TinkerBloX UltraEdge™

High-Performance AI & Mixed Workload Execution Fabric

Execution Efficiency is the Key.

UltraEdge redefines how compute is executed — not by adding hardware, but by eliminating software bloat. It creates a unified, deterministic execution layer across CPUs, GPUs, and accelerators, enabling faster, leaner, and more energy-efficient runtime for AI and mixed workloads across data centers, automotive HPCs, and smart products.

⚠ THE PROBLEM — EXECUTION BLOAT & FRAGMENTED ORCHESTRATION

Modern compute is powerful, yet underperforming.

- **Legacy runtimes & containers** were never built for today's AI or mixed workloads — they're static, heavy, and inefficient.
- **Execution bloat** consumes 30–50% of available compute cycles before workloads even start.
- **Fragmented orchestration** splits AI, IoT, and enterprise pipelines, forcing multiple runtimes, schedulers, and manual optimization.
- **Power drain & inefficiency:** Idle servers draw up to 90% of peak power while running at <50% utilization.
- **Result:** Low GPU/CPU yield, high TCO, slow onboarding, and billions lost in wasted energy and compute potential.

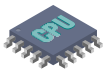
Scaling hardware no longer scales performance — the execution layer must evolve.

PERFORMANCE METRICS — QUANTIFIED EFFICIENCY

	Workload Metrics	Traditional Execution Stack	UltraEdge (MicroBoost + MicroPac)	Performance Gain
	Avg StartUp time (All Workloads)	3 - 1 Sec	0.0188 Sec	~30 x Faster
	Package Size (AI Model)	917 MB	240 MB	~ 3.8 x smaller
	Memory Usage (Avg)	67 - 135 MB	46 - 50 MB	Upto 65% reduction
	Power Draw (AI Workload)	1050 - 1200 mW	947 mW	6% - 8% savings

AI Model : Vision based Object Classification on DC

IOT App : Automotive Cruise Control App



Arm/Intel CPUs
NVIDIA A100

*Start Up times have been normalized across AI, IoT & Traditional workloads

Outcome: 15–20 % better Perf/Watt, 3–4× more models per node, and months of onboarding reduced to days.

THE PRODUCT — ULTRAEDGE™ FABRIC ARCHITECTURE

UltraEdge is composed of two integrated execution stacks optimized for different workload types:

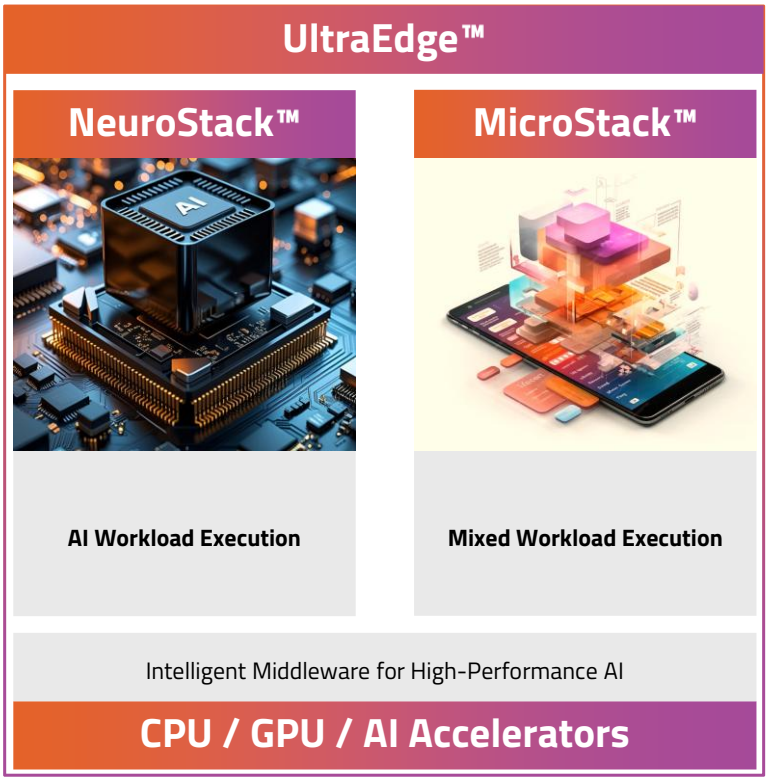
1. MICROSTACK — FOR MIXED WORKLOADS (ENTERPRISE, ANALYTICS, CONTROL)

- **MicroBoost:** Lightweight runtime engine that removes OS and container overhead, maximizing CPU efficiency.
- **MicroPac:** Lean packaging system enabling deterministic startup, lifecycle control, and secure isolation.

2. NEUROSTACK — FOR AI WORKLOADS (INFERENCE, TRAINING, EDGE AI)

- **NeuroBoost:** AI-optimized runtime delivering low-latency execution across GPUs and accelerators.
- **NeuroPac:** AI-native container alternative — minimal footprint, zero-latency startup, consistent performance.

Together, MicroStack and NeuroStack form **UltraEdge**, the unified fabric for AI and mixed workload execution — from edge devices to hyperscale data centers.



UNIQUE VALUE PROPOSITIONS

- **Unified Execution:** Run AI and traditional workloads side-by-side on one fabric.
- **AI-Native & Mixed-Workload Ready:** Optimized for both inference and mission-critical applications.
- **Perf/Watt Leadership:** 15–20% better efficiency and 65% utilization uplift.
- **Container-Free Efficiency:** 30× faster startup, 3.8× smaller footprint.
- **Hardware-Agnostic:** Runs on CPUs, GPUs, NPUs, and FPGAs.
- **Plug-and-Play Integration:** No infrastructure changes — deploys directly on compute instances.
- **Sustainable by Design:** Lower energy burn and reduced carbon impact.

DEPLOYMENT & INTEGRATION

- **Runs On:** Kubernetes, VM, or bare-metal infrastructure
- **Operating Systems:** Linux and QNX (for automotive)
- **Hardware Ecosystems:** ARM | NXP | NVIDIA | Qualcomm | Intel | AMD
- **Delivery Model:** ARR-based subscription per compute instance
- **Deployment Flow:** Plug & Play → Activate Stack → Execute AI & Mixed Workloads → Optimize in Real Time

UltraEdge plugs directly into existing infrastructure — instantly converting stranded compute and power waste into measurable ROI.

TinkerBloX UltraEdge™ — *Built for real-world AI infrastructure. Faster. Leaner. Deterministic.*

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