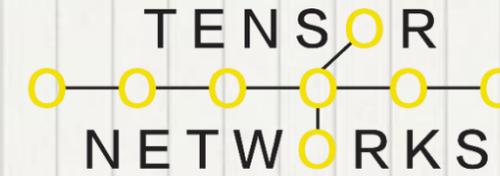
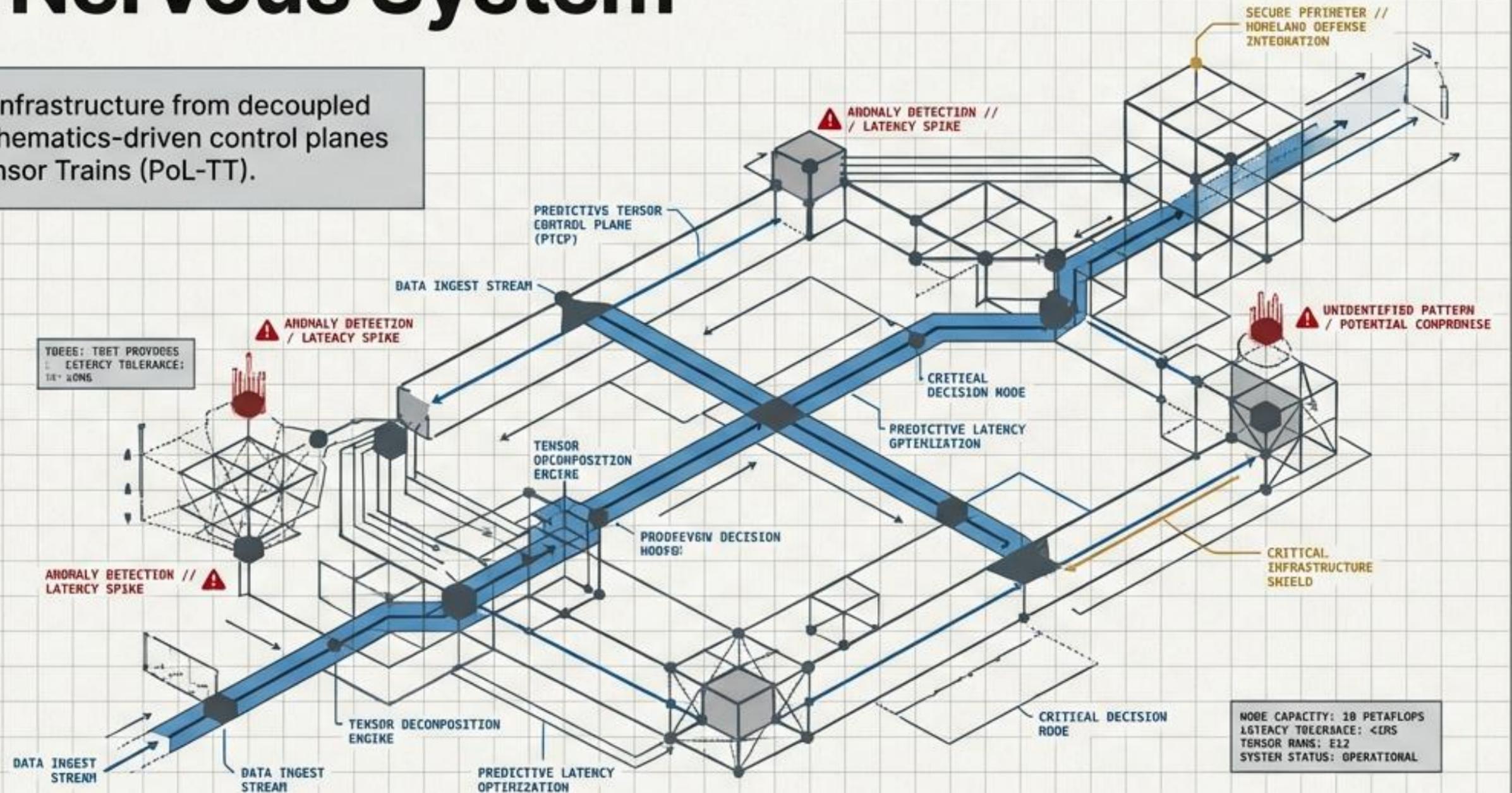
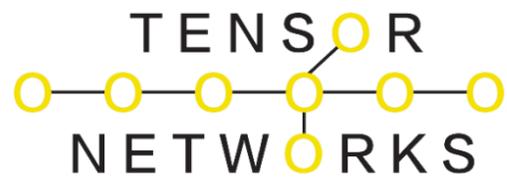


Upgrading the DoD to a Predictive Nervous System



Transitioning military network infrastructure from decoupled data movers to predictive, mathematics-driven control planes powered by Pattern-of-Life Tensor Trains (PoL-TT).



