

“Amateurs talk tactics, but professionals study logistics.”

This oft-used quote is regularly recited within a variety of contexts by both military and civilian strategists. It describes a nation’s mindset and capabilities to win on the current and future battlefield. As technologies and threats continue to morph for our allies and adversaries alike, we must prepare for contingencies and crises beyond our previous efforts.

Contested logistics describes and defines the challenges that must be overcome to provide our operational and tactical units with the resources and materials to win our nation’s next war. It encompasses the entirety of our sustainment process, from the strategic support area to our depots and industrial base to ports of debarkation forward to the tactical edge. We will be contested at every stage of sustainment, both militarily and economically, and in all domains.

Our future adversaries will not hesitate to use all the tools at their disposal, from controlling natural gas flow to critical imports/exports and even surveillance balloons. These capabilities include utilizing the space and cyber domains to inhibit our domestic production and shipping of necessary commodities and warfighting supplies. These threats will impact strategic mobility from the depot to the theater. Much like air superiority, we cannot assume we will have freedom of movement within our CONUS supply chain nor freedom of navigation to the theater. These capabilities and threats jeopardize our operational reach and freedom of action.

Our Air, Sea, and Ground lines of communication will be challenged at every step, and this challenge will only intensify at the theater and operational levels. The use of host-nation ports, airfields, and non-navigable or congested roadways that are subject to constant multi-domain attacks will make every movement difficult for us, our Allies, and our partners. Artificial intelligence (AI) will provide several advantages within every aspect of contested logistics. It will give us the necessary edge to win at every phase of the conflict, from optimizing strategic mobility methods and maximizing throughput for maritime shipping and air movements (through TRANSCOM – Maritime Sealift Command / Air Mobility Command / SDDC) to prioritizing supply production based on the needs of forward units (AMC/DLA).

Concept

AI will provide visibility across the logistics enterprise, from the strategic support area to front-line units. It provides data-driven options to avoid disruptions in strategic mobility—depot, industry, fort to port to Intermediate Staging Bases (ISBs), enabling Reception, Staging, Onward Movement, and Integration (RSOI) of combat forces and their required sustainment. This capability is available now to provide significant value as we operate in the “competition phase” and will enable information/decision dominance during times of crisis and war.

CONVERGENCE OF PREDICTIVE LOGISTICS AND DOMAIN AWARENESS

Contested Logistics encompasses logistics planning, optimization, and domain awareness of current and future threats in the environment. This highly complex operational situation requires diverse commercial, open-source, secure, and non-secure datasets in various forms, including, but not limited to, structured, unstructured, time series, and visual data sources.

Any solution deployed to mitigate or alleviate the challenges of contested logistics must be able to support those datasets with ready-made AI pipelines enabled by expertise and maturity across a diverse group of use cases and problem sets that have hardened the AI being used, as well as knowledge of the best pathways to solve the problems laid out. This requires deep data science, software engineering, and domain proficiency.

Enabling Concept

Avathon has a proven track record of providing optimized, cost-saving capabilities to industry using AI. We have the expertise and experience to bring this to the Army and Joint Force. It requires a diverse group of use cases, developed in collaboration with senior leaders to connect the right hardened systems and data, both secure and insecure, to apply deep data science, software engineering, and domain proficiency—delivering the desired data-driven logistics decision-making capabilities.

The ability to fuse these diverse datasets and create insights and recommended Courses of Action (COA) for operators creates shorter decision cycles for warfighters and reduces the threat of adversaries impacting missions. These COAs can be included in scenario planning efforts and ‘what if’ analyses to lay out future impacts based on different decisions.

Concept Delivery

Scenario planning and ‘what-if’ analysis resulting in multiple COAs and options will produce defined positive impacts and outcomes.

