

LTM

Edge AI with ARMADA

LTM Solution, 2026

Solution Offering



A Larsen & Toubro
Group Company

INDUSTRIAL **EDGE AI FACTORIES**

Bridging the Digital Divide · Creating Value at the Industrial Edge

Challenges

Explosion of Data at the Edge

Over 90% of industrial operational data is generated and trapped at the edge — legacy infrastructure can't process it fast enough for real-time decisions.

Data Sovereignty and Residency

Strict regional compliance and data residency mandates make centralized cloud processing legally and operationally untenable. Federated, on-premise inference is the new standard.

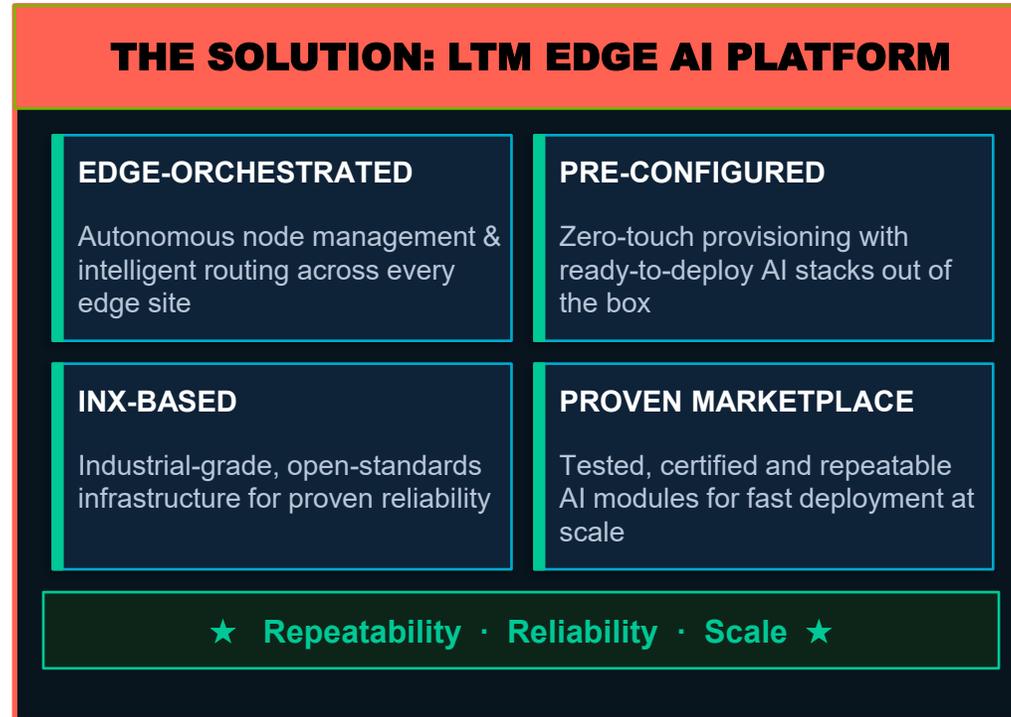
Moving AI From the Cloud to the Edge

Real-time computer vision, robotics, and autonomy require inference at the point of operation — cloud latency is no longer acceptable.

Deployment Complexity

Deploying and managing AI across remote industrial sites — offshore rigs, mines, FOBs — demands ruggedized hardware and remote orchestration without on-site IT.

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Use Cases

Manufacturing Optimization - BusBar Production

“Predict. Simulate. Optimize. Manufacturing Without Waste.”

Infrastructure Reliability - Water Utility

“Predict Failures Before They Flood the City.”

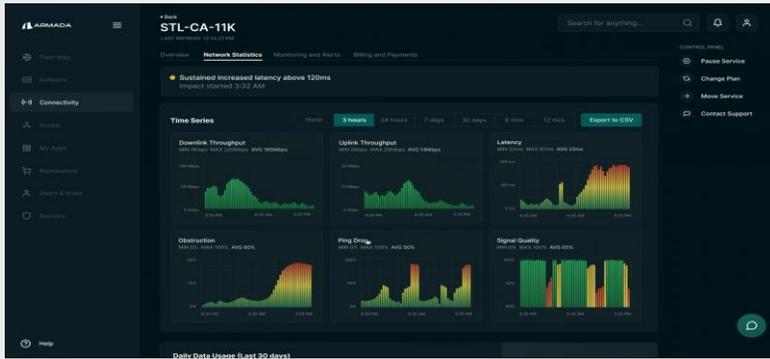
Federated Hybrid LLM Inferencing

“Cloud-Grade AI at the Edge — Without Cloud-Scale Cost.”