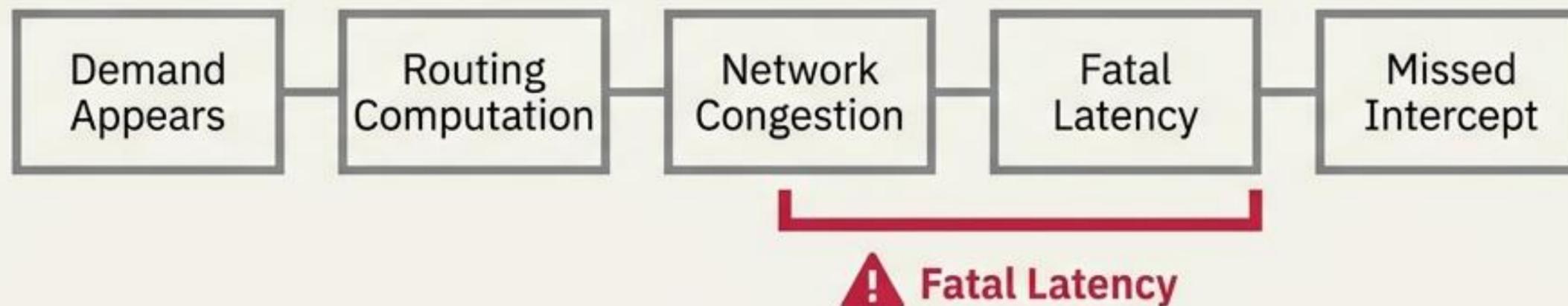


Disclaimer: Forward-Looking Statements This presentation may contain forward-looking statements regarding future product plans, expected features, or anticipated release dates. These statements outline our general product direction and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for our products remain at our sole discretion and are subject to change without notice. These statements do not represent a commitment, promise, or legal obligation to deliver any specific material, code, or functionality

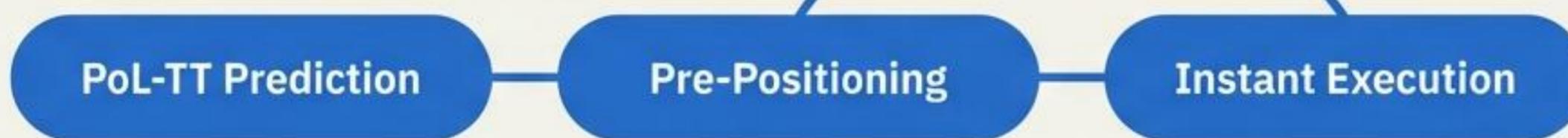
Reactive Data Routing Introduces Fatal Latency in High-Intensity Conflicts

Current military network infrastructures act as ensembles of decoupled data movers. They optimize routing only after demand appears, leaving systems inherently reactive and vulnerable to near-peer adversaries.

