(1) Executive Summary of Component Project

America's Marine Test Ranges Network (AMTRN), led by the Rhode Island Commerce Corporation, unlocks private-sector growth by cutting costs and accelerates time-to-market for Autonomous Marine Systems (AMS) – critical technologies for U.S. maritime dominance and national security. Real-world testing is essential to advance AMS from lab stages (TRL 3–5) to operational readiness (TRL 6–9), yet even sophisticated U.S. defense companies struggle finding affordable places to test new technologies and face high costs because each test requires specialized equipment, vessels, and permits. AMTRN addresses this challenge by creating a network of ready-to-use testing sites that are safer, easier, and cost-effective.

AMTRN establishes one of the world's first large-scale, commercial, in-water test range, offering near- and off-shore, cyber-compliant test range network that enables multiple access points and long-range testing while still in a controlled environment. AMTRN will include four existing ranges, one new range, and five dock and water access points. This will be a commercial multi-test range network, spanning variable ocean conditions from the Narragansett Bay to Buzzards Bay to open ocean. Local operators manage individual ranges while OTH oversees the integrated network, creating a coordinated, secure environment for both commercial and defense testing.

Construction will begin within nine months of award, with ranges and data systems operational in 18 months. By the end of the performance period, AMTRN will expand from four active ranges to seven, serving at least five companies in queue. The network will scale from an anticipated 5+ paying customers in year one, based on industry feedback to 125+ within 10 years, support rapid AMS commercialization, generate new patents and contracts, and strengthen the U.S. tax base.[1] **This initiative enhances the Hub's global competitiveness, advances federal priorities under Executive Order 14269: Restoring America's Maritime Dominance**, and delivers enduring value to the American taxpayer through innovation, job creation, and economic growth.

(2) **Project Specific Challenge**

2.1 AMS are critical to U.S. maritime security, offshore energy, undersea exploration, and national defense. Yet many AMS technologies stall at mid-level readiness (around TRL 5) because companies cannot reliably test and refine precision in real ocean environments. To go to market, AMS must prove performance across ocean depths, pressures, temperatures, currents, and water chemistry – as well as in varied terrains (subsea mountains, reefs, caves, silt flows). This requires repeated, controlled testing in multiple real-world marine settings.

Today, access to these environments is limited, fragmented, and cost-prohibitive. Testing requires vessels, skilled crews, permits, specialized instrumentation, and temporary equipment: resources that most small and midsize AMS companies cannot afford or coordinate. Without this access, firms cannot refine autonomy software, validate and fine tune sensors and payloads, or demonstrate long-duration reliability. This slows iteration, delays commercialization, increases investor risk, and allows global competitors with larger government support to advance more quickly.

2.2 The primary barrier to AMS commercialization is not lack of technological or innovation capacity – regional companies and research institutions have developed strong capabilities – but lack of affordable, organized, and well-instrumented ocean testing sites. Existing ranges are geographically and operationally fragmented, and no entity has the resources

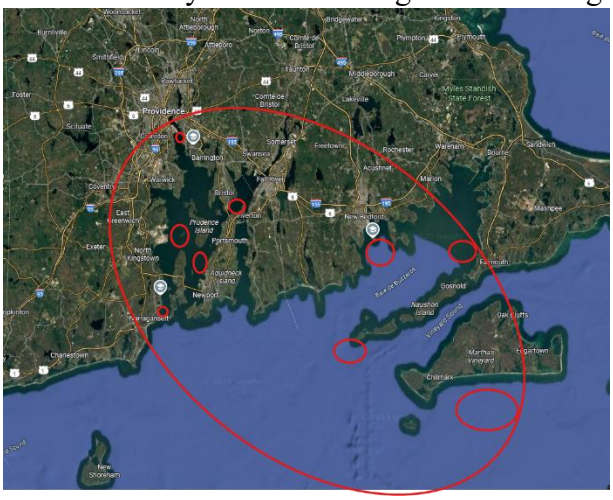
[1] Saab Inc, HavocAI, Vatn Industries, and Jaia Robotics have expressed specific interest in using the test range.

or mandate to unify them. Federal funding is required because: (1) Upfront capital costs to develop and instrument ocean test ranges are too high for individual companies or states to absorb; (2) Testing demand is specialized and irregular, making it economically infeasible for private entities to build and sustain this infrastructure alone; and (3) Coordinating multiple ranges, standardizing instrumentation, and creating shared access systems requires federal investment to align regional assets.

