# The Architecture of ~~Innovation~~ Inaction

## UK Defence reads Ukraine as a story about technology. It is not: it is a story about policy enabling production

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### ABOUT THIS RESEARCH

This essay builds on a Defence Research Paper (DRP) written for the UK's Advanced Command and Staff Course. The research asked *what factors and structures in Ukraine are enabling defence technology innovation to be so successful? Of those factors and structures, which are replicable in the UK?* The findings rest primarily on thirty-four interviews conducted between February and July 2026, with participants spanning UK and Ukrainian Defence architecture, and the defence-technology and finance private sector. Some interviewees are disclosed; others are obscured to protect the discreet nature of their involvement in Ukraine. These interviews are triangulated by analysis of UK Government policy (i.e. the Strategic Defence Review (SDR), the Defence Industrial Strategy (DIS) and the Defence Investment Plan (DIP)) and a case study of Project OCTOPUS[1]. An eight-factor framework, drawn from defence-innovation and innovation-systems theory, structured the original enquiry, and this paper focuses on five thematic findings. Government policy documents provide the 'say'; the interview evidence supplies the 'do'; the gap between them is the finding.

This paper recasts Ukraine's defence-innovation success as a product of institutional and industrial policy rather than technological exceptionalism. The decisive conclusion for the UK is that the most significant barriers to replication are not genuine constraints; rather, they are our own policy choices and institutional behaviours that government can alter. Context explains why Ukraine moved first; it does not explain why Britain has not moved enough. The mechanism Ukraine's war forced, namely deregulation, a contractual demand signal at volume, and capital at scale, remains available to the UK without the catalyst that forced it. The UK's dominant reading of Ukraine fixates on technology iteration rates and overlooks the manufacturing and contracting architecture it could build now: scalable production is not simply the final stage of innovation but a distinct capability that production-policy must deliberately create. The paper contributes a Ukraine-based update to defence innovation theory, and nine policy recommendations to the institution.

The views expressed are the author's own and do not represent those of the Ministry of Defence. The original DRP can be found on the DARE and provides greater methodological detail.

"*UK Defence is not interested in manufacturing process; it just wants the thing*"[2]

*"You experience the defence industry you deserve"*[3]

The unspoken assumption that the UK must 'innovate like Ukraine' has a momentum so strong, that the notion can defy deeper interrogation. The refrain is justified: Ukrainian defence-industrial capacity grew from $1bn to $35bn between 2022 and 2025, and they are now producing almost 100% of the Unmanned Air Systems (UAS) they consume.[4] As for the UK, there are burgeoning signs of market confidence: three of Europe's eight defence unicorns[5] are UK-domiciled – for now at least. However, the country that holds Europe's deepest capital markets, one of the world's

[1] A UK-Ukraine joint project to design, manufacture, and mass-produce an advanced interceptor drone of Ukrainian technology origin. Co-production and development were announced publicly in September 2025. UK production targets thousands of units per month. OCTOPUS is the first output of a broader UK-Ukraine technology-sharing agreement signed by Prime Minister Starmer and President Zelenskyy in June 2025, and serves as the pilot for transferring battlefield-proven Ukrainian innovation into UK industrial production. Further information can be found at: Ministry of Defence, "Groundbreaking Ukraine Tech Sharing Agreement to Deliver Drones and Support Jobs," GOV.UK, 9 September 2025, Groundbreaking Ukraine tech sharing agreement to deliver drones and support jobs - GOV.UK.

[2] Senior UK Manufacturing Officer: interview, dated 03rd March 2026.

[3] Maj Gen (Retd.) Carl Boswell: interview, dated 23rd June 2026.

[4] Stuart Dee et al., "Looking Ahead: Enablers of Innovation and Scale for the Future of Ukraine's Defence-Industrial Base," Rand.org (RAND Corporation, December 4, 2025).

[5] A privately held defence or dual-use tech startup valued at over US$1 billion. Cambridge Aerospace, Kraken and UForce are UK-domiciled; Stark, Helsing and Quantum Systems are German; Tekever is Portuguese and Harmattan AI is French.

strongest university research bases, and a defence budget rising to £74 billion next year, must yet match private sector confidence with significant and predictable contracts. [6] That is the test.

The volume of the 'innovate like Ukraine' message is helpful in forcing people to listen, but is it drowning out the specificity necessary to turn rhetoric into actionable deductions? Innovation 'at a wartime pace' is how both the Strategic Defence Review (SDR) and Defence Industrial Strategy (DIS) put it, with drones as the creed's fetishised poster-child. But if that is what the government *says,* what is it *doing*? Is our fixation on the 'tech' obscuring what actually matters – the institutional architecture needed to produce lots of 'tech' at the time and place we need it; to enable repeatable innovation at scale – to arrest the architecture of our own inaction?

