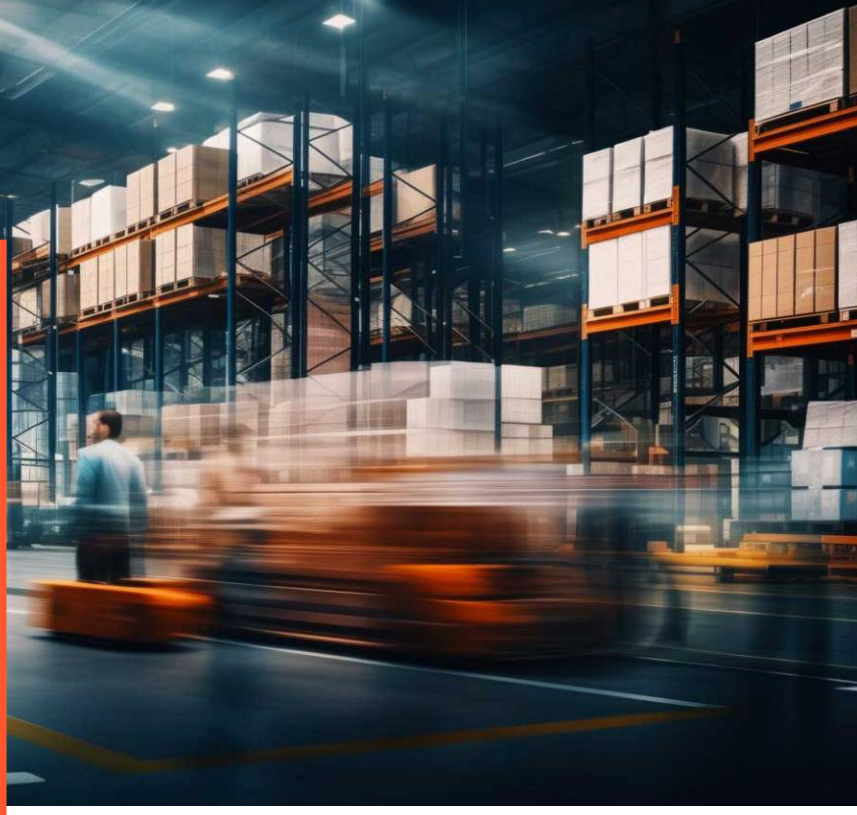
LMI



CASE STUDY_

AI-Enabled Forecasting Transforms Munitions Stockpiling & Saves Millions of Dollars

AI-ENABLED DELIVERY

Key Highlights

- The U.S. Army Joint Munitions Command (JMC) identified a gap between unit forecasted and actual demand for critical munitions, and enlisted LMI to improve efficiency and hopefully save money.
- LMI partnered with JMC to build the Quarterly Resupply Model (QRM) platform, using AI/ML models to resolve fragmented data and enable dynamic, predictive logistics that align forecasting with real world demand.
- Since deploying QRM, JMC has seen a 40% reduction in forecasting errors and millions of dollars in annual cost savings.

Managing munitions for the joint warfighter

JMC manages the production, distribution, and demilitarization of the nation's ammunition, ensuring rapid response to global surge demands. Overseeing 18 arsenals, depots, and plants in the Army's Organic Industrial Base, it provides logistics support to deliver critical munitions, sustaining operational readiness and battlefield success for the joint warfighter.

Always looking to enhance performance, JMC identified a gap between forecasted and actual demand at Army Ammunition Supply Points (ASPs), leading to inefficiencies and misaligned resource allocation. Data stored across disconnected systems and formats were not user friendly and leading to inflated demand, resulting in oversupply and excess costs at the ASPs. The inefficiencies resulted in excess costs.

Bridging the gap with the Quarterly Resupply Model

LMI partnered with JMC to develop the Quarterly Resupply Model (QRM)—an AI/ML-powered solution designed to:

- Centralize munitions data through industry best practices in data engineering
- Improve supply chain visibility, efficiency, and management
- Alleviate logistical burdens on national ammunition depots

Implementing QRM wasn't a matter of layering on new tech—it required reimagining the entire approach to demand forecasting across the enterprise.

Our first task was addressing a foundational issue: scattered and siloed munitions data that distorted demand signals. We designed and deployed advanced data pipelines within **Army VANTAGE**, the Army's enterprise platform for data-driven operations, to consolidate that data and prepare it for use in AI/ML-driven forecasting.

From there, our team developed and deployed custom models and intelligent demand forecasts tailored to specific ammunition types and base requirements. But the real impact came from what we built on top of those models: using statistical analysis, the team developed a flexible inventory management solution that

Delivering munitions in line with demand

QRM enables JMC to deliver munitions more efficiently, and in alignment with real-world demand—supporting joint warfighter readiness while significantly improving cost effectiveness. It also advances the Army's broader shift toward predictive logistics, integrating cutting-edge technology into operations that are critical to mission success.

Since deployment, QRM has delivered significant, measurable improvements across JMC's ammunition forecasting and supply operations, including:

+40% An over 40% reduction in forecasting error compared to the legacy system.

+6k Over 6,000 monthly forecasts generated each month.

3X Our models now outperform legacy human forecasting methods in 74% of direct head-to-head comparisons—making them nearly three times more likely to predict expenditures more accurately.

Cost savings in substantial excess of the contract value, projected double digit percentage decrease in annual shipping costs.

Optimized inventory levels, reduced shipment frequency, enhanced forecasting accuracy.

Mission-critical warfighter readiness through faster, data-driven resupply decisions.

spans multiple ammunition types and bases. The tool allows users to define acceptable stock-out risk levels and ensures adequate safety stock based on historical consumption patterns and descriptive analytics.

LMI assembled a cross-functional team of data scientists, logisticians, and defense domain experts who embedded with JMC throughout the development process. This close collaboration ensured the platform didn't just work in theory—it worked in practice. Every design decision reflected deep engagement with users, mission priorities, and the operational tempo of JMC's global enterprise.

Key features include:

- User-defined stock-out risk parameters for managing inventory levels
- Analytics of historical consumption trends to inform resupply
- Reorder automation to minimize unnecessary shipments
- Improved regional inventory and depot alignment
- Near real-time monitoring with custom metrics and KPIs

Since deploying QRM, JMC has seen a 40% reduction in forecasting errors and millions of dollars in annual cost savings.

JMC is actively monitoring the model's impact on key metrics such as shipment frequency, inventory accuracy, and impact to Army readiness. As a trusted partner, LMI will continue to support model refinement and rollout, bringing a unique blend of data science, logistics expertise, and defense mission insight to drive sustained improvements across the ammunition supply chain.

For more information

Alex Adamczyk
Sales Eng. & Rapid Prototyping, VP
alex.adamczyk@lmisolutions.com

Christian Smith
AI/ML Practice Area Lead
christian.smith@lmisolutions.com