

# Department of the Navy SBIR/STTR Transition Program

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Topic # N193-A01

LAV25 Logistics Optimization using Machine Learning

Tagup, Inc.

## WHO

**SYSCOM:** NAVAIR

**Sponsoring Program:** EXPECTED: MARCOR I&L LP

**Transition Target:** EXPECTED: PEO EIS PMW-230 Global Combat Support System-Marine Corps

**TPOC:**  
(407)381-8936

**Other transition opportunities:** MARCOR Ground Equipment, DON legacy equipment, Army Ground Equipment (GCSS managed), alternative DOD Asset Managers.

**Notes:** Tagup machine learning capabilities were developed on the LAV using GCSS-MC maintenance records, and successfully scaled to the MTRV platforms. The predictive modeling capabilities are applicable to any asset platform with a similar maintenance data record.



US Marine Corps photo. Cpl. Dylan Chagnon

## WHAT

**Operational Need and Improvement:** To improve MAGTF scenario planning capabilities, machine learning (ML)-based readiness and sustainment analytics augment the warfighter by identifying best available assets, evaluating historical unit/asset performance, and forecasting upcoming sustainment needs. The application of machine learning (ML) can drastically improve mobilization planning capabilities by taking advantage of historical O&M data readily available in GCSS.

**Specifications Required:** This ML technology is prototyped on AWS GovCloud and deployable to any authorized cloud environment (e.g., MCBOS, McCEITS). A containerized architecture allows deployment via a robust continuous integration/continuous delivery (CI/CD) pipeline that can flexibly integrate with existing ERP systems.

**Technology Developed:** New machine learning methods rapidly improve mobilization planning capabilities of commanders, maintainers, and supply personnel through unified data and intuitive dashboards. Prototyped alongside the warfighter, tools use ML-based analytics to present accurate forecasting of fleet readiness, asset availability, and unit sustainment needs.

Capabilities include:

- Data cleaning and restructuring sourced from multiple available systems, and rapidly scalable
- Comprehensive summary of any asset's O&M history
- Readiness forecasts out to 30 days, aggregated by unit or TAMCN
- Mobilization planner to optimize EDL specification and Class IX block building
- Depot-level operational logistics planner linking materiel posture to tactical unit activity

**Warfighter Value:** Lightweight, intuitive dashboards unify the mobilization process for Commanders, Maintainers, and Suppliers to evaluate best-available criteria on assets and sustainment needs using real-world operational data. Models are built to maximize mission success while minimizing operating cost via reduced customer wait time and logistics response time with an improved readiness posture.

## WHEN

**Contract Number:** N68335-20-F-0459 **Ending on:** November 12, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
SBIR Phase II Prototype Complete	Low	Successful deployment of prototype using historical data to MAGTF workgroups, including onboarding and feedback	6 - Proof of Concept Success and model validation in simulated-ops environment.	November 2021
Phase II.5: Integration and Test	Low	Integration with live data sources (e.g. MDR, McBoss), and interoperability and secure API architecture development. Prototype validation with streaming data.	7 - System Prototype demonstration in an operational environment.	June 2022
Phase II.5 Field Deployment and Scaling	Low	Additional TAMCN data ingestion Integration with new data sources (e.g. telemetry, manufacturer data, and other logistics information systems)	8 - Integrated streaming software system in live-ops environment	December 2022
Phase III: Fleet Deployment	Med	Full Deployment. Software built and operated across TAMCNs to demonstrate performance in the actual operational environment		December 2023

## HOW

**Projected Business Model:** Tagup offers licensed custom integration into enterprise software applications. System interfaces use a REST API, providing direct access to the data pipeline and analytics engine, including all data and forecasts. The analytics may be expanded to additional asset classes and data sources. Professional services are offered to support implementation, training, and sustainment.

**Company Objectives:** Tagup seeks to provide industry-leading machine learning algorithm development and custom applications, both as a Prime and to support joint-service warfighter mission readiness.

**Potential Commercial Applications:** Tagup provides industrial equipment owners and operators intuitive forecasting and planning tools to minimize operating costs without compromising safety, reliability, and efficiency. Current software deployments in general industry are with electric utilities, power generators, oilfield operators. All industry applications use AI to predict critical events, identify unusual operations, and optimize control decisions. Core product applications include procurement and inventory optimization for improved asset management.

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