The answers matter because the UK is reimagining its defence industry having concluded that Ukraine is a story about technology. This paper argues that it is not. Instead it is a story about policy – policy that governs the technology you foster, how you make it and at what scale; policy that is trade-off choice; choice we control. The comfortable explanation is that Ukraine is at war and the UK is not: policy will change if and when it needs to; that time is not yet. This research found the opposite: policy is so entrenched, it is too often the choice we forget we have.

Across thirty-four interviews the evidence converges on a single diagnosis: the barriers preventing the UK from replicating Ukrainian innovation success are less strictly technical and legal; rather, they represent where we have fallen on our own policy trade-offs. These findings echo those of Barclays' September 2026 Report which concluded that: "*The UK has everything it needs to lead in defence tech except the systems to make it happen at scale*".[7] The mechanism Ukraine's war forced into being – deregulation, contractual demand at volume, and capital at scale – are available to the UK now, without the catalyst (war) that forced it; but they are not costless. Deregulation can remove avoidable friction; while contractual demand and productive capacity require sustained expenditure, political prioritisation and acceptance of opportunity cost. The argument is not that Britain can reproduce Ukraine's mobilisation without paying for it. It is that Britain retains a choice over whether to incur some of the cost of preparedness before crisis, when capacity can be developed deliberately, or much more of it during crisis, when time, supply and strategic freedom are already constrained.

What follows sets out what Ukraine actually teaches – the eleven factors that enable defence innovation, where the UK system stands against them, and nine recommendations to the institution.

## What Ukraine actually teaches

The peacetime literature on defence innovation – principally Cheung's framework of catalytic, input and institutional variables, Bitzinger's Israel-Singapore comparison, RAND Europe's UK-specific barriers, and the innovation-systems of Lundvall and Asheim [8] – yields eight factors that enable defence innovation.[9] Horowitz and Pindyck provide particularly foundational insight: that innovation is best seen as a process, not an event.[10]

Interview evidence supported seven of these, substantially reframed one, and added four further factors, producing an eleven-factor framework. The four factors the peacetime literature did not anticipate emerged consistently from the interview dataset: the importance of a problem-not-solution focus in how the state engages industry; the requirement to deliberately erode prime-

[6] John Ridge (Chief Adoption Officer, NATO Innovation Fund): interview, dated 27th February 2026.

[7] Barclays Bank, 'Scaling UK Defence Tech: Unlocking Growth, Investment, and Strategic Advantage through Innovation', September 2026, https://home.barclays/content/dam/home-barclays/documents/news/Insights/Scaling%20UK%20Defence%20Tech%20Unlocking%20growth,%20investment%20and%20strategic%20advantage%20through%20innovation.pdf.

[8] Tai Ming Cheung, "A Conceptual Framework of Defence Innovation," *Journal of Strategic Studies* 44, no. 6 (2021): 1-27; Richard A. Bitzinger, "Military-Technological Innovation in Small States: The Cases of Israel and Singapore," *Journal of Strategic Studies* 44, no. 6 (2021): 873-900; Jon Freeman et al., "Innovation Models for Defence" (RAND Corporation, 2015); Bengt-Åke Lundvall, *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning* (London: Anthem Press, 2012); Bjørn T. Asheim, Helen Lawton Smith and Christine Oughton, "Regional Innovation Systems: Theory, Empirics and Policy," *Regional Studies* 45, no. 7 (2011): 875-91.

[9] 1. Threat perception and strategic urgency; 2. Policy permissions and authorities; 3. User-producer proximity; 4. permeability; 5 Human capital and network density; 6. Resource commitment and demand signal; 7. Tolerance and failure acceptance; 8. securing access to external technology and knowledge. See the original DRP on the DARE for greater explanation and a full literature review.

[10] Michael C. Horowitz and Shira Pindyck, "What Is a Military Innovation and Why It Matters," *Journal of Strategic Studies* 46, no. 1 (2022): 1-30.

contractor privilege; the recognition that the metrics a system incentivises determine the industrial base it gets; and the ability to scale as a quality of its own. Of the eleven factors that result (Fig.1), Factor Two (demand signal) is the foundational factor from which the others flow, and Factor Eleven (capability production at scale) is the objective they serve.

While the original DRP on which this essay is based explores the Ukrainian evidence for each of the eleven factors, only the key five thematic deductions are explored in this paper.

