BHARATI|EXICOM
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TACTICAL MANET NETWORKS FOR THE INDIAN BATTLEFIELD

Why Adaptive Mesh Communications Are Defining the Next Phase of Indian Modernisation

#CommsOnTheMove

When the Network is the Weapon, the First Shot is Invisible.

From the Russia–Ukraine war to India's own high-altitude stand-offs, one truth cuts through: control of the spectrum decides control of the battle.

The first shot today is an EM pulse that silences command links, blinds sensors, and severs unmanned control before the first kinetic exchange.
For India, now fielding UAVs, UGVs, and autonomous maritime platforms, this fight is already underway.

HUD

SIGNAL LOST

LINK STATUS: CRITICAL FAILURE

SPECTRUM JAMMING DETECTED: 4.2 GHz

ANTENNA GAIN: -85 dBm

The Communications Gap: Where Legacy Systems Fail Under Fire

Combat experience has exposed the critical limits of traditional systems:

Jamming & GNSS Denial

Fragmented Command

High Mobility & Attrition

Bandwidth Chokepoints
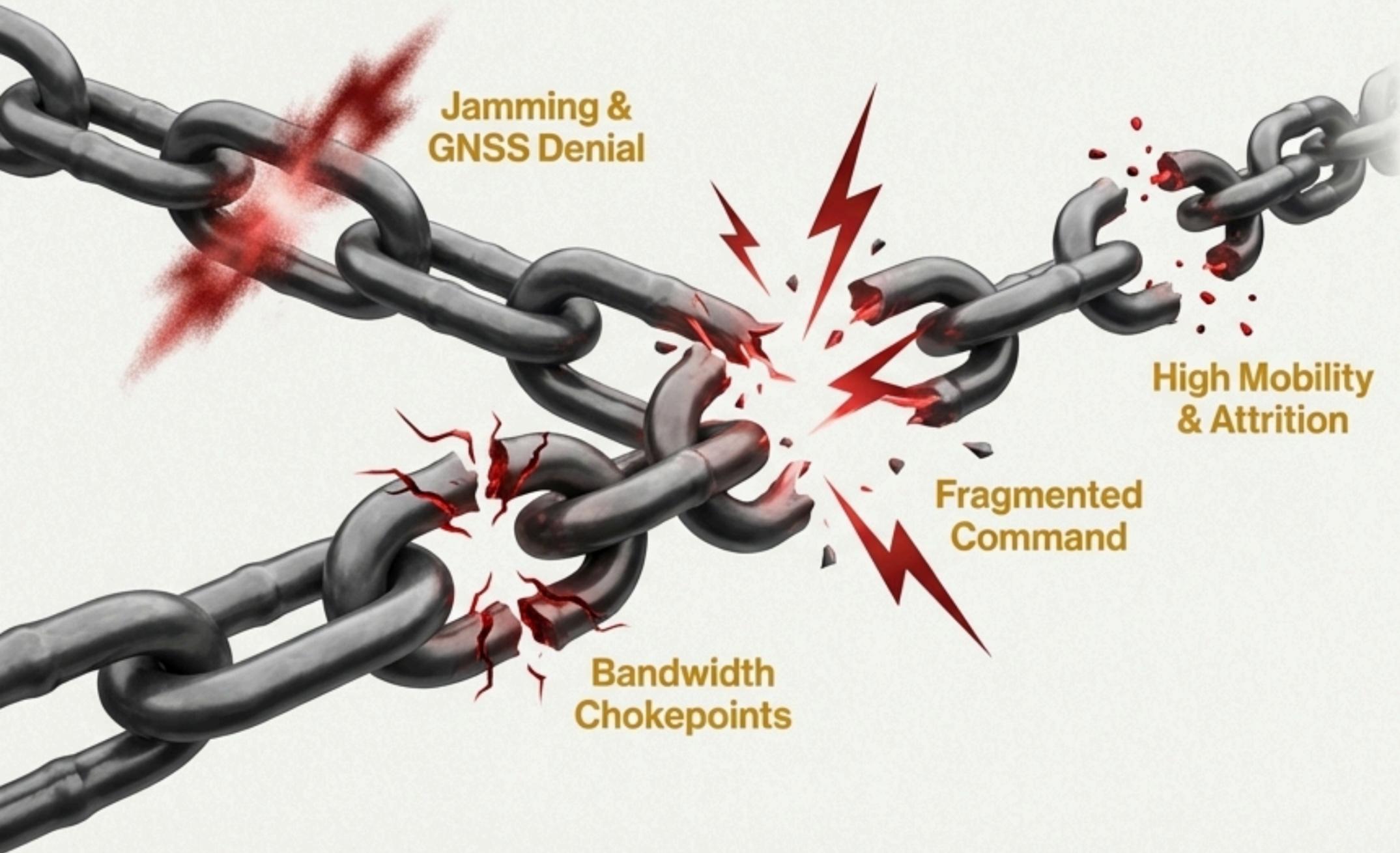
* **Jamming & GNSS Denial:** Cripple telemetry, positioning, and drone control.

