Tomorrow's Affairs
Analysis of today
Assessment of tomorrow

By: David Kirichenko

Ukraine's innovation is raising the standards of naval warfare

When Russia launched its full-scale invasion of Ukraine in 2022, few anticipated how fast the nature of warfare would evolve. Even fewer predicted that Ukraine, widely assumed to be outmatched, would pivot from traditional military doctrine to become a vanguard of modern, tech-driven defence.

The war has become a crucible for innovation, with Ukraine leveraging low-cost, high-impact drone technology not only on land but increasingly at sea.

Over the past year, Ukraine's use of unmanned surface vehicles (USVs) has transformed naval warfare in the Black Sea. These sea drones have neutralised the advantage of Russia's larger fleet, forcing a powerful navy into retreat and making maritime innovation a necessity for any future-focused military.

NATO and its member states would do well to take note: the age of big ships and slow procurement is over. The future belongs to those who can iterate fast, adapt faster, and dominate with technology.

The Battle for the Black Sea

Ukraine's navy, once almost entirely dismantled following the occupation of Crimea in 2014, is now built around drones. When the war began, its only frigate–the Hetman Sahaidachny–was scuttled to avoid capture.

From these ashes rose an asymmetric maritime strategy powered by ingenuity by the Ukrainians. Now Ukraine is beating the Russians at the Battle for the Black Sea with a small tech navy.

Sea drones such as the Magura V5 and Sea Baby became weapons of precision and persistence. In late 2023, modified sea drones armed with heat-seeking missiles downed two Russian Mi-8 helicopters, marking the first time a naval drone successfully brought down enemy aircraft.

By January 2024, Ukraine was launching First-Person View (FPV) kamikaze drones from USVs to destroy Russian air defence systems in Kherson Oblast, each valued at $15–$20 million.

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A newly unveiled Ukrainian USV even carries quadcopter drones and lays mines, enabling complex, multi-phase attacks. Ukrainian intelligence recently confirmed that upgraded sea drones can carry over a tonne of explosives across 1,000 kilometres.

These aren't mere suicide craft – they're robotic aircraft carriers operating around the enemy, redefining what constitutes a navy, at least in the short-term, until the next countermeasures are developed.

For example, Russia is now using helicopters to launch FPV drones to counter Ukrainian sea drones. The hope for the Russian side is that the FPV drones can now be used to spot and destroy Ukrainian sea drones from the air before they reach Russian ships or ports.

Ukraine has also recently unveiled a "Special Edition" of its Shrike FPV drone capable of submerging underwater and lying in wait before taking off to strike, offering what could be a new type of stealth for ambush operations.

The price-to-kill ratio

Ukraine's drones are cheap and scalable. In modern warfare, it's not the size of the platform but the price-to-kill ratio that counts. For instance, Andy Yakulis, a former Army special-operations commander, highlighted the absurdity of the U.S. using $1 million missiles to shoot down $40,000 Houthi drones in the Red Sea.

The USS Ford, a $13 billion carrier, is potentially vulnerable to swarms of drones

that cost a tiny fraction of that. China and Russia understand this math.

Taiwan has already taken note. Its newly unveiled Endeavor Manta USV mirrors Ukrainian sea drones in form and function – armed with torpedoes, kamikaze payloads, and AI navigation systems.

First Lieutenant Hunter Keeley of the U.S. Marine Corps has argued that Taiwan must learn from Ukraine's "Hellscape" strategy: using drones, jammers, and mobile sensors to create a dense, layered defence that delays and disrupts PLA amphibious operations.

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At the Army-2024 defence expo, Russia revealed the Murena-300S USV. It's compact, fast, and possibly fitted with a Starlink antenna – signalling Russia's attempt to mirror Ukraine's real-time command capabilities at sea.

While Russia lagged early, it is catching up, investing in drone swarms, AI guidance, and mass production through Iranian and Chinese tech partnerships. Its stated goal: AI-enabled autonomous weapons at scale.

Meanwhile, China's Feiyi drone has shattered old assumptions. It can launch from submarines, shift from underwater to aerial flight, and return to its launch platform. While the U.S. experiments with similar tactics, China is already operationalising them.

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The Algorithmic War

Ukraine's true edge may lie not just in hardware with the sea drones being developed but in the data being gathered across all the battlefields.

Through its OCHI system, Ukraine has amassed over 2 million hours of frontline drone footage from 15,000 operators – now being used to train battlefield AI. This data feeds algorithms that identify targets, optimise attack angles, and even control drone swarms. In time, these systems may power sea drones with autonomous decision-making capabilities.

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The value of this data cannot be overstated. It feeds machine learning algorithms that not only identify targets and recognise Russian targets but also optimise paths, assess weapon effectiveness, and refine swarm coordination logic.

Ukraine is essentially the only country deploying sea drones at scale in battle and gathering all the data needed to build the leading models for autonomous sea drones.

Autonomous sea drones could swarm a port and then deploy autonomous FPV drones that go and hunt targets on the ground.

Platforms like Brave1 and Defence Builder are fast-tracking these innovations. Developers, often veterans of frontline units, design, test, and deploy combat-ready tech in months, not years. In a military culture where "working prototypes" are expected to be battlefield-

ready within six months, agility trumps perfection.

Palmer Luckey, founder of the defence technology company Anduril, argues that the West must abandon its obsession with exquisite systems and embrace mass production. “We don’t need to be the world’s police,” he said. “We need to be the world’s gun store.”

He warns that China is already building militarised civilian infrastructure and automated missile factories that can outproduce the U.S. in weeks.

If NATO wants to maintain maritime superiority, it must think like a start-up and focus on adaptability. That means preparing for a future where battlefields are saturated with autonomous drones, decisions are made in milliseconds by AI, and billion-dollar platforms are hunted by swarms costing less than a family sedan.

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