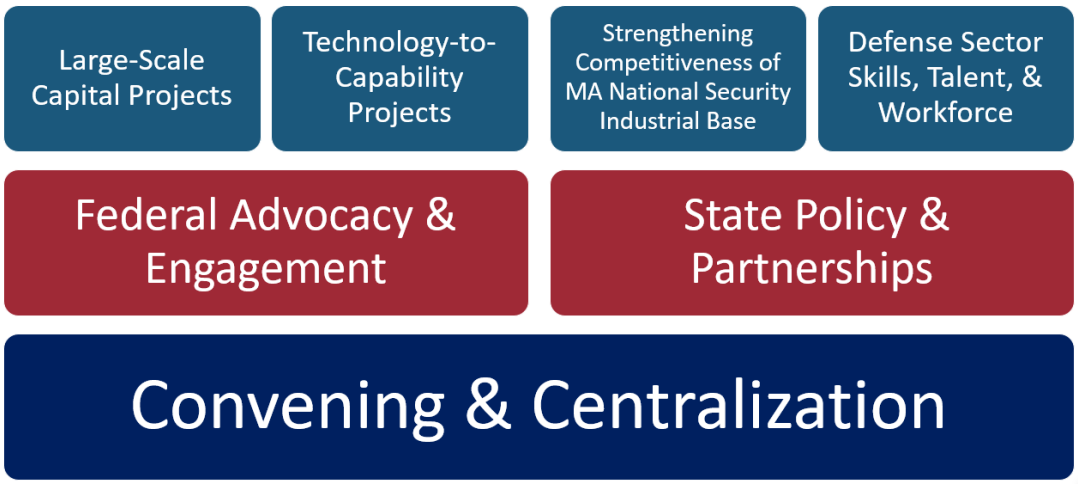


Figure 8: SHIELD Action Agenda Framework

Collectively, these items serve as the functional building blocks of the SHIELD Action Agenda for the Massachusetts Defense and National Security Ecosystem. The suite of action items is anchored in an economic development framework that bridges the needs of Massachusetts' large defense prime contractors and new industry entrants to transition emerging technologies to the warfighter. These items are intended to strengthen both the competitiveness of Massachusetts' supply chain and defense and national security industrial bases while inviting investment and regional partners into the state.

[32] The full list of action items considered can be found in Appendix D.

SHIELD's efforts have revealed the profound opportunity to align behind a mission-connected approach that allows for rapid and broad movement of technology from the lab to the field. With these opportunities on the horizon, as well as feedback from the ecosystem, the initiative has synthesized these multi-faceted challenges into prioritized action areas designed to foster a more resilient, agile, and quicker Massachusetts Defense and National Security Ecosystem.[33]

Action Area: Convening and Centralization

Convening and Centralization action items focus on sustaining and accelerating the Massachusetts Defense and National Security Ecosystem through large and focused events, along with centralized resources and tools to foster ecosystem collaboration. The proposed action items are:

1. **Establish a Massachusetts Defense and National Security Ecosystem economic development home.**

   - Massachusetts should codify a dedicated economic development home for the Massachusetts defense sector to coordinate and promote efforts to foster the development of the next generation of defense-related innovations, enhance the competitive position of the Commonwealth in defense and national security sectors, and support the development of a defense-ready workforce.
   - A Massachusetts defense home with full-time staffing that can lead initiatives, drive programs, and convene and engage the Massachusetts Defense and National Security Ecosystem on a continuing basis through continued events and activities.
   - A centralized defense home may facilitate coordinated engagement with federal elected officials and defense agency leadership, market Massachusetts' defense ecosystem relative to other states, and amplify the strengths and benefits that incumbent defense contractors play in anchoring the Massachusetts Defense and National Security Ecosystem with a co-located world-leading innovation ecosystem that creates defense and dual-use new entrants.

2. **Leverage and connect existing manufacturing and supply chain participants through a digital-backbone for the Massachusetts Defense and National Security Ecosystem.**

   - Massachusetts should develop, deploy, and maintain a digital collaboration platform for the defense sector to identify and connect, partner, and cooperate (e.g. pursue federal funding, supply chain partnerships, etc.).
   - Expand NEMC's capability and capacity network beyond microelectronics to include facility and equipment inventory in support of broader defense sector needs in partnership with Massachusetts' quasi-state agencies. This inventory could assist organizations to identify and collaborate with existing catalogs of defense ecosystem capabilities to enable defense technology startups to find service centers, unique facilities, and accessible university laboratories in New England to support partnerships and utilization from across the nation.
   - A shared digital infrastructure with the purpose of accelerating defense commercialization would build connectivity between and with manufacturing innovation centers (BIC, MIT.nano, Greentown Labs, the Engine), the manufacturing extension network (MassMEP), entrepreneurial support organizations and accelerators (MassChallenge, the Engine Accelerator, Mass APEX Accelerator), and connector platforms (FORGE).