* **Fragmented Command:** Incompatible networks prevent seamless inter-service operations.

* **Bandwidth Chokepoints:** Freeze mission-critical ISR feeds mid-mission.

* **High Mobility & Attrition:** Links cannot rebuild themselves in motion or when nodes are lost.
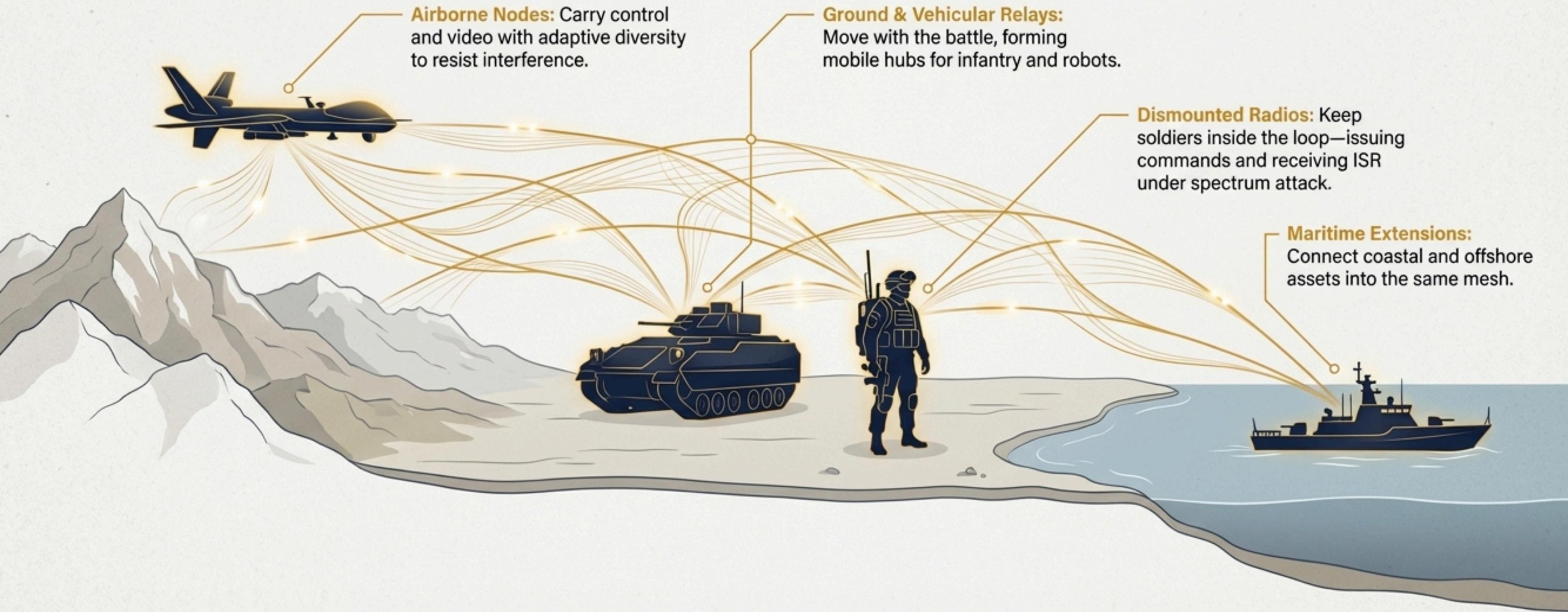
Every Broken Link is a Loss of Initiative.

In modern war, situational awareness is the currency of victory. Every second lost to a frozen ISR feed, a dropped command link, or a fragmented network is a second surrendered to the adversary. The communications gap isn't a technical problem; it's a strategic vulnerability.

One Network. All Domains.

Exicom's Tactical MANET Architecture is built on a single principle: one mission-grade IP backbone that connects every platform, manned or unmanned, without fixed towers or static relays.

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Airborne Nodes: Carry control and video with adaptive diversity to resist interference.

Ground & Vehicular Relays: Move with the battle, forming mobile hubs for infantry and robots.

