

// CONFIDENTIAL · INVESTOR BRIEFING

GARANT AI

Fleet Intelligence Platform

Enterprise Intelligence Ecosystem & Edge-Native Vehicle Safety

Investor Whitepaper + Technical Specification — v2.0

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| Author | Bahtu Ruslan |
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// EXECUTIVE SUMMARY

Executive Summary

GARANT AI is an AI-native operating system for commercial fleets, turning every truck into an autonomous, self-protecting and intelligent node.

The platform fuses edge computer vision, multi-sensor fusion, real-time behavioral intelligence, Zero-Trust security, and cloud predictive orchestration. GARANT radically reduces cargo theft, fraud, accidents and operational losses while raising fleet efficiency by 30–50%+.

We solve the critical pain points of global logistics: cargo theft (US\$6.6B+ annually in the US alone), the absence of true AI visibility, driver risk exposure, and the inefficiency of legacy telematics.

GARANT is not another tracker or dashcam. It is a distributed AI brain for the fleet — combining Tesla-grade autonomy and Palantir-grade intelligence for industrial transport.

Problem Statement

- Cargo and equipment theft, fraud and unauthorized use
- No real-time, contextual control across mixed-OEM fleets
- High driver-safety and cargo-safety exposure
- Inefficiency: fuel, downtime, unplanned maintenance
- Rising insurance premiums and regulatory pressure (DOT, FMCSA, GDPR)

Market Opportunity

- Fleet Management Market: US\$33–38B (2025) → US\$67–70B+ by 2030
- AI-powered fleet software: US\$5.2B → US\$14.4B by 2030 (~18.7% CAGR)
- Material TAM across logistics, construction, utilities, defense and insurance

// ARCHITECTURE

System Architecture

Edge → AI → Cloud → Command

- Vehicle Layer — multi-sensor stack + hardened gateway
- Edge AI Layer — computer vision and behavioral AI on-device
- Telemetry and Zero-Trust Security Engine
- Cloud Intelligence Platform — federated learning + GenAI
- Fleet Command Center — operator console, real-time HUD
- External Integrations — insurance, ERP, TMS, OEM APIs

Original Technical Contributions

Five novel components that — to our knowledge — are not commercially available in any single competing platform:

1. Zero-Trust CAN-Bus Cryptography Layer

A hardware-rooted cryptographic envelope for ECU traffic. Every CAN frame is signed and verified at the gateway, neutralizing relay attacks, OBD-port intrusions and aftermarket bus injection — without modifying OEM firmware.

2. Sub-Second Distributed Threat Response ($\leq 0.4s$)

A purpose-built event pipeline that propagates an anomaly from on-vehicle inference to fleet-wide policy enforcement in under 400ms, enabling autonomous immobilization, geofence escalation and operator hand-off before a threat actor can complete an action.

3. Multi-Modal Driver and Cargo Cognition Engine

On-device fusion of vision, audio, CAN telemetry and IMU streams produces a continuous driver-state score (fatigue, distraction, duress) and cargo-integrity score (door, temperature, vibration, presence) without sending raw video to the cloud.

4. Federated Fleet Learning with Differential Privacy

Edge nodes contribute model updates — never raw data — to a central orchestrator. New threat patterns observed on one truck improve detection across the entire global mesh within hours, while preserving customer data sovereignty.

5. Hardware-Agnostic Edge Runtime

A single inference runtime targeting Jetson, Hailo, Ambarella and x86 edge boxes, with automatic model quantization and fail-safe fallback. Operators deploy GARANT on existing in-cab compute without lock-in.

// FUNCTIONAL MODULES

Full Technical Specification

1. Perimeter and Asset IoT — Biometrics and Access Control

Tracks every door, hood and cargo-bay access point. Biometric verification gates engine start. Critical alerts on any access outside geofenced corridors.

2. 360° Surround VMS (5-camera array)

Continuous record + Live View: cabin, road/ADAS, blind spots, cargo bay. Event-tagged with telemetry and AI annotations.

3. Two-Way Communication Hub

Push-to-talk voice, text instructions and live route dispatch to the in-cab tablet, with privacy-preserving session logs.

4. Native ELD and HOS Compliance

Automatic Hours-of-Service logging to DOT/FMCSA standards with proactive violation warnings.

5. Cloud-Native Multi-Brand Diagnostics

Remote connection to any truck's ECU for DTC read/clear, calibration and over-the-air service routines.

6. Anti-Tampering Security Module

Instant response to OBD disconnect, cut wires or GPS jamming — escalation policy executed in under one second.

7. Real-Time CAN Bus Telemetry Analytics

Live engine, fuel and pressure telemetry. AI detection of micro-siphons and fuel-card fraud.

8. Smart Predictive Maintenance

Automatic interval computation from mileage and load; advisories on oil, brakes and tires before failure.

9. Edge Connectivity Gateway

Onboard Wi-Fi router with QoS — alert traffic is prioritized over passenger and crew data.

10. Zero-Trust Remote Command

Cryptographically signed remote engine immobilizer, invoked only with operator + supervisor co-approval.

11. Eco-Driving and Safety Scoring

Driving-style analytics plus cognitive monitoring (micro-sleep, distraction) with personalized coaching feeds.

12. Cold-Chain Monitoring

Refrigeration telemetry with instant excursion alerts and tamper-resistant audit trail.

Roadmap Capabilities

- GenAI Fleet Co-Pilot — natural-language operator queries across the live fleet
- Autonomous routing and dispatch orchestration
- Advanced predictive maintenance (component-level RUL)
- Defense-grade secure communications (FIPS-aligned)

// BUSINESS MODEL

Business Model

- SaaS (per-vehicle / month)
- Enterprise licensing + custom deployments
- Revenue share with insurance partners
- Hardware margin on Edge Gateway
- Opt-in data analytics monetization

Product Roadmap

- v1 MVP (2026) — full security module suite + core fleet visibility
- v2 (2027) — predictive + GenAI capabilities
- v3 (2028+) — Autonomous Fleet Intelligence OS

Closing

GARANT AI is not telematics. It is the next-generation infrastructure for intelligent industrial mobility — ready for demonstration, pilot deployment and strategic investment.

Contact: investors@garant.ai · New York, USA