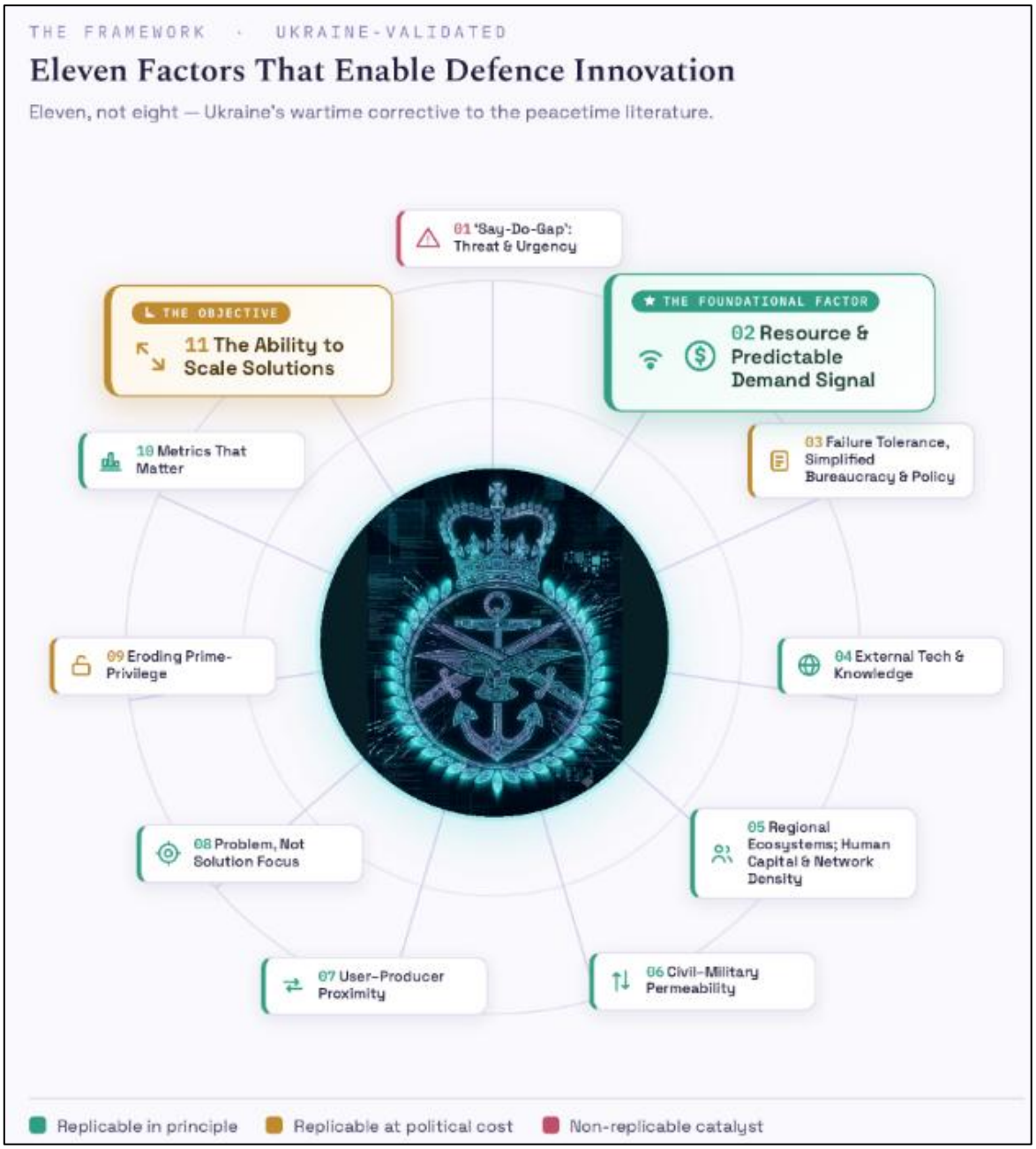



Figure 1: The eleven Ukraine-validated factors that enable defence innovation, with a UK-replicability assessment

*"Amateurs talk drones; professionals talk policy"*[11]

*"The magic of Ukraine is not the specific bits of tech – it's the approach: scale devices not soldiers; production capacity not stockpiles."*[12]

## The mechanism, not the catalyst

Ukrainian innovation success is easily romanticised, and romance obscures the lesson. On the eve of the 2022 invasion, Ukraine's defence sector was government-owned, over-regulated, and commercially stagnant: most producers still operated under Soviet-era bureaucratic protocols with no market incentives and without a functioning frontline-driven demand signal. [13] As one Ukrainian defence industry insider and key architect of the Unmanned Systems Forces (USF)[14], put it: "*the government is not an effective manager of businesses*".[15] The point is that while the 2022 invasion induced a demand, a preexisting – albeit dormant – industrial base existed to receive it. We have the chance to invigorate our own industrial base now.

