



Training in an Uncrewed Future?

aka

Drones - UAV – sUAS - RPAS - UMS – USV – UUV – UGV – OPV ...

Remotely Operated - Autonomous

Andy Fawkes | Joint Military Training & Simulation Conference
Bristol | 24/25 February 2026

80%

A Strategic View

Subject: Unleashing US Military Drone Dominance 10 July 2025

CUI *Corrected Copy

 SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

JUL 10 2025

MEMORANDUM FOR SENIOR PENTAGON LEADERSHIP
COMMANDERS OF THE COMBATANT COMMANDS
DIRECTORS OF DEFENSE AGENCIES

SUBJECT: Unleashing U.S. Military Drone Dominance

When I became the Secretary of Defense, I committed to rebuild our military to match threats to capabilities. Drones are the biggest battlefield innovation in a generation, accounting for most of this year's casualties in Ukraine. Our adversaries collectively produce millions of cheap drones each year. While global military drone production skyrocketed over the last three years, the previous administration deployed red tape. U.S. units are not outfitted with the lethal small drones the modern battlefield requires.

On June 6th, President Trump issued Executive Order 14307 to support the American drone industry and arm our warfighters. The Department of Defense is going above and beyond this order. I am rescinding restrictive policies that hindered production and limited access to these vital technologies, unleashing the combined potential of American manufacturing and warfighter ingenuity. I am delegating authorities to procure and operate drones from the bureaucracy to our warfighters.

Our mission is threefold. First, we will bolster the nascent U.S. drone manufacturing base by approving hundreds of American products for purchase by our military. Leveraging private capital flows that support this industry, our overt preference is to Buy American.

Second, we will power a technological leapfrog, arming our combat units with a variety of low-cost drones made by America's world-leading engineers and AI experts. Drone dominance is a process race as much as a technological race. Modern battlefield innovation demands a new procurement strategy that fuses manufacturers with our frontline troops.

Finally, we'll train as we expect to fight. To simulate the modern battlefield, senior officers must overcome the bureaucracy's instinctive risk-aversion on everything from budgeting to weaponizing and training. Next year I expect to see this capability integrated into all relevant combat training, including force-on-force drone wars.

Emergent technologies require new funding lines. To address the urgent need for drones, investment methods outlined in Executive Order 14307 are being investigated.

The directives detailed in the attached memorandum support our industrial base, reform acquisition, and field new technology for the warfighter. Lethality will not be hindered by self-imposed restrictions, especially when it comes to harnessing technologies we invented but were slow to pursue. Drone technology is advancing so rapidly, our major risk is risk-avoidance. The Department's bureaucratic gloves are coming off.

Attachment:
As stated



*Corrected copy to add UNCLASSIFIED when separated from attachment
CUI

 06C006689-25/CM009163-26

‘Drones are the biggest battlefield innovation in a generation’

‘Next year (2026) I expect to see this capability integrated into all relevant combat training, including force-on-force drone wars’

Chief of the General Staff

General Sir Roly Walker KCB DSO, Chief of the General Staff
RUSI Land Warfare Conference, June 2025



‘A £20 million tank and four experienced crew members lost to a £1,000 drone operated by a kid with only a few days training — who probably isn't even on the same map sheet as the tank.’

‘I want to spend 50% of our money on the 20% of crewed and expensive, and 50% on the remaining 80% of attritable.’

20%

Crewed
Platforms

40%

Reusable
Uncrewed

40%

Consumable
Single-Use

80% Uncrewed — British Army and SDR 2025 Strategy

SDR 2025

Ministry
of Defence

Strategic Defence Review

Making Britain Safer:
secure at home,
strong abroad

2025

Integrated Force

- 'dynamic networks of **crewed, uncrewed, and autonomous assets**'

Royal Navy:

- 'We will create a **'New Hybrid Navy'**, ... introducing new autonomous vessels to patrol the North Atlantic and beyond.'

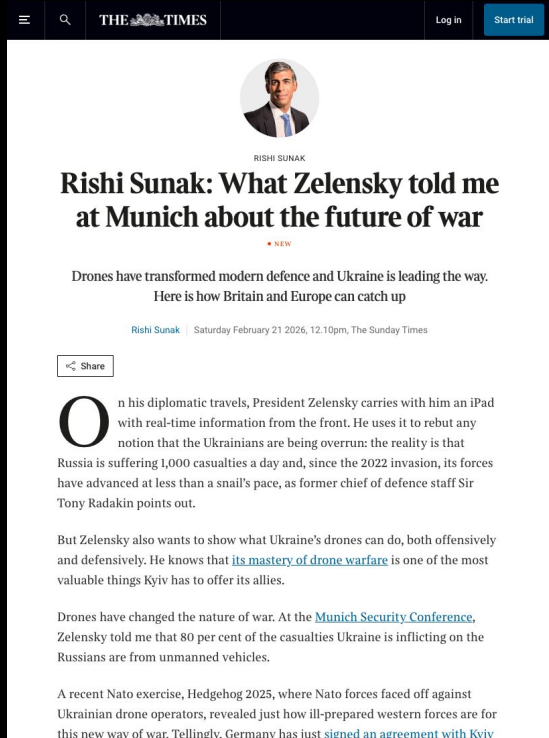
British Army:

- 'combining more people and armoured capability with air defence, communications, AI, software, long-range weapons, and **land drone swarms.**'

Royal Air Force:

- 'Future Combat Air System - a sixth-generation, crewed jet operating with **autonomous collaborative platforms**'

A Politician's View



THE SUNDAY TIMES

Log in Start trial


RISHI SUNAK

Rishi Sunak: What Zelensky told me at Munich about the future of war

NEW

Drones have transformed modern defence and Ukraine is leading the way.
Here is how Britain and Europe can catch up

Rishi Sunak | Saturday February 21 2026, 12:10pm, The Sunday Times

Share

On his diplomatic travels, President Zelensky carries with him an iPad with real-time information from the front. He uses it to rebut any notion that the Ukrainians are being overrun: the reality is that Russia is suffering 1,000 casualties a day and, since the 2022 invasion, its forces have advanced at less than a snail's pace, as former chief of defence staff Sir Tony Radakin points out.

But Zelensky also wants to show what Ukraine's drones can do, both offensively and defensively. He knows that [its mastery of drone warfare](#) is one of the most valuable things Kyiv has to offer its allies.

Drones have changed the nature of war. At the [Munich Security Conference](#), Zelensky told me that 80 per cent of the casualties Ukraine is inflicting on the Russians are from unmanned vehicles.

A recent Nato exercise, Hedgehog 2025, where Nato forces faced off against Ukrainian drone operators, revealed just how ill-prepared western forces are for this new way of war. Tellingly, Germany has just [signed an agreement with Kyiv](#)

Drones dominate:

- 80% of Russian casualties come from uncrewed systems

Naval victory without a navy:

- Drone warfare forced Russia's Black Sea fleet to port

Production is broken:

- Post-Cold War consolidation of defence companies means we can no longer scale quickly

Scale beats sophistication:

- Ukraine produced 4M+ drones in 2025 vs NATO's combined total

Spend smarter:

- UK defence budget must prioritise start-ups, only 5% currently reaches SMEs against a 25% target

Drone Denial?

Air Marshal (Retd) Edward Stringer & Dr Keith Dear AI SME at Fujitsu

 UK Parliament

Committees

[UK Parliament](#) > [Business](#) > [Committees](#) > [Defence Committee](#) > 3 February 2026

3 February 2026 - One-off Session on the Future of Warfare - Oral evidence

Committee ▶ [Defence Committee](#)
Inquiry ▶ [One-off Session on the Future of Warfare](#)



Air Marshal Stringer

- 'I am staggered that I still hear officers in many places ... when asked about drones and the battlefield we see in Ukraine, say, "Oh, but we wouldn't fight like the Ukrainians"'
- That strikes me as a very complacent and rather arrogant statement.
- The future of warfare does not look exactly like Ukraine, but it certainly involves a lot of what you are seeing in Ukraine, adapted for future theatres.'

