DualOps: Real-Time Combat Resources & Supplies Management Software module for C2 Systems

Executive Summary: *Revolutionizing Supplies & Resource Management in unpredictable Battlefields*

In modern combat environments, uncertainty is the only constant. Commanding officers must manage critical shortages in manpower, equipment, and supplies while reacting to fast- changing battlefield realities. Actual consumption rarely matches planned forecasts, and time-sensitive decisions made under pressure risk costly human errors in terms of lost lives and destroyed military equipment and technics.

DualOps as a *Real-Time Combat Resources & Supplies Management Software* is built to meet these challenges head-on. It combines proven *Theory of Constraints (TOC)* and *LEAN* methodologies to create stability in highly unpredictable environments. It enables faster, smarter decision-making, dramatically reduces errors, and provides a unified operational platform for managing materials, supplies, resources, and equipment — all tailored to the needs of different command levels through intuitive, role-based information layers.

Designed as an additional operational layer, our software seamlessly **integrates** with any **existing *C2 (Command & Control) systems***, allowing for two-directional data exchange. This ensures that commanding and logistics officers can leverage real-time information from both platforms, enhancing situational awareness and operational coherence without disrupting existing workflows: it (1) provides real-time dynamic visibility of all resources and assets in their actual location; (2) enables monitoring and forecasting of actual resource and supply depletion and attrition; and (3) It acts as a logistics management tool integrated into operational-tactical maneuver planning and execution.

At its core is an *edge-AI Driven Engine* that integrates real-time data, neurolinguistic programming, and statistical computing. The system predicts consumption, absorbs disruptions, optimizes resource pools, and suggests intelligent reallocation scenarios, ensuring that military teams and task forces are always ready to act rapidly and decisively.

Designed for commanding officers, operational planning teams of all levels, logistics personnel, and field medical services, this solution answers critical operational questions about replenishment timing, resource displacement, consumption rates, and optimal resource allocation, based on *NATO supply and readiness levels for all Supply Classes.*

In the chaos of battle, the advantage belongs to those who are best prepared to adapt. ***DualOps*** **as a** ***Real-Time Combat Resources & Supplies Management Software*** **gives you that decisive edge — empowering your forces to stay ahead, stay supplied, and stay commanding.**

DualOps as dual-use software, making it suitable not only for military operations but also for complex emergency and crisis management scenarios, providing the same level of predictive, adaptive resource control under extreme conditions.

Main Challenges Addressed: *Real-Time Combat Resource & Materials Management*

In the uncertainty of combat environments, commanders face immense pressure in managing manpower, equipment, materials, and supplies. They frequently encounter critical resource shortages, including a lack of essential combat personnel, technical assets, and equipment in specific operational sectors. Inventory discrepancies are common, as the actual consumption of supplies—such as ammunition and fuel—often deviates from planned estimates due to the unpredictable nature of the battlefield. Decision-making becomes highly intuitive and inherently risky, with extreme time pressure significantly increasing the likelihood of costly human errors. Additionally, command staff fatigue poses a serious challenge for military management teams. This fatigue refers to the physical, mental, and emotional exhaustion experienced by military leaders and decision-makers who are continuously engaged in high-pressure operations, often working long hours with limited rest and enduring sustained cognitive demands.

Real-time operations are influenced by five defining factors: high variability; frequent disruptions and unexpected events; limited visibility for early warning detection; complex chains of dependencies and interdependencies; and the inherent challenges of human behavior and multitasking.

To address this uncertainty, we integrated the *Theory of Constraints (TOC)*, *LEAN* methodologies, and *edge-AI* into the *DualOps Software* for *C2 systems*, creating a stable and responsive working environment through intelligent buffering, proactive resource management, and constraint optimization.

Key Features: *Real-time, Dynamic Resources and Supplies management Software Layer for C2 Systems*

The system provides dynamic answers to crucial operational questions, such as when to trigger replenishment activities, from where and to where supplies or resources should be moved, how much material is needed based on actual consumption, and how to optimize timing for replenishment and displacement operations. It supports the full management cycle of hierarchical resource and equipment pools, as well as materials and supplies classes according to NATO classifications.

- *(Explainable) edge-AI* **support:** Provides best-fit solutions to forecasted and real-life situations that require decision-making, while allowing final decisions to be made by humans. This ensures it remains a supportive tool rather than an autonomous decision-maker when needed. User choices are recorded and fed back into the AI training process to enable adaptation to the specific context and user preferences. The AI explains why certain solutions are recommended and includes a "rewind" function that allows users to review and analyze past decisions, supporting both learning and oversight processes.

- **Priorities-Based *Dynamic Inventory and Resource Management*:** Task-level prioritization for determining optimal inventory and resource allocation, replenishment, reinforcement, or displacement, ensuring that combat operations are efficiently managed during different situations.

- **Data-Driven Reporting:** Provides detailed, real-time reports on situational awareness and management dashboards of key performance indicators (KPIs), including resource and inventory buffer utilization, response times, and more. Alert messages and color coding are used for KPIs and other metrics to prompt corrective actions, ensuring the optimal use of all types of resources and inventory.

- **Customizable Configurations:** Adapt the software to meet the specific needs of combat teams and C2 elements, taking into account the roles and functions of all members—from platoon command (reporting) to all levels of C2 and planning teams. The system can also be tailored to reflect the nature, scale, and phase of the combat situation.

- **Configurable Training Simulator:** Develop and simulate combat scenarios of varying complexity to assess the staff preparedness, identify areas for improvement, and determine the training needs of staff members. Evaluate the success of simulation participants using a configurable ranking system based on selected key parameters.

The Engine Behind It: *(Explainable) edge-AI*

At the heart of the system is our *edge-AI Driven Real-Time Dynamic Resource and Inventory Management Engine*. It integrates neurolinguistic programming (NLP) and statistical computing with real-time battlefield data, enabling unprecedented speed and precision in decision-making. AI-enhanced inventory buffers predict future consumption patterns and absorb the sudden disruptions. Smart resource pools, powered by AI, enable intelligent, agile reallocation of personnel and materials based on forecasting, real-time demands and priorities. The AI continuously suggests optimal courses of action empowering commanders to make faster, better-informed decisions while drastically minimizing the risk of human error.

Key Users

The software is designed for all levels of commanding and staff officers, with a particular focus on S3 Teams responsible for manpower and equipment planning and management, logistics officers handling critical materials and supplies like ammunition and fuel, and Field Medical Services coordinating essential medical supplies and personnel.

Why Choose Our Solution?

Our Real-Time Combat Resources & Supplies Management Software is built on proven TOC and Lean principles, specifically adapted to thrive in highly unpredictable environments. It significantly accelerates decision-making while reducing human errors by offering real-time intelligence and decision support. By providing a unified operational environment for materials, supplies, resources, and equipment management, it eliminates fragmented workflows and supports more coherent command actions. Different command levels access tailored information layers, ensuring that each decision-maker receives the exact data they need. The system's user-friendly and intuitive design makes it easy to learn and deploy across all levels of command, maximizing efficiency from the very first day.

Stay ahead. Stay supplied. Stay commanding. Empower your forces with *DualOps Real-Time Combat Resources & Supplies Management Software* — where technology meets the demands of modern battlefield operations.