For Ukraine, the transformation began not with the war itself, but with the policy choices the war forced. The government lifted small-business restrictions so that "*any housewife could start producing FPV drones in her kitchen*".[16] It paired that deregulation with contractual demand at scale: BRAVE1, a newly-created state-backed technology cluster, enrolled more than 1,500 companies, distributed $40 million in grants and advanced over 200 concepts to combat use in its first year.[17] The government then funded the result at meaningful volume, devolving purchasing authority to brigade level – roughly $60 million a month drawn through the BRAVE1 marketplace – inverting procurement from 70 per cent centralised to 70 per cent end-user direct.[18] "*The only demand signal that matters is contracts*"[19] is how a senior UK government procurement officer put it. BRAVE1 – contracting fast and at volume – operates as a demand signal substitute where the Ukrainian MOD cannot move quickly enough. It offers direct funding, procurement, investor connection and startup stimulation.[20] Where the MOD has been unable to repeat-contract when required and stock runs out in three months, BRAVE1 contracts within the week.[21]

The catalyst, existential threat on national territory, cannot be replicated and should not be wished for; the mechanisms the catalyst unlocked – deregulation, demand and dollars – are a set of deliberate policy trade-offs, each available to any state able to generate the political legitimacy that creates institutional urgency. This distinction between catalyst and mechanism is the analytical foundation of everything that follows.

## The iteration alibi masking the impact of scale

Another dominant UK reading of Ukraine fixates on pace: tactical adjustments in 24 hours, software updates in six weeks, a next generation in six months.[22] The narrative is true, yet distracting. A senior UK manufacturing technologist involved in Project OCTOPUS supplies the corrective: roughly 90% of any weapon system's hardware does not iterate at software pace, in this war or any other.[23] The fetishisation of Ukrainian iteration treats the visible 10% as the lesson and obscures the 90% the UK could plan for now, without a catalyst: supply chain architecture,

[11] UK Special Forces Technology Officer: interview, dated 10th February 2026.
[12] Ridge.
[13] Pauline Paillé et al., "From Policy to Victory: Recommendations to Ukraine for Harnessing Defence Technology," Rand.org (RAND Corporation, November 24, 2025).
[14] A component of the Ukrainian Armed Forces created in 2024 and dedicated to the procurement and employment of unmanned systems. Ukraine were the first Armed Forces in the world to create such an entity.
[15] Ukrainian defence industry insider: interview, dated 1st April 2026.
[16] Ibid.
[17] Olena Bilousova, Maksym Makarchuk and Tymofiy Mylovanov, "Ukraine's Drones Industry: Investments and Product Innovations" (Kyiv School of Economics, October 2024).
[18] Serving UK Army Officer: interview, dated 9th February 2026.
[19] Senior UK government procurement officer. Interview, dated 10th February 2026.
[20] Ukrainian defence industry insider.
[21] Ibid.
[22] Serving UK Army Officer.
[23] Senior UK Manufacturing Officer.

manufacturing capacity, and the requisite workforce.[24] The iteration narrative has become an alibi for inaction. The UK admires Ukraine and concludes it can do nothing.

The arithmetic of attrition shows what the real lesson is. Ukrainian drones are always jammed, always crashing, yet always incredibly lethal.[25] If roughly 70 per cent of individual platforms fail and drones nevertheless account for roughly 70 per cent of battlefield casualties, then, while platform sophistication is important, scale is the decisive factor. A serving UK officer with first-hand Ukrainian technology sector experience compresses it to a sentence: "*the capability isn't the FPV; it is the production.*"[26]

Ukrainian output rose from a few thousand UAVs in 2022 toward four million in 2024.[27] That volume came less from *what* Ukraine builds than from *how* it builds. Three design features explain it. First, producers buy commercial off-the-shelf (COTS) components from global electronics markets rather than commissioning bespoke parts, so the supply chains already exist and lead times shrink. Second, assembly is modular, so a factory can swap a camera, radio or warhead as the threat changes without redesigning the system. Third, they distribute production: FirePoint, a Ukrainian battlefield technology producer, operates more than forty distributed facilities, each with an identical backup so that production survives Russian strikes.[28] One interviewee estimated that a single Ukrainian facility produces around 10,000 FPVs a month;[29] several were sceptical UK production rates could match that.[30] The gap is not technical – the UK can build drones – instead it reflects the Western demand signal: exquisite, highly integrated platforms over mass at speed.

## User-Producer Proximity ('tacticians and technicians')

A key enabler of product iteration pace has been Ukraine's user-producer proximity that approximates a near-fusion of manufacturer and military identity. A Ukrainian drone manufacturer CEO describes the relationship: "*We consider ourselves part of the armed forces now*".[31] Frontline-embedded operational teams function as unit members rather than external suppliers; feedback is continuous and real-time. "*It's literally instant. It's not like they flew and we received it a couple days later. We flew with them*".[32] The result is the staggering aforementioned iteration pace: tactical adjustments in 24 hours, software updates in six weeks, next generation in six months.[33] Ukraine has "*taken out almost every interlocutor between the person producing the technology and the person using it*."[34] The USF is the institutional architecture underpinning this proximity at scale – a single point of contact between incoming technologies, operational users, and the Ukrainian MoD, absorbing technologies, testing in combat, and returning feedback to funders and producers.[35] Ukraine's real advantage is therefore not a faster innovation cycle in isolation, but a shorter learning-to-effect cycle: battlefield problems are identified, transmitted, solved, absorbed and reproduced faster than the enemy can respond. Demand and production architecture matter because they convert that learning into materially consequential capability at scale.