Legacy / Reactive Network



PTCP / Predictive Nervous System

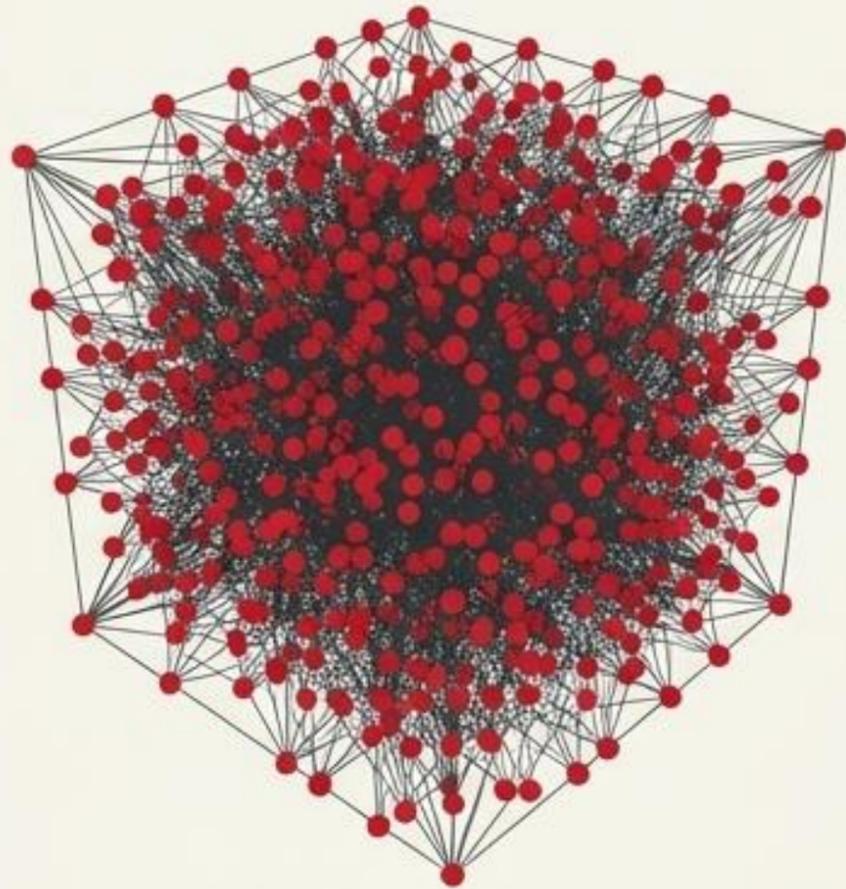


PTCP transitions observability into a sequence of bounded matrix operations.

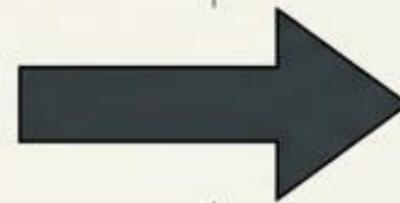
Infrastructure Evolution: Decoupled Networks vs. Predictive Nervous Systems

Dimension	Legacy Decoupled Networks	PTCP (PoL-TT)
Operational Posture	Reactive ensemble.	Predictive nervous system.
Data Routing Trigger	Post-demand optimization.	Probabilistic forecasting.
Cross-Layer Visibility	Network and storage are blind to each other.	Unified mathematical signal to all layers.
Edge Compute Dependency	Requires heavy cloud compute.	Evaluates marginals/conditionals directly on SWaP-constrained hardware.
Telemetry Overhead	Transmits massive raw telemetry.	Pushes only compact mathematical summaries up.

Tensor Train Decomposition Solves the Curse of Dimensionality



Massive Joint Probability State
(Sensors, Bogeys, Interceptors).



Pattern-of-Life Tensor Train
(PoL-TT).

Tracking thousands of variables creates a joint probability state that traditional analytics cannot process in real-time.