Federal support will catalyze a self-sustaining testing ecosystem by lowering access costs, simplifying regulatory processes, and enabling private investment to scale AMS innovations into operational products. This investment strengthens regional supply chains, supports high-skill maritime jobs, and helps safeguard U.S. leadership in maritime autonomy, all outcomes that state, local, or private funders cannot generate alone.

(3) Project Specific Solution

3.1 AMTRN provides an integrated, affordable, and operationally ready solution to long-standing AMS testing barriers. The project delivers three core improvements. First, it establishes a new industry-driven test range in the Narragansett Bay built based on private-sector requirements. Second, it upgrades an existing range at Martha's Vineyard Sound and modernizes instrumentation and increases capacity to support frequent, high-fidelity testing at water access points to the Mt. Hope Bay, Upper and Lower Narragansett Bay, and Clarkes Cove/Buzzards Bay). Third, it creates an enterprise data architecture connecting all ranges to produce consistent, comparable information, removing the need for companies to manually clean or reconcile datasets and enabling faster, lower-cost testing, validation, and mission-scale demonstrations across multiple environments. This data architecture would ingest and process data from current ranges and sensors/sites, similar to a healthcare exchange.



AMTRN will use proven, off-the-shelf components designed for quick build–test–refine–deploy cycles, allowing fast delivery of systems that can operate continuously and improve maritime awareness. The ranges will support advanced uses such as underwater docking for autonomous vehicles, tactical ocean sensing, anti-submarine warfare, and protection of critical infrastructure. These capabilities directly support economic growth, strengthen naval readiness, and improve homeland security. Key efforts include:

- **Construction and upgrades to in-water testing facilities** – Building one new range to industry spec, with sensor arrays, positioning systems, acoustic current Doppler profilers, and retrieval capacities; and upgrades to the Air-Sea Interaction Tower (ASIT) to enable open water retrieval and testing.
- **Improvements to shore access points within the AMTRN** – Providing equipment and small-scale deployment supports to enable land-based range access at targeted entry points throughout the region.

- **Data architecture development –** Implementing a platform to ingest and fuse live and historical data streams into a unified environment, apply quality controls, integrate public data sources and environmental models, and provide analytics and visualization tools for operational decision-making.
- **Secure data access and transfer –** Leveraging an approach similar to MITRE's BlueIV, which enables secure sharing and access to distributed data, remote connection to sensors and laboratories, and collaborative use of datasets through controlled interfaces with encryption and role-based permissions.
- **Timeline** – Months 0–6: Contracting and governance; Months 3–12: Range construction and integration, including permitting; Months 6–18: Data portal release, cross-range analytics, and CMMC Level 2 certification. Note: This timeline has been developed based on conversations with industry (for contracting and equipment installation), US Coast Guard, NOAA, and state agencies on water-use approvals, and federal funded research and development centers on data portal development. Once configured, a Test Range can be deployed in 1-2 days. This timeline may be extended if Build America, Buy America waivers must be solicited.

By interconnecting these ranges through a unified data platform, AMTRN will enable simultaneous multi-environment testing, longer-duration missions, and secure data sharing, thereby creating the largest commercially focused in-water testing ecosystem in the U.S. It will also enable the potential future for maritime quantum systems and post-quantum cryptography.

3.2 Testing infrastructure remains the most significant hurdle to AMS commercialization. Research from Rutgers University's AUV program demonstrates that iterative, multi-environment testing can reduce mission failure rates by up to 50%, accelerating development and lowering costs. Currently, companies rely primarily on vessel-based trials, which are up to five times more expensive, provide inconsistent conditions, and generate fragmented data. AMTRN addresses this gap by offering pre-instrumented, standardized, and connected test ranges that enable repeated, controlled, and coordinated testing across diverse marine environments at a fraction of the cost.