[33] An action area is a high-level strategic category used to organize related action items into a cohesive policy framework.

3. **Support incumbent Massachusetts defense contractors.**
    - Work with large incumbent defense contractors to aggregate their supply chains, workforce, and technology needs on a Northeast-regional level to expand opportunities.
    - Incumbent Massachusetts defense contractors require assistance identifying and training a manufacturing workforce necessary to meet increased demand for legacy systems.
    - Massachusetts can assist defense contractors looking to expand their facilities and infrastructure necessary to support increased production demands.

4. **Leverage existing state and quasi-state agencies' leadership, advisory groups, boards, and commissions to further the defense mission.**
    - Engage existing leadership organizations, such as the Advanced Manufacturing Collaborative, to organize ongoing input from the statewide manufacturing sector regarding higher-level defense sector missions.
    - Engage the Workforce Skills Cabinet, STEM Council, and other bodies to ensure defense sector needs and priorities are continuously elevated.
    - Ensure the Massachusetts Defense and National Security Ecosystem is properly represented across advisory group or subject matter expert panels for critically adjacent sectors and technology areas that contribute to the defense sector.

5. **Designate and connect defense and security points of contact across academic institutions, FFRDCs, small businesses, and large defense contractors.**
    - Academic institutions, FFRDCs, small businesses, and large defense contractors should designate key points of contact for continued engagement and effective collaboration. (Note, small businesses could be represented through existing trade associations.)
    - On an ongoing basis, connect program leads or defense sector contacts at manufacturing innovation centers, the manufacturing extension network, entrepreneurial support organizations and accelerators, and the state quasi-governmental organizations.
    - These primary points of contact should facilitate bi-directional information sharing and disseminate state priorities, initiatives, and opportunities internally, as applicable.
    - Coordinate information flows from organizations with multiple sites or campuses (e.g. General Dynamics, the University of Massachusetts, etc.).

Action Area: State Policy and Partnerships

State Policy and Partnerships action items focus on actions to strengthen state defense policy, foster regional partnerships with neighboring states, leverage MA leadership beyond our borders, and champion the state's defense sector on a global level. The proposed action items are:

1. **Establish and expand defense state incentives equal to other high-growth sectors.**
    - Massachusetts should establish state incentives equivalent to those offered to other high-growth sectors, such as life sciences and climate tech.

- Incentives should target new entrants and companies which can deliver differentiated technologies in the supply chain, including cybersecurity, sensors, payloads, optics, communications, and software-based capabilities. Incentives may include: (i) non-dilutive capital, (ii) infrastructure, (iii) site-readiness and R&D grants, (iv) property tax abatements, (v) job creation, (vi) investment and R&D tax credits, (vii) loan guarantees, (viii) bond financing, (ix) energy credits, and more.
- Extend the obligation deadline for the Federal Matching Fund from December 1, 2026, to December 1, 2029, as proposed in the Governor's DRIVE Act filed in July 2025, and reauthorize additional funding to support the Commonwealth's continued pursuit of federal funding opportunities.

2. **Advance Opportunity Zone 2.0 and Maritime Prosperity Zone initiatives that center on defense and national security opportunities.**
   - Ensure defense sector support and national security consideration for upcoming Opportunity Zone 2.0 and Maritime Prosperity Zone selections and designations in the lead up to federal submission deadlines.
   - The Executive Office of Economic Development is developing a maritime strategy in response to the release of America's Maritime Action Plan, which proposes establishing 100 Maritime Prosperity Zones (MPZs) explicitly modeled after the Opportunity Zone tax framework for investors supporting maritime industries[34]. Maritime defense opportunities should be considered for inclusion in the Massachusetts maritime strategy.
   - Evaluate state-based funding and incentive policies that can enable state economic development leadership while addressing federal defense and national security objectives.
3. **Create a Massachusetts biosecurity framework initiative.**
   - Establish and resource a key defense sector initiative for a Massachusetts biosecurity policy framework initiative that resides at the intersection of the state's defense and life sciences sectors. The recent Executive Office of Technology Services and Security cybersecurity policy framework across state secretariats and agencies could serve as an example.
4. **Pursue New England and Northeast regional defense partnerships.**
   - Build on recent cross-state partnerships, like the DOW Microelectronics Commons Hub with NEMC or the EDA Tech Hub proposals with Rhode Island for marine tech and Vermont for gallium nitride (GaN) design, to support regional maritime, defense, and national security partnerships and domestic value chain development.
   - Additional opportunities can include quantum efforts with New York and Connecticut; biomanufacturing and regenerative medicine with New Hampshire; and advanced manufacturing, cybersecurity, and space systems region-wide.
   - Further opportunities can include UAS and counter-UAS development and testing with New York including the FAA UAS Test Site, and Advanced Air Mobility (AAM) initiatives with Maine, New Hampshire, and Rhode Island.