EDGE AI FACTORIES Powered by ARMADA Edge Platform

AI Infrastructure for the Remote Edge

Atlas



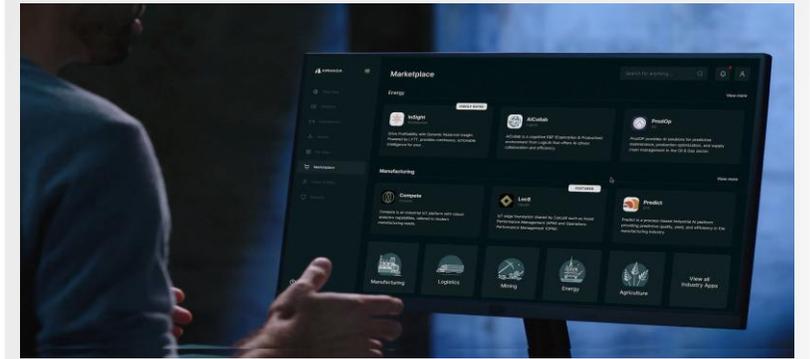
Enterprise OS for edge assets – satellite terminals, SD-WAN devices, drones, sensors, robots, autonomous vehicles, etc.

Beacon & Scout



Mobile, ruggedized compute rapidly deployed to the remote edge

Marketplace



Management and procurement of edge assets and apps in a single pane of glass via our marketplace (“Marketplace”)

Armada provides the infrastructure layer that makes LTM’s AI solutions deployable and operational at any remote edge environment — mines, oil fields, utilities, or defense installations.

The First Full-Stack Edge Solution

Separate Pieces Before

- Separate vendors for connectivity, compute, and software
- No unified orchestration or lifecycle management
- Manual configuration per site — unscalable and error-prone
- No app marketplace or workload deployment pipeline
- Cloud-dependent tooling unable to operate disconnected



Armada Beacon

One Solution Today

- Modular, ruggedized compute via Beacon or Scout shipped to any remote site
- Integrated networking, power, and cooling in one unit
- Full orchestration via Atlas
- App lifecycle via Marketplace — one-click deployment
- Compliance-ready: FedRAMP Moderate, IEC 62443
- Deployable in days, not months

From a single pane of glass, Armada manages every layer of the edge infrastructure stack — so AI workloads run reliably everywhere.

Manufacturing Optimization - BusBar Production

“Predict. Simulate. Optimize. Manufacturing Without Waste.”

Manufacturing

Business Problem

- High material waste due to undetected bottlenecks, rework process inefficiencies
- Defects identified late in the cycle with limited in-line visibility
- Limited root-cause traceability across machine settings, tool wear, and material batches
- Physical layout/process changes are expensive and risky to test in live environments
- Manual optimization lacking predictive intelligence and automated recommendations

Solution Approach

- Created a GPU-accelerated digital twin of the BusBar production floor using NVIDIA Omniverse.
- Embedded **Computer Vision** at critical stations (cut/punch/bend) for in-line defect detection & evidence capture.
- Introduced **Agentic AI Orchestrator** to coordinate sensing → inspection → decisioning → workflow actions (MES/alerts/work orders).
- Performed root-cause analysis by correlating defects with machine parameters, tool wear, material batch and line context.
- Generated actionable recommendations (parameter tuning, tool change, re-routing, preventive maintenance) and closed-loop learning.
- Simulated material flow, machine dynamics, and layout scenarios using Isaac Sim.

NVIDIA + ARMADA STACK

- **NVIDIA Omniverse** – Industrial-grade digital twin platform
- **NVIDIA Isaac Sim** – Physics-accurate simulation environment
- **NVIDIA RTX GPUs** – Real-time rendering & simulation acceleration
- **Edge Compute:** Jetson Orin family
- **Models:** Nemotron VLM/LLM
- **Deployment & Acceleration:** NIM + TensorRT + CUDA
- **ARMADA Menace – T / BECON**
- **ARMADA ATLAS**

High-precision industrial production environments where material efficiency, throughput, and quality consistency directly impact profitability and delivery timelines.

Infrastructure Reliability - Water Utility

“Predict Failures Before They Flood the City.”

Business Problem

- Expensive pipe bursts causing service disruption and repair costs
- Aging infrastructure with limited predictive visibility
- Reactive maintenance leading to emergency response scenarios
- High training cost and operational risk for new field operators
- Lack of safe simulation environment for failure scenarios

Solution Approach

- Created a physics-based digital replica of the water distribution network.
- Simulated pressure, flow dynamics, and stress behavior using AI-driven modeling.
- Predicted pipe burst risks and failure patterns before physical occurrence.
- Added **Agentic AI Orchestrator** to coordinate monitoring → diagnosis → work-order creation → crew routing
- Used VLM/SLM co-pilot to summarize incidents, explain likely causes, and generate operator-ready recommendations.
- Delivered immersive VR-based operator training using realistic failure simulations.

