Predictive Logistics is the Way of the Future

■ By LTG Christopher O. Mohan

The battlefield of 2030 will be characterized by increased complexity, uncertainty, lethality, and technological advancements, requiring seamless sustainment across all domains. The proliferation of artificial intelligence (AI), robotics, and autonomous systems will also demand swift adaptation and support, and adversaries will target supply chains, necessitating resilient and agile sustainment strategies.

However, the digital revolution also presents new opportunities, providing better data collection, real-time analytics, and improved connectivity, enabling predictive logistics to thrive. As the Army prepares for the future battlefield, we must embrace innovative technologies and strategies to maintain our competitive edge.

As outlined in Army Field Manual (FM) 4-0, Sustainment Operations, the Army must anticipate and posture sustainment capabilities to support unified land operations "to enable freedom of action and extend operational reach." Predictive logistics represents a shift from traditional, reactive sustainment models to a proactive, data-driven approach that allows us to position supplies to ensure the right resources are available at the right time and place.

It all starts with forecasting demand. Algorithms can analyze historical data, current trends, and operational plans for supplies, spare parts, and services. This enables proactive stock management, reducing waste and ensuring critical items are available when needed. For example, the Army can anticipate the demand for specific munitions based on emerging threats and operational requirements, optimizing inventory levels.

Predictive logistics can also optimize the positioning of supplies and assets, reducing response times and enhancing operational agility. By anticipating where and when resources will be needed, the Army can stage them accordingly, mitigating the risk of shortages in critical moments.

Meanwhile, predictive analytics can monitor equipment health, usage patterns, and environmental factors to anticipate failures and

schedule maintenance proactively. This minimizes downtime, extends equipment lifespan, and ensures maximum operational availability. The Army's fleet of vehicles and aircraft can benefit significantly from predictive maintenance, enhancing readiness and reducing sustainment costs.

Finally, real-time data analysis can optimize supply chain and distribution routes, adapting to disruptions, threats, or changing priorities. This ensures continuous sustainment, even in contested environments.

To accomplish these things, several enabling technologies will underpin the Army's predictive logistics capabilities. Sensors embedded in equipment, vehicles, and infrastructure will provide real-time data on status, usage, and environmental conditions, feeding predictive algorithms. AI and machine learning will power the analytical engines of predictive logistics, learning from data, identifying patterns, and making predictions. In addition, high-speed, low-latency communications will enable real-time data transfer and analysis, facilitating swift, informed decision making.

Implementing predictive logistics for success on the battlefields of the future will not be without challenges. The Army must address data silos, interoperability issues, and cultural resistance to change. Additionally, we must ensure robust data governance, privacy, and security measures

to protect sensitive information. Through training and education, we must build a data-literate workforce capable of leveraging predictive logistics effectively. Collaboration with industry, academia, and international partners will be crucial to stay at the forefront of technological advancements.

Moreover, the Army must integrate predictive logistics into its doctrine, training, and exercises. FM 4-0 provides a solid foundation, emphasizing the importance of anticipatory and adaptive sustainment. Building on this, the Army must develop specific guidelines and tactics, techniques, and procedures for predictive logistics, ensuring their effective application across the force.

Predictive logistics offers a transformative opportunity for the Army's future battlefield sustainment. By reimagining sustainment today, we pave the way for the battlefield of tomorrow.

LTG Christopher O. Mohan currently serves as the deputy commanding general and acting commander of U.S. Army Materiel Command. He also serves as the senior commander of Redstone Arsenal, Alabama. He was commissioned into the Army from Appalachian State University in Boone, North Carolina, where he graduated as a Distinguished Military Graduate with a Bachelor of Science degree in criminal justice. His military education includes the Ordnance Officer Basic Course, the Combined Logistics Officer Advanced Course, the Naval College of Command and Staff, and the Army War College. He holds a Master of Science degree in national security and strategic studies from the Naval War College and a Master of Science degree in military strategy from the Army War College.

> Through training and education, we must build a data-literate workforce capable of leveraging predictive logistics effectively.