[34] White House. (2026). America's Maritime Action Plan. Accessed June 8, 2026 at https://www.whitehouse.gov/wp-content/uploads/2026/02/Restoring-Americas-Maritime-Dominance.pdf.

- SENEDIA and the Underseas Technology and Innovation Consortium are models and resources that are adding value to the defense ecosystem in New England. Consider these proven ecosystem models, particularly for how consortium-based approaches can organize defense sub-sectors, marshal resources, and elevate the role defense plays in the Commonwealth.

5. **Support international opportunities for defense and dual-use technology partnerships.**

- Massachusetts academic and nonprofit organizations partner with foreign allies on defense technology programs, such as MassChallenge's participation in the NATO DIANA program and support to organizations within Ukraine.
- The Mass Wins Act provides a basis for promoting and expanding international partnerships and residency partnerships with the Massachusetts Defense and National Security Ecosystem.
- Provide opportunities for active engagement at international events and showcases, including the International Paris Air Show.

Action Area: Federal Advocacy and Engagement

Federal Advocacy and Engagement action items aim to proactively communicate state priorities to the federal Congressional delegation and identify opportunities for inclusion of specific items in the budget. For Massachusetts to realize the full economic potential of its defense sector and contribute its fullest to national security, more coordinated and frequent engagement with the MA Federal Delegation and decision-makers in Washington DC is needed. The proposed action items are:

1. **Create a state- or consortium-based office for federal interface.**

- Establish a defense-specific function in Washington, D.C. to advocate for the Massachusetts Defense and National Security Ecosystem.
- A Washington, D.C.-based advocacy function may act as a communications and advocacy resource for sharing early signals on federal priorities with the Massachusetts Defense and National Security Ecosystem, help smaller defense organizations navigate complex federal compliance, liaise with and educate Congressional staff, and shape policy and legislation supporting the ecosystem.
- A Massachusetts defense-specific function may be housed and/or coordinated within a single Massachusetts defense organization. Similar functions exist within state-based trade groups and associations such as the Aerospace and Defense Alliance of California, Washington Aerospace Partnership, and Arizona Technology Council's DC Fly-In.

2. **Strengthen partnership between federal decision-makers, the state, and the Massachusetts Defense and National Security Ecosystem.**

- Representation, participation, and promotion at the federal level is necessary for Massachusetts to compete proactively with other defense-active states. Direct engagement with DOW's Economic Defense Unit, and other acquisition officials ensures the ecosystem has up-to-date information on current defense needs and requirements.
- Strengthening the engagement and partnership with federal defense and security personnel operating in Massachusetts and New England is key. This can be achieved by continuing work with the MASS-TF and MassDevelopment to enable the ecosystem to engage with bases including Hanscom Air Force Base, their resident Portfolio Acquisition Executives (PAE) and Program

Executive Offices (PEO), and their strategic real estate line of effort. Similarly, opportunities for defense sector growth aligned with the SHIELD Action Agenda should be considered part of the MassDevelopment-led master planning effort underway at Joint Base Cape Cod (JBCC).

3. **Identify and communicate priorities for federal delegation on defense sector and engage frequently with decision-makers in Washington, D.C.**
   - Coordinate the top defense sector priorities that could be proactively included or aligned with federal legislation timelines.
   - Convene the federal delegation annually to align with the state's defense sector priorities on a schedule complementary to the congressional National Defense Authorization Act (NDAA) mark-up.
   - Build on existing meeting structures and communication channels between the Administration (including FFIO, the Governor's Office, and other relevant stakeholders) and the congressional delegation to continue highlighting emerging defense-related opportunities and issues.

4. **Organize and disseminate federal opportunities across the Massachusetts Defense and National Security Ecosystem.**
   - A designated state entity should identify, organize, track, and communicate defense-specific federal funding opportunities and information in collaboration with FFIO, MASS-TF, and other stakeholders.
   - Integrate and consolidate federal funding information tools being utilized across state agencies.

5. **Establish a common voice for Massachusetts Defense and National Security Ecosystem priorities.**
   - Push and coordinate key priorities from a statewide perspective by coordinating with Massachusetts-based organizations (e.g., academic institutions and companies) and regional entities that have a representation and relationships in Washington D.C. (e.g., New England Council (NEC), SENEDIA, and NDIA.)
   - Collaborate with the state defense industry for a common approach to federal advocacy. For key efforts, work with Massachusetts defense sector organizations and their Washington, D.C. representation.

