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The future of European defence

For years, Eastern Europe was largely seen as a back-office tech outsourcing hub. Today, Ukraine is spearheading a new wave of defence start-ups

When Russia launched its full-scale invasion in 2022, few could have predicted that Ukraine would respond not only with resilience, but with a homegrown tech ecosystem capable of reshaping the very nature of defence innovation. Yet, just three years later, Ukraine has become one of the world's most active defence start-up hubs — a battlefield-turned-laboratory where technology is stress-tested under real fire.

In a scenario that echoes the precision and suspense of a Hollywood thriller, the beginning of June was marked by Ukraine's long-planned operation called 'Spider's Web', which unfolded as a coordinated drone assault targeted Russian air bases and strategic warplanes, culminating in the destruction of 34 per cent of Russia's cruise missile-carrying bombers. The strike, more than a year and a half in the making, is estimated to have inflicted $7 billion in damages, marking one of the most significant blows to Russia's long-range strike capabilities since the full-scale invasion began.

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Behind the scenes of such high-impact operations lies a rapidly developing defence tech ecosystem. Since the war began, over 500 defence-focused start-ups have emerged in Ukraine — a wartime shift that blends state backing, battlefield urgency and grassroots innovation. Engineers, former soldiers and software developers are now building drones, ground robots, sensors and AI platforms with the kind of speed Silicon Valley can only admire from afar.

This new wave of defence entrepreneurship is driven by necessity. Ukrainian start-ups aren't waiting years for military procurement contracts; they're delivering directly to the front, testing their solutions under combat conditions and refining them in near real-time.

Take the explosion in drone manufacturing. In 2024, Ukraine manufactured over 1.5 million first-person-view (FPV) drones and is looking to produce a staggering 4.5 million by the end of 2025. Most of these drones are made not by defence giants, but by decentralised teams working in industrial parks, converted garages and lean manufacturing labs.

In a quiet but significant development, the country recently also unveiled a new AI-powered 'mother drone' system that hints at the future of autonomous warfare. The system can launch two GPS-independent strike drones capable of seeking out and destroying high-value targets up to 300 kilometres behind enemy lines — a breakthrough that reflects the steady evolution of Ukraine's defence tech capabilities amid ongoing conflict.

The start-ups behind Ukraine's defence ecosystem

It's a war economy, but one built around open competition. If your drone works, it ships. If it fails, the front-line soldiers will let you know — immediately. Moreover, what began as volunteer-driven efforts to meet urgent battlefield needs, in most cases evolved into a structured defence tech industry with the potential for global impact.

Now, some of these new players are already becoming household names in military circles. Griselda is developing a geospatial platform to give soldiers better visibility in urban combat and post-disaster zones. Huless produces universal drone platforms for military and civilian missions. Himera's encrypted radios are now standard kit for many units operating near Russian electronic warfare zones.

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Others are pushing into AI and autonomy. Mantis Analytics provides real-time battlefield monitoring, drawing insights from open-source intelligence and encrypted channels alike. Bavovna.aiis tackling one of the war's hardest problems — drone navigation without GPS, a frequent target of Russian jamming. Similarly, Sine.Engineering is developing advanced drone navigation systems that operate without GPS, using time-of-flight technology to ensure reliable positioning even in electronic warfare environments.

There's a surge in land-based robotics, too. SkyLab Defense Robotics is testing the Sirko-S1, a semi-autonomous unmanned ground vehicle (UGV), while Roboneers' Ironclad robot is already in limited field use. On the electronic warfare front, Kvertus builds mobile anti-drone systems now deployed across frontline positions.

Meanwhile, more than 20 000 Ukrainians have undergone amputations in the course of the war. Meeting this urgent humanitarian and medical challenge, Ukrainian companies have also rapidly pivoted their expertise to support wounded soldiers and civilians alike.

One standout example is Esper Bionics, a company that once focused primarily on the US market but since 2022 has redirected 70 per cent of its efforts to Ukraine. Blending robotics, AI and bionics, Esper Bionics is pioneering prosthetic technology specifically tailored for the realities of wartime injuries. Its flagship program, the Esper Hand, delivers multifunctional, AI-driven prosthetic hands to Ukrainian amputees.