Examples of AI decision factors include:

CHANGE IN PRIORITY (Mission Command Systems and Networks like CPCE)

- Red Force Information
- Friendly / Enemy Force Disposition

OSINT/PAI

- Civil Disturbance
- Port Capacity Status - Sanctions
- Cellular Network Traffic - Orbital Imagery

Edge Sensors/Sources

- ATAK
- Red Force Contacts
- Cyber Domain State
- Tactical Airborne Imagery

Environmental

- Weather
- Ocean Currents

Readiness/Logistics (GCCS-A) Tactical Level (205k users, 114 unique interfaces, 27 partner systems)

- Fleet Readiness
- Asset Availability
 - Supply/Inventory Availability
 - Supply Distribution
 - Dispatch Manifests
 - Intended Recipients

AMC—Readiness / Logistics (LMP) National Level (23k users, 296 unique interfaces, 56 partner systems)

- Supply Chain (Supply Availability), MR&O
- Depots and Arsenals

EBS-C (Future ERP – Finance (GFEBs), Logistics (LMP / GCS-A), link to TRANSCOM, DLA, and Industry

DLA

Industry

DELIVERING AI CAPABILITY IN CONTESTED LOGISTICS PLANNING & OPTIMIZATION

Avathon's advanced AI solves these problems now. We have developed and advanced several technologies in the commercial sector which have shown significant value to industries like Aerospace, Energy, Manufacturing, and Logistics, among others. Applying these technologies to the Army can increase operational efficiency, enhance planning and optimization efforts, and create greater multi-domain awareness for the Army and Joint Force. When delivered synchronously, these capabilities can provide a decisive advantage to the Army in a conflict, especially in a contested environment with diverse threats.

Avathon is proposing a new solution that uses the same core commercial AI/ML technology to analyze different data types to help plan and optimize future logistics scenarios in contested environments. This technology—the Avathon Industrial AI platform—will focus on the most relevant data sources for the Army's mission. By using real-time data analysis and prediction capabilities, the platform can identify and plan for potential enemy threats to logistics and supply networks. The benefits of this approach include improved inventory management at forward-deployed locations, faster decision-making, reduced complexity, and more robust recommendations for enhancing overall operations.

COMMERCIAL LOGISTICS SUCCESS DELIVERED

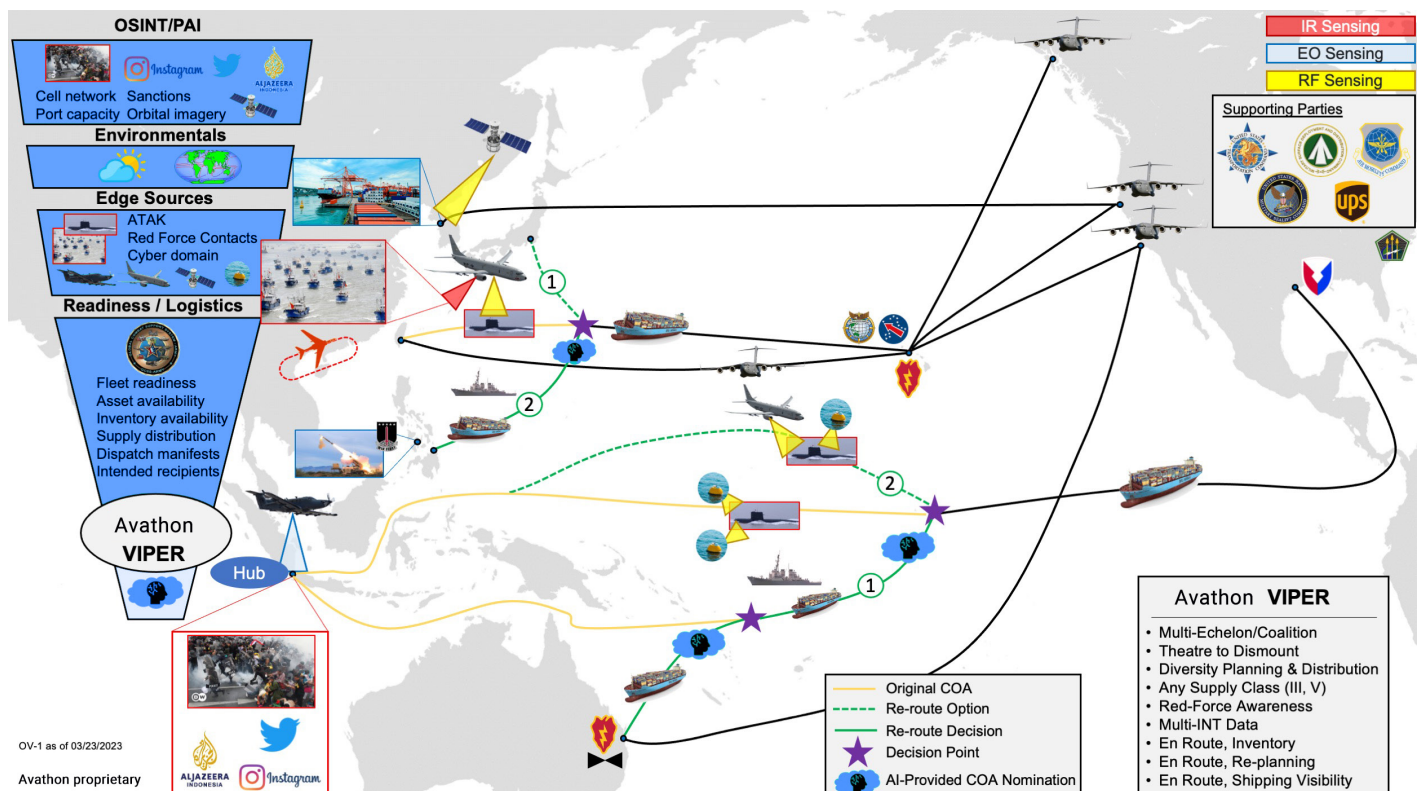
Avathon has delivered AI-enabled planning technology in the commercial maritime logistics market, specifically, the trading and shipping business of one of the world's largest oil and gas companies. This company transports several million barrels of oil products across the maritime domain each day.

