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Drones do not win wars

The war in Ukraine demonstrates the growing role of digital technologies, unmanned systems, and electronic warfare. The mass use of drones, supported by a developed IT sector and efficient institutional adaptation, has allowed Ukraine to effectively limit its opponent's military advantage. At the same time, even the most advanced technological solutions do not eliminate the importance of classic components of military power. The ability to integrate various combat tools, operational flexibility, and real-world combat experience continue to determine the outcome of a conflict – lessons from which NATO armies should draw.

Evolution of war. On March 21, 2026, former Supreme Commander of the Ukrainian Armed Forces, Valery Zaluzhny, once again spoke publicly ("IEŚ Commentaries", No. 1528), emphasizing in a text for "The Telegraph" that the war in Ukraine has completely changed the modern battlefield. Also referring to Israel and the US actions against Iran and a possible ground operation, he argued that traditional military advantages (numbers, heavy weapon systems) are currently losing importance in favor of relatively cheap drone systems and electronic warfare (EW). The Russian-Ukrainian war is a laboratory of modern warfare, and its course proves that innovation, flexibility, and the ability to use technology are crucial. According to Zaluzhny, only Ukraine, Russia, and Iran already have the appropriate doctrines and experience in this area[1].

Ukraine has been defending itself against Russian aggression for over four years[2]. During this period, the conflict fundamentally changed. Ukraine owed its initial successes, and above all, the effective containment of the Russian invasion, to Western military and financial aid. In the long run, however, determination and the will to fight, as well as rapid and effective adaptation to the specific nature of the aggressor's actions and the changing conditions of the battlefield, proved crucial. On the one hand, Ukraine has developed an effective model and instruments for asymmetric confrontation with a more powerful adversary. On the other, it has become the world's largest and most important laboratory for unmanned technologies. Importantly, these technologies are tested and developed under real-world warfare conditions, giving Ukraine unprecedented experience in this field.

Ukraine was the first in the world to establish a separate branch of the armed forces in February 2024: the Unmanned Systems Forces. They are responsible for planning and coordinating air, sea, and ground drone operations. New solutions and innovations are being introduced on an ongoing basis, tested in combat conditions, and artificial intelligence is being increasingly used. The scale and pace of change (e.g., the intensification of EW and the mass use of First Person View drones at every level of operations) have transformed the battlefield and the course of the war, including by virtually eliminating the Russian Black Sea Fleet from combat operations and preventing the large operations of armoured-mechanized units.

This adaptation is taking place primarily based on the Ukrainian technological and industrial base. According to media reports, Ukrainian manufacturers offer the military over 150 types of FPV drones (including reconnaissance, bomber, kamikaze, and interceptor drones), over 20 types of fiber-optic UAVs, over 30 types of ground drones (engineering and logistics), and over 300 different types of electronic devices used to counter

[1] "What the Ukraine war tells us about the Iran conflict", https://www.telegraph.co.uk/world-news/2026/03/21/ukraine-war-tells-us-about-iran-conflict/

[2] It is worth emphasizing that this is how long World War II lasted, from the perspective of the American and Soviet armies – in 1945, both of these armies (like all others) were completely differently organized, equipped, and fought differently than in 1941.

unmanned systems[3]. This process is largely grassroots, not initiated by state institutions, but relies on a network of private manufacturers who have created a common platform for cooperation. An example of an innovative solution is the "Drones Army. Bonus" program, which awards drone units with "e-points" for combat successes, verified by the Delta command system. Points can be exchanged for additional equipment (from the manufacturers' catalogue) on the Brave 1 Market platform, shared by the military and industry. The entire process is simplified and digitalized to the maximum extent possible.

Ukraine's high-tech sector. The rapid and effective adaptation and innovation of Ukraine's defense system would not have been possible without a robust and dynamic technological base. Upon taking power in 2019, Volodymyr Zelensky and his team saw digitalization as an opportunity for the economic and institutional modernization of the state and a relatively quick and inexpensive "leapfrog" aimed at bridging the gap between Ukraine and the West ("IEŚ Commentaries", no. 1180). While the Zelensky government's overall performance is viewed with skepticism by Ukrainian society, the digital reform raises no objections, as its effects are visible. One example is the "State in a Smartphone" program, which aims to digitalize most public services. In 2020, the public services portal "Diia" ("State and I" – Ukrainian: *Держава і я*) was launched. "Diia" is being gradually expanded, currently offering approximately 200 services, from registering civil status records to air raid alerts and recruiting military drone operators. The portal has over 20 million users, representing the majority of adult Ukrainian citizens.