By integrating a unified data platform, AMTRN allows real-time analytics, offline modeling, long-duration missions, and secure data sharing, eliminating duplication and leveraging economies of scale. This approach provides reliable, repeatable, and coordinated testing, enabling companies to advance AMS technologies from TRL 3–5 to TRL 6–9 more efficiently than any alternative. Beyond infrastructure, federal investment in AMTRN strengthens strategic readiness and national competitiveness. Autonomous systems, sensors, and intelligent platforms are increasingly critical to future U.S. naval power, and by accelerating validation and commercialization, AMTRN enhances the maritime industrial base, supports submarine and broader defense programs, and positions the U.S. as a global leader in next-generation ocean technologies. Its integrated data architecture also lays the foundation for advanced capabilities such as maritime quantum systems and post-quantum cryptography, enabling companies to iterate and develop AMS even when not physically operating in live environments.

3.3 This project brings together leading industry innovators, research institutions, and technology providers to create a fully integrated testing network. Each partner contributes unique assets and expertise to ensure AMTRN delivers maximum value for commercialization and

national security and enables varied testing opportunities within one large, connected water-based asset.

- **Systems Integrator** – Serves as the enterprise integration and data strategy partner, ensuring interoperability across ranges and partners; oversees deployment of data platform; manages compliance with CMMC Level 2 standards, and provides advisory services for developing a data strategy and data analytics platform.
- **Technology Infrastructure Partner** – Provides data integration platform, harmonizing live and historical data streams from sensors, buoys, and robotic vehicles into a secure, audit-grade system. Features include automated ingestion, metadata validation, model assimilation, and real-time visualization through secure dashboards and APIs.
- **Naval Undersea Warfare Center (NUWC)** – Collaborates on data integration between defense-focused and commercial ranges, expanding access for companies unable to enter federal facilities. Note: NUWC does not plan to share DOW data with commercial entities but is interested in ingesting data from the NBTR.
- **Roger Williams University (RWU)** – RWU offers a 200-foot pier and deconflicted water access up to 80 feet deep, ideal for rapid prototyping and quick-turn testing needs; Provides research vessels and dockside facilities for near-shore testing and workforce training.
- **Woods Hole Oceanographic Institution (WHOI)** – Operates a permitted acoustic and vehicle test area in Buzzards Bay, expanding capacity and integration with AMTRN's digital network; Enables open-ocean vessel retrieval, modification, and relaunch.
- **Quonset Development Corp, 401 Tech Bridge and Blue Robotics Lab** (AMS-RPC Partners) – Provides dockside operational support and test range access; classroom space for trainings; and additional rapid prototyping capacity during testing.

3.4 The OTH region already hosts a robust foundation of in-water testing infrastructure and innovation assets that AMTRN will leverage and integrate into a unified, market-driven network; existing ranges and water-access points in the region have already committed to participating in the AMTRN.

Operational Testing Capacities:

- **Atlantic Resiliency Innovation Institution (ARII)** – Offers instrumented water directly on the Atlantic Ocean and dock access at its Marshfield, MA facility.
- **General Dynamics Mission Systems** – Offers a privately owned test range on the Weymouth Fore River and vessel access at its Quincy, MA facility at commercial rates.
- **Naval Undersea Warfare Center (NUWC)** – Restricted-access DOW operated test range in Narragansett Bay, offering three testing environments that include: (1) Inner Range -10,000 yards long and 2,750 yards wide, with depths from 60 ft to 20 ft. (2) Hole Test Area**-** 1,760 yards long and 880 yards wide, with a maximum depth of 127 ft , and (3) **Outer Range** – 17,500 yards long and 4,000 yards wide, depths from 100 ft to 120 ft. enabling interoperability between commercial and military systems.
- **Woods Hole Oceanographic Institution (WHOI) ASIT** – Operational open water test range south of Matha's Vineyard, enabling AMS to be deployed and validated under realistic ocean-atmosphere conditions, including currents, waves, and turbulence. Supports open ocean trials and acoustic sensing capacity.