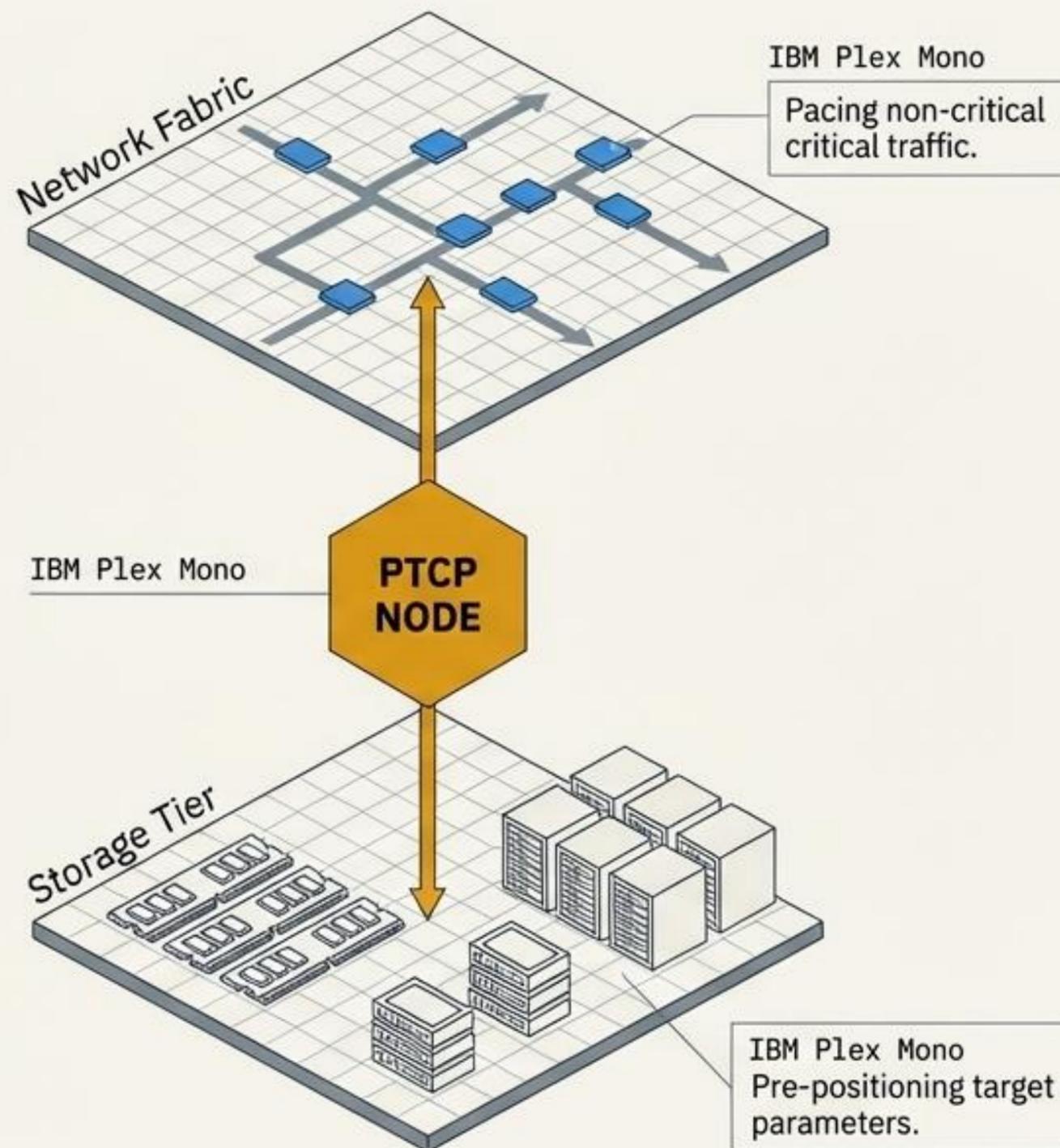
By compressing cross-layer behavior into a tractable Tensor Train format, the control plane lives directly near the data path, predicting supporting states instantly.

Project Golden Dome Requires Cross-Layer Convergence to Close the Kill Chain

In a mass-attack scenario, Golden Dome sensors flood the network with telemetry. Legacy network and storage layers are traditionally blind to one another.

