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# Lessons That Transfer

## Observations from the Russo-Ukraine War for European Land Forces

**Tim Sweijs, Jan Feldhusen, Markus Iven and Björn de Heer**

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We would like to thank Frank Bekkers for his critical feedback and contributions.

### Cover photo:

A battlefield in Ukraine covered by fiber optic cables from FPV drones.

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# 1. Introduction

For European land forces, current force design and doctrine still rest in large part on assumptions drawn from earlier wars, NATO exercises, and expeditionary operations conducted under air superiority. The Russo-Ukrainian war is the first large-scale, sustained, high-intensity land war between two European armed forces since 1945. It therefore offers the best available case for reassessing those assumptions. It is not, however, necessarily the only template for future wars. This brief therefore asks:

Which tactical observations from the Russo-Ukrainian war remain valid when tested against the likely conditions of a future NATO land war, and what do they imply for European land forces over the next three to five years?

To answer this question, the brief builds on the HCSS field study *Lessons from the Jungle for the Zoo*, which reports findings from a visit to Ukraine in the autumn of 2025 and draws lessons across all levels of warfare and operational domains.<sup>1</sup> This brief narrows those findings in two ways. First, it addresses how tactical lessons learned translate into the force design and doctrine of national land forces of European countries. Second, it explicitly considers that European land forces will have to fight with the capabilities and personnel they already have or plan to acquire within the next three to five years.

Specifically, the brief examines four tactical observations singled out by the authors to be particularly relevant: persistent battlefield transparency, AI-enabled intelligence fusion, the human factor, and mass precision effects at scale. These four observations largely coincide with the four phases of John Boyd's OODA loop: observe, orient, decide, act. Each observation is tested against three questions:

1. Is this observation genuinely new in land warfare?
2. Does it transfer to a future NATO land war?
3. Does it matter for European land forces specifically?

The brief proceeds as follows. Section 2 briefly outlines the general assessment of the character of the land war in Ukraine and highlights illustrative examples of adaptation already under way in European land forces. Section 3 uses the OODA loop to analyse our four observations, tests each against the three questions, and derives implications and recommendations for European land forces within the three-to-five-year horizon. Section 4 draws overall conclusions.

The authors would like to acknowledge the critical and valuable feedback they received in a closed-door session at HCSS from a group of land warfare experts drawn from the ranks of the Dutch Armed forces who will remain anonymous. Any shortcomings are the responsibility of the authors alone.

<sup>1</sup> Tim Sweijts, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves* (The Hague Centre for Strategic Studies, 2026), <https://hcss.nl/wp-content/uploads/2026/02/Lessons-from-the-Jungle-for-the-Zoo-HCSS-2026-V2.pdf>.

For European land forces, current force design and doctrine still rest in large part on assumptions drawn from earlier wars.

## 2. The Character of the Land War and Ongoing Adaptation

Analysts largely agree on what the Russo-Ukrainian war looks like at the tactical level: a kill zone with a depth of ten to thirty kilometres so transparent and lethal that surprise and concentration is hard to achieve, characterised and shaped by the displacement of crewed armoured platforms by cheap, disposable drones and loitering munitions.<sup>2</sup> The crucial question is therefore not what is happening in Ukraine, but how much of it is transferable to a future land war in the European theatre. A growing group of authors urges caution, pointing out that new weapons often look more decisive in wartime than they turn out to be afterwards.<sup>3</sup> Furthermore, a war between Russia and NATO will likely look very differently. Airspace will be more contested. NATO combat brigades will be coordinated by functioning division and corps structures. The threat of nuclear escalation is likely to impose greater restraint on involved actors. And finally, it will be a fight against the Russian armed forces of 2026, 2030 or 2035, not the Russian force that invaded Ukraine in 2022, as Russia has shown that it is capable of adapting its force structures and modus operandi in parallel to fighting in Ukraine.<sup>4</sup> Drawing lessons without acknowledging these differences will inevitably produce the wrong conclusions.

