UKRAINE :

THE FUTURE OF WARFARE IS ALREADY HERE

INTERVIEW QUESTIONS
- MAJOR GENERAL (RET.) GARY DEAKIN

Major General Gary Deakin is a former senior British Army leader and internationally recognised strategic planner. His career includes leadership roles across NATO forces, NATO Headquarters, and the NATO command structure, with his final post as Deputy Chief of Staff Plans at NATO Joint Force Command Naples. In Iraq, he commanded the 1st Battalion Duke of Lancaster's Regiment and an All Arms Battle Group. He is currently Head of Defence and Security at MaltinPR in London, serves on the Advisory Council of OPEWI, and has recently been mobilised as a 2-star Mentor for the British Army's One-Star Command Assessment Development Pathway. His operational, planning, and leadership experience bring critical depth to the discussion.

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1. What operational lessons from Ukraine's use of drones, AI-enabled targeting, and real-time data fusion should most urgently drive NATO's evolution in land warfare doctrine and force design?

The lessons from the war in Ukraine should drive NATO and its nations to urgently revise doctrine and force design. On 11 Dec 25 the NATO Secretary General in a speech in Berlin said Russia could attack a NATO country within the next 5 years. "We must be prepared for the scale of war our grandparents or great-grand parents endured'. The first driver is that the modern land battlefield is defined by persistent overhead surveillance, massed drones, and pervasive electronic warfare. Small, low-cost Unmanned Aerial Systems (UAS)—particularly First Person View (FPV) strike drones—have compressed the sensor-to-shooter cycle and made large formations, static positions, and predictable patterns highly vulnerable. Survivability now depends on micro-dispersion, rapid relocation, and rigorous signature management across electromagnetic, thermal, and visual spectrums. NATO doctrine must assume continuous observation and codify deception, mobility, and electronic discipline as core battle drills at the lowest echelons.

The second driver is Ukraine's success in integrating AI-enabled autonomy and real-time data fusion. They have successfully fused multi-source intelligence into actionable targeting data at the tactical level, enabling rapid fires and decentralised decision-making. AI-assisted navigation and terminal guidance have improved strike reliability despite jamming, while maintaining human control over target selection. NATO must accelerate development of modular autonomous weapon systems, resilient analogue systems, and computing capabilities to ensure forces can operate in EW-contested environments. There is also an urgent requirement for doctrinal clarity on human-in-the-loop targeting.

The third driver is that force design must assume the threats and opportunities offered by loitering munitions and UAS-based fires across the battlespace at every level. The Forward Line of Own Troops (FLOT) or the Forward Line of Enemy Troops (FLET) are no longer valid concepts. The boundaries blurred and shifting in accordance with UAS capabilities. Mass still counts but dispersed rapidly moving and enabled by tech is now mission critical. Ukraine has proven that 'mass in tech' can be as critical as 'mass in troops' in the traditional sense. UAS provide precision and immediacy, complementing traditional artillery and enabling saturation effects. NATO should institutionalise UAS fires integration, create organic drone units, and invest in layered counter-UAS defences at every level.

Organisational agility is paramount: Ukraine's iterative, bottom-up innovation cycle has outpaced Russia's adaptation and as a result NATO nations must learn rapidly, adapt in training and bring temp to force design. Nations need to embed rapid acquisition cells to close the decision loops on procurement. Primes, Tier 1 and Integrators should deploy forward elements into the battle space in the 2nd or 3rd echelon to learn the lessons and replay back to the factories, in the manner a Formula 1 team operates.

This will require decentralised financial decision making within the bounds of agreed contracts and encourage the taking of risks with financial and safety regulations.
In short, NATO's warfare evolution hinges on four imperatives: fight under constant ISR and EW pressure, exploit AI and data fusion for decision advantage, integrate loitering munitions as routine fires, and institutionalise rapid adaptation. These changes demand not only new technologies but a cultural shift toward speed, modularity, and resilience—conditions that Ukraine has proven decisive in modern high-intensity conflict.

2. How can NATO and Allies overcome doctrinal and institutional inertia to translate battlefield innovation into formal doctrine and interoperable capability faster?