Dismounted Radios: Keep soldiers inside the loop—issuing commands and receiving ISR under spectrum attack.

Maritime Extensions: Connect coastal and offshore assets into the same mesh.
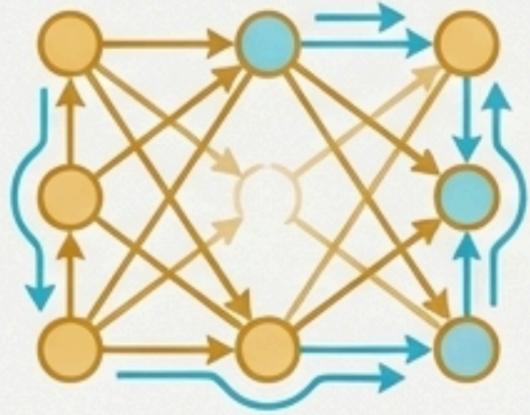
A Network That Fights Back.

A mesh doesn't wait for permission to connect. Every radio, drone, or soldier becomes a living node: sensing, routing, and healing the network in real-time. It is a foundation where every node is a survivor, not a dependency.
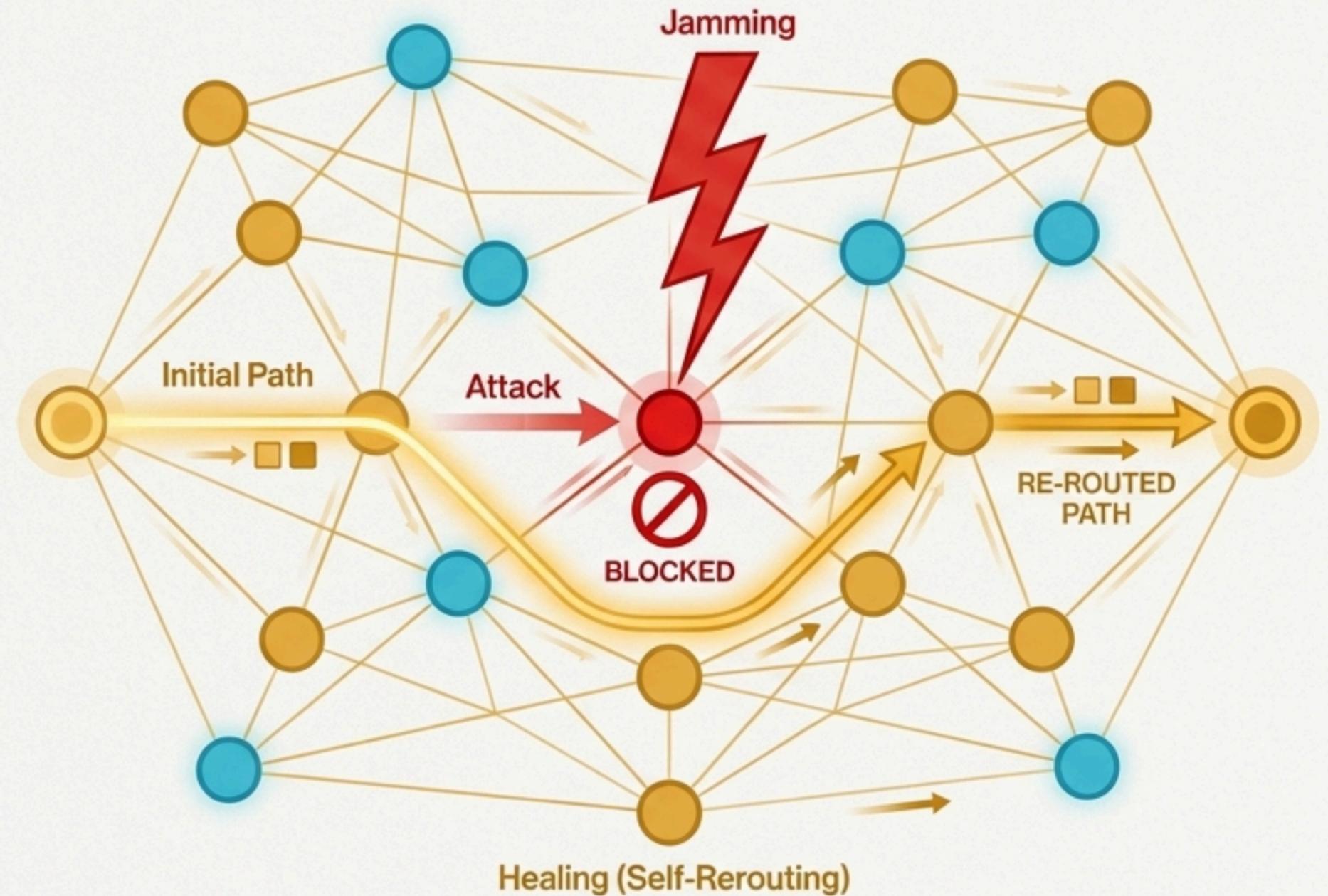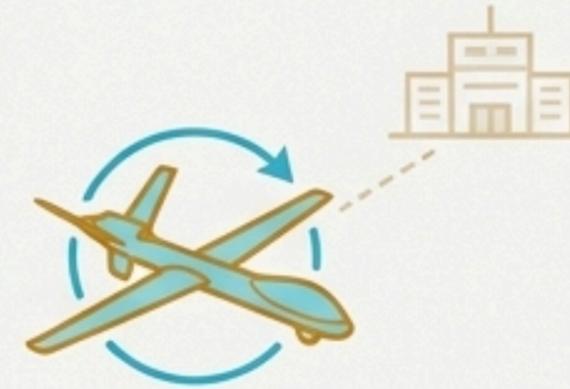
The Anatomy of Resilience.