## Civil-Military Permeability

The blurring of lines seen between 'tacticians and technicians' extends across Ukraine's wider civil-military boundary also. Permeability means that people, firms, ideas and institutions cross freely between civilian and military life, in both directions. People: Fedorov moved from Digital

[24] Ibid.
[25] Robert Tollast, "Ukraine Land Warfare," RUSI lecture to Advanced Command and Staff Course 29, dated 3rd March 2026.
[26] Serving UK Army officer.
[27] KSE Institute reporting documents Ukrainian UAV output rising from roughly 3,000-5,000 units in 2022 to around 300,000 in 2023 and toward four million in 2024. Bilousova, Makarchuk and Mylovanov, "Ukraine's Drones Industry"; KSE Institute, "From the Battlefield to the Future of Warfare" (2025).
[28] Lucas Risinger et al., "From Words to Action: Barriers to Defense Industrial Collaboration between Ukraine and Europe" (KSE Institute, 8 April 2026).
[29] Serving UK Army officer.
[30] Ibid; Senior DE&S commercial official: interview, dated 12th March 2026.
[31] Ukrainian drone manufacturer CEO. Interview, dated 26th March 2026.
[32] Ibid.
[33] Serving UK Army Officer.
[34] Ridge.
[35] Ukrainian defence industry insider.

Transformation Minister to Defence Minister, taking a civilian technology mindset to the top of the defence establishment.[36] Firms: AirLogix began as a civilian cargo-drone start-up and pivoted to frontline defence manufacture in 2022; with no institutional support, its founder taught himself electronic warfare, GPS spoofing and jamming from technical literature.[37] Ideas: both DELTA – a single cloud-based data system available on any device, providing real-time battlefield mapping and video-feed streaming from any drone – and BRAVE1 began outside the military before the MOD adopted them.[38] Institutions: academic bodies, such as the Kyiv Aviation Institute (KAI), partner directly with the military on technological research and development, connecting academic expertise to battlefield problems.[39]

The state's structural incentive architecture – reward mechanisms connecting military-user to commercial-producers – both encourages permeability and is a powerful example of it. DELTA allows units to earn 'e-Points' from video-verified kills redeemable though the BRAVE1 marketplace: more kills, equal more kit.[40] In effect, battlefield results, rather than procurement officials, decide which firms win orders, so commercial producers compete directly on military performance.

## Securing Access to External Technology and Knowledge

Ukraine's unique offer is not as an inventor of things, but as an experienced integrator of cheap, scalable COTS capabilities. The viable mechanism for transferring this integration intelligence is the Joint Venture. One CEO was unambiguous: their company cannot operate in a foreign defence market alone – regulatory compliance requires a local legal entity; knowledge transfer requires co-production, not licensing.[41] There is also a political dimension: Western company presence in Ukraine "*would stimulate our government to allow more cooperation and exchange of dual-use technologies*."[42] Joint Ventures are simultaneously a technology access vehicle for foreign nations and a political catalyst for Ukrainian export control relaxation. A UK defence-technology researcher highlights Quantum Systems (German) joint-production of Ukrainian designs at scale for Ukrainian use as an example of this[43] – "*exactly the model a lot of people were advocating 18 months ago in the UK, but never materialised*."[44]

## The warts

However, the UK should not want to be Ukraine's defence industry. Firstly, while the value of Ukraine's China-supplied drone components dropped from 89% in 2024[45] to 38% in 2025, Ukraine's 2026 expenditure on Chinese parts looks set to exceed last year's total[46] – a dependency NATO industrial strategy would not wish to tolerate.[47] Secondly, corruption distorts feedback through official channels: a meaningful share of the Ukrainian startup ecosystem is a financial construct built to capture Western investment and may yet prove to be 'a bubble'.[48] Thirdly, Ukraine shows that even with a live war as a forcing function, demand signal failure is possible when it is politically gated. Ukrainian private companies hold spare industrial capacity they cannot deploy because the government limits the demand signal to UAF customers only: no international exports are generally allowed.[49] Fourthly, there can be false lessons for the UK from a production model forged by a very different industrial history with "*human capital-intensive lines*"[50]. Three