At the geo-strategic level NATO leadership in the North Atlantic Council needs to inspire NATO nations of the imminent existential threat from Russia. The refinement and adaptation of doctrine across the Alliance currently takes up to 3 years by which time it is irrelevant.
NATO needs to revolutionise the speed of doctrinal refinement by instutionalising it at every level of the NATO Command and Force Structure. Currently driven by its own lessons learned process and sitting outside of the remit of commanders, doctrinal refinement and battlefield innovation needs to be owned by commanders, who should be assessed on their ability to innovate in training and exercises. To get over the inertia and speed up adaptation NATO should consider adopting a lead or framework nation approach for different types of doctrine thus decentralising, empowering and therefore increasing tempo. The NATO Centres of Excellence (COE) need to be brought into the NATO Command Structure (NCS) and their outputs adapted at the speed of relevance.

NATO needs to find a way to institutionalise continuous adaptation cycles and break away from slow, top-down processes. Ukraine's experience shows that bottom-up innovation, rapid software iteration, and modular capability integration outperform traditional acquisition timelines. NATO should embed agile doctrine development cells within operational commands, empowered to capture frontline lessons and publish interim doctrinal updates wen required rather than waiting for multi-year cycles.

NATO must create fast-track interoperability frameworks. This means adopting open architectures, common data standards, and API-driven integration for C2 systems, enabling Allies to plug in emerging technologies without lengthy certification. Interoperability should be treated

as a design principle from day one and a system and infrastructure needs to be created where nations can test and validate new capabilities collaboratively under realistic EW and ISR conditions.

To overcome the doctrinal and institutional inertia governance and culture needs reform. NATO should establish innovation hubs across the Command and Force structure backed by discretionary NATO common funding and authority to field experimental capabilities during exercises. Lessons learned should feed directly into doctrine via a formal an "innovation-to-doctrine pipeline", supported by digital platforms, such as a 'Commanders Innovation App' for rapid dissemination.

3. What does Ukraine's model of low-cost mass production and agile industrial mobilisation reveal about how the Alliance should rebuild its defence-industrial base for sustained, high-tempo conflict?

Ukraine's approach to low-cost mass production and agile industrial mobilisation underscores the need for NATO to pivot from slow, bespoke procurement toward scalable, consumable systems. In high-tempo conflict, attritable platforms—such as drones and loitering munitions—deliver decisive effects at a fraction of the cost of traditional systems. This demands a shift to design-to-cost principles, modular architectures, and production models that prioritise speed and volume over perfection.
Equally critical is the creation of agile, distributed production ecosystems. Ukraine has leveraged networks of small manufacturers, rapid prototyping, and iterative software updates to sustain battlefield innovation. NATO should replicate this through defence innovation clusters, dual-use manufacturing partnerships, and collaborative development cycles. Pre-approved component catalogues and streamlined contracting will enable rapid adaptation and fielding of new capabilities.

Resilience and surge capacity must be built into the Alliance's industrial base. Stockpiling critical components, securing supply chains, and investing in regional surge facilities will ensure NATO can sustain operations under attrition. The principle of sustainment has evolved from 'just in case' in the Cold War to 'just in time' fir the expeditionary operations of Afghanistan and Iraq to tech and innovation enabled 'just right'. This should be driven by a "innovation-to-field" pipeline—supported by NATO common funding and fast-track certification—which will translate lessons from the combat across the battle space into interoperable capability before adversaries adapt. Speed, scalability, resilience and flexibility must become the defining principles of NATO's industrial strategy.

4. In an era of contested spectrum and electronic warfare, how can NATO ensure resilient, AI-driven C2 and information dominance on the future battlefield?