Dr Keith Dear

- any bet that drones are only going to have a small impact on the future of war is a pretty big bet against the progress we are seeing (e.g. *in AI*)

Wider Pressures



Rapid Acquisition

'An 85 percent solution in the hands of our armed forces today is infinitely better than an unachievable 100 percent solution endlessly undergoing testing or awaiting additional technological development.'

7 November 2025

- Front-line warfighters will have a far greater say in deciding what capabilities and equipment are needed
 - Fast is The Focus
 - Competition, Modularity, and Multi-Source Practices
-
- **What does this mean for Training and Training Systems themselves?**



Rebuilding the Arsenal of Freedom

It's Multi-Domain

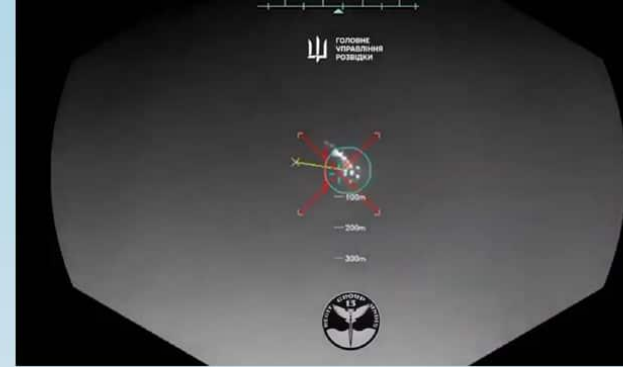
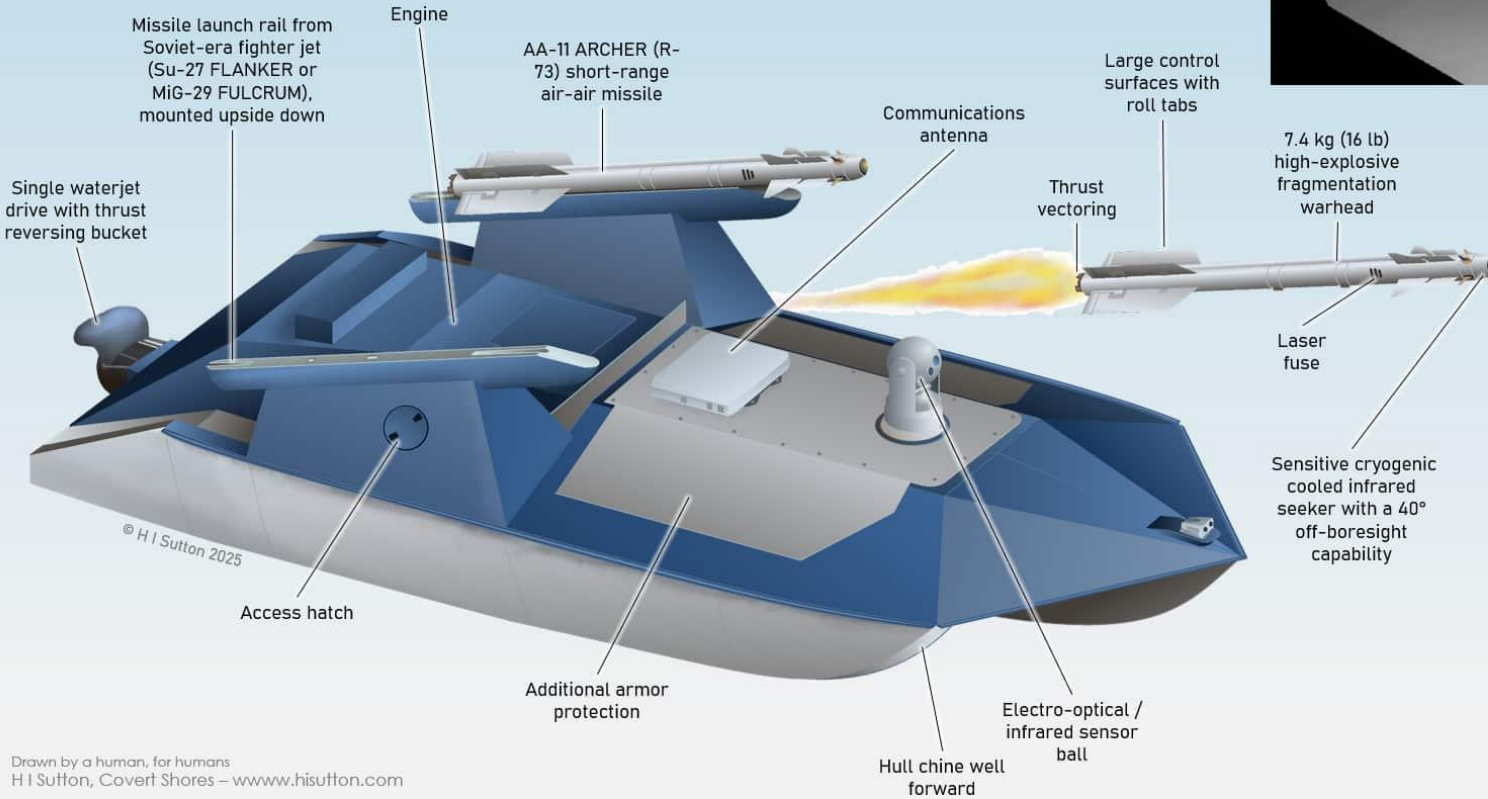
**Royal Navy
Minehunting
USV
Royal Navy
Motor Boat
Ariadne**





Ukrainian 'Magura' Maritime Drone (USV) Armed With AA-11 ARCHER (R-73) 'Sea Dragon' Missiles

NAVALNEWS



The moment the Su-30 FLANKER fighter is hit, May 2, 2025. As seen from the USV.



Main Directorate of Intelligence, Ukraine (HUR)



UYRIY 10 OPTO



INACTIVE

Why? - War



Ukraine — 2025 In Numbers

Ukrainian Ministry of Defence — Army of Drones Annual Report, January 2026

820,000

RUSSIAN TARGETS HIT BY UKRAINIAN DRONES IN 2025

240,000

Personnel killed
or critically wounded

62,000

Light vehicles
destroyed

32,000

Enemy drones
intercepted

Data

WE TRAIN AND EQUIP



Join us now

REPORT OF USF GROUPING

11:13:56 Thu
19.02.2026

February

January

27 762
damaged targets

10 216
incl. destroyed

71 615
strike flights

62 367
recon flights

9 381
enemy personnel

4 885
including killed

4 496
incl. wounded

	damaged	incl. destroyed
 Enemy personnel	9 381	4 885
 Drone launch positions	1 012	23
 Antennas	1 404	1 002
 Radars (vehicles)	8	2
 Radars (equipment)	19	11
 EW (vehicles)	3	0
 EW (car)	219	71
 EW (equipment)	99	59
 Enemy wings	1 544	1 513
 Shaheds and Gerberas	584	554
 Tanks	80	9
 APCs, IFVs, ACVs	88	16
 Guns, howitzers	414	47
 Self-propelled artillery	39	1

	damaged	incl. destroyed
 Mortars	25	2
 MRLS, SAMs, anti-aircraft guns	44	3
 Light, Heavy, Special-purpose vehicles	1 117	242
 Motorcycles and military buggies	522	161
 Ammo, fuel and equipment depots	264	164
 Strategic Infrastructure	TOP SECRET	TOP SECRET
 Tactical infrastructure	25	1
 Shelters	6 182	348
 Dugouts	3 288	93
 Network equipment	243	125
 Cameras	5	5
 Enemy copter drones	859	767
 Enemy unmanned robotic complexes	66	28
 Other	218	83

VKP ENG



Drones Now Dominate The Battlefield

80%

*"Over 80% of enemy targets are destroyed by drones.
The vast majority are drones manufactured in Ukraine."*