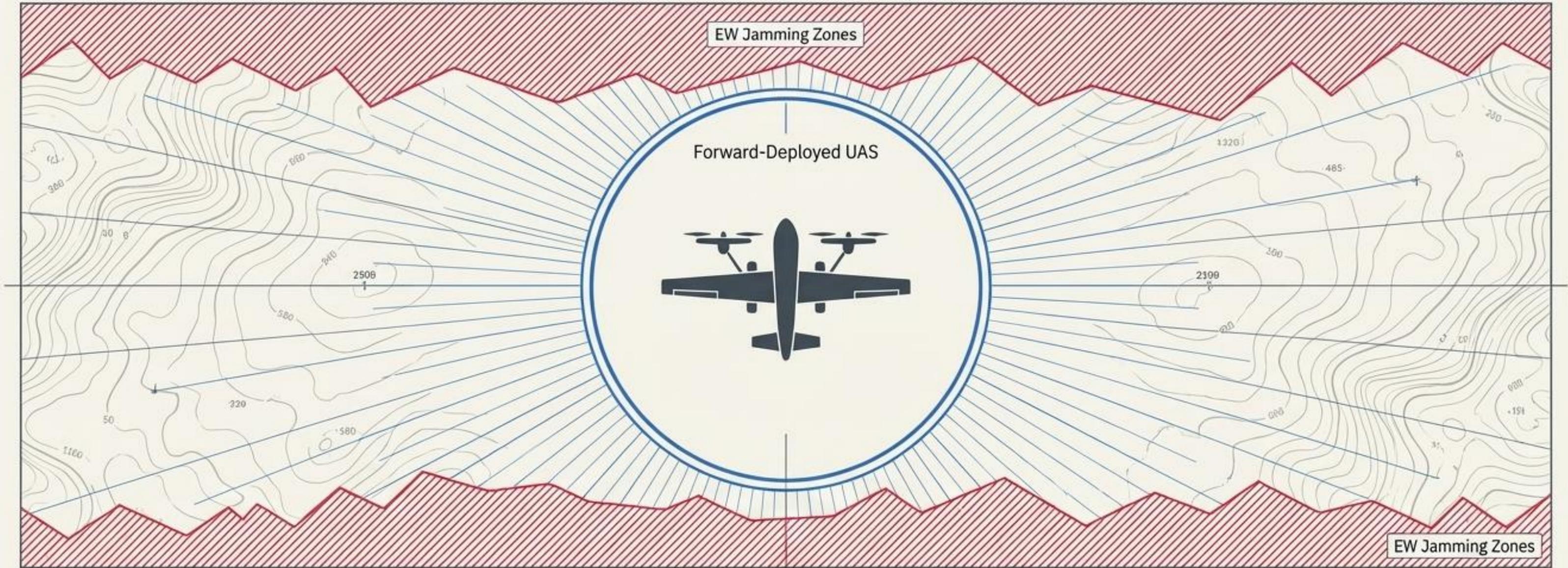
PTCP acts as the unified brain: the exact same mathematical model manages network pacing and storage pre-positioning simultaneously.

PTCP probabilistically forecasts where network pressure will form, routing interception telemetry before bottlenecks occur.



Tactical Edge AI Demands Lightweight Inference Under Heavy Electronic Warfare

IBM Plex Mono



StylP: CRITICAL

LATECY: <1ss

DPU: EDGE INFERENCE

ANOMALY SCORE: 0.98

The Constraint

The DoD's AI Overmatch requires pushing AI to unmanned systems and mobile units. These environments face severe Size, Weight, and Power (SWaP) constraints and heavy EW jamming, negating cloud reliance.

The PTCP Advantage

SWaP-constrained hardware does not need to materialize the entire mathematical state. Edge DPUs only need to evaluate marginals, conditionals, and anomaly scores directly on the device.

