**MILAS 1.0: A Secure Big Data Architecture for Predictive Military Logistics in Network-Centric Warfare Environments**

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**Abstract**  
This paper presents the Military Logistics and Intelligence System (MILAS 1.0), a novel secure computing architecture that transforms traditional demand-pull logistics into AI-driven predictive supply networks for defense applications. Responding to documented inefficiencies in current systems (Serrano et al., 2023) – particularly the 72-hour average delay in critical resupply operations observed during African peacekeeping missions – the proposed framework integrates four technological innovations:

**Hybrid Predictive Engine**: Combines LSTM neural networks with survival analysis models trained on 15+ years of declassified operational data from Southern African theaters, achieving 89.3% accuracy (σ=2.1) in 30-day consumption forecasts

**Blockchain-Enabled Audit Trail**: Implements Hyperledger Fabric private chain to maintain immutable records of high-value asset movements while preserving operational security

**Adaptive Geospatial Intelligence**: Fuses satellite imagery (0.5m resolution) with real-time IoT sensor data using modified Simultaneous Localization and Mapping (SLAM) algorithms

**Tactical Edge Computing**: Lightweight containerized analytics deployable on ruggedized hardware at battalion-level command posts

Methodologically, we adopt a design science research approach (Hevner et al., 2004) with:

Phase 1: Retrospective analysis of 7 historical operations (n=3,214 supply events)

Phase 2: Development using Scrum methodology with ZDF stakeholder inputs

Phase 3: Controlled simulation testing with synthetic data representing SADC operational scenarios

Preliminary results demonstrate:

41.7% reduction in emergency resupply requests (p<0.01)

28% improvement in fuel allocation efficiency

Tamper-evident documentation of 100% of simulated arms transfers

The system aligns with Zimbabwe's National Defense Policy (2021) priorities for:

Technological modernization (Priority 4.2)

SADC interoperability (Priority 7.1)

Resource optimization (Priority 3.4)

Ethical considerations include:

Dual-use technology safeguards per Wassenaar Arrangement guidelines

Anonymization of sensitive operational data

Rigorous penetration testing by certified cybersecurity professionals

**Keywords:** military logistics, predictive analytics, secure computing, network-centric warfare, blockchain

**Presentation Preference:** Oral Presentation