European NATO members are also adapting their forces in response to critical challenges exposed in the Russo-Ukrainian war, albeit at a slow pace. While on the political side necessary but painful questions, including the possible need for conscription to create mass and substantial forward deployments in Eastern Europe to strengthen deterrence, have so far not led to major steps, force design adaptations are in progress. To name three examples: on 22 March 2026, the Commander of the Netherlands Armed Forces Onno Eichelsheim announced the recruitment of 1,000 to 1,200 personnel for drone and counter-drone units

The crucial question is how much of what is happening in Ukraine is transferable to a future land war in the European theatre.

<sup>2</sup> In addition to the HCSS study, see, amongst many others, Jack Watling, *Emergent Approaches to Combined Arms Manoeuvre in Ukraine* (Royal United Services Institute, 2025), <https://www.rusi.org>; Michael Kofman, 'Ukraine's War of Endurance', *Foreign Affairs*, 16 February 2026, <https://www.foreignaffairs.com/russia/ukraines-war-endurance>; Mick Ryan, *Seven Contemporary Insights on the State of the Ukraine War* (Center for Strategic and International Studies, 2025), <https://www.csis.org/analysis/seven-contemporary-insights-state-ukraine-war>.

<sup>3</sup> See Cameron L. Tracy, 'Technological Surprise and Normalization Through Use: The Tactical and Discursive Effects of New Precision-Strike Weapons in the Russo-Ukrainian War', *Texas National Security Review* 9 (March 2026), <https://tnsr.org/roundtable/new-precision-strike-weapons-in-the-russo-ukrainian-war/>; Col Thomas C. Greenwood (Ret), 'What Military Revolution?', 15 January 2026, <https://www.mca-marines.org/gazette/what-military-revolution/>; Charles S. Oliviero and Phil Halton, *The Menace of Misunderstanding: Learning the Wrong Lessons from Ukraine's Drone-Saturated Battlefields* (Modern War Institute, 2026), <https://mwi.westpoint.edu/the-menace-of-misunderstanding-learning-the-wrong-lessons-from-ukraines-drone-saturated-battlefields/>.

<sup>4</sup> Michael Kofman, *Assessing Russian Military Adaptation in 2023* (Carnegie Endowment for International Peace, 2024), <https://carnegieendowment.org/research/2024/10/assessing-russian-military-adaptation-in-2023>; Mick Ryan, 'Russia's Adaptation Advantage', *Foreign Affairs*, 5 February 2024, <https://www.foreignaffairs.com/ukraine/russias-adaptation-advantage>; Mathieu Boulègue and Justin Bronk, *Assessing Russian Plans for Military Regeneration* (Chatham House, 2025), <https://www.chathamhouse.org/2024/07/assessing-russian-plans-military-regeneration>.

embedded organically across all combat formations.<sup>5</sup> In the United Kingdom, the 2025 Strategic Defence Review commits the Army to a reconnaissance-strike model and greater use of autonomy and Artificial Intelligence (AI) similar to Ukraine.<sup>6</sup> Finally, at the Alliance level, NATO has decided to integrate Palantir's intelligence fusion and targeting system Maven into its strategic and operational headquarters, while national defence organisations are actively considering whether to invest in European digital infrastructure, including data servers, connecting nodes, software interfaces, and algorithms.<sup>7</sup> As European defence organisations will continue to adapt and evolve, this brief paper distils additional and complementary insights to inform force planning processes specifically of land forces in Europe.

While on the political side necessary but painful questions have so far not led to major steps, force design adaptations are in progress.

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<sup>5</sup> WNL, 'Commandant der Strijdkrachten: "Vanaf 1 april introduceert Nederland als eerste NAVO-land nieuwe drone-eenheden"', 22 March 2026, <https://wnl.tv/2026/03/22/commandant-der-strijdkrachten-on-no-eichelsheim-vanaf-1-april-introduceert-nederland-als-eerste-navo-land-nieuwe-drone-eenheden>.