— President Zelenskyy, Army of Drones 2025 event

Calculation of drone effectiveness and cost, January 2026

Unmanned Systems Forces

\$30 039 250

cost of drones used

37 054	FPV drones	1 225	Night Bombers
991	Mavic	2 272	Interceptors

December - \$28 283 600
November - \$25 555 850
October - \$24 748 650
September - \$21 848 600
August - \$24 204 150

\$3 032 939 000

estimated cost of destroyed enemy targets

27 762	targets hit/destroyed
9 381	including enemy personnel

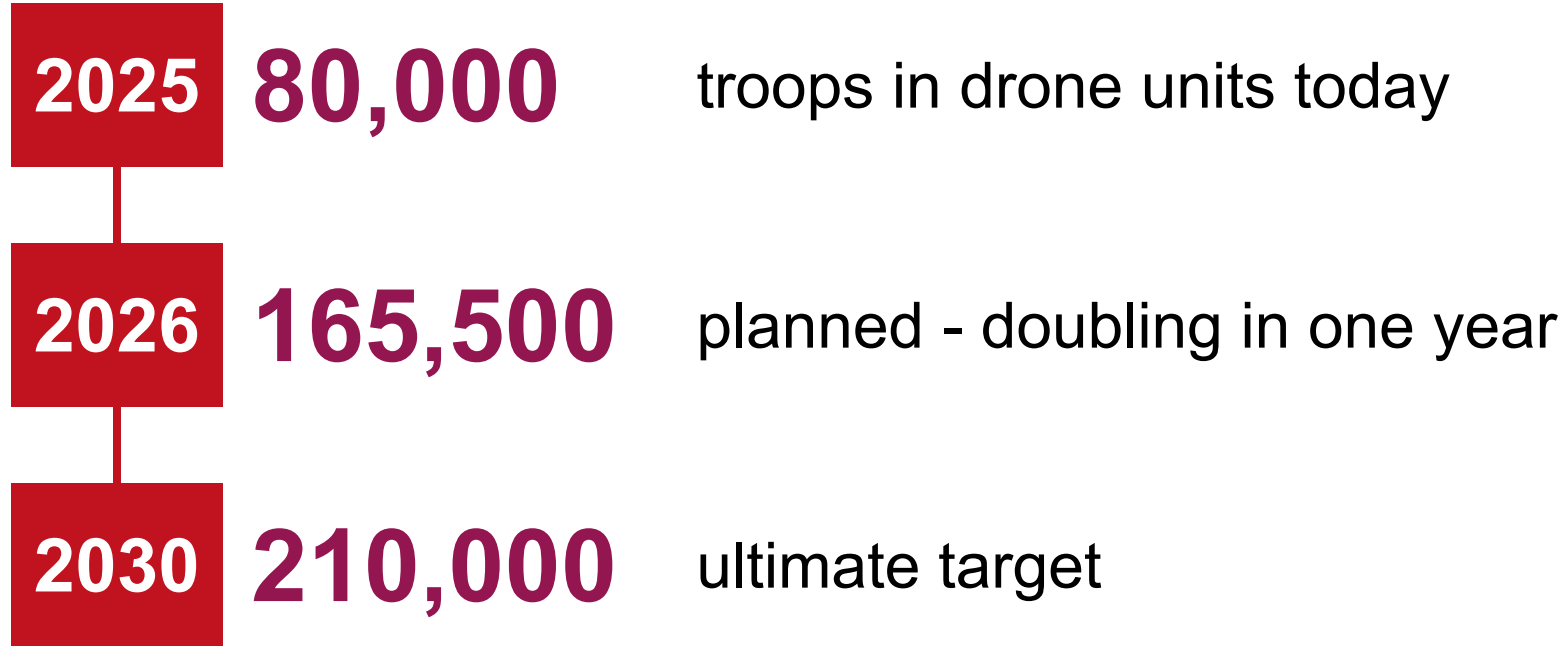
December - \$2,962 billion
November - \$2,189 billion
October - \$2,498 billion
September - \$2,190 billion
August - \$2,685 billion

1:101

Ratio of funds invested in drones
to damage inflicted on the enemy

Russia Is Building A Drone Army

Long War Journal / FDD — January 2026



A dedicated military drone academy opens in 2027 | All instructors have Ukraine combat experience

How Long Does it Take to Train for Crewed Platforms?

- **Pilot** - The average time to join an Operational Conversion Unit is 4.8 years for Fast Jet; 5.4 years for Multi Engine and; 6.9 years for Rotary Wing. (Minister of State/Ministry of Defence 2022)
- **Tank Crew** – 34-35 Weeks (British Army)
- **Naval Captain** - About 10 years to reach the rank of Lieutenant Commander (Royal Navy)
- + Training & Educating Engineers, Logistics, etc. Personnel

Beyond Ukraine

Al Jazeera visual investigation, February 2026

1,003

drone strikes in Sudan's
civil war since April 2023

118

countries with military
drones in their arsenal

*"Sudan shows what happens when irregular forces gain access to reach and air-like effects without an air force.
It allows a militia to impose costs on a state even when it cannot win conventional battles."*

— Andreas Kreig, School of Security Studies at King's College London

Drone warfare is a universal feature of conflict.

The Pace Of Change

DAY & WEEKS

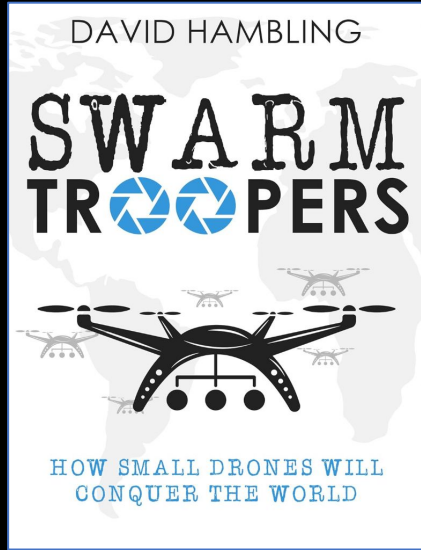
Why? – Technology

A Similar Moment in Military History?

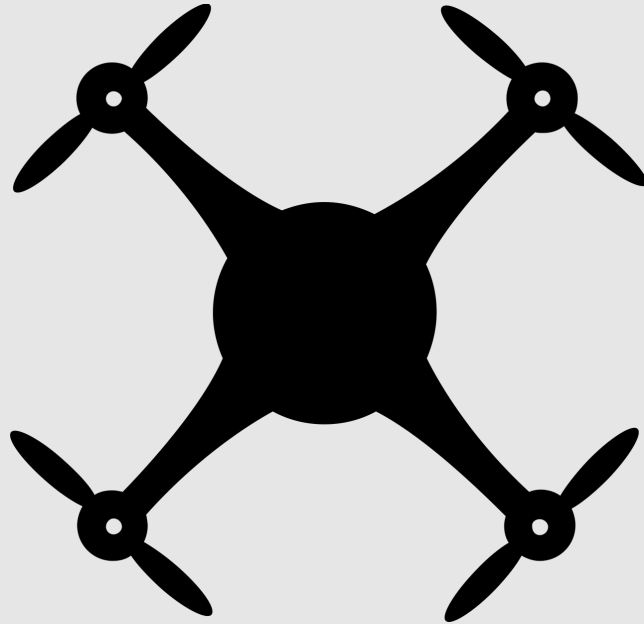
National Army Museum & IWM



THINKE



(2015)



Drone Design and Execution in Day and Weeks

GOV.UK

Home > International > Foreign affairs

Press release

English | Українська

Front line drone technology to fuel UK - Ukraine partnership

A landmark agreement between the UK and Ukraine to share battlefield technology has been reached today, boosting Ukraine's drone production and linking up the UK's defence industry with the cutting-edge technology being developed on the front lines in Ukraine.