[36] Serving UK Army Officer.
[37] Ukrainian drone manufacturer CEO.
[38] Ukrainian defence industry insider.
[39] Ibid.
[40] Serving UK Army Officer.
[41] Ukrainian drone manufacturer CEO.
[42] Ibid.
[43] KCL PhD researcher: interview, dated 04th May 2026.
[44] Ibid.
[45] Olena Bilousova, Maksym Makarchuk, and Tymofiy Mylovanov, "Ukraine's Drones Industry: Investments and Product Innovations" (Kyiv: KSE, October 2024), https://kse.ua/wp-content/uploads/2024/10/241004-Brave1-report-v.1.pdf.
[46] Colin Hood, 'Ukraine's Drone War Exposes An Uncomfortable Reliance On China', RadioFreeEurope/RadioLiberty (RFE/RL, 30 August 2026), https://www.rferl.org/a/ukraine-drones-china-chinese-components/33835808.html.
[47] Robert Tollast, 'Drones: Decoupling Supply Chains from China' (RUSI, 18 November 2025), https://static.rusi.org/rp-drone-supply-chains-china-nov-2025_0.pdf.
[48] Serving UK Army officer.
[49] Ukrainian defence industry insider.
[50] Senior Capability Procurement Official. Interview dated 18th February 2026.

conclusions follow: avoid the dependencies; recognise that a BRAVE1 equivalent will not suffice without market freedoms, because urgency, when it arrives, will not fix procurement by itself; and copy Ukraine's production architecture, not its assembly lines.

## The UK against the framework: the say-do gap

*"We [NATO] are super rich on prototypes, but super poor on capability"*[51]

*"Terrific intent in the SDR that really fired people up, but implementation is proceeding at such a slow pace that it is failing to keep up with the rapidly emerging risk."*[52]

Set the UK system against the eleven innovation-enabling factors and one pattern dominates: stated intent reliably present, institutional machinery to deliver reliably absent. The say-do gap was named independently and repeatedly by interviewees.

### What the UK says

The stated ambition is substantial. Offering detail to the SDR's 'wartime pace', the DIS announced the creation of UK Defence Innovation (UKDI) and the National Armaments Directorate (NAD), committed at least 10% of equipment procurement to novel technologies, and set the now surpassed ambition of growing the first UK defence unicorn.[53] The Defence Investment Plan allocates £298 billion over four years, including more than £5 billion for uncrewed systems.[54] On paper, the intent half of the ledger is full.

### What the UK does

The practice half tells a different story, with four areas consistently emerging from the data set:

**Systematic Prime privilege.** Direct MOD spend reaching small and medium enterprises fell from five to four per cent between 2022 and 2024.[55] The US Defence Innovation Unit will fund a concept demonstrator at around $50 million; the UK equivalent is closer to £50,000.[56] John Ridge, who ran innovation inside the MOD before moving to the NATO Innovation Fund (NIF), is unambiguous: "*The UK does not have a good track record of buying innovative products from startups. It really is as simple as that.*"[57] Too often, *"UK money is locked into programmes buying the force we once wanted, not the one we now need"*.[58] Industry's own data, gathered independently of this research, lands in the same place. Two months after the DIP landed, almost four in ten SMEs in a Barclays survey doubted that smaller firms could reach the opportunities created by the DIP. Def tech companies named procurement complexity as their top barrier to winning public contracts (30%) far more often than with private customers 18%):[59] the UK government remains a complex customer to navigate. The challenge, Barclays argues, is not generating defence innovation but "*converting that into adoption, scaled procurement, and investable growth.*"[60]

The mechanisms are specific and self-imposed. UK Defence procurement architecture unintendedly sabotages companies' ability to deliver at both speed and scale. One senior DE&S commercial official counted fourteen people who had to say yes before he could execute a

[51] Boswell.
[52] General (Retd.) Sir R. Barrons: interview dated 27th February 2026.
[53] Ministry of Defence, *Making Defence an Engine for Growth: Defence Industrial Strategy 2025* (London: Ministry of Defence, 2025).
[54] Ministry of Defence, 'The Defence Investment Plan', GOV.UK, 30 June 2026, https://www.gov.uk/government/publications/the-defence-investment-plan.
[55] "Defence & Economic Growth Taskforce Report". Oliver Wyman and CBI, June 2025, uk-defence-economic-growth-taskforce-report.pdf.
[56] UK data startup CEO: interview dated 7th April 2026.
[57] Ridge.
[58] Ibid.
[59] Barclays Bank, *Scaling UK Defence Tech*.
[60] Ibid.

delegation he already held, and observes that the legal freedoms are far broader than the system exercises: "*We have much more freedom than we think*"[61]

The decision chain is opaque: the same DE&S official counts "*about 47 different opinions over what the system needs to buy*".[62] By contrast, Ukraine's Unmanned Systems Force speaks to industry with one voice.[63]