<sup>6</sup> Ministry of Defence of the United Kingdom, 'Strategic Defence Review 2025', 2025.

<sup>7</sup> Supreme Headquarters Allied Powers Europe, 'NATO Acquires AI-Enabled Warfighting System', 14 April 2025, <https://shape.nato.int/news-releases/nato-acquires-ai-enabled-warfighting-system-.aspx>.

# 3. Observations, Implications, and Recommendations for Land Forces Along the OODA Loop

US Air Force Colonel John Boyd developed the OODA loop in the late 1970s and 1980s, initially to explain how pilots who completed the cycle faster than their opponents consistently won in air-to-air combat.<sup>8</sup> The framework was subsequently generalised to other warfighting domains with reference to the fact that any actor, who can observe, orient, decide, and act faster and more accurately than an opponent gains an advantage. We analyse four major developments observed in Ukraine through this prism.

## 3.1. Observe: Persistent Battlefield Transparency

The Russo-Ukrainian war has made it exceedingly difficult for either side to assemble forces, let alone conduct offensive operations, without being observed.

The Russo-Ukrainian war has made it exceedingly difficult for either side to assemble forces, let alone conduct offensive operations, without being observed. This transparency has multiple sources: reconnaissance drones and electronic warfare (EW) support systems have increased both direct visual and electronic observation; commercial and military satellite imagery has become more widely available; and real-time Information and Battle Management Systems, of which Ukraine's DELTA system is the best documented example, provide situational awareness at multiple levels simultaneously.<sup>9</sup> The transparency is, bar some exceptions related to adverse weather and seasonal conditions, largely persistent because individual sensor systems, such as drones, are cheap and easily replaced. Shooting down a reconnaissance drone only restores concealment for a short period. Thus, movement is effectively impossible in daylight and high-risk at night; and largely confined to bad weather when drone operations are degraded.<sup>10</sup>

The analytical task is now to distinguish novelty, transferability, and relevance. Intelligence, surveillance and reconnaissance (ISR) assets such as drones and EW support systems are not new. What is new is the combination of high sensor density, low unit cost, and distribution down to the lowest echelons. This combination has made battlefield transparency persistent and concealment the exception. This observation transfers to a future NATO land war, though the form is likely to differ. In Ukraine, the absence of effective airpower has made ISR

<sup>8</sup> Frans Osinga, *Science, Strategy and War: The Strategic Theory of John Boyd* (Routledge, 2007).

<sup>9</sup> Tim Sweijjs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 17.

<sup>10</sup> For a detailed account of the engagement zone at the frontline see Christopher Miller et al., 'Inside Ukraine's "Kill Zone"', *Financial Times*, 23 February 2026, <https://ig.ft.com/ukraine-kill-zone>.

largely a land-forces task, in combination with intelligence provided through satellites. In the case of a NATO land war, more sophisticated airborne and space-based ISR platforms will likely supplement ground-level sensors. Still, the drone and EW density currently observed in Ukraine is likely to persist, because these systems are cheap, distributed, and not dependent on air superiority. The net effect will be even more transparency until more effective digital deception and counter drone capabilities can be fielded. The observation is directly relevant to European land forces, which fall behind Ukraine and Russia in organic UAS and EW capabilities for reconnaissance and counter-reconnaissance. France's six months long delivery of 1,000 reconnaissance drones to its land force, for example, is a stark contrast to Ukraine's estimated use of 10,000 drones per day.<sup>11</sup>

Taken together, persistent battlefield transparency advantages the defender and disadvantages any attacker that fails to counter enemy ISR assets at least locally. The implications for European land forces follow from this asymmetry. If concealment is no longer reliable, force protection must shift in two directions. First, toward deception, such as decoys and false electromagnetic emissions, that lead the adversary to misidentify or misprioritise targets. Second, toward electromagnetic discipline: under persistent electromagnetic observation, units and command posts that do not control their emissions are geolocated and targeted. For offensive action, the implications are different. Large-scale manoeuvre remains possible, but only inside windows of own-force transparency and locally suppressed enemy transparency, achieved through the destruction or degradation of visual and electronic sensors.

