

PHALANX-I: SOVEREIGN EDGE AI

SYSTEM ON A CHIP (SOC) / SYSTEM-IN-PACKAGE (SIP)

PROPRIETARY // FOR
OFFICIAL USE ONLY

THE A2/AD HARDWARE MANDATE

Current Uncrewed Aircraft Systems (UAS) rely on centralized cloud processing and monolithic silicon vulnerable to Electronic Warfare (EW) jamming and supply chain sabotage.

Astra Bytes delivers a US-manufactured, hardware-native intelligence layer that guarantees decentralized swarm autonomy in fully denied environments.

THE HARDWARE ARCHITECTURE: CHIPLET FUSION

The Phalanx-I is not a standard processor. It is an advanced **System-in-Package (SiP)**. By combining modular silicon components (Chiplets) on a single microscopic interposer, we achieve unprecedented SWaP-C (Size, Weight, Power, Cost) dominance. The core comprises two proprietary technological pillars:

1. QUADRACOREAI™ EDGE ACCELERATOR

A proprietary four-node intelligence architecture operating with zero cloud reliance. It provides a deterministic firewall against data poisoning and adversarial spoofing.

- ▶ **Neuro-Symbolic Fusion:** Fuses raw sensor ingestion with hard-coded physical constraints, ensuring autonomous swarm decisions cannot violate physical laws.
- ▶ **Deterministic Logic Gating:**

2. ADVANCED POWER MANAGEMENT MICROCHIP

Edge AI requires absolute resilience. Our proprietary architecture guarantees sustained micro-watt operation in extreme battlefield conditions.

- ▶ **Extreme Temperature Viability:** Utilizes a proprietary SEPIC CC/CV (Constant Current/Constant Voltage) architecture, maintaining continuous current from -50°C to +150°C.

PHALANX-I: TACTICAL DEPLOYMENT

JOINT FORCE INTEGRATION & 6-MONTH GDSII ROADMAP

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THE DISTRIBUTED STATE FABRIC

The QuadraCoreAI™ chips communicate via the **Interverse Spatial Telemetry Layer (iSTL)**. By bypassing traditional cloud networks, the swarm weaves an unbreakable, un-jammable tactical mesh.

- ▶ **Telemetry Shards:** Spatial data is fragmented and encrypted into microscopic shards. Intercepted transmissions are mathematically useless to hostile SIGINT without the hardware-bound reconstruction key.
- ▶ **Hardware-Bound Verification Routing:** A drone or boot cannot enter the network without a valid silicon PUF signature, making spoofing or "Blue-on-Blue" injection physically impossible.
- ▶ **Zero-Latency State Syncing:** Thousands of nodes share the exact same 3D battlefield reality simultaneously.

COUNTER-UAS & SWARM AUTONOMY

When EW jamming severs the pilot's control link, the Phalanx-I takes over. The swarm relies on the local State Fabric to autonomously coordinate formations, identify targets, and execute the mission without a single command from base.

PHALANXNODE: THE DISMOUNTED MAP

Integrating the SoC into the SOF operator's footwear. Harvesting kinetic power, the boot's mmWave radar maps GPS-denied environments in real-time, dropping encrypted digital "breadcrumbs" for follow-on squads.

ZERO-TRUST HARDWARE REVOCATION: THE "PAPERWEIGHT PROTOCOL"