A.I. FOR ARCTIC SECURITY COOPERATION

ENHANCING HOMELAND DEFENSE THROUGH ALLIED INTEGRATION

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INTRODUCTION

The July 2025 release of America's AI Action Plan[i] establishes a decisive posture toward global technological leadership by prioritizing rapid innovation, infrastructure expansion, and the strategic alignment of AI capabilities with U.S. diplomatic and security objectives. While the plan does not explicitly reference the Arctic, its strategic relevance to U.S. homeland defense and allied deterrence necessitates specific consideration. The Arctic is a critical operating environment where traditional force structures and persistent human presence remain constrained by geography, infrastructure gaps, and extreme climate. As the Department of Defense (DoD) and allied militaries face challenges in maintaining domain awareness and operational reach in remote northern latitudes, artificial intelligence offers a transformative solution. Through export, integration, and collaborative development of U.S. AI technologies with Arctic allies, the United States can address gaps in homeland defense capabilities that are unlikely to be filled through conventional means alone. AI in this context functions as a direct capability enabler, allowing for expanded reach without expanded presence.

OPERATIONAL GAPS IN ARCTIC DEFENSE POSTURE

Effective Arctic homeland defense is limited by the scarcity of forward-deployed personnel, inadequate infrastructure for persistent surveillance, and seasonal barriers to mobility and logistics. Recent procurement decisions by Arctic allies, such as Denmark's acquisition of MQ-9B SkyGuardian drones for Arctic ISR missions, underscore the strategic necessity of deploying autonomous systems where persistent human presence is untenable.[ii] These realities weaken deterrence posture in an era where both China and Russia seek to assert influence through undersea, cyber, and aerial incursions—such as joint bomber flights near Alaska and coordinated naval patrols in the Bering Strait.[iii] Traditional domain awareness systems—those relying on continuous human operation or fixed-site deployment—are neither scalable nor cost-effective across the Arctic operating environment.[iv] AI-enabled systems—from autonomous surveillance platforms to predictive logistics and satellite tasking algorithms—offer a scalable, deployable alternative that does not depend on sustained human presence.

STRATEGIC EXPORT AS A FORCE MULTIPLIER

The America's AI Action Plan identifies export of the full U.S. AI technology stack as a key pillar of its international diplomacy and security strategy.[v] This includes models, software, hardware, and standards that can be delivered to nations within a trusted U.S.-led AI alliance. Arctic allies such as Norway, Denmark (Greenland), and Canada already host critical forward defense installations and scientific infrastructure —ranging from the U.S.-operated Pituffik Space Base and Denmark's Station Nord to Norway's Arctic research stations and joint satellite payloads—thereby providing essential platforms for collaborative domain awareness and AI-enabled defense operations. Targeted export of defense-relevant AI technologies to these nations serves as a force multiplier: enabling distributed surveillance, enabling autonomous ISR (intelligence, surveillance,

reconnaissance) systems, and reducing reliance on human operators in sparsely populated or environmentally sensitive areas.

These AI systems can be employed to monitor maritime approaches, cue response mechanisms, and detect anomalous behavior patterns across the northern approaches to North America. In turn, allies can co-develop use-case specific applications, contribute environmental data for model retraining, and serve as critical testing grounds for cold-region performance evaluation. Export should prioritize AI models with application to dynamic sensing, cold-weather optimized logistics and mobility platforms, anomaly detection in satellite or RF data, and secure communications in GNSS-denied environments.

COUNTERING STRATEGIC COMPETITOR INFLUENCE

By supporting U.S. allies through AI export and deployment, the Action Plan directly counters the growing influence of China and Russia in Arctic digital and surveillance domains. Both adversaries are investing in autonomous sensor networks and Arctic-specific military infrastructure, yet their development models prioritize centralized control and state dependency.[vi] In contrast, the U.S. model of distributed AI integration with sovereign partner nations enhances resilience and reinforces alliance trust. Exporting AI tools tailored for Arctic mission profiles signals that the U.S. intends to lead not only in AI innovation but in its responsible, defense-oriented application where mission planning must account for extreme cold, mobility limits, and persistent domain gaps. AI functions as a force-multiplying enabler, strengthening deterrence through interoperable allied systems.