From: [Prime Minister's Office, 10 Downing Street, Ministry of Defence](#) and [The Rt Hon Sir Keir Starmer KCB KC MP](#)

Published 23 June 2025



A landmark agreement between the UK and Ukraine to share battlefield technology has been reached today, boosting Ukraine's drone production and linking up the UK's defence industry with the cutting-edge technology being developed on the front lines in Ukraine.

Prime Minister Keir Starmer and President Zelenskyy reached the agreement during the Ukrainian leader's visit to Downing Street today.

Technology data sets from Ukraine's front line are set to be plugged into UK production lines, allowing British defence firms to rapidly design and build, at scale, cutting edge military equipment available nowhere else in the world.

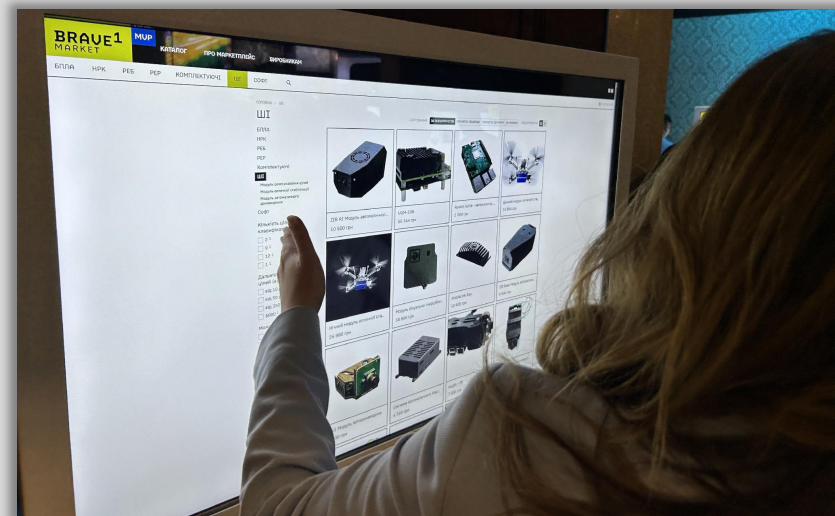
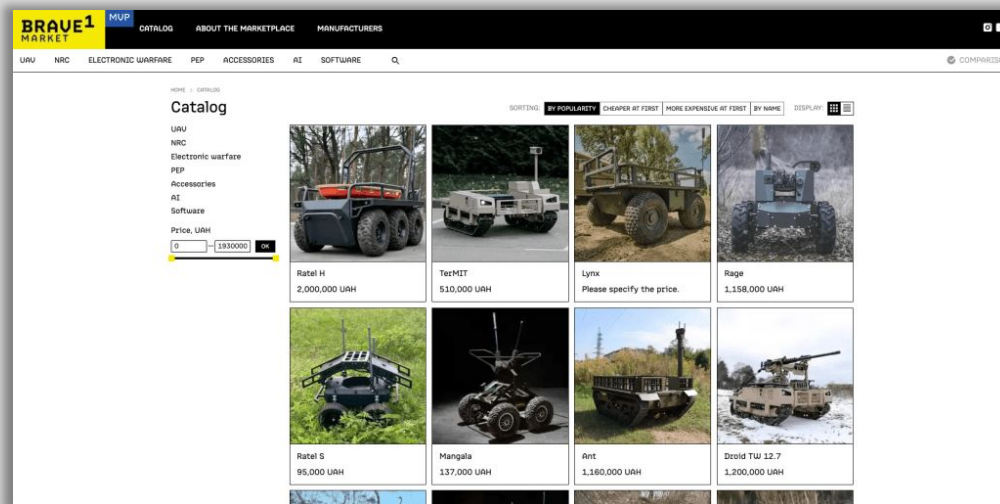
Ukraine is the world leader in drone design and execution, [with drone technology evolving, on average, every six weeks.](#)

‘drone
technology
evolving, on
average,
every 6
weeks’

Acquisition Agility

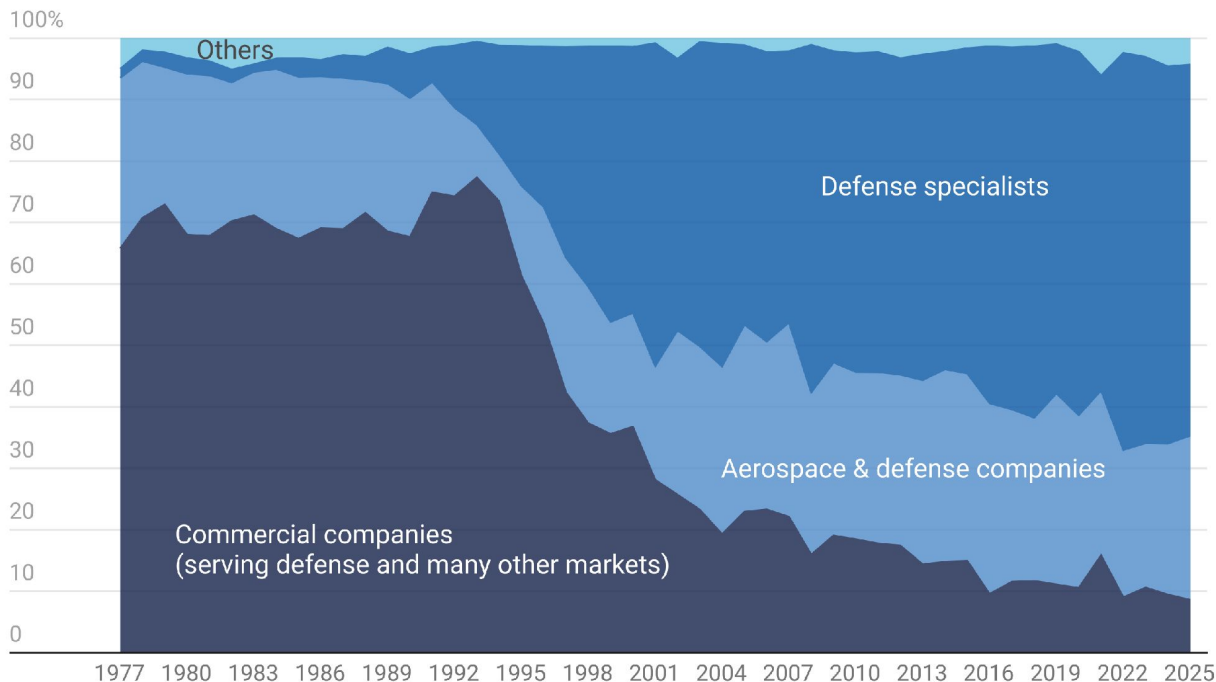


Ukraine Brave 1 Marketplace for Soldiers



Return to the Past?

**Figure 1 – Major Weapon Systems Acquisition Budget:
Share by Industrial Base Category**



Note: "Major weapon systems" includes MDAPs and some additional spending, not the entire procurement and research, development, test, and evaluation budget.

Source: Martin Bollinger, based on the DOD's *Annual Report to the Congress and Program Acquisition Cost by Weapon System*, fiscal years 1977 through 2025.

Training the Warfighter...

Surely We
Are Doing
Something
About This,
Right?

BBC NEWS УКРАЇНА

Home War with Russia Stories Video BBC Book of the Year Podcasts

"NATO's methods don't work anymore." Why weren't Ukrainian military trained to fight with drones at Polish training grounds?