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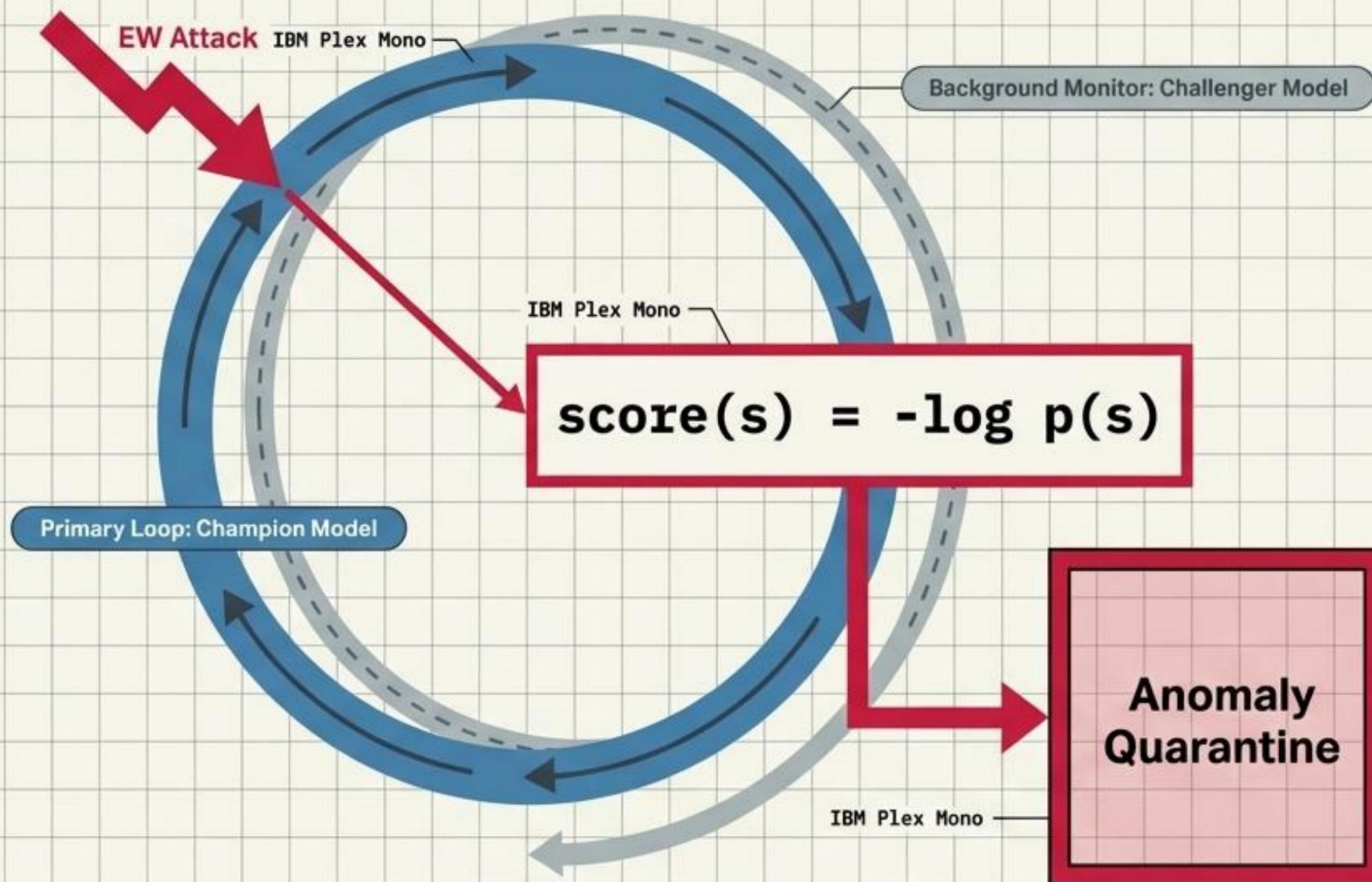
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The Champion/Challenger Protocol Quarantines Jammed or Poisoned Telemetry

Model Drift Prevention

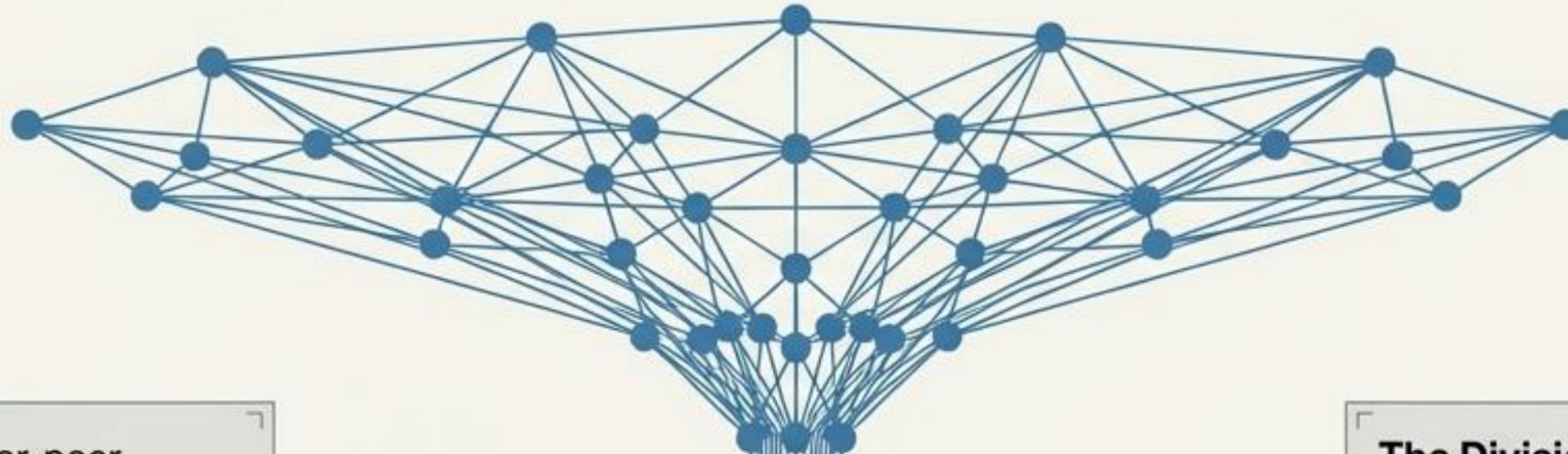
If an adversary injects poisoned data, PTCP prevents the edge AI from learning a degraded state as the new normal.