With hundreds of constraints and business rules in play and data from a dozen different sources for vessels, routes, ports, charter parties, customer SLAs, and so on, developing feasible fleet schedules and recommending an optimal one was already a tedious and lengthy process for this customer. However, operational matters such as canal closures, port unavailability, weather conditions, storage issues, and port congestion frequently made following the recommended plan impractical. This unpredictable reality created a costly ripple effect of economic and logistical impacts across the rest of their fleet schedule.

To solve their fleet utilization and shipping challenges, the customer deployed our technology, a first-of-its-kind intelligent planning optimization application, to systematically integrate all data sources, constraints, and business rules; automatically optimize schedules across the fleet with a single click; and rapidly process 'what if' scenarios for better insights. The solution empowers operators to optimize and continuously adapt their scheduling and operations, delivering significant benefits in year one of deployment:

- Increases the ability to identify production-impacting events by as much as 75%—increasing asset availability.
- Provides asset failure predictions with an average of 9 days of advanced notice.
- Supports fleet optimization by prescribing optimal schedules.
- Operators can respond to and develop 'what if' scenarios rapidly.
- One maritime logistics customer realized up to a 13% reduction in monthly per-barrel shipping costs.
- Savings from deployment to a single maritime logistics customer were greater than \$60M per year.

Avathon Visualization and Intelligence Planning for Enhanced Readiness (VIPER) OV-1 for Contested Logistics



APPLYING INDUSTRIAL AI TO THE CONTESTED LOGISTICS MISSION

The future fight is one in which our ability to operate effectively in an environment with threats emanating from all domains and across our supply chain is essential. Further, there will be a complex planning environment where decision-making will be based on a growing number of variables and inputs from diverse data sources and data types. This creates the need for advanced analytics and AI to be introduced to impact operational planning and decision-making.

Avathon Industrial AI has matured in commercial applications, and the AI technology it is built upon has been deployed across many Fortune 50 companies in diverse sectors. Now, we must transition and configure the capabilities along with the unique data sets and needs of the Army to create the force multiplier needed to enable decision dominance in the event of future conflict.

Across the value chain of activities, including maintenance, supply, logistics, and planning, introducing and applying AI technologies will be critical to aiding our warfighters in making the optimal decision to impact our logistics. Connecting these value chain elements with domain awareness and real-time battle management technology ensures that the Joint Force will stay ahead of adversarial efforts—equipped and enabled to make decisions at the speed necessary to win in contested environments.

ABOUT AVATHON

Avathon, a leader in Industrial AI, extends the life of critical infrastructure while advancing the journey toward full autonomy. Avathon's Industrial AI platform empowers commercial and government customers with scalable, secure, and value-driven solutions that enhance efficiency and resilience across heavy industry.

To learn how Avathon enables mission readiness, visit avathongov.com.