- **WHOI Dock** – Provides an anchor point for the larger test range; dockside fabrication shops, lifting cranes, equipment and instrument support vans and adjacent offices; allows distributed testing at a key deep-water facility.

Docks and Water Access Points:

- **Herreshoff Marine Museum (Bristol, RI)** – Located in Bristol Harbor, offers a renovated pier and dock with a soon to be installed 50-ton jib crane to increase access to ocean testing; includes access to rentable workspace.
- **Roger Williams University (RWU)** – Offers access to a 200-foot pier and deconflicted water access up to 80 feet deep in Mt Hope Bay, ideal for quick-turn testing at required atmospheric depths.
- **University of Rhode Island Bay Campus (URI)** – Offers access to a 200+-foot pier and some of the most comprehensive wave, acoustic, and tow tanks in the US, as well as lab space and technology-transfer incubator space.
- **University of Massachusetts Dartmouth (UMD)** – Offers access to state-of-the-art testing facilities, seawater labs, supercomputing, and a research pier.

Sensor Networks:

- **Narragansett Bay Sensor Array** – Over 600 operational sensors, which are open source or operated by entities willing to share data.
- **Harbor-to-Bay (New Bedford)**: Newly developed modeling and simulation environment for AMS performance prediction and scenario planning, supported by $4.3M, that will create a fully sensored marine environment.

These assets will be interconnected through AMTRN's data architecture, creating the largest commercially focused in-water testing ecosystem in the U.S. The network will enable simultaneous multi-environment testing, secure data sharing, and advanced analytics – accelerating AMS validation and commercialization while leveraging significant public and private investments already made in the region.

3.5 AMTRN serves as the operational backbone of the OTH, linking laboratory innovation to real-world performance. The network provides instrumented, secure, multi-domain test ranges that connect directly to the AMS-RPC's research and prototyping facilities and the TAN's scheduling and coordination platform. The test range integrates closely with other component projects to form a continuous development pipeline. Together, these facilities enable companies to **prototype technologies** (AMS-RPC), **access vessels and operational support** (TAN), **validate systems at test ranges** (AMTRN), and return to the prototyping center to **refine designs**: accelerating commercialization, reducing costs, and ensuring operational readiness for defense and commercial applications.

AMS technologies developed at the AMS-RPC and other Hub facilities move into the AMTRN for system-level trials, validation, and certification. Data gathered from these trials (e.g., on endurance, autonomy, communications, and payload performance) feed directly back to the AMS-RPC labs for rapid refinement and re-testing. The AMTRN's integration with TAN ensures efficient scheduling, logistics, and asset utilization, enabling continuous throughput and reducing cost barriers for private industry. Workforce training programs through Maritime Readiness will additionally access the real-world testing data in the classrooms.

Through established collaboration among 401 Tech Bridge, BRL/MassRobotics, URI/UMass D, WHOI, and other regional research, industry, and defense partners, the AMTRN leverages years of coordinated investment and planning. This alignment ensures immediate

operational readiness and positions the AMTRN as the central proving ground for the nation's next generation of dual-use maritime technologies.