What unites all of these start-ups is a mindset: agility over perfection, and direct feedback from the battlefield over top-down R&D, with an innovation that is raw, fast and purpose-built.

The role of the state

Behind many of these efforts is Brave1, the Ukrainian government's central defence tech platform. Launched in 2023, Brave1 serves as a matchmaker between military needs and civilian innovators. The government platform dedicated to advancing defence technology has backed around 1 500 companies and supported 3 200 military-related projects over the past two years.

Brave1's real power lies in lowering barriers, as it helps start-ups navigate military certification, testing and even export controls. And it provides legitimacy in a system where even unofficial units are experimenting with new tech in real combat.

During the past year, Brave1 has helped raise over $12 million in private capital into defence start-ups. While that's still modest, it shows growing investor confidence — a rare signal of optimism in an otherwise grim war economy.

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Ukraine's defence tech renaissance isn't happening in isolation, and right now, it is being closely monitored – and increasingly emulated

Ukraine's fast, modular and feedback-driven approach is a revelation.

– by NATO members, especially those in Central and Eastern Europe. The UK and Latvia now co-lead a Drone Coalition that's committing over €1.8 billion to Ukrainian drone procurement and co-development. European defence firms like Tekever, Milrem and RSI are already testing their own platforms alongside Ukrainian troops.

For Western militaries used to decade-long procurement cycles, Ukraine's fast, modular and feedback-driven approach is a revelation. At the same time, this isn't just about drones, but a new paradigm for building and scaling dual-use technology.

However, the model does have its limits. While Ukrainian engineers are pushing autonomy, particularly in navigation and targeting, the deployment of fully autonomous lethal weapons is still a red line. Most systems remain 'human-in-the-loop' — both for ethical reasons and to preserve trust in battlefield reliability.

There's also a scaling challenge. Not all start-ups can transition from prototype to production. Supply chains are fragile, capital is limited, and the legal framework for procurement remains a work in progress. And yet, Ukraine continues to prove that bottom-up defence innovation can work — even in a country at war.

The new defence frontier

For years, Eastern Europe was largely seen as a back-office tech outsourcing hub. Today, Ukraine is reshaping the region's role by spearheading a new wave of defence start-ups — born from existential necessity, rapidly evolving through battlefield experience and capturing global attention.

In a landmark move, the European Commission is committing €910 million through the 2024 European Defence Fund (EDF) to strengthen and innovate Europe's defence industry. This funding targets critical capability gaps – such as force mobility and drone defence – by fostering a robust collaboration across European science and industry.

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For the first time ever, Ukrainian defence companies are eligible to participate in EDF projects, signalling a deeper integration of Ukraine into the European defence industrial ecosystem. This enhanced cooperation builds

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on ongoing outreach by the EU Defence Innovation Office in Kyiv, aimed at forging closer ties and embedding Ukraine firmly within Europe's defence innovation landscape. Together, they are advancing shared security goals and driving forward a unified vision of technological progress.

If drones are to the 21st century what tanks were to the 20th, then Ukraine is not merely deploying these tools — it is shaping how they are designed, tested and refined. And most importantly, the innovations taking shape here will resonate far beyond Ukraine's borders.

Therefore, Europe cannot afford to treat Ukraine's defence tech breakthroughs as a wartime anomaly or a one-way aid dependency. This is how military innovation is built, tested and scaled. So, instead of shielding its defence industry behind bureaucratic walls and slow-moving procurement cycles, the EU must fast-track an even deeper integration with Ukrainian innovators, opening up more and more dual-use funding channels and embedding them directly into long-term strategic planning.

The war has made Ukraine a proving ground for the kind of agile, modular and battlefield-driven technology that Europe will inevitably need — not just to support Ukraine, but to defend itself. The longer the EU hesitates, the more it risks missing out on the most important defence transformation in a generation.



Bojan Stojkovski
Skopje

Bojan Stojkovski is a freelance journalist based in Skopje, North Macedonia, covering foreign policy and technology in the Balkans, for more than a decade. His work has appeared in Foreign Policy, ZDNet and Nature.