First-time contract demands on industry are untenable for the majority of SMEs and start-ups: one drone company CEO describes a Catch 22 of being asked to deliver in six months, yet wait four months for the MOD contract, while managing a three-month manufacturing lead time – "*Your [MOD] process doesn't allow me to do it*."[64] Another CEO self-funded £2 million of initial costs with no contractual guarantee: the MOD opened the door; the SME had to pay to walk through it.[65] The incremental contracting model compounds the issue: "*make four, prove it; now make ten then we might order 100"*.[66] No startup can survive hand-to-mouth like that and respond when Defence suddenly needs 10000. The system creates the shortage it then complains about by preventing companies from ever building the industrial capacity such volume requires.[67]

Which companies can achieve classified access also exposes Prime privilege. Many of Defence's hardest problems sit behind a SECRET classification, and no firm can work on them without accredited facilities, cleared staff and secure IT. One UK data start-up CEO estimated the upfront cost of operating at SECRET at around £500,000 enabled by established access[68] – money a firm must spend before it can bid, let alone win. Classification barriers are not designed to exclude new entrants, but it excludes them anyway. That is what this paper means by architecture.

**Predictability, not just volume**. The predictability of contracts and cash flow, not simply their volume, determines industrial behaviour. Retired General Carl Boswell highlighted how the UK's artillery ammunition demand is switched on, throttled back and rejigged, rather than sustained. Firms laid off in the trough lose skilled staff to other sectors, and when demand resumes the UK is rebuilding a workforce rather than restarting production[69]. A cross-party Commons committee reached the same judgement in September 2026, concluding that 'stop-start procurement' weakens sovereign capability and workforce retention. Babcock, the report found, recruited 300 welders from the Philippines because it could not find them at home.[70] An intermittent demand signal produces an intermittent industrial base. It bears repeating: *"You experience the defence industry you deserve*".[71]

Germany shows what the alternative looks like inside the same alliance, operating under similar fiscal constraints, and the same peacetime political conditions. Its national strategy designates AI, communications, sensors and electronic warfare as key national competencies to be maintained domestically; it has clarified that sustainable investment funds may back defence companies; and it proposes planning certainty through advance orders and capacity-retention premiums.[72] The Bundeswehr now operates as a 'lighthouse customer' for German defence-tech firms, with Helsing and Stark each winning large initial loitering-munition contracts worth over £250 million with options for more.[73] Establishing Europe's first defence and dual-use unicorns as German was not a coincidence; they were policy-enabled outcomes.

**The money architecture.** UK fiscal policy plays its own inhibiting role. General (Retd.) Sir Richard Barrons, co-author of the SDR, argues that existing Treasury and statistical-accounting rules constrain the potential of private investment as a multiplier. Where government is the

[61] Senior DE&S commercial official.
[62] Ibid.
[63] Ibid.
[64] UK drone startup CEO: interview, dated 12th March 2026.
[65] UK drone startup CEO: interview, dated 27th February 2026.
[66] Senior UK Manufacturing Officer.
[67] Ibid.
[68] UK data startup CEO.
[69] Boswell.
[70] House of Commons Scottish Affairs Committee, 'Securing Scotland's Future: Defence Skills and Jobs - Committees - UK Parliament', Parliament.Uk, House of Commons , 15 September 2026, https://committees.parliament.uk/work/9408/securing-scotlands-future-defence-skills-and-jobs/.
[71] Boswell.
[72] German Federal Ministry of Defence and Federal Ministry for Economic Affairs and Climate Action, "National Security and Defence Industry Strategy," 4 December 2024.
[73] Sebastian Sprenger, 'Once-Reluctant Germany Goes Big on One-Way Attack Drones', Defense News, 26 February 2026, https://www.defensenews.com/global/europe/2026/02/26/once-reluctant-germany-goes-big-on-one-way-attack-drones/.

principal customer – and retains sufficient control or ultimate exposure – privately financed defence structures may still be classified under public borrowing, even where investors carry substantial delivery risk.[74] The consequence is that private capital may provide different financing and risk allocation without creating the fiscal headroom policymakers expected. While such a position is designed to prevent governments masking public borrowing as private finance,[75] the defence sector's criticism is that the framework can struggle to distinguish between conventional borrowing and outcome-based investment structures, where substantial delivery risk sits with private investors rather than the taxpayer.

While not a direct comparison, Germany amended its constitution in March 2025 to exempt defence spending above 1% of GDP from its debt brake: not an abandonment of fiscal discipline, but a narrow, legally-defined, carve-out for one category judged strategically distinct.[76]

Any UK equivalent would require careful definition by the Treasury and ONS in order to determine whether tightly specified, outcome-based defence structures – in which control and material delivery risk genuinely remain with private investors – warrant different statistical or fiscal treatment under existing rules.[77] Regardless, the aim must be to unlock the power of private investment without compromising fiscal transparency, or adhering dogmatically to a one-size-fits-all policy designed for a different purpose.