6. **Engage key DOW decision makers operating in the Massachusetts Defense and National Security Ecosystem on defense sector needs and capabilities.**
   - Engage newly established PAEs across services to ensure the ecosystem has up-to-date information on actual needs and acquisition requirements.
   - Engage representatives of agencies that fall under the defense acquisitions, including the newly established DOW Economic Defense Unitthe Defense Innovation Unit (DIU) and the Office of Strategic Capital (OSC).
   - Deepen coordination and relationships with partners operating out of the New England X United States (NEXUS) Center at the UMLARC, this includes SOCOM, DIU, AFWERX, DEVCOM, and others.

Action Area: Large-Scale Capital Projects and Investments

Large-Scale Capital action items focus on establishing advanced physical infrastructure to support surge production and specialized manufacturing needs. Investment implementation should take into consideration opportunities to leverage existing private, federal, and other third-party capital or resources in concert with state investment. The proposed action items include:

1. **Align investments with Submarine Industrial Base (SIB) and Maritime Industrial Base (MIB) to expand manufacturing capabilities for maritime systems.**
   - Matching SIB and MIB investments can support the development, test, industrialization, maintenance, and readiness for small and medium autonomous maritime systems.
   - Develop and support broader MIB funding streams for SIB supply chain expansion.

2. **Investments in defense biomanufacturing infrastructure, with an emphasis on priority bioindustrial applications and critical medical countermeasures.**
   - Defense biomanufacturing secure scale-up and deployment infrastructure is needed in support of biological sciences applications in areas like therapeutics and energetics supply chains.
   - United States therapeutic and energetic supply chains remain dependent on China-linked contract development and manufacturing organizations (CDMO) and foreign-based components and manufacturing inputs, including energetics suppliers, as opposed to domestic sources.

3. **Invest in secure facilities and equipment applicable to defense work.**
   - The cost of Sensitive Compartmented Information Facility (SCIF) construction and classified computing infrastructure is a hurdle necessary for defense work and launching of defense-ready companies. The state may consider a co-investment model that enables shared secure facility access across the state.
   - Develop, upgrade, and coordinate the use of secure facilities and equipment including classified computing, R&D, and test and evaluation facilities, or those that could be used for defense work with additional features or conditions.

4. **Support physical and digital infrastructure that accelerates and de-risks commercialization of high-complexity, high-impact defense programs (e.g. autonomous robotics systems).**
   - Manufacturing adjacencies such as advanced simulation, digital engineering, AI, and data analytics are critical to defense contractors. Building this infrastructure supports the Defense Digital Design-Engineering-Simulation-Manufacturing. Similarly, test facilities or infrastructure that enables outdoor testing of new ground and air autonomous vehicles, and sensor systems would increase iteration cycles and accelerate commercialization.

Action Area: Technology-to-Capability Projects

Technology-to-Capability action items prioritize funding for multi-organization collaborations that bridge the gap between applied R&D and defense acquisition through the formation of domestic value chains and transition acceleration. The proposed action items include:

1. **Funding to support DOW transition aligned projects that support the readiness or modernization missions.**
   - Funding to support multi-organization technology to capability projects aligned with DOW capability and critical technology needs, including capital expenditure for mission-directed applied R&D projects
2. **Engage DOW Portfolio Acquisition Executives on defense sector needs and capabilities.**
   - Engagement with newly established PAEs under DOW's Capability Portfolio Management (CPM) acquisition reform approach at Massachusetts bases and elsewhere, and capital expenditures for DOW Critical Technology transition projects.
3. **Invest in defense applied research and development and readiness infrastructure.**
   - Infrastructure to enable capability or mission directed applied R&D projects
   - Infrastructure necessary to support DOW transition of technologies and systems to support the readiness mission

Action Area: Strengthening the Competitiveness of Massachusetts National Security Industrial Base (NSIB)

Strengthening the Competitiveness of the Massachusetts NSIB action items center on lowering barriers for SMMs through modernization, compliance support, and enhanced visibility. The proposed action items in this area are:

1. **Establish a Cyber Maturity Model Certification (CMMC) support program.**
   - Funding to support an expanded CMMC program for small and medium manufacturers that builds on existing work of the MassCyberCenter and other ecosystem partners.
   - Consider implementation under a broader defense-ready effort that addresses a multitude of SMM needs.
2. **Build a Massachusetts defense-qualified supplier database.**
   - Provide resources to create an NSIB defense-qualified supplier database and matchmaking.
   - Look to partner with Northeast regional states that may have similar or related efforts.
3. **Facilitate connections and coordination between Massachusetts suppliers to connect with defense primes.**
   - Lead events and engagements that enable partnership with defense primes for Massachusetts-based suppliers and manufacturers in high-growth defense supply chain areas.
   - A strong supply chain exists but lacks general awareness across capabilities. Coordination requires upfront commitment and partnership from established defense prime contractors.
4. **Fund infrastructure to accelerate defense-ready Critical Technology capability and capacity.**
   - Infrastructure to expand, diversify or modernize Critical Technology capability and capacity including developing defense-ready capabilities, and investment in equipment for testing and integration.