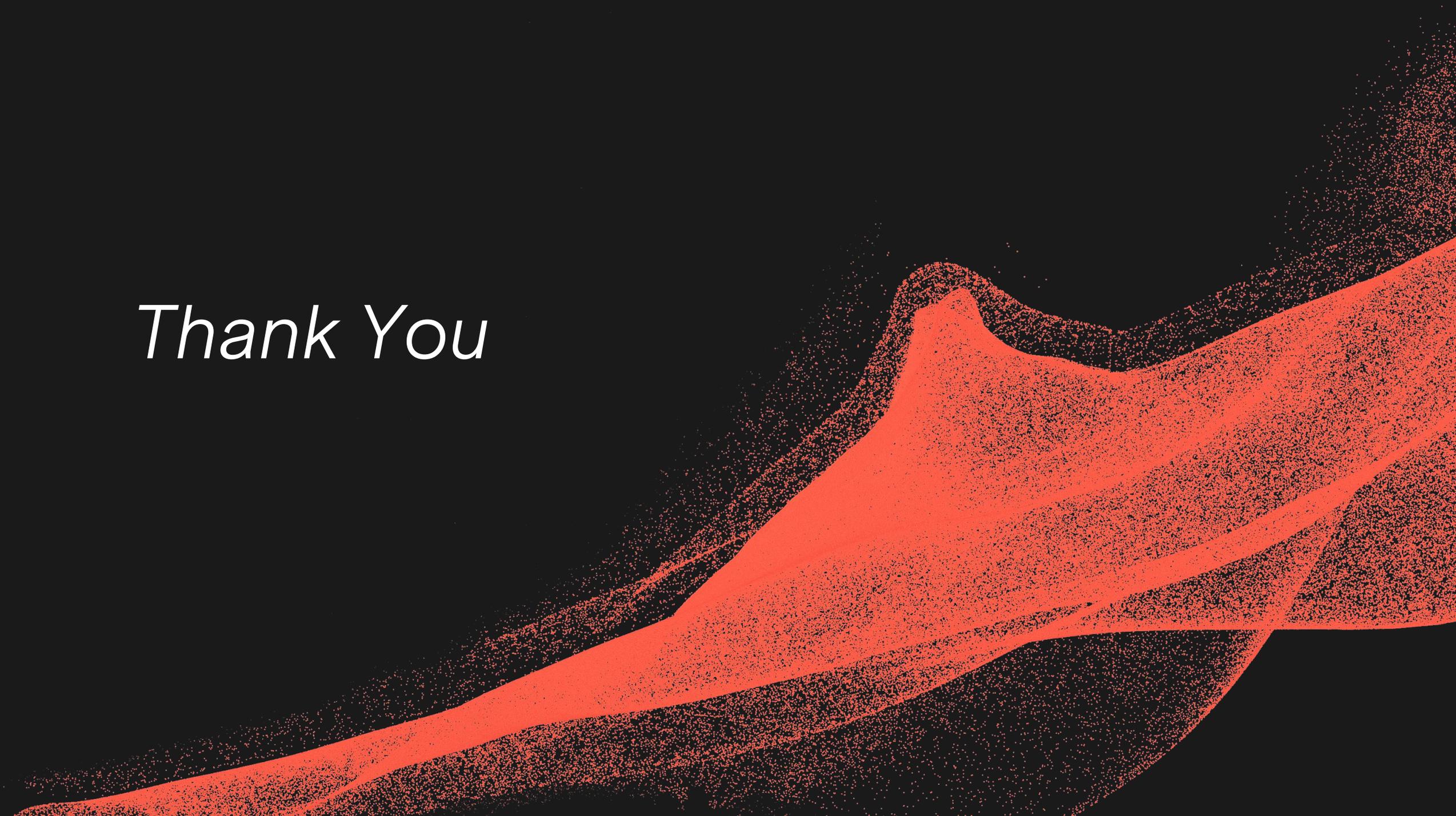
Utilities

NVIDIA + ARMADA STACK

- **NVIDIA Modulus** – Physics-informed AI modeling for fluid dynamics and structural stress prediction
- **NVIDIA Omniverse** – High-fidelity digital twin and simulation environment
- **NVIDIA RTX GPUs** – Real-time rendering and simulation acceleration
- **NVIDIA Jetson (Orin Nano / Orin NX / AGX Orin)** – Edge AI for pump stations / field gateways (low-latency anomaly detection)
- **NVIDIA Nemotron (VLM/SLM)** – Multimodal/compact models for image/video understanding, operator co-pilot and reasoning
- **ARMADA MENACE –T / BECON**
- **ARMADA ATLAS**

Urban water distribution networks where system reliability, pressure stability, and asset longevity directly impact public safety, regulatory compliance, and operational expenditure.

Thank You

The background features several overlapping, wavy, semi-transparent bands of orange and red colors against a solid black background. The bands have a grainy, stippled texture, giving them a sense of depth and movement. The colors transition from a bright orange to a darker red, and the overall effect is reminiscent of a stylized flame or a dynamic, abstract landscape.