Financial investment constraint can also be seen at the multilateral layer. Policy inhibits the traditional development banks, the EIB, EBRD and World Bank, from funding kinetic defence capability, while a lender with a AAA-rated guarantee structure would resolve the Basel capital-weighting problem[78] that constrains SME lending. The nascent Defence, Security and Resilience Bank (DSRB) and the UK-led Multilateral Defence Mechanism (MDM), represent constructs that seek to address both issues. By using member-government-backed capital and guarantees to unlock large-scale private financing, the DSRB hopes that over 850 Bn Euros per year could be generated in additional annual defence spending, while expanding production capacity across defence supply chains, particularly for SMEs in sectors such as drones, cyber and advanced manufacturing.[79] In contrast, the MDM intends to bolster joint European procurement and stockpiling, with an initial UK commitment of £400 million.[80] Geo-politics, at least as much as financial sense, will determine which camp the UK settles in, but the very emergence of these institutions reinforces the issue: Defence spending must rise; medium-power government's acting alone cannot mobilise capital and demand at the requisite scale. Choice is required.

**Fragmentation and the plan that proves the point**. The funding volume problem is compounded by institutional fragmentation. Resources are dispersed across overlapping organisations and initiatives, producing activity and visibility, but too rarely coherent capability outcomes. Cataldo, a former Army officer who co-founded a dual-use incubator proposal, counted more than fifteen innovation hubs across defence producing eighty-four separate UAV programmes[81] – a diagnosis of waste, not insufficiency, and the institutional expression of Boswell's prototypes-without-capability charge, with visibility substituting for effect. Founders describe violent agreement from senior customers on the requirement, and then a series of small

[74] Gen (Retd) Sir Richard Barrons: interviews, dated 27th February and 24th June 2026.
[75] The treatment reflects, in part, experience with PFI arrangements in which nominal risk transfer did not always remove the state's residual exposure, particularly where the need to maintain essential public services limited government's practical ability to allow failure.
[76] Noerr, 'German Bundestag Approves Exemption from the Debt Brake for Defence Spending and Special Funds for Investments in Infrastructure and Climate Protection', Noerr.Com, 21 March 2025, https://www.noerr.com/en/insights/bundestag-approves-exemption-from-the-debt-brake-for-defence-spending-and-special-funds-for-investments-in-infrastructure-and-climate-protection.
[77] Barrons.
[78] Under Basel banking regulations, loans to defence firms, particularly SMEs, are often viewed as higher risk, requiring banks to hold more regulatory capital against them. This increases the cost of lending and can restrict the flow of private finance, even where underlying demand is strong. A highly rated guarantee can reduce the risk weighting, lowering capital requirements and supporting greater lending.
[79] Mark Carney and Luc Frieden, 'Credible Deterrence Requires a New Nato Bank', Financial Times, 24 June 2026, https://www.ft.com/content/cef7b1a9-1ccc-40bd-9e87-cca118a528a3.
[80] George Parker, et al. 'Britain will not join Canada-led defence bank', Financial Times, 25 October 2026, https://www.ft.com/content/1f7924c1-ab63-465d-94b8-e97861e2348e?syn-25a6b1a6=1#comments-anchor.
[81] Mick Cataldo (co-founder, Churchill House): interview, dated 4th May 2026.

fiefdoms in which no one is singularly empowered to say yes[82] – the very echo of an earlier DE&S finding.

The DIP illustrates how deep the issues run, precisely because it is a serious document. It accepts this research's diagnosis almost verbatim, observing that the war in Ukraine has proven military strength as inseparable from industrial agility and the flow of public and private capital. The DIP makes genuinely important commitments: six new energetics factories by 2030 and an always-on munitions pipeline.[83] Yet examine the architecture. The Uncrewed Systems Centre in Swindon – the body charged with cohering the UK's entire uncrewed ecosystem, setting universal standards and unblocking the safety and liability bottleneck – receives £310 million over four years.[84] The issue is not whether the settlement is sufficient, but whether an institution carrying such system-wide responsibilities can realistically overcome a decade of fragmentation through a funding inject alone. Importantly, the DIP leans its scaling model on private capital[85] while remaining silent on the fiscal rules that penalise it. A plan that accepts the diagnosis and declines the structural prescriptions is not a refutation of the argument; it is the strongest available evidence for it.

### OCTOPUS: the system in miniature

Project OCTOPUS compresses the wider argument into one case. Its significance was never that it would deliver the world's best interceptor drone; rather, it was conceived as a pilot for a repeatable process: the transfer of battlefield-proven Ukrainian government-owned technology into UK industrial manufacture and, ultimately, UK military service. It is a genuine journey of firsts: the first international co-development of Ukrainian MoD-owned intellectual property, the first associated export-control mechanism, and the first gov-gov licensing framework.[86] In that sense, its most important output may not be the drone at all, but