Action Area: Defense Sector Skills, Talent and Workforce

This pillar addresses the human capital funnel, from K-12 STEM awareness to micro-credentials for technicians. The proposed action items falling in the area of Skills, Talent and Workforce include:

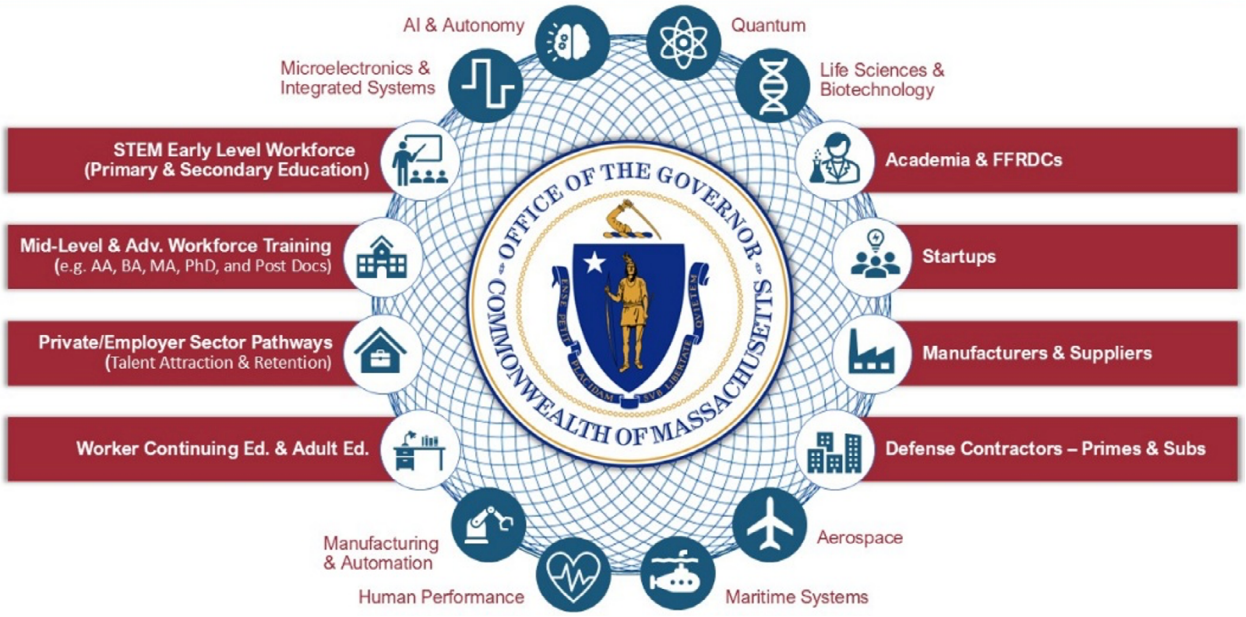


Figure 9: Education, Skills, Talent, and Workforce Landscape

1. **Funding to identify workforce needs of Massachusetts Defense and National Security Ecosystem and promote career pathways.**
    - Resources to support the Massachusetts defense sector on a continuous basis for identification of needs and development of programs for skills, talent, and workforce development.
    - Resources to support a marketing or an ongoing awareness campaign through a variety of channels to promote career pathways and opportunities in the defense industrial base.
2. **Build defense sector initiatives for talent and security clearance pathways.**
    - Establish dedicated incentives or funding to support defense and national security internships at Massachusetts-based companies with cross-secretariat coordination to address defense workforce housing, especially where housing constraints impact defense production capacity.
    - Resources to support a key defense sector initiative for security clearance pathways and clearable workforce pipeline, acknowledging that that defense work frequently requires United States citizenship and/or security clearances.
    - Research and consider a university-student security clearance case study, a limited study of facilitating clearances for students at universities could determine the extent that clearance for graduates could accelerate the defense talent pipeline.