RECOMMENDED ACTIONS

1. Prioritize Arctic-Appropriate AI Systems for Export. *Enhancing Foreign Military Sales (FMS) pathways and allied interoperability requires prioritizing AI systems that address Arctic operational gaps in surveillance, logistics, and decision dominance.* A coordinated review process—led by the Department of Commerce in partnership with DoD's Chief Digital and AI Office (CDAO)—would help surface multi-use systems most suitable for Arctic ISR, routing optimization, and resilient field deployment.

2. Embed AI Export Goals in Arctic Defense Agreements. *To strengthen deterrence and command readiness, Arctic AI export strategies should align with Combatant Command priorities and theater-specific operational concepts.* Existing institutional arrangements, including NORAD mod ernization, NATO's DIANA program, and Arctic Security Forces Roundtable, offer natural venu es to operationalize this alignment and facilitate the fielding of mission-tailored AI capabilities.

3. Develop Cold-Region Testbeds for Operational Validation. *Improving acquisition readiness and interoperability requires rigorous testing of AI systems under Arctic and sub-Arctic operational conditions.* Establishing multi-service testbeds—leveraging CDAO coordination and contributions from DEVCOM, AFRL, Task Force Climate/59, and NORTHCOM-aligned units—would enable high-fidelity stress testing and support rapid advancement through the acquisition pipeline. AI systems validated in Arctic conditions can also support disaggregated warfighter operations by reducing exposure, shortening decision cycles, and enabling mission success in low-access environments.

4. Advance Arctic Defense Integration Through AI Diplomacy. *Ensuring that AI export strategies reinforce defense posture and alliance cohesion requires deliberate integration of Arctic use cases into multilateral planning.* Expanded U.S. engagement across NATO, Arctic Security Forces Roundtable, and multinational efforts such as the Multinational Capability Development Campaign (MCDC) would ensure Arctic operational realities are reflected in shared standards, licensing approaches, and cooperative decision-support tooling.

CONCLUSION

Artificial intelligence is not simply a technological innovation—it is a flexible and scalable means of enhancing U.S. and allied homeland defense postures in the Arctic when implemented through well-governed systems and integrated operational doctrine. Rather than replacing traditional models of force projection, AI serves to augment them by extending situational awareness, reducing the burden on forward-deployed personnel, and enabling disaggregated warfighter operations in harsh, infrastructure-poor environments. These functions are particularly critical in regions marked by great power competition and environmental extremity, where persistent presence is often constrained by physical and logistical limitations.

In this context, AI becomes more than a capability enhancer; it is a direct capability enabler that amplifies allied integration and supports interoperable mission execution. When deployed through export pathways aligned with U.S. priorities and Combatant Command needs, AI contributes to a more resilient, interoperable defense posture. Operational readiness is not guaranteed by technology alone—it is achieved through disciplined concept development, integrated deployment, and iterative adaptation to Arctic operating requirements. The success of America's AI Action Plan in securing defense advantage will therefore hinge on how effectively these tools are embedded into cooperative frameworks that reflect both geographic realities and alliance strengths.

The views expressed in this Brief are those of the author and do not reflect the official policy or position of the U.S. Department of Defense or of the U.S. Government.

ENDNOTES

[i] National Artificial Intelligence Initiative Office. (2025). AI Action Plan. AI.gov. Retrieved July 22, 2025, from https://www.ai.gov/action-plan

[ii] Breaking Defense. (2025). Denmark Orders Four MQ-9B SkyGuardian Drones. http://breakingdefense.com/2025/07/denmark-orders-four-mq-9b-skyguardian-drones-for-arctic-missions/

[iii] Reuters. (2024, November 1). U.S. envoy sees 'concerning signals' in Russia-China military cooperation in Arctic. Retrieved from https://www.reuters.com/world/us-envoy-sees-some-concerning-signals-russia- china-military-cooperation-arctic-2024-11-01

[iv] RAND Corporation. (2023). Report on the Arctic Capabilities of the U.S. Armed Forces. Retrieved from https://www.rand.org/pubs/research_reports/RRA1638-1.html

[v] The White House. (2025, July 23). Executive Order: Promoting the Export of the American AI Technology Stack, Section 1 and Section 3.a. Retrieved from White House executive orders repository.

[vi] Business Insider. (2025, May). NATO countries are racing Russia to develop drones capable of operating in the Arctic. Retrieved from https://www.businessinsider.com/nato-allies-race-russia-develop-arctic-drones-weather-cold-china-2025-5