GLOBAL IMAGES UKRAINE/GETTY IMAGES

| Drone

Victoria Kalimbet
BBC News Ukraine

November 17, 2025

Since 2022, the Armed Forces of Ukraine have been training in training centers in European countries. In particular, Poland provides its instructors and training grounds, where basic and special training of Ukrainian soldiers has

17 Nov 25

The Telegraph

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British brigade 'destroyed' in Nato wargame

Armed Forces' quick defeat in drone-heavy exercise is wake-up call



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Thousands of soldiers from 12 Nato countries participated in the wargame. Credit: ASI Mark Doliard/Ministry of Defence

**Kieran Kelly**

Kieran Kelly is a Foreign Breaking News Reporter at The Telegraph. See more

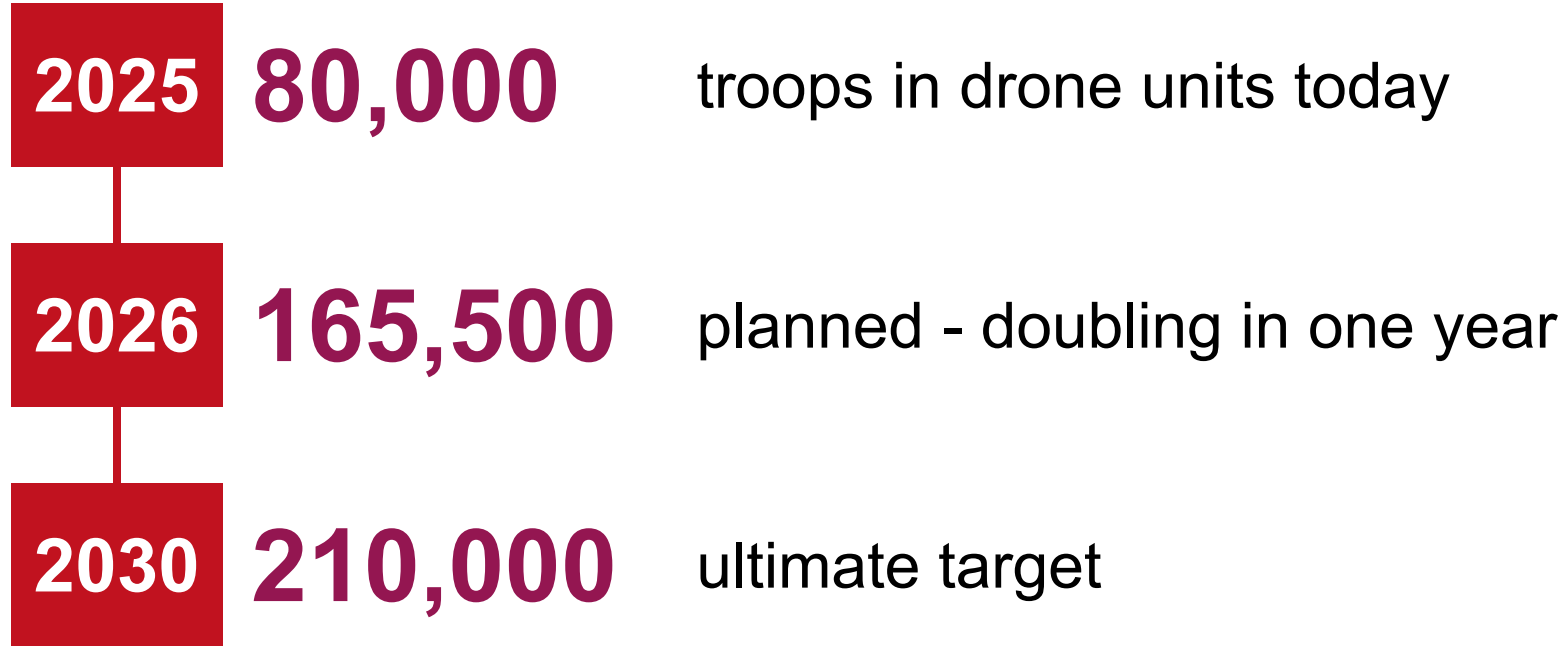
13 February 2026 8:38pm GMT

A British brigade was "destroyed" in a Nato wargame in Estonia last year, it has emerged

13 Feb
26

Russia Is Building A Drone Army

Long War Journal / FDD — January 2026



A dedicated military drone academy opens in 2027 | All instructors have Ukraine combat experience

Training Demand Signal?



IT2EC 2025 – Saab Training Drone



I/ITSEC 2025 Program – 110 Pages

- ‘unmanned’ – 4 times
- ‘uncrewed’ – 0 times
- ‘drones’ – 6 times

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US Army Drone Training

 MENU



SEARCH 

Fort Benning integrates virtual drone training into OSUT program of instruction

By Capt. Stephanie Snyder February 12, 2026





FORT BENNING, Ga. — As small unmanned aircraft systems, sUAS, become a defining feature of the modern battlefield, the Maneuver Center of Excellence is ensuring every new Soldier has a high-tech edge.

One-Station Unit Training trainees are now undergoing a 10-hour sUAS familiarization course integrated into their formal program of instruction. Using Virtual Battle Space 4 software and the Virtual Drone Collective Trainer plug-in, Infantry and Armor trainees master flight mechanics before stepping onto a live flight line.

- 10-hour sUAS/drone course
- VBS4 software and Virtual Drone Collective Trainer plug-in
- Infantry and Armour trainees progress from basic controls to simulated strikes
- Familiarisation for all, and top performers fast-tracked

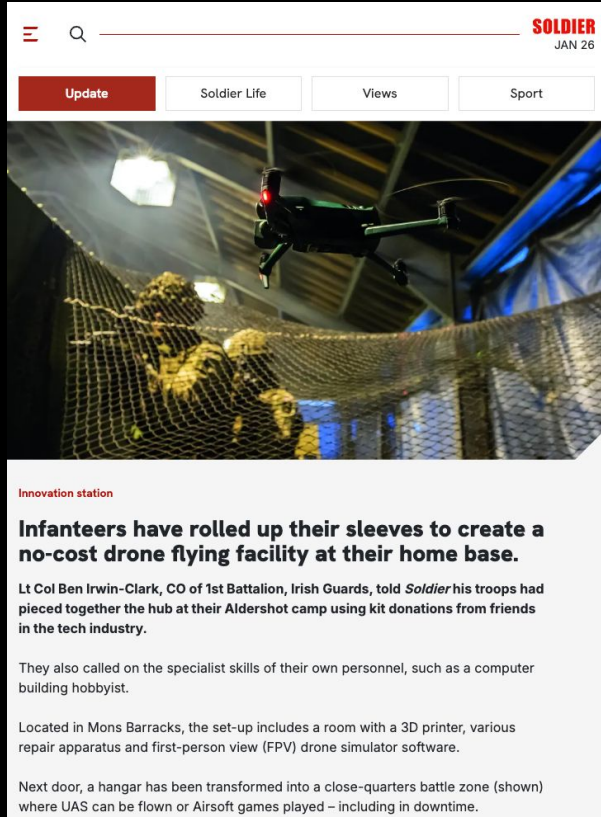
UK



Task Force Rapstone –

- 3,000 quadcopters across three size variants, 5-inch, 8-inch, and 10-inch, each equipped with FPV goggles, controllers, toolkits, and chargers.
- Kits will allow personnel to gain hands-on experience assembling, maintaining, and flying FPV drones under controlled conditions.
- Soldiers will undergo a minimum of 15 hours of simulator training before handling the drones

Local Initiative



- Lt Col Irwin-Clark (CO 1st Battalion, Irish Guards) said his troops' willingness to embrace new tech had been 'unreal'.
- *'I used to walk my spaniel on our training area in the evenings and look up to see our young people in their windows, headphones on and gaming. I would think 'shame' – but now I think 'great, I need you to use those skills to get your 60 hours of online flying'*
- There are 276 people in this unit and around 25% are now qualified.