The Ministry of Digital Transformation, headed in 2019 by Mykhailo Fedorov (then 29 years old – the youngest minister in Ukrainian history), is responsible for the state's digitalization. He also served as deputy prime minister and remained a minister until 2026 – a unique development in the Ukrainian political scene, which is rife with personnel changes and corruption scandals. In January 2026, the Minister of Digital Transformation took over the position of Minister of National Defense.

Fedorov's appointment as head of the MoD is not surprising, given the importance of the IT sector for national defense and the course of the war. Even before 2022 and the Russian invasion, this sector of the Ukrainian economy was developing dynamically: IT services exports contributed 5% of Ukraine's GDP and 10% of service export revenues. The number of IT specialists was estimated at around 300,000. The Russian invasion slowed the sector's development in the civilian sphere, but rapidly accelerated its military applications. The effective use of high technologies in defense against aggression was made possible thanks to a dynamic technological sector, but other factors also contributed: war pressure and an existential threat to the state; numerous grassroots activities and initiatives; Ukraine's possession of material resources and know-how in the field of military production; and the search for innovative and economic solutions in the face of limited domestic resources and decreasing scope of external assistance.

Lessons. In February 2026, media reports appeared about the "Hedgehog" exercises, conducted by NATO in Estonia in 2025. During the exercise, a small team of Ukrainian drone operators and Estonian territorial forces "eliminated" a NATO mechanized formation. This sparked a flurry of comments criticizing NATO's readiness to operate on the modern battlefield and assigning a key and dominant role to unmanned systems. Such opinions have been appearing, including in Poland, for a long time and are often rightly referred to as "dronosis"—as they are a gross oversimplification[4].

The Russia-Ukraine and US/Israel-Iran wars demonstrate that nominally weaker states (Ukraine and Iran) are capable of effectively countering aggression by employing innovative solutions and asymmetric warfare methods and means based on technology. The course of these conflicts demonstrated to Western states that they possess neither comparable unmanned systems nor systems for combating them. However, given the West's financial

[3] M. Dura, *Dronizacja – przepaść dzieli Polskę od Ukrainy*, https://defence24.pl/sily-zbrojne/dronizacja-przepasc-dzieli-polske-od-ukrainy-opinia

[4] In the case of "Hedgehog," general conclusions were drawn from a single tactical episode, taken out of context. Similarly, in the 1930s, exercises were conducted in Poland that concluded that a dug-in infantry regiment would crush an attacking tank formation. The September Campaign of 1939 verified this, as in real-world conditions, the infantry had no time to dig in and did not know from where or when the tanks would attack—unlike in exercises.

and technological potential, this problem can be expected to be resolved. However, the key challenge remains the lack of know-how and real-world experience in warfare, and therefore the ability to quickly adapt and create innovative solutions. Many Ukrainian commanders and analysts have been pointing out this problem for a long time – technological advancement unsupported by real battlefield experience does not provide an advantage.

Moreover, NATO armies are unfamiliar with the modern battlefield, not only in terms of unmanned systems, EW systems, and the like – none of them actually has experience in "real" warfare. Consequently, the Ukrainian Armed Forces (UAF) are gradually moving away from Western training programs in favour of their own, based on actual wartime experience (including the extensive use of drones). Some NATO countries (e.g., the United Kingdom) propose relocating training to Ukrainian territory, which would make it easier for Western instructors to benefit from Ukrainian experience. Germany, on the other hand, has decided that the Bundeswehr will be extensively trained by Ukrainian instructors, partly due to the "fully digital battlefield."

Conclusions. Unmanned aerial vehicles and EW systems have transformed the battlefield. Ukraine has mastered this element thanks to advanced digitalization and a developed IT sector. Nevertheless, it continues to strive to acquire aircraft, artillery, and tanks, as drones cannot win the war, break frontlines, control airspace, or replace infantry or artillery. It should also be emphasized that Ukrainian innovation in military solutions was, in a sense, forced by circumstances: the need to defend against a more powerful aggressor with limited domestic resources and amidst dwindling Western aid.

This doesn't change the fact that the UAF are currently one of the most experienced armies in the world, in every aspect. Given the current international security environment, leveraging this experience is imperative for NATO armies. Saudi Arabia and Qatar, for example, have already learned this lesson by signing military cooperation agreements with Ukraine.