World

Kyiv outflanks analogue Russia with ammunition from Big Tech

Ukraine

George Grylls

Ukrainian soldiers have revolutionised the way battles will be fought in the 21st century by waging an "algorithmic war" that enables Kyiv to outgun invading forces with far fewer troops.

Artificial intelligence developed by companies in the West has given Ukraine a technological edge over Russia, military experts said, turning the tide of the war.

Artillery continues to dominate the war in a way that would be familiar to generals fighting battles centuries ago. However, the accuracy, speed and deadliness of Ukrainian strikes has dramatically increased thanks to software developed by Palantir, a US tech firm co-founded by the Republican billionaire Peter Thiel.

Those who have witnessed the AI in action have been left in no doubt about its revolutionary power. "The Russians are using their artillery like it's the First World War. What the Ukrainians are doing is completely different," one defence source said. "A digital army is fighting an analogue army. What you are seeing is that the digital army, despite being a fraction of the size, is able to massively outperform its analogue adversary."

Palantir is closely linked to the CIA, which was an early investor, and it has opened an office in Kyiv. The firm played a key role for the Department of Health during the pandemic. Software called Foundry worked out where vaccines were running short and ministers relied on it to track uptake.

The company's software in Ukraine, MetaConstellation, relies on intelligence gathered on enemy troop positions by commercial satellites, heat sensors and reconnaissance drones as well as spies working behind enemy lines and ordinary Ukrainians pinpointing the locations of Russian troops on the country's E-Enemy app.

The software uses AI to transform the data into a map highlighting the probable locations of Russian artillery, tanks and troops. A Ukrainian soldier using a tablet device is given a list of coordinates and can then direct their fire. The technology also "learns" from previous strikes, meaning that it is constantly getting better at identifying and locating materiel.

General Sir Richard Barrons, who was a senior commander in the British Army in Iraq and Afghanistan, said that a military headquarters would only have been able to identify a maximum of ten targets per day just 20 years ago. "Now the equivalent headquarters has 300 targets per day — in fact more targets than they can shoot at," Barrons said. "The conflict that has played out would be recognisable to any general from about the US Civil War onwards where you are dealing with the power of artillery and the machinegun. But Ukraine has done an outstanding job of harnessing commercial technology to dramatically improve the rate at which you can acquire targets over a large area."

While small bands of Ukrainians brandishing anti-tank weapons have captured the popular imagination, most military experts agree that Kyiv's successful counter-offensives can be explained by the country's superior use of artillery and rocket launchers.

Phillips O'Brien, professor of strategic studies at St Andrews University, said "the dominant weapons" in the war were systems such as Himars light rocket launcher and the M270 Multiple Launch Rocket System donated by western countries.

However, he said most of the weapons given to Ukraine were decades old — including Patriot, the air-defence system promised to Kyiv this week after President Zelensky's visit to Washington. Despite the displays of affection on both sides during the trip, President Biden is refusing to sanction the donation of ATACMS, long-range missiles with a maximum range of 190 miles, out of fear that it could be used to hit Russian territory. Kyiv has also had its requests for F-16 fighter jets, MQ-9 Reaper armed drones and Abrams battle tanks turned down.

Despite using systems that first entered service during the Gulf War, the Ukrainians have been able to recapture more than half the territory seized by Russia earlier in the conflict with experts pointing to their use of Palantir's software as significant to their success.

"The power of advanced algorithmic warfare systems is now so great that it equates to having tactical nuclear weapons against an adversary with only conventional ones," Alex Karp, the chief executive of Palantir, told The Washington Post this week. "The general public tends to underestimate this. Our adversaries no longer do."

British soldiers tested similar Zodiac systems during exercises in the Californian desert this year.

With satellites watching from above and people taking pictures on phones, the movements of armies are scrutinised like never before, with experts predicting an end to Blitzkrieg-style offensives in the age of mass information.

"It is not possible to sneak up on an opponent with an army, navy or air force," says Barrons. "The world is transparent. That's a combination of what you see from space, and what you get from open-source data as well as from human intelligence."

Ethical concerns have been raised about the ability of AI to sift through information in peacetime as well as war. Palantir has developed a controversial reputation for its tendency to make governments reliant on its products in areas such as healthcare while privacy campaigners have raised concerns about its power. In 2019, its technology was used to track undocumented migrants in the US.

As well as being a supporter of Donald Trump, Thiel is a fan of *The Lord of the Rings* and named Palantir after the all-seeing crystal balls from the JRR Tolkien fantasy series. His company's software is used pro bono by Ukraine. But the devastating power that the firm has been able to advertise in the war means the decision to help Kyiv seems to be paying for itself. This week the Ministry of Defence signed a £75 million contract with Palantir to further incorporate its AI technology in the British armed forces.

Ukraine's technological edge

Key
5G network
Peer-to-peer

1 THE CONNECTIVITY TECH
5G is used to connect drones, sensors and devices when cloud computing is not available. Peer-to-peer connections such as WiFi and bluetooth are back-ups

Drones

Surveillance drones

5G network

Command centre

2 BATTLEFIELD AI
Soldiers use AI to help identify the best targets taking data from satellite imagery, heat sensors, social media, mobile signals and local intelligence

BATTLEFIELD DEPLOYMENT
● Soldier-worn sensors and devices provide battlefield information such as location and health data
● Twenty years ago command could identify about ten targets a day; today it is 300