3. **Build a cybersecurity compliance CMMC assessor workforce.**
    - Training to address a critical bottleneck, CMMC assessors, in the defense industrial base through Cyber AB-approved certified training organizations.
4. **Upskill critical defense employees.**
    - Address key sector issues by enabling employers to upskill their existing workforce, improve retention, and build internal talent pipelines, possibly through state-supported training grants to entities engaged in workforce development.
5. **Fund K-12 initiatives for STEM-related jobs.**
    - Provide competitive funding to support K-12 experiential learning initiatives that build student interest in critical technologies aligned to DOW priorities.

SHIELD Follow Through and Implementation

Massachusetts has equipped the United States' national security mission for the past 250 years. The Massachusetts Defense and National Security Ecosystem stands as a central pillar of the state's economy, prominently in the areas of advanced manufacturing, technological innovation, and labor market stability. Strengthening this sector is vital for Massachusetts because the strength of the defense sector is deeply coupled to the resilience of the general manufacturing economy. Additionally, the state's high concentration of defense-related innovation generates substantial technological spillovers that fuel broader commercial and dual use innovation. The defense sector also provides a stabilizing force in the Massachusetts labor market, particularly for high-skilled technical roles.

Maintaining the momentum developed by the SHIELD Working Group, addressing the four critical action items, as well as taking the initial steps in each of the seven areas in the SHIELD Action Agenda provides the best opportunity to capitalize on the activities and events that have occurred since Governor Healey signed the executive order in October 2025. The Massachusetts Defense and National Security Ecosystem is poised to build on the momentum created through the SHIELD Initiative. This is evidenced where existing efforts aligned to the Technology-to-Capability Projects area of the Action Agenda are already underway. NEMC has continued the execution of the second year of funding for Microelectronics Commons project while convening its members to pursue additional project funding through the 2026 Call for Projects. The BioNexus program, funded through a $3 million state commitment, is operationalizing the investment through the release of a notice of funding opportunity (NOFO) launched on June 9, 2026. SHIELD convened an Exchange event for Warfighter Performance Optimization (WPO) on May 29, 2026 at the Massachusetts State House; the Exchange hosted DOW program leadership along with industry leaders, medical institutions, and state and federal government officials to discuss opportunities arising from the Secretary of War's May 6, 2026 memorandum on WPO.

To take things to the next level, combining SHIELD's mission with NEMC's mission and organizational infrastructure under MassTech provides a clear and ready-made pathway forward. The SHIELD Initiative can carry on through smaller and more targeted working groups organized to align with the seven primary action agenda areas while taking advantage of ecosystem partners already working on solutions. Current Working Group members can continue to move this important work forward while inviting additional partners from the Massachusetts Defense and National Security Ecosystem to be brought into the effort. However, dedicated operating, investment, and workforce support resources are needed to make substantial progress on the SHIELD Action Agenda recommendations.

Massachusetts has taken meaningful steps during the period of the SHIELD Initiative to support further recognition and development of the Commonwealth as a defense state. The administration is taking a comprehensive approach to supporting the research and innovation ecosystem that underlies the Massachusetts Defense and National Security Ecosystem. The governor launched the Discovery, Research and Innovation for a Vibrant Economy (DRIVE) Initiative[35] in August 2025 to support the Commonwealth's research and innovation economy and to retain and attract talent. The 2026 Mass Wins Act, filed in April 2026, provides a targeted $305 million in capital authorizations to accelerate the Commonwealth's leadership in critical technology sectors and reduces operational barriers for businesses.[36] A cornerstone of this legislation is a $100 million authorization dedicated specifically to defense sector innovation, which functions as a primary funding mechanism to operationalize the SHIELD initiative.[37] This investment could support capital projects, research, and supply chain infrastructure across essential national security technologies, directly aligning with SHIELD's mandate to strengthen the Massachusetts Defense and National Security Ecosystem. Beyond direct sector funding, the Mass Wins Act introduced $75 million for applied AI and quantum computing, as well as $25 million for the robotics cluster, providing a complementary technological foundation for dual-use defense applications.[38] The state's ecosystem of defense companies and institutions could also benefit from comprehensive regulatory and talent-focused reforms in the Mass Wins Act expected to bolster regional competitiveness.

Further resources to support our defense sector are forthcoming. The Healey-Driscoll Administration recently announced a $70-million investment in Career Technical Education (CTE) program capital grants to 28 high schools and career technical schools across Massachusetts, which provides an opportunity to grow training and talent cultivation that benefit the defense sector.[39] Portions of previously committed state match funding for the success and sustainability of NEMC are being designated to operationalize the SHIELD Action Agenda beginning in FY27. Lastly, as identified in the executive branch review, an existing 100 programs, incentives, or initiatives have been identified to support defense sector growth. These resources and programs need to be operationalized as quickly as possible through the state's Business Front Door and other channels.