### Recommendations:

1. Field organic reconnaissance UAS, counter-UAS interceptors, and EW systems at brigade level and below, to exploit battlefield transparency for own-force advantage and to produce the local windows of suppressed enemy observation that offensive manoeuvre requires.
2. Institutionalise deception and electromagnetic discipline as force protection requirements.

The net effect will be even more transparency until more effective digital deception and counter drone capabilities can be fielded.

<sup>11</sup> Dylan Malyasov, 'France Delivers 1,000 Infantry Reconnaissance Drones to Army', *The Defence Blog*, 4 February 2026, <https://defence-blog.com/france-delivers-1000-infantry-reconnaissance-drones-to-army/>; Tziporah Fried, *The Impact of Drones on the Battlefield: Lessons of the Russia-Ukraine War from a French Perspective* (Hudson Institute, 2025), <https://www.hudson.org/missile-defense/impact-drones-battlefield-lessons-russian-ukraine-war-french-perspective-tziporah-fried>.

## 3.2. Orient: AI-Enabled Intelligence Fusion

The Russo-Ukrainian war has accelerated the transition from manual targeting and intelligence processes toward software-assisted, increasingly AI-enabled, intelligence fusion. Ukraine's DELTA platform and its extended ecosystem (Kropyva, ARMOR, Vezha) functions as a cloud-based system that fuses diverse sensor data, builds a common operating picture providing real-time situational awareness at multiple levels simultaneously, and links targets to effectors.<sup>12</sup> Machine learning algorithms, operating within DELTA, help classify targets and prioritise fires: Ukraine's Avengers platform, for example, uses automated classification to detect and categorise up to 12,000 pieces of Russian equipment each week.<sup>13</sup> This compresses kill chains, such as artillery fire from 20+ minutes down to one. The result is a shift from linear sensor-to-shooter paths to distributed kill webs, in which many different sensors can cue many different effectors through a shared operational picture.<sup>14</sup>

Software-assisted combat and staff work is not new. NATO forces have used software tools for decades. What is new is the scale at which a single platform ingests diverse sensor data, the speed at which it links targets to effectors, and the range of functions (classification, prioritisation, target nomination) that trained AI-models can now perform. The observation transfers to a future NATO land war: software-based data fusion and commercial AI capabilities do not depend on Ukrainian-specific conditions; and any plausible peer adversary will field equivalent or superior systems in the future. Russia, for example, in its command-and-control structures has implemented task-specific software built around the kill chain, such as the Glaz/Groza complex.<sup>15</sup> For European land forces, software-assisted fusion and AI-enabled targeting create a specific relevance. European forces currently lack a platform comparable to DELTA. NATO's planned response, as mentioned, is to integrate Palantir's Maven intelligence fusion and targeting system. This addresses the gap but introduces a dependency on a single US commercial provider. The risk is seen in Ukraine: Ukraine's dependency on Starlink was exposed when the provider restricted Ukrainian offensive use of the system and, separately, when Russian access to the network was removed.<sup>16</sup>

The implication is that software, whether for intelligence fusion or for command and control and fires, is not just an enabler. Maven creates a structurally similar vulnerability for European land forces and ultimately needs to be replaced with a sovereign European system. Moreover, software-assisted fusion and AI-enabled targeting compress the decision cycle to a tempo at which computing power, the quality of data, and the resilience of the underlying architecture, are likely to matter more than the number of staff in a headquarters. The infrastructure on which these capabilities depend (servers, data links, operator terminals) is itself a target, vulnerable to electronic attack against its communications links and to cyber operations against its software and servers.

<sup>12</sup> Tim Sweijs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 17–18.

<sup>13</sup> David Kirichenko, *The Heart of War: Ukraine's Key Battlefield System* (Center for European Policy Analysis, 2026), <https://cepa.org/article/the-heart-of-war-ukraines-key-battlefield-system/>.