No Single Point of Failure:
If one node drops, data instantly finds another path.

Adaptive Resilience:
Frequency hopping and power modulation outsmart jammers in real-time.

Continuous Hand-Off:
Control, video, and data shift seamlessly between nodes on the move.

Edge Autonomy:
Unmanned systems retain control, loiter, and return safely even when cut off from command.

PRIORITY

VIDEO

Priority Intelligence:
Mission-critical signals are never delayed by high-bandwidth video load.

Engineered for the Modern Indian Theatre.

Exicom's battlefield philosophy mirrors India's new Integrated Theatre mindset: systems must not just perform in trials; they must endure in conflict.

- **Latency Built for Autonomy:** Deterministic timing keeps control-loop integrity under ISR load.
- **Video is Mission Data:** Full-motion feeds are compressed and prioritised to survive bandwidth loss.
- **Relays That Move with the Fight:** Airborne, vehicle, and man-portable nodes build instant backhaul.
- **Stay Hidden, Stay Connected:** Cognitive radios sense and adapt, masking their signature while staying live.
- **Secure by Design:** AES-256 encryption and ECCM defences keep data uncompromised under EW attack.

Under the Hood: The Exicom Mesh Fabric.

| Capability	Specification
Throughput	Up to 87 Mb/s
Nodes Supported	144 per frequency network
Encryption	AES-256 (FIPS 140-2 certified)
Cognitive Radio	Real-time channel adaptation
Range	150 km (LOS) / 20 km (NLOS)
ECCM	Adaptive jamming resistance
Form Factor	85 g (airborne) to 1.3 kg (vehicular)