To maintain information dominance under pervasive electronic warfare, NATO must design C2 architectures that are decentralised, adaptive, and spectrum-resilient. This means moving away from reliance on single high-bandwidth links and embracing multi-path, multi-band communications—including mesh networks, optical links, and low-probability-of-intercept waveforms. AI should be embedded at the tactical level to enable autonomous spectrum management, dynamic routing, and predictive EW threat detection, reducing latency and dependence on vulnerable centralised nodes.
Resilience also requires AI-driven decision support integrated with modular networks. Systems must fuse multi-source data locally, validate integrity under jamming, and provide commanders with actionable insights even in degraded conditions. This approach ensures continuity of operations even when SATCOM or GPS is denied.
NATO must institutionalise contested-spectrum training and doctrine, making EMCON discipline, EW manoeuvre, and reversionary modes as standard practice. An adaptive system for rapid AI model updates—tested in demanding and contested EW environments—will keep algorithms relevant against adaptive adversaries. By combining distributed architecture, autonomous spectrum agility, and robust assurance frameworks, NATO can secure AI-enabled C2 and preserve decision advantage on the future battlefield.

5. How should NATO and Allies balance the need for rapid innovation with the realities of readiness cycles, training demands, and long-term force sustainment?

If the NATO Secretary General's statement in Dec 25 becomes reality, NATO needs to get transform onto a war footing and prioritise readiness now. As part of this transformation rapid innovation needs to be fully integrated with readiness cycles, training and sustainment. A tiered transformation from peace to war needs to be planned and executed. The Alliance should prioritise spiral integration—fielding new capabilities first in high-readiness formations and experimental units, while maintaining baseline interoperability for the wider force. This ensures innovation does not compromise readiness and cohesion.
Training and doctrine must evolve in parallel. Rapid capability introduction requires adaptive training pipelines, modular curricula, and simulation environments that allows the forces to master new systems without extending readiness timelines. NATO should institutionalise innovation exercises within existing rotations, blending experimentation with core readiness tasks to avoid creating separate, resource-intensive cycles. Simulation, digital twinning and AI-driven training tools can accelerate learning while reducing physical resource strain.

Sustainment must be built into innovation from the outset guided by the principle of 'just right' logistics. Consumable systems, software upgrades, and modular components

should replace bespoke, high-maintenance platforms. Predictive agentic AI maintenance, repair and overhaul systems need to be adopted across the Command and Force structure in order to enable greater resilience and more robust sustainment. Lifecycle management frameworks should be adopted that anticipate attrition and enable rapid replenishment through agile industrial networks. By embedding speed, scalability, and resilience into both acquisition and training, the Alliance can innovate without eroding readiness or long-term force viability.

6. How can governments and industry redefine their partnerships to sustain continuous adaptation and make Ukraine's rapid integration of civilian and commercial technologies an enduring Allied advantage?

A redefinition of government and industry partnerships must be driven by collaboratively coherent Defence Industrial Strategies, similar to the one published by the UK in Sep 25. These then need to operationalised with coherent and fully resourced Defence Investment Plans, in which the ends, ways and means are balanced. Governments need to underwrite the financial risks to industry, fostering innovation and building purpose driven strategic partnerships.

Partnerships need to evolve from being requirements driven and transactional in nature toward persistent, collaborative ecosystems. A cultural and conceptual shift from rigid, requirements-driven acquisition to outcome-based partnerships, where industry is incentivised to deliver iterative improvements rather than fixed in time solutions. This means embedding defence primes, SMEs, and tech startups into a common innovation framework with shared standards, open architectures, and rapid certification pathways. All of which needs to be close to the war fighter. Defence primes should have entities forward with personnel trained and equipped to be in the combat zone. The partnership must start at the tactical level and build through the operational to the strategic. To sustain continuous adaptation, NATO should institutionalise dual-use innovation that leverage commercial advances in robotics, AI, and communications. Governments can enable this by creating agile contracting models, pre-approved component catalogues, and discretionary common funding for experimental fielding during exercises and training. Industry, in turn, must commit to modular designs, transparent data-sharing, full interoperability and lifecycle support that anticipates attrition and replenishment in high-tempo conflict. The future partnership must be underpinned by secure digital collaborative platforms and joint test environments where emerging technologies can be validated under EW and contested-spectrum conditions. By aligning incentives for speed, scalability, and resilience, NATO can transform Ukraine's ad hoc innovation into an enduring Allied advantage—turning commercial agility into a strategic edge.

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