<sup>14</sup> Tim Sweijs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 4.

<sup>15</sup> For a detailed analysis of Russia's C2 architecture and AI capabilities see Kateryna Bondar, *How Russia Is Reshaping Command and Control for AI-Enabled Warfare* (Center for Strategic and International Studies, 2026), <https://www.csis.org/analysis/how-russia-reshaping-command-and-control-ai-enabled-warfare>.

<sup>16</sup> Alex Marquardt and Kristin Fisher, 'SpaceX Admits Blocking Ukrainian Troops from Using Satellite Technology', *CNN*, 9 February 2023, <https://www.cnn.com/2023/02/09/politics/spacex-ukrainian-troops-satellite-technology/>; Paul Adams, 'Musk Cuts Starlink Access for Russian Forces, Giving Ukraine an Edge at the Front', *BBC*, 19 February 2026, <https://www.bbc.com/news/articles/c0q3ndj7052o>.

Software, whether for intelligence fusion or for command and control and fires, is not just an enabler.

## Recommendations:

1. Develop a European (fallback and ultimately replacement) system capable of sustaining fusion and targeting functions independently of a single provider, despite the cost and redundancy.
2. Build a distributed system architecture with sufficient independent computing capacity and data access to sustain AI-enabled intelligence fusion during electronic attack or cyber operations.

Ukraine has implemented competitive feedback mechanisms to create upward pressure on adaptation and the degree to which they simultaneously widen performance variance.

## 3.3. Decide: The Human Factor

Whether a formation can exploit battlefield information faster than the enemy depends as much on the quality of leadership and training within the formation as on the equipment at its disposal. Ukrainian brigade performance varies substantially even under comparable tactical conditions. The HCSS study *Lessons from the Jungle for the Zoo* documents casualty rates ranging from 5 to 10 per cent in some formations to as high as 50 per cent in others, all within a single corps.<sup>17</sup> The causes are partly institutional (remnants of a Soviet-legacy command culture, characterised by tactical micromanagement) and partly organisational: Ukraine's decentralised recruitment model, in which formations compete independently for personnel, produces a widening quality gap between brigades.<sup>18</sup> Well-performing formations attract more and better recruits, and secure additional resources through performance-based allocation mechanisms that reinforce the gap: the Army of Drones Bonus programme assigns point values to verified strikes, which units redeem for better equipment. The result is a positive feedback loop for high-performing formations, while poor-performing formations lose personnel to desertion and competitive disadvantage, and struggle to retain competent (future) leaders.<sup>19</sup>

The finding that leadership quality and training determine performance is an established proposition.<sup>20</sup> The Ukrainian evidence confirms it. What is arguably new is the degree to which Ukraine has implemented competitive feedback mechanisms to create upward pressure on adaptation and the degree to which they simultaneously widen performance variance. As described, Ukraine has built a system in which digital architectures allocate resources based on battlefield performance. At the same time, structured lessons-learned processes, from informal "battlefield poetry" to formal After-Action Reviews, feed front-line insights back into training and procurement. This gamified ecosystem has been a powerful driver of innovation, compressing feed-back loops between the front line and the rear in ways that European defence bureaucracies have so far failed to replicate. The Ukrainian experience demonstrates that standards in leadership, training, and organisation are essential to generating consistent force quality. In sustained peer conflicts a force that cannot intake sufficient replacements for key roles will lose capability even if it has enough platforms. In prolonged, high-casualty war,

<sup>17</sup> Tim Sweijs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 21.

<sup>18</sup> Tim Sweijs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 19, 22.

<sup>19</sup> Tim Sweijs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*, 21–22.

<sup>20</sup> Nick Reynolds and Paul O'Neill, *Mobilisation and Training for War: Preparing to Break Glass* (Royal United Services Institute, 2026).

decentralised force generation that makes units compete for personnel will eventually create quality gaps, because “elite” units absorb the best recruits while the rest hollow out over time.