4.1-4.6

Baseline	Outputs (by the end of the Period of Performance)	Intermediate Outcomes (5 years)	Long-term Outcomes (within 10 years)	Component Goal(s)	Contribution to the Tech Hub Outcomes
No commercially accessible, instrumented in-water testing ranges for AMS	Construct 1 new near-shore test range, upgrade existing sites, and add Mount Hope Bay access point and digital data architecture linking 4 ranges	Operate 4 fully instrumented, digitally connected testing ranges across Narragansett Bay, Buzzards Bay, Vineyard Sound, and Cape Cod Bay	Expand to 7 ranges and establish world's largest integrated multi-environment ocean-testing network, supporting 300+ AMS demonstrations	**Build and digitally integrate regional in-water and subsea ranges for AMS testing and validation**	**Scale foundational infrastructure to advance from TRL 3-5 to TRL 6-9, enabling commercialization and jobs demand**
Fragmented regional testing assets with no unified data system	Deploy Coastal Measures CUMULUS platform for data integration and secure access	Achieve standardized data collection and cross-range analytics across all sites	Maintain unified, secure network for continuous testing, analytics, and real-time data sharing	**Create interoperable data architecture for secure analytics**	**Reduce testing costs and shorten development cycles**
No existing non-federal revenue streams for test infrastructure	Complete test-range buildouts and integration and secure customer commitments	Serve 5+ paying customers, incl. startups, defense contractors, and academia, and achieve full cost recovery within 3 years of operation	Reach 125+ recurring customers across commercial, defense, and research markets	**Establish self-sustaining, fee-for-service testing and demonstration ecosystem**	**Strengthen Hub financial independence and catalyze private investment for innovation and infrastructure**
AMS testing limited to short, costly vessel trials	Enable repeatable, low-cost testing using acoustic and sensor networks	Cut average testing costs by ~30% and expand access to varied environments	Sustain 30%+ cost reductions and expand testing capacity across the network	**Lower cost and complexity of TRL 6–9 validation**	**Enable faster commercialization and attract startups to the region**
~790 utility patents granted, on average, region-wide	Sustain 1.2x YOY growth (~900 total MSA patents; with 60+ AMS-tagged)	Expand patent and research output; AMS patent filings to grow by 20+ annually	Grow patent baseline by more than 1.5x , with 80+ AMS-tagged leading to commercialization	**Accelerate the development of new technologies coming online**	**Enhance regional R&D productivity and knowledge transfer**
Less than $0.7B in annual regional defense contract activity	Sustained $1.1B+ new defense contracts per year, after integrating testing ranges	Increase regional defense contracting to $1B+ as regional suppliers win new Navy and DoD awards	Sustain $1.3B+ new incremental defense contracts per year, and in route to defense innovation hub	**Accelerate defense procurement and commercialization by bridging R&D, testing, and contracting**	**Expand defense industrial base and national security readiness**

(5) Project Specific Long-Term Viability of Sunsetting Plan

5.1 AMTRN is designed as a cornerstone of OTH's sustainability strategy. By creating the first integrated network of test ranges and a secure data architecture, this project establishes a revenue-generating asset that ensures OTH's independence from federal funding and positions the U.S. to reshore manufacturing, bringing U.S. company testing back to US waters from places

like China, Bermuda and Portugal. Commercial rental of range access will provide predictable income streams to maintain infrastructure and access to data; associated services will support operations and fund future innovation.

5.2 AMTRN will continue in perpetuity as a market-driven service, managed by the Ocean Tech Hub through the Test Access Network (TAN) Navigator Program. See the TAN Project Narrative for details on how entity relationship will be managed. Federal investment provides the startup capital needed to build and connect ranges, deploy advanced data systems, and achieve CMMC Level 2 compliance. After the initial build-out, the Hub will operate on a tiered membership and fee-for-service model. Revenue streams will include:

- Range access fees for testing and demonstrations;
- Data services for analytics, storage, and secure transmission; and
- Equipment rentals for specialized subsea and surface systems.

This model ensures affordability for industry while generating sufficient revenue for reinvestment in maintenance, cybersecurity, and operational upgrades. Anticipated challenges include maintaining competitive pricing and adapting to evolving AMS technologies. These will be addressed through continuous market feedback, strategic partnerships, and flexible service offerings.

5.3 Because AMTRN is designed to be self-sustaining, its activities will continue operating indefinitely, using its tiered membership and fee-for-service model to maintain and expand capabilities. Ongoing integration with the AMS Rapid Prototyping Centers (AMS-RPC) and the Test Access Network (TAN) ensures a continuous, market-driven pathway for companies to advance technologies from prototype to operational deployment, while allowing AMTRN to adapt to evolving industry needs and reinvest revenue in system upgrades and cybersecurity.