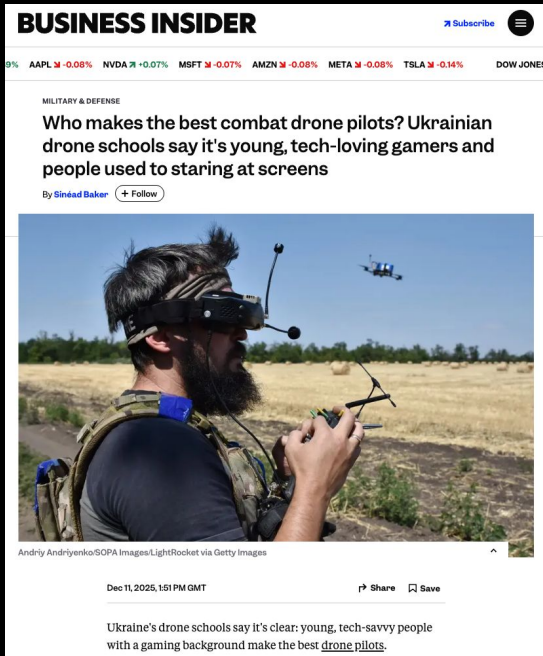
**How Long
Does it
Take?**

**Broad
Brush**

**Multiple
Sources**

Phase	Simulation (Cumulative)	Live (Cumulative)	Total (Cumulative)	Source
Initial Familiarisation	10-15 hrs	0 hrs	10-15 hrs	UK RAPSTONE, US OSUT
Basic Competence	20-30 hrs	5-10 hrs	25-40 hrs	Multiple sources
Combat Ready	50-60 hrs	10-15 hrs	60-75 hrs	Irwin-Clark, Carr
Mastery (w/ self-paced)	70-80 hrs	10-15 hrs	80-95 hrs	Carr (9:1 sim ratio)

Best Drone Pilots?



- Ukraine's drone schools say young gamers (18-27) with tech backgrounds excel due to joystick skills and screen endurance
- *the leading predictor of success is age. Overall failure rate: 15-20% | Under-28 failure rate: 3% (Skua Defence/ Westlake)*
- Technical fluency (IT/engineering) helps grasp drone mechanics; non-tech fields like marketers for example struggle more

Ukrainian Training Model

- 3-4 week to combat competence
- 9:1 simulation to live (by flight hour)
- Laptops accessible 24/7
- Self-paced practice ('they're there at night')
- Instructors buying laptops with own pay
- Software updates: Days
- Distribution: messaging apps
- Tens of thousands of users

"A soldier spending their own money on anything is to me the clearest signal that something works."

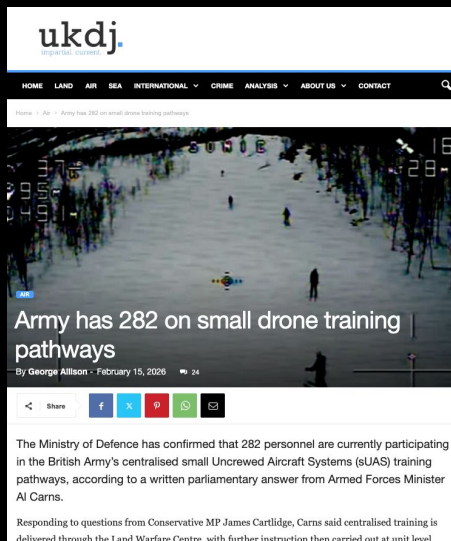
— Martin Carr, Managing Director, Applied Virtual Simulation
Direct observation inside Ukrainian brigade training cells, 2025-2026

Live Training?



- Drone Diversity and Rapid Change
- Integration with existing live training systems

Keeping Track of Numbers



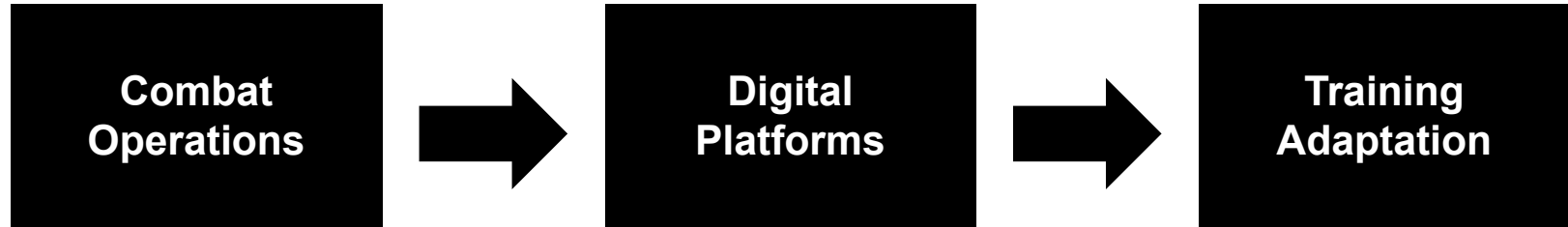
‘We’ve **trained over 3,000 drone pilots**, with another 6,000 over the next year, as well as providing 200 simulators into unit lines.’

General Sir Roly Walker, RUSI, 17 June 2025

‘As of February 2026, **282 personnel** are currently participating in the British Army’s centralised sUAS training pathways. Exact figures for those currently undertaking **distributed training are not available** as these figures are not held centrally.’

Armed Forces Minister Al Carns, 13 February 2026

Ukraine's Data-Driven Model



After-action reports, performance data, and operator observations captured in near real-time

Adversary tactics change detected

Hours to Days

Training demand signal generated

Immediate

Drone Training Going Forward?

- Unit Driven - Procurement, Training & Experimentation

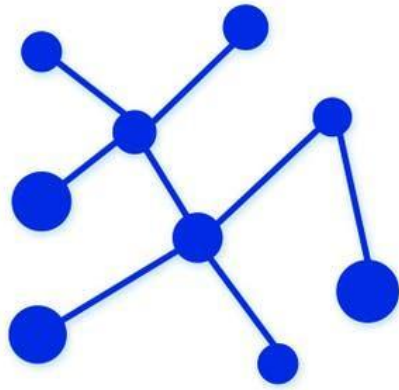
or

- Hybrid – Unit Driven, Enterprise Data Capture and Best Practice Distribution

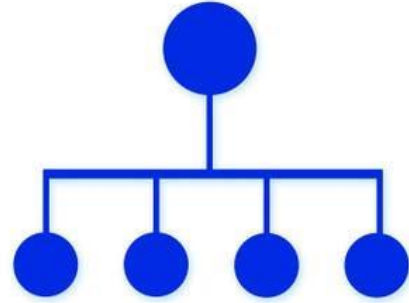
or

- Enterprise Driven - Common Software, Common Services, Common Training

Choices



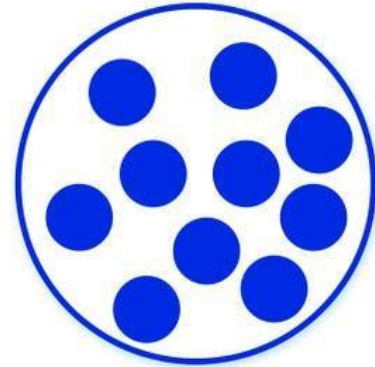
decentralized



centralized



hub and spoke



holistic

Who Should Decide?



The Gamification of Warfare

Valuing Gaming Skills



2019

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Call of Duty: Defence secretary John Healy wants online gamers to join up for real to become drone pilots as he plans to ease entry requirements for 'console warriors'

By DAVID WILCOCK, DEPUTY POLITICAL EDITOR FOR MAILONLINE
PUBLISHED: 14:28, 22 September 2024 | UPDATED: 14:28, 22 September 2024

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2024

2026

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---	--

THINK

Warfighter Skills?