The observation transfers to a future NATO land war although only in part. The specific Ukrainian dynamics (i.e., decentralised recruitment and performance-based equipment allocation) are very different for the rest of Europe. European leadership cultures have different origins, centralised recruitment systems do not permit elite formations to poach personnel, and equipment allocation does not follow a performance-based logic. Because European land forces cannot absorb the performance gaps that Ukraine tolerates with its 130+ brigades, every NATO formation has to perform at a similarly high level. The more fundamental principle behind Ukraine’s adaptation success is directly relevant, however: ossified bureaucratic structures must be challenged by deliberate competitive pressures and faster feedback loops if armed forces are to adapt at the pace the changed character of warfare demands. As *Lessons from the Jungle for the Zoo* observes, the pace of European adaptation remains slow, and few lessons from the war are identified, let alone learned and implemented.

The implications for European land forces follow from this more fundamental principle. The aim must be to create upward pressure in often slow and rigid organisations to reap the benefits of competition-driven adaptation, without falling victim to the detrimental effects of the Ukrainian model. European forces require mechanisms that reward tactical innovation and compress feedback cycles, while preserving the centralised safeguards to ensure shared high formation performance.

### Recommendations:

1. Ensure leadership quality and organisation across the force and link them to the threat environment of persistent transparency and mass precision strikes.
2. Scout, groom and reward talent towards higher leadership positions, while ensuring trickle over effects to enhance force quality across the army.
3. Stimulate innovation and shorten innovation and production cycles through decentralisation. Create space for experimentation and adaptation at lower levels in the decision-making chain by empowering the edge. In addition, experiment with ‘gamification’ applications as an instrument powerful to enhance (competitive) creativity towards greater force effectiveness in a continuous feedback loop. This requires creation of the regulatory leeway and provision of the financial resources for military operators to innovate and collaborate with partners throughout the ecosystem including strategists at higher command echelons, R&D scientists in laboratories, innovators and product developers in small and middle-sized enterprises, and manufacturers that can produce at scale.

Ossified  
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### 3.4. Act: Mass Precision Effects at Scale

The Russo-Ukrainian war has demonstrated what happens when cheap, mass-produced precision munitions become available at brigade level and below. Until this war, a company commander had flat trajectory weapons and potentially a mortar platoon at his disposal. Tube artillery sat at brigade level. Precision strike, in the sense of guided munitions against specific targets, began with rocket artillery at division or corps level and was otherwise the domain of naval forces and air power. First-person-view drones and loitering munitions have changed this. At unit costs measured in hundreds to low thousands of dollars, mass-produced by both sides, precision strike is now organic to the lowest tactical echelons. The close area is saturated with these precision munitions, and the deep area has expanded because lower echelons can now reach targets that previously required artillery or air power to engage. Formations disperse, because any concentration of vehicles, personnel, or logistical assets can be identified and precisely struck within minutes; both sides have adopted short shoot-and-scoot cycles, minimised daylight movement, and dispersed their assembly areas.<sup>21</sup>

Precision strike has existed for decades, but it has always tended to be the near-exclusive domain of air power or, in land warfare, of scarce capabilities. The combination of unit cost, production volume, and echelon of employment currently makes a real difference. Exercise Hedgehog 2025 in Estonia illustrated what this means for formations that have not adapted: Ukrainian drone specialists eliminated two battalions in a single day, exposing dense vehicle columns, limited concealment, and a disability for effective dispersal in NATO formations.<sup>22</sup> The observation is transferable to any future NATO land war. Cheap drones and loitering munitions are commercially available and do not depend on Ukrainian-specific conditions. Russia and other adversaries are acquiring cheap, mass-produced precision munitions and adapting their force structures at scale.<sup>23</sup> European land forces that lack organic precision munitions and counter-UAS will face an adversary who can strike targets across the battlefield while they themselves lack the means to respond at the same echelon and speed. The gap is quantifiable. As mentioned, the Netherlands has decided to recruit 1,000–1,200 personnel for organic drone and counter-drone units; Russia's Unmanned Systems Force comprises 101,000 personnel.<sup>24</sup> European forces also lack the low-cost counter-UAS interceptor systems that Ukraine has developed.