Every module is ruggedised to MIL-STD-810H, designed to operate from Siachen's cold to Rajasthan's heat—the invisible fabric binding India's next-generation forces.
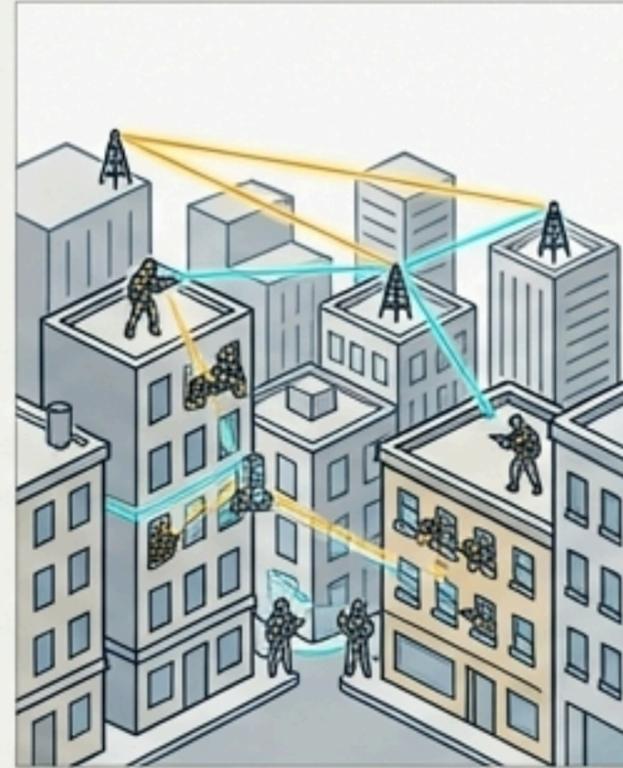
From Theory to Reality: Mission Applications.
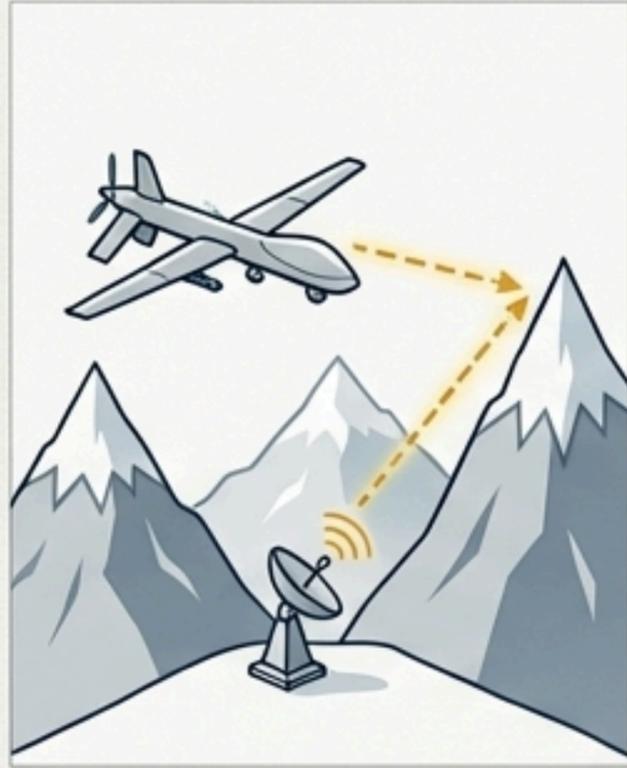
High-Altitude ISR

UAVs maintain live FMV across ridgelines, even under GNSS denial.
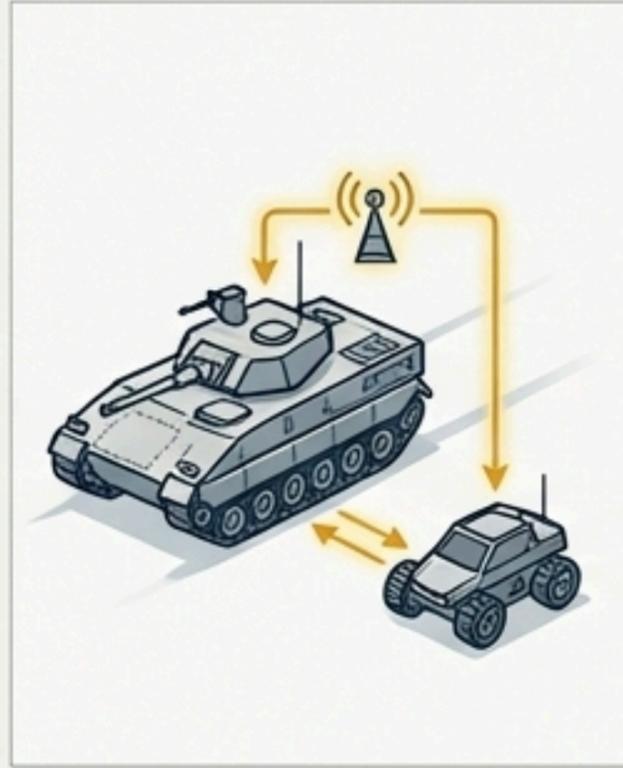
Mechanised Convoys

UGVs and AFVs share autonomy data through rolling vehicular relays.

Urban CI Ops

Low-power nodes sustain links through dense, multipath-heavy terrain.

Maritime Mesh

USVs and UAVs exchange targeting data across littoral zones, maintaining control beyond visual range.

Joint-Domain Missions

Air, land, and sea assets operate under one resilient mesh, with seamless command transfer.

Dominance Begins Not With Firepower, But With Connection.

Modern conflict begins in the spectrum, not on the map. India's next war will be decided by who stays connected when the spectrum turns hostile. Exicom's tactical MANET ensures that every soldier, drone, and vehicle remains part of a living, thinking, and unbreakable web-one that adapts faster than it can be silenced.

The Commander's Checklist: Five Questions of Network Survivability.

1. Can your squad maintain voice and data when jammed?

2. Do your unmanned assets retain control under GNSS denial?

3. Can your network re-route in seconds when nodes fail?

4. Is your data prioritised, secured, and interoperable?

5. Can your communication system fight back?

These aren't specifications anymore—they're survivability questions.