Profile:

- **Age:** Under 30 preferred (digital native, faster learner)
- **Background:** Gaming experience (especially MMO/RTS/FPS)
- **Core skill:** Spatial reasoning + rapid decision-making under cognitive load
- **Interface mastery:** Comfortable operating through abstractions (tablets, VR, gesture control)
- **Learning style:** Iterative, failure-tolerant, comfortable with simulation

Future:

- Ability to **supervise AI** rather than manually control
- **Swarm orchestration** mindset (one operator, many platforms)
- Comfort with **human-machine teaming**
- **Ethical decision-making** at machine speed

Not Changing:

- Ethos, Team Working, Physical and Mental Fitness

Ukraine Army of Drones Bonus



- **Points-based kill verification system:** eg. 6 points for a soldier, 40 for a tank. Points redeemed on "Brave1" digital marketplace for advanced equipment.
- **Real-time targeting prioritisation:** If Ukraine needs to wear down Russian artillery pieces, increased points granted for destroying them... And now we see it in real time, what's working, what's not.
- **Effectiveness:** After increasing soldier kills from 4 to 6 points, "The kill count doubled in a month."
- **Ethical/security concerns unresolved:** Programme concentrates sensitive data and war can start to feel less real.

The Ender's Game Dilemma

*"Technically, something like that is already feasible. A drone pilot could sit anywhere in the world and operate their weapons at a distance, not knowing whether their screens are showing them a simulation of combat or an actual feed from the front.
At this point it's just a thought experiment. But things could go in that direction."*

— Ukrainian drone developer — Time Magazine, September 2025

APPROVED
CADET GAME

MILITARY
SIMULATOR

COMBAT FEED
MASKED AS GAME

The Future?

**Trained in
under an
hour, a US
Army soldier
operates
autonomous
UH-60 Black
Hawk**

**(Optionally Piloted
Vehicle - OPV)**

August 2025





EW





Ends Soon: Less than \$1/week

F 1

BUSINESS > AEROSPACE & DEFENSE

Software Uses Radios To Cut Through Electronic Fog And Find Jammers

By [David Hambling](#), Senior Contributor. © I'm a South London...

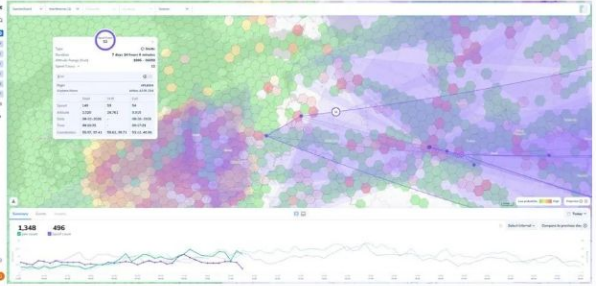
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Tenna System's Arena mapping of radio interference near the Russian border.

TENNA SYSTEMS

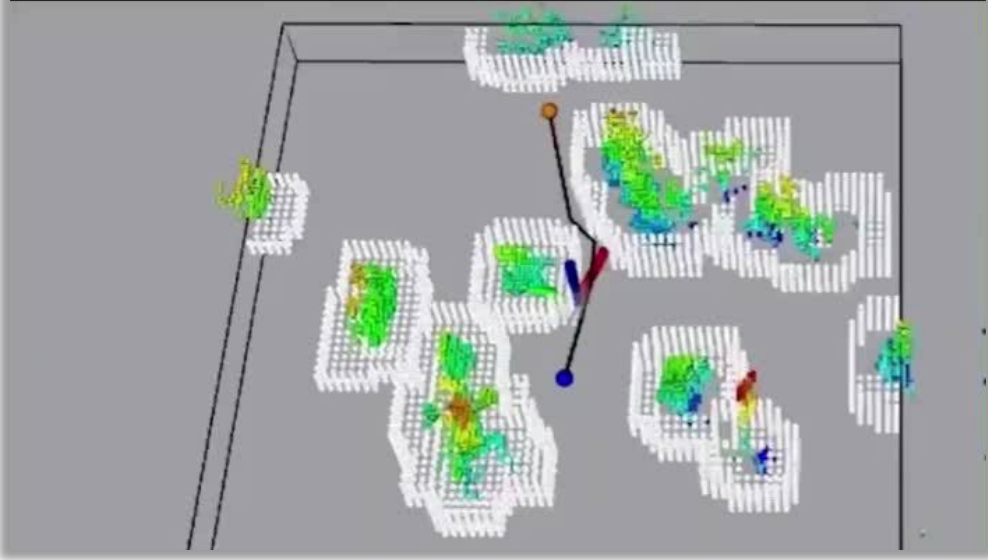
The electromagnetic spectrum is a contested battleground, with wars in both Ukraine and Gaza bringing unprecedented levels of jamming. This impedes communications with both soldiers and drones, and legacy systems struggle to cope with the challenge. [Avner Bendheim](#), CEO and co-founder of [Tenna Systems](#), believes his company has the answer.

“What we are doing is dissolving the fog of war in the electromagnetic spectrum,” says Bendheim.

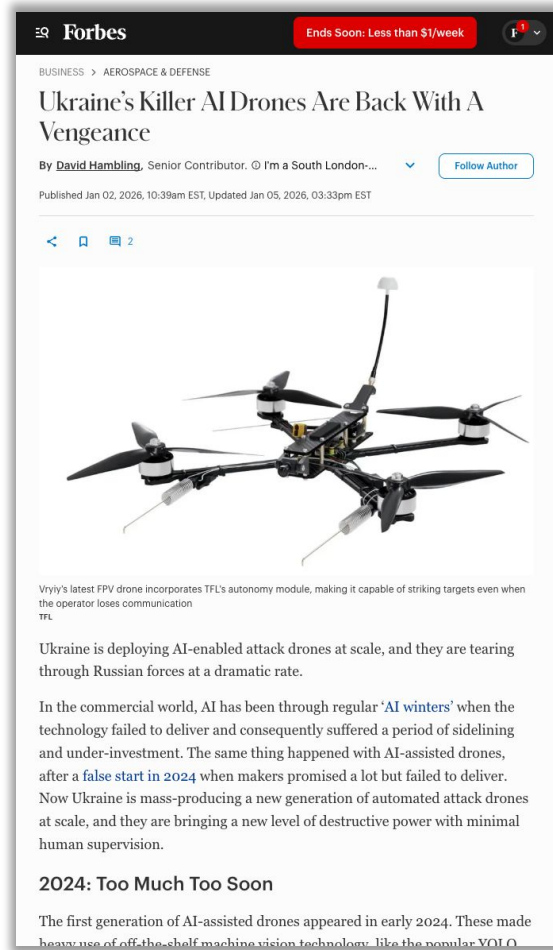
Tenna is described as a “software-first” company. While previously electronic warfare was driven by hardware, Tenna seeks to use information from all existing receivers, from phones to drones, to map out the electronic battlefield in real time, counter jamming, and even target the jammers.

THINK

Drone Navigates Through Internal 3D Model of the World



AI Assistant?



- Numbers suggest the Ukrainian AI-enabled system is a valuable aid for an unskilled pilot and would roughly quadruple their chances of a hit,
- But only provide a modest improvement for a skilled one and
- there are very few experienced people who really trust a machine to do their job better.

WILL KNIGHT BUSINESS FEB 18, 2026 2:47 PM

This Defense Company Made AI Agents That Blow Things Up

Scout AI is using technology borrowed from the AI industry to power lethal weapons—and recently demonstrated its explosive potential.



Prompt:
Fury Orchestrator, send 1 ground vehicle to checkpoint ALPHA. Execute a 2 drone kinetic strike mission. Destroy the blue truck 500m East of the airfield and send confirmation.

An AI brain with warfighter-level intelligence

Pretrained to imitate expert warfighters across domains



**22,580 DRONES SYNCED
FROM SINGLE PC
BREAK GUINNESS RECORD**

cgtn europe • Follow
China state-controlled media
Original audio

cgtn europe 1 w
22,580 drones. One computer. A
brand-new Guinness World Record.

At the 2026 Spring Festival Gala's Hefei branch venue, 22,580 drones were simultaneously controlled by a single computer, setting a new Guinness World Record for "Most Drones Simultaneously Controlled by a Single Computer."

The drone display was a key technological program at the Hefei venue and incorporated visual elements inspired by Huangmei Opera, ink-wash dance, and local architectural features, highlighting the integration of advanced technology with regional cultural characteristics.