The PTCP node agent calculates instantaneous anomaly scores to flag pathological behavior, **protecting the operational integrity of the unit.**



CJADC2 Networks Overcome A2/AD Bandwidth Limits via Compact Exchange

Comprehensive Situational Awareness for Command Node

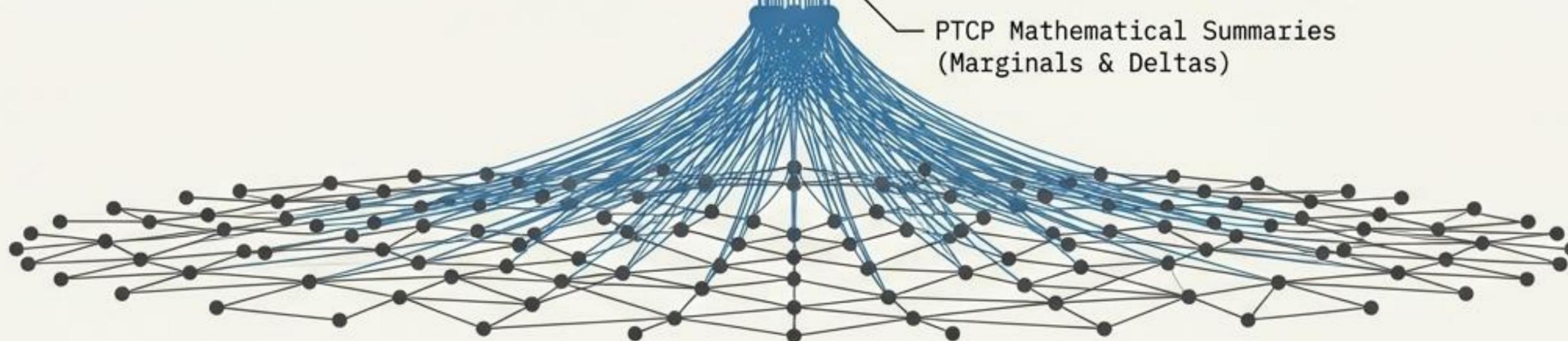


The A2/AD Threat: Near-peer Anti-Access/Area Denial (A2/AD) capabilities can sever connections to central command, demanding decentralized operations.

The Division of Labor: Forward-deployed agents transmit only compact mathematical summaries upward, drastically reducing telemetry overhead on contested networks.

The Narrow Neck

PTCP Mathematical Summaries
(Marginals & Deltas)