Answering the Call

When the SHIELD Working Group initially convened late last year, the discussion started by recognizing the formidable opportunity in front of us. The opportunity encompassed both the importance of the state fully recognizing the strength of its storied Massachusetts Defense and National Security Ecosystem, while at the same time, establishing SHIELD to take the sector to the next level.

An established sector has answered SHIELD's call, is activated, and is ready to work in partnership with the Commonwealth to take the vision and momentum created through the SHIELD Initiative and create a fully cohesive Massachusetts Defense and National Security Ecosystem.

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[35] Mass.gov (2025). The DRIVE Initiative: Learn about the Massachusetts Discovery, Research and Innovation for a Vibrant Economy (DRIVE) Initiative.

[36] Mass.gov (2026). Governor Healey Files Mass Wins Act to Create Jobs, Lower Costs and Attract Global Investment.

[37] Mass.gov (2026). Mass Wins: An Act Relative to Massachusetts Winning Global Investment, Talent, and Innovation.

[38] Mass.gov (2026). Mass Wins: An Act Relative to Massachusetts Winning Global Investment, Talent, and Innovation.

[39] Mass.gov (2026). Governor Healey Announces $70 Million to Expand Career Technical Education at 28 Schools, Add 2,500 Seats

The answer is to follow-through with bold leadership and support through organizational infrastructure, resourcing, and action. The SHIELD Action Agenda aims to do just that through intentional sector support, ecosystem alignment, strategic investments, and deeper federal engagement. This agenda takes advantage of the co-location of our world-class innovation ecosystem and world-class military personnel. The outlined suite of action items is anchored in an economic development framework that bridges the needs of Massachusetts' large defense primes and those of new entrants launching companies to transition emerging technologies to the warfighter. As they are executed, the action items will strengthen the competitiveness of Massachusetts' defense sector and regional and federal partners while inviting investment into the state. Implementing the SHIELD Action Agenda will help ensure Massachusetts continues its legacy of national security and defense manufacturing excellence, and assist in attracting additional resources to secure both economic stability and national technological dominance for the next 250 years.

Reference Materials

Glossary

The terms listed here are used with specific meaning in the context of the SHIELD Initiative and this report.

Term	Definition
Action area	An action area is a strategic category used to organize related action items into a policy framework.
Action items	An action item is a prioritized project or programmatic intervention designed to address a validated ecosystem challenge.
Biodefense ecosystem	The companies, laboratories, and service providers that develop and produce biological systems of importance to national security including biosecurity, biological data protection, warfighter performance, and bio-industrial manufacturing.
Challenges	A technical, structural, or regulatory barrier that prevents the seamless movement of innovation from laboratory research to scaled defense production and operational use by DOW.
Defense-ready	Companies that have the ability to work on defense contracts, including meeting standards such as cybersecurity compliance, holding active clearances when necessary, and using modern advanced manufacturing capabilities.
DOW transition pathway	Movement of an innovation from laboratory research to scaled defense production and operational use by DOW.
Dual-use	Dual-use refers to technologies, processes, and products that have potential application to defense and commercial use.
Massachusetts Defense Ecosystem	The integration of research institutions, prototyping and testing equipment and facilities, advanced manufacturing facilities of the Innovation Ecosystem with the diverse network of prime contractors and small businesses of the MA Defense and National Security Ecosystem.
Massachusetts Defense and National Security Ecosystem	The portion of the Defense Industrial Base (DIB) in the Commonwealth of Massachusetts, including the DIB's specialized sub-sectors, notably the Maritime Industrial Base (MIB), the Intelligence Industrial Base (IIB), and the broader National Security Industrial Base (NSIB).
Technology-to-capability transition	The process of moving technology from research and development phases into operational production, commercialization, or government acquisition, by advancing maturity - typically Technology Readiness Levels (TRLs) 1–4 through TRLs 6–9 - to ensure technologies are deployable and commercially viable.

Acronym Listing

This table contains a reference list of all acronyms in the report.