[#ChineseNewYear](#)

538 12

6 February

[Log in](#) to like or comment.



Another View



From Software Supporting Hardware, To Hardware Supporting Software

- Defence forces will be increasingly defined not by the platforms and capabilities, but by the software that operates and connects them.
- Enhancing capabilities through **frequent software upgrades** and continually ensuring algorithmic superiority will be decisive in delivering military advantage.
- Defence forces may struggle to find, train, and/or retain personnel with the necessary **STEM** skills required to manage and operate future capability systems.

From Human Accountability By Default, To Human Accountability By Design

- Human accountability, and adherence to international law, will need to be built into the system design.

**Are We Building Powerful
Weapons That Have No
Fear And No Conscience?**

**We Still Need
Warfighters**



War Remains Regressive

"It doesn't matter how much technology you throw into the field, it doesn't matter how supremely trained your troops are. Sooner or later, it ends up as two blokes in a muddy hole, slugging it out with a billhook or a spade."

— Lt Col Ben Irwin-Clark, CO 1st Bn Irish Guards - Business Insider, February 2026

"Let me be abundantly clear - we are going to need survivable and lethal platforms for as long as land forces need to seize and hold terrain, which means boots on the ground to close with and kill the enemy, if it comes to it."

— General Sir Roly Walker, CGS — RUSI Land Warfare Conference, June 2025



Simulation's Expanded Role

5 Roles For Simulation In An Uncrewed Future

01

TRAIN HUMANS

Operators, commanders, planners - faster and at scale

02

TRAIN AI

Generate synthetic data; run reinforcement learning at machine speed

03

PREDICT THE FUTURE

Wargame, experiment, test doctrine before it costs lives

04

TEST & EVALUATE

Assure autonomous systems before operational deployment

05

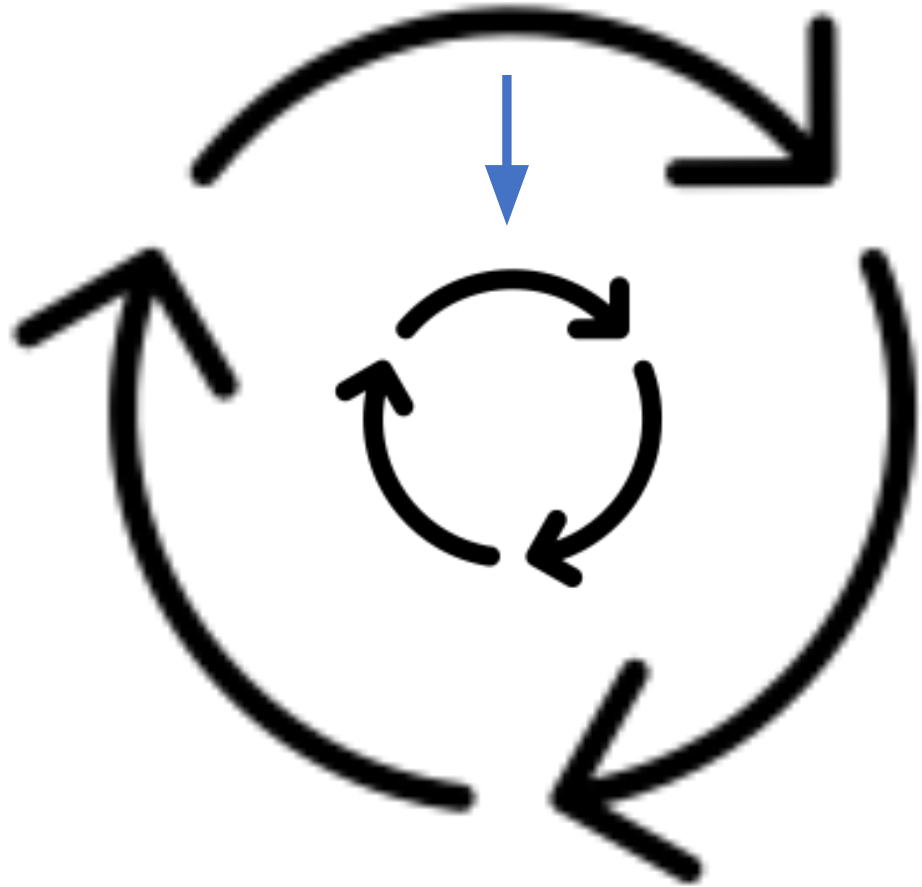
CLOSE THE LOOP

Real-time operational feedback → simulation updates → doctrinal adaptation

**Simulation Can Speed
Up the Military Cycle,
but it Needs to be
Speeded up Itself**

**Remove Barriers &
Friction:-**

**Interoperable, Data &
Software Commonality,
Less Org. Barriers, a
Sharing Connected
Ecosystem**



**Simulation Could be
the Central Nervous
System of
How Modern Forces
Learn, Collaborate,
Develop, Test, Adapt
and Improve**

-

**A Central System not
a Supporting System**



Wider Training Transformation?

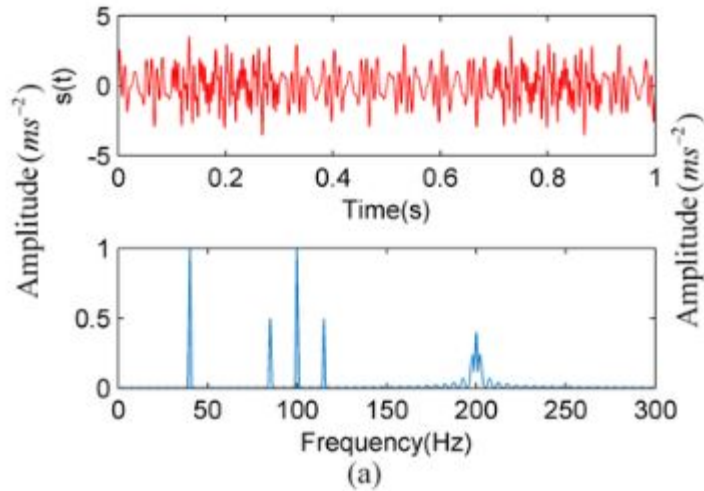


Traditional Military Platforms



Core training requirements can remain stable for 20-30 years

**If Training
Requirements
were a Signal**



Now

Before

Two Models of Training Demand

EPIODIC

- Years between signals
- Formal capability reviews
- Stable requirements
- Long development cycles

CONTINUOUS

- Daily/weekly signals
- Real-time operational data
- Dynamic requirements
- Rapid adaptation needed

Three Strategic Options for the Enterprise

OPTION 1: INCREMENTAL ADAPTATION

- **Accelerate existing structures** - Compress systems approach to training (JSP 822) from years to months/days via parallel development, streamlined approvals, increased resourcing
- **Problem:** 12-month cycles still insufficient when requirements evolve weekly

OPTION 2: DUAL-TRACK SYSTEMS

- **Traditional processes** for stable platforms (fast jets, submarines, 24-month cycles)
- **Rapid-iteration systems** for software-defined capabilities (drones, cyber, EW, weeks-to-months)
- **Problem:** Cultural friction between communities, dual governance overhead, unclear if transitional or enduring

OPTION 3: ENTERPRISE TRANSFORMATION

- Training functions as data-driven, continuously-adapting systems enterprise-wide (Learning Engineering)
- **Problem:** Do we wait for the crisis or build the system now?"

Questions?

Andy Fawkes

andy.fawkes@thinke.co.uk



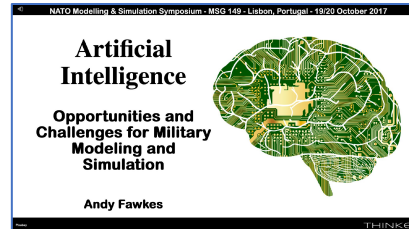
Some Context



Ministry
of Defence



VEDETTE



Current