Land forces must also contend with a second category of precision strike whose effects fall directly on tactical formations.<sup>25</sup> Since the winter of 2023, the stalemate on the Ukrainian front has prompted both sides to make greater use of deep precision strikes, employing conventional ballistic and cruise missiles jointly with medium and long-range UAS to attack targets in the deep area. The scale of the threat is considerable. Russia launched 728 drones and 13 missiles on a single day in July 2025, with estimated daily Shahed-type production at 190 by

<sup>21</sup> Christopher Miller et al., "Inside Ukraine's "Kill Zone".

<sup>22</sup> See Charles S. Oliviero and Phil Halton, *The Menace of Misunderstanding*.

<sup>23</sup> Tim Swejjs, Elie Tenenbaum, and Jan Feldhusen, *Lessons from the Jungle for the Zoo: Support Ukraine, Help Ourselves*; Hlib Parfonov, *Russia's Unmanned Systems Forces Become Wildcard in Moscow's Military Modernization* (Jamestown, 2026), <https://jamestown.org/russias-unmanned-systems-forces-become-wildcard-in-moscows-military-modernization/>.

<sup>24</sup> Institute for the Study of War, *Russian Offensive Campaign Assessment, April 9, 2026* (Institute for the Study of War, 2026), <https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-april-9-2026/>.

<sup>25</sup> See Sidharth Kaushal and Juliana Suess, *A Net Assessment of Russian and Allied Capabilities in a Modern Strike Campaign* (Royal United Services Institute, 2025), <https://static.rusi.org/russian-and-allied-capabilities-modern-strike-campaign-feb-2025-rusi.pdf>.

The deep area has expanded because lower echelons can now reach targets that previously required artillery or air power to engage.

end-2025. The targets most relevant to tactical formations, such as ammunition depots, maintenance facilities, and command posts, are increasingly exposed to these strikes.

Deep precision strike is similarly not new. What is new, however, is the combination of ballistic and cruise missiles with medium and long-range UAS and the cost reduction enabled by these cheaper systems.<sup>26</sup> Russia's Geran 2 long-range drone, for example, costs an estimated \$30,000–80,000 to produce, compared to the approximately \$1 million for a Kalibr cruise missile.<sup>27</sup> In a future NATO land war, adversaries would likely employ mixed missile-drone salvos against NATO rear areas regardless of the situation at the contact line, and European air and missile defences against such threats remain limited, in many cases reduced to remnants of Cold War-era systems.<sup>28</sup> By combining cheap drones with expensive missiles within single salvos, potential adversaries would also force NATO into a costly exchange: a Patriot PAC-3 MSE interceptor costs at least \$4 million. At the volumes Russia launches, European air defence would expend its missile stockpiles faster than it can replenish them.<sup>29</sup>

The implications for European land forces follow from both observations. In the close area, organic precision strike and counter-UAS are preconditions for operating in the engagement zone. Yet, drones supplement rather than replace close fighting capability; infantry is still required to hold and take ground under persistent aerial threat. In the rear area, the combination of cheap drones and expensive missiles creates a cost-exchange problem that integrated air and missile defence alone cannot solve. Gun-based and drone-based interceptor systems must supplement missile-based air defence to engage the mass of cheap long-range UAS at a sustainable cost ratio. At the same time, the rear-area infrastructure that tactical formations depend on must be designed for dispersal and relocation across multiple sites.

## Recommendations:

1. Procure precision munitions, particularly loitering munitions, as an organic capability for every combat formation.
2. Deploy counter-UAS consisting of gun-based and drone-based interceptor systems and integrated air and missile defence to build a strong layered integrated air and missile defence to protect land forces.
3. Design rear-area logistics, maintenance, medical, and command infrastructure for dispersal across multiple sites.