Raw Tactical Data / Sensors at the Edge

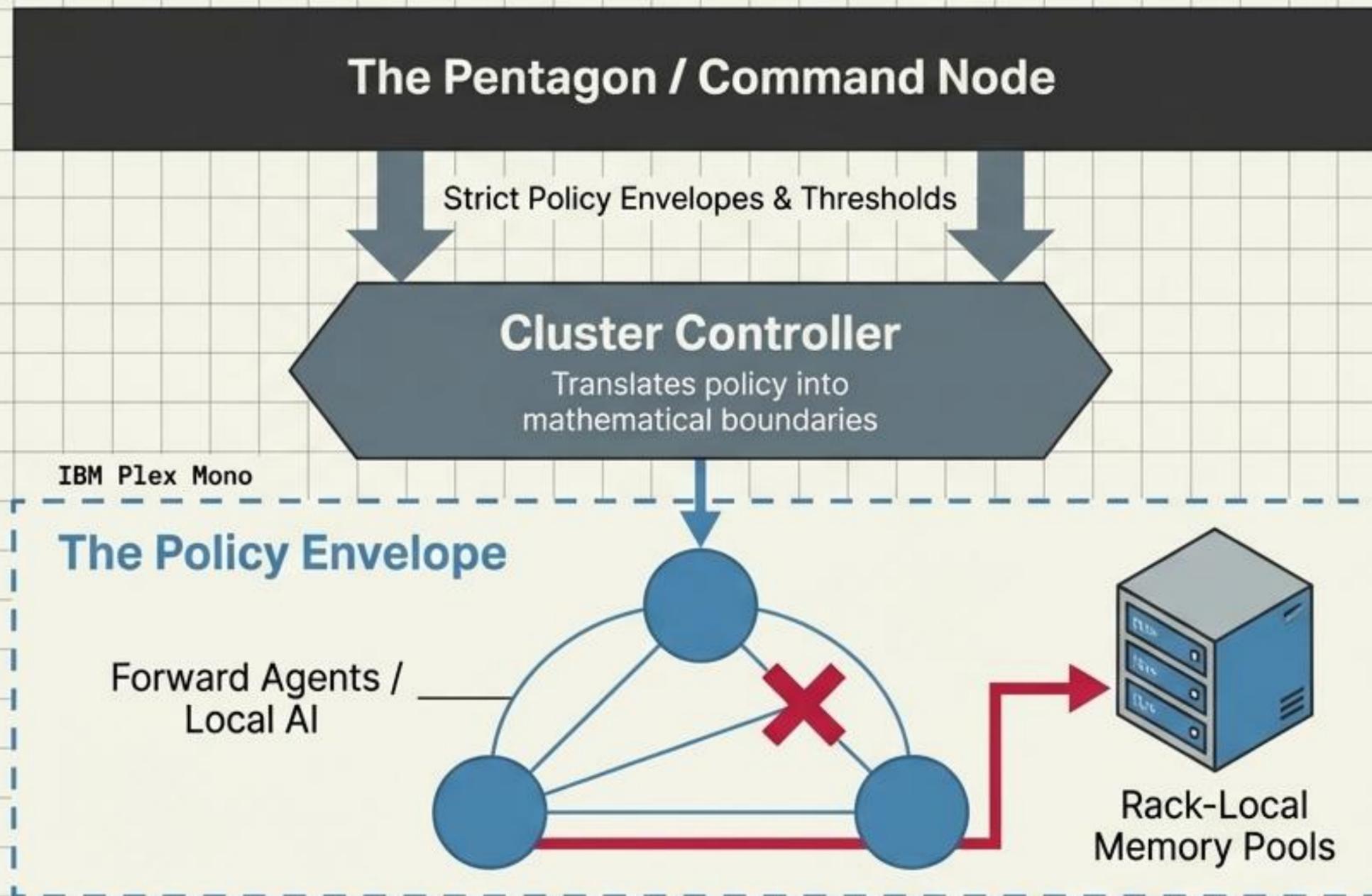
Bounded Autonomy Ensures Command Integrity in Severed Environments

Bounded Closed-Loop Control

The military cannot allow decentralized AI nodes to make unbounded decisions. Local AI can pace traffic or reroute communications, but strictly within mathematically defined policy boundaries pushed from above.

Resilience via Pooling

If links are severed, conditional probabilities dynamically route critical intelligence into rack-local storage until connectivity is restored.



A Unified Architectural Vision: One Mathematical Framework Across All Domains

Project Golden Dome



Constraint Solved:
Dimensionality Curse.

CJADC2 Decentralization



Constraint Solved:
Bandwidth Limits.

Tactical Edge AI



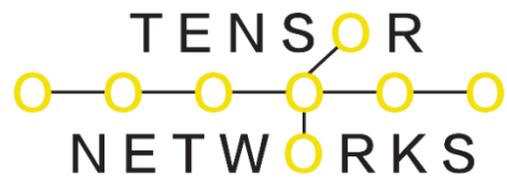
Constraint Solved:
SWaP Constraints.

By layering Pattern-of-Life Tensor Trains onto existing COTS and specialized hardware, a singular mathematical framework unifies Homeland Defense, Tactical Edge, and Command environments.

From Reacting to Adversary Actions to Predictively Outmaneuvering Them

Strategic Imperative: Data superiority is the defining characteristic of modern warfare. The transition to a Predictive Tensor Control Plane is mathematically rigorous and strategically vital.

Procurement Mandate: By embedding mechanisms like the Champion/Challenger mitigation strategy directly into DoD procurement requirements, the operational integrity and safety of autonomous systems can be structurally guaranteed against near-peer threats.



Thank You for Your Partnership We look forward to building the future of networking together. Please don't hesitate to reach out with any questions.

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information@tensornetworks.net