Tactical Superiority in Contested Environments

Part of the series: The Argument for Embedded Logic at the Edge vs Centralised Large AI in Modern and Future Warfare

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Executive Summary

The return of large-scale land war, the proliferation of unmanned systems and the rise of electronic and cyber denial have reshaped the tactical landscape. From eastern Ukraine to the Red Sea and Sahel, the battlefield is no longer defined by control of territory, but by control of time, space, and information under duress.

This paper argues that in contested environments, saturated with jamming, deception, interference and threat, centralised AI architectures are unfit for purpose. Tactical superiority cannot depend on infrastructure that does not survive first contact. It must be embedded, portable, resilient, and decisive.

Capabilities of Embedded AI Logic

1

Operate with or without connectivity

Systems designed to function independently when communication links are severed, maintaining tactical effectiveness in isolation.

2

Adapt to evolving threats and denied conditions

Intelligent systems capable of recognizing and responding to new threat patterns without requiring external updates or guidance.

3

Enable responsive autonomy at scale

Providing decision-making capabilities at the level of squads, vehicles, drones, or dismounted assets without reliance on distant command infrastructure.

The Core Argument

> To dominate in contested environments, military AI must be able to fight alone, think locally, and survive disruption. Centralised systems built for peacetime or data-centre comfort will not deliver tactical advantage in denied battlespaces. Embedded logic will.

This fundamental principle drives the need for a paradigm shift in military AI deployment strategies, moving away from vulnerable centralized architectures toward resilient edge computing solutions.

Key Takeaways

New Baseline

Jamming, cyber interference, and spectrum denial are no longer edge cases, they are the new baseline.

Mission Continuity

Embedded AI enables mission continuity, even when GPS, SATCOM, or cloud links fail.

Intelligent Degradation

Contested environments demand systems that degrade intelligently, not catastrophically.

Local Logic

Tactical overmatch depends on fast, local logic. Not slow, remote inference.

What This Paper Provides

- ## Conflict Analysis

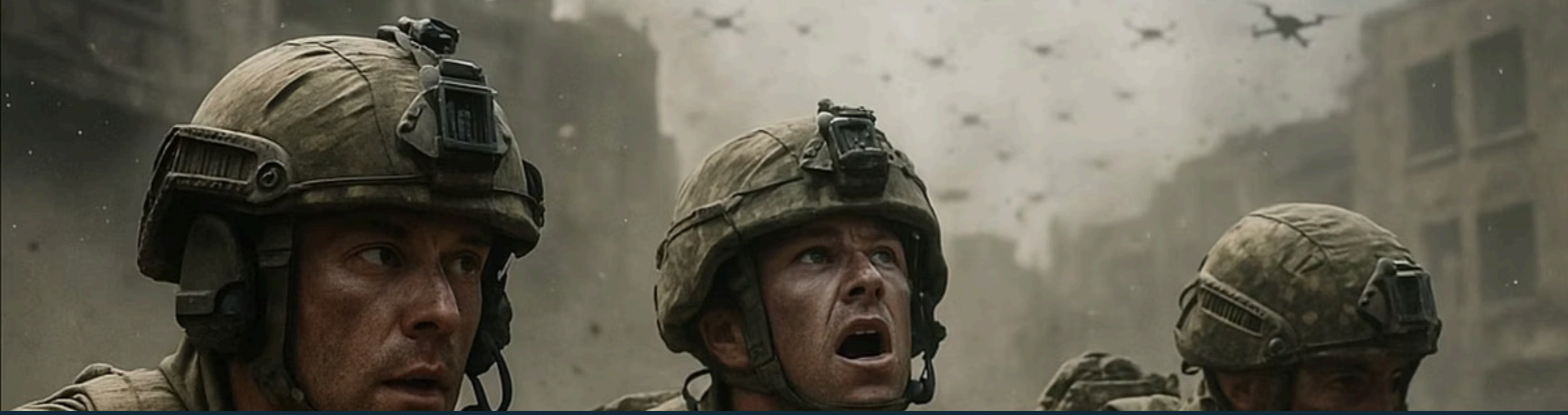
  An analysis of modern tactical environments through recent conflict examples.

- ## Operational Scenarios

  Operational scenarios in which embedded logic outperformed centralised AI.

- ## Strategic Guidance

  Strategic guidance for designing AI-enabled systems built to win in degraded, denied, and disrupted theatres.



The Decisive Factor

"The winner is not the one with the smartest AI, it's the one whose AI is still functioning after contact."

Next in the series:

Chapter 13: The New Tactical Battlespace – Disruption as a Default

Chapter 14: Local Logic, Instant Advantage – Outthinking the Threat at the Edge

Chapter 15: Survivability by Design – Graceful Degradation in Denied Environments

Chapter 16: Contested Dominance – Shaping the Fight Through Adaptive AI