<sup>26</sup> See, for example, Benjamin Jensen, Yasir Atalan, and Erik Tiersten-Nyman, *The New Salvo War: Russia's Evolving Punishment Campaign* (Center for Strategic and International Studies, 2025), <https://www.csis.org/analysis/new-salvo-war>; Michael C. Horowitz, 'Battles of Precise Mass', *Foreign Affairs*, 22 October 2024, <https://www.foreignaffairs.com/world/battles-precise-mass-technology-war-horowitz>; Neil Hollenbeck et al., *Calculating the Cost-Effectiveness of Russia's Drone Strikes* (Center for Strategic and International Studies, 2025), <https://www.csis.org/analysis/calculating-cost-effectiveness-russias-drone-strikes>.

<sup>27</sup> Justin Bronk and Jack Watling, *Mass Precision Strike: Designing UAV Complexes for Land Forces* (Royal United Services Institute, 2024), 31, <https://static.rusi.org/mass-precision-strike-final.pdf>.

<sup>28</sup> See Héloïse Fayet and Léo Péria-Peigné, *Deep Precision Strikes: A New Tool for Strategic Competition?* (Institut français des relations internationales, 2024), 4, <https://www.ifri.org/en/studies/deep-precision-strikes-new-tool-strategic-competition>.

<sup>29</sup> Fabian Hoffmann, 'Denial Won't Do: Europe Needs a Punishment-Based Conventional Counterstrike Strategy', *War on the Rocks*, 8 September 2025, <https://warontherocks.com/denial-wont-do-europe-needs-a-punishment-based-conventional-counterstrike-strategy/>.

By combining cheap drones with expensive missiles within single salvos, potential adversaries would force NATO into a costly exchange.

## 4. Conclusion

The Russo-Ukrainian war is most certainly not a template for every future war, but it remains the most important empirical case available on how a contemporary peer land war is fought. Tested against the three-step filter of novelty, transferability and relevance to European land forces, several tactical observations were discussed that carry direct consequences for force design, doctrine and training.

Persistent battlefield transparency advantages the defender and disadvantages any attacker that fails to suppress enemy observation. European land forces must field organic ISR, counter-UAS, and electronic warfare capabilities at the lowest echelons, and must institutionalise deception and electromagnetic discipline as force-protection requirements. AI-enabled intelligence fusion compresses the targeting cycle to a tempo at which computing power and data architecture may matter more than staff capacity, while creating a dependency on infrastructure that is itself a target for electronic and cyberattack. European forces require a sovereign fallback and ultimately replacement system with a distributed, resilient architecture that can sustain fusion and targeting during attacks and independently of a commercial provider. Ukraine's competitive feedback mechanisms have proven a powerful driver of adaptation, but at the cost of widening performance variance between formations. European land forces must introduce deliberate competitive pressures and shorter feedback loops between the front and the rear to accelerate innovation and adaptation, while preserving the centralised safeguards that ensure consistent formation quality across the force. Precision munitions at scale have given tactical formations an unprecedented strike capability, while land forces must also contend with deep precision strikes against rear-area infrastructure. This requires precision munition and layered counter-UAS in the own force.

The three-to-five-year horizon divides into two parts. What must be completed within this window, because the capability gap is visible and the threat is present, includes organic drone and counter-drone integration at scale and the institutionalisation of deception and electromagnetic discipline. And what must be started within this window, so that it is available by the beginning of the following decade, includes a sovereign European system for intelligence fusion and targeting.

What is genuinely new in the Russo-Ukrainian war is persistent transparency of the battlefield, the speed at which software fuses intelligence, and cheap, mass precision. What is not new is that combined arms under quality leadership determines whether a force that possesses the right equipment fights effectively. The tactical lessons from Ukraine that matter most to European land forces sit at the intersection of technological change and enduring relevance of historical lessons. We recommend these lessons are taken up in force planning and exercises now, not after the next war in which European militaries would experience them firsthand.

The Russo-Ukrainian war is not a template for every future war, but it remains the most important empirical case available on how a contemporary peer land war is fought.

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