Acronym	Meaning
AAI	Applied Artificial Intelligence
AFB	Air Force Base
AFWERX	Air Force innovation program (AFWERX)
AI	Artifical Intelligence
AIM	Associated Industries of Massachusetts
Artemis	NASA's Artemis missions
AUV	Autonomous Underwater Vehicle
AVEN	Axisymmetric Vectoring Exhaust Nozzle
BAE	BAE Systems
BASE-X	BASE-X
BENS	Business Executives for National Security
BIC	Berkshire Innovation Center
BioNexus	BioNexus program
CAM	Center for Advanced Manufacturing
CapEx	Capital Expenditure
CDMO	Contract Development and Manufacturing Organization
CMMC	Cybersecurity Maturity Model Certification
CNC	Computer Numerical Control
COTS	Commercial-Off-The-Shelf
CPM	Capability Portfolio Management
CREW	Command Readiness, Endurance, and Watchstanding
CTE	Career Technical Education
DARPA	Defense Advanced Research Projects Agency
DEVCOM	U.S. Army Combat Capabilities Development Command
DIB	Defense Industrial Base
DIU	Defense Innovation Unit
DOE	Department of Energy
DOW	Department of War
DRIVE	Discovery, Research and Innovation for a Vibrant Economy
EDA	Economic Development Administration
EOAF	Executive Office for Administration and Finance
EOED	Executive Office of Economic Development
ESO	Entrepreneurial Support Organization
FAA	Federal Aviation Administration
FFIO	Federal Funds and Infrastructure Office

Acronym	Meaning
FFRDC	Federally Funded Research and Development Center
FORGE	FORGE
FY	Fiscal Year
GaN	Gallium Nitride
GDP	Gross Domestic Product
GE	General Electric / GE Aerospace
IP	Intellectual Property
JBCC	Joint Base Cape Cod
JP Morgan	JPMorgan
K-12	Kindergarten through 12th grade
MassCEC	Massachusetts Clean Energy Center
MassChallenge	MassChallenge
MassDevelopment	Massachusetts Development Finance Agency / MassDevelopment
MassMEP	Massachusetts Manufacturing Extension Partnership
MassTech	Massachusetts Technology Collaborative
MASS-TF	Massachusetts Military Asset and Security Strategy Task Force
MassVentures	MassVentures
MBI	Massachusetts Biomedical Initiatives
MIB	Maritime Industrial Base
MIT	Massachusetts Institute of Technology
MIT.nano	MIT.nano
MITRE	MITRE Corporation
MLSC	Massachusetts Life Sciences Center
MMAP	Massachusetts Manufacturing Accelerator Program
MOU	Memorandum of Understanding
MRL	Manufacturing Readiness Level
M2I2	Massachusetts Manufacturing Innovation Initiative
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NATO DIANA	NATO Defence Innovation Accelerator for the North Atlantic
NDAA	National Defense Authorization Act
NDIA	National Defense Industrial Association
NDIA-IP	National Defense Industrial Strategy Implementation Plan
NDIS	National Defense Industrial Strategy
NEC	New England Council
NEMC	Northeast Microelectronics Coalition
NEXUS	New England X United States
NIH	National Institutes of Health
NOFO	Notice of Funding Opportunity

Acronym	Meaning
NSCEB	National Security Commission on Emerging Biotechnology
NSF	National Science Foundation
NSIB	National Security Industrial Base
NSSC	Natick Soldier Systems Center
OLDCC	Office of Local Defense Community Cooperation
OSC	Office of Strategic Capital
OTA	Other Transaction Authority
OUSW(R&E)	Office of the Under Secretary of War for Research and Engineering
PAE	Portfolio Acquisition Executive
PEO	Program Executive Office
PFAS	Per- and Polyfluoroalkyl Substances
PIA	Partnership Intermediary Agreement
Pryzm	Pryzm
Q-BID	Quantum and Battlefield Information Dominance
QSL	Quantum Systems Laboratory
R&D	Research and Development
RF	Radio Frequency
RTX	RTX
SBA	Small Business Administration
SBIR	Small Business Innovation Research
SCIF	Sensitive Compartmented Information Facility
SCR-584	SCR-584 radar system
SENEDIA	Southeastern New England Defense Industry Alliance
SHIELD	Strategic Hub for Innovation, Exchange, and Leadership in Defense
SIB	Submarine Industrial Base
SMM	Small and Medium Manufacturer
SOCOM	U.S. Special Operations Command
START	Small Business Innovation Research / Small Business Technology Transfer support program (START)
STEM	Science, Technology, Engineering, and Mathematics
STTR	Small Business Technology Transfer
TD Economics	TD Economics
TechHub / TechHubs	Technology Hub / Technology Hubs
TRL	Technology Readiness Level
UARC	University Affiliated Research Center
UAS	Unmanned Aircraft System
UMass	University of Massachusetts
UMLARC	University of Massachusetts Lowell Applied Research Corporation
UUV	Unmanned Underwater Vehicle

Acronym	Meaning
VC	Venture Capital
VR	Virtual Reality
VTOL	Vertical Take-Off and Landing
WHOI	Woods Hole Oceanographic Institution
WHOOP	WHOOP
WPI	Worcester Polytechnic Institute
WPO	Warfighter Performance Optimization
X-BAT	Shield AI's X-BAT aircraft/platform

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