AMTRN will also be fully integrated with the AMS Rapid Prototyping Centers (AMS-RPC) and the Test Access Network (TAN), creating a seamless, market-driven pathway for companies to prototype, test, and refine their technologies. This approach ensures affordability for industry while generating sufficient revenue for reinvestment in maintenance, cybersecurity, and operational upgrades. Anticipated challenges, such as maintaining competitive pricing and adapting to evolving AMS technologies, will be addressed through continuous market feedback, strategic partnerships, and flexible service offerings.

(6) Taxpayer bargain

6.1 The OTH region hosts at least 15 AMS companies, 200+ ocean technology related companies and supported by 7,000+ supply-chain-related companies, all integrating numerous technologies across varying TRLs. The AMTRN will be an engine of regional economic growth by converting underused industrial assets into revenue-generating, commercially accessible test ranges that attract AMS firms, primes, and defense contractors. This integrated network of test ranges will unlock more and faster product development, increasing the tax base for the region and revenue for the nation. It will further provide an in-water testing asset in the U.S. unlike any other available, helping to onshore manufacturing and bring more global companies with increased foreign direct investment into the region. This higher throughput is projected to generate 1,500+ direct high-quality jobs over the next decade, expand demand for regional suppliers by an estimated $400M in cumulative supply chain impact, and catalyze private

investment, and strengthens attraction and retention of private investment that multiplies the federal seed investment 5:1 leverage ratio and over $1B in private capital attracted.

6.2 By providing state-of-the-art testing facilities and infrastructure, the AMTRN accelerates the development and commercialization of AMS technologies, driving the U.S. global leadership in maritime innovation. With the global AMS market projected to grow at a 10.5% CAGR by 2035, AMTRN's expanded network enables innovators to validate and deploy breakthrough solutions more rapidly and cost-effectively. The AMTRN's success will attract private investment (projected $1B+), foster innovation (with 10+ of new technologies and 20+ new patents expected annually), and enhance U.S. competitive edge in the global maritime economy, by almost tripling U.S. market share to more than 40% by 2035, positioning the region as a top-tier global hub driving ocean technology and autonomous marine systems forward.

6.3 AMS are redefining modern warfare: protecting warfighters, enabling persistent surveillance, and delivering advanced countermeasure capabilities. China recognizes this shift and is investing aggressively in similar technologies at scale, including large-displacement autonomous/unmanned underwater vehicles (AUV/UUVs), autonomous surface vessels for anti-submarine warfare, and AI-enabled maritime drones for mine detection and long-range reconnaissance. These platforms are being integrated into China's naval modernization strategy to expand its reach in contested waters and challenge U.S. dominance in the Indo-Pacific.

To maintain global leadership and safeguard U.S. taxpayer interests, America must accelerate the development and deployment of AMS technologies. AMTRN plays a pivotal role by providing secure, reliable, and efficient testing environments that enable rapid validation and commercialization of these systems. This infrastructure supports critical defense applications – from tactical oceanography and infrastructure protection to submarine interoperability – while reducing costs and shortening development cycles.

The strategic importance of the U.S. maritime industry to national security cannot be overstated. By enabling faster testing and deployment, AMTRN will increase the number of platforms validated for military use, improve operational efficiency, and strengthen readiness across the fleet. These outcomes directly advance national security objectives, ensuring the U.S. remains ahead of adversaries in autonomy, sensors, and intelligent systems – the technologies that define the next era of maritime power.

6.4 The construction of AMTRN will enable revenue flow for OTH, ensuring the sustainability of the effort long-term and enabling potential revenue share with the federal government. This investment will further drive the rapid development of dual-use technologies, supporting the nation's defense efforts and maximizing cost-effectiveness in defense and war spending.

This approach ensures that the initial federal investment is leveraged effectively, providing a high return on investment for taxpayers. The AMTRN's operations are projected to generate an average $7.5M in annual revenue, with a return on investment ratio of 5x over a 7-year horizon, demonstrating the project's financial viability and value to the public. By fostering private sector involvement the share from public sources decline from 100% of revenue in the first year to 70% in the second year, and fully eliminating reliance on federal funding after the third year beyond the initial ramp-up, the AMTRN exemplifies a model of sustainable development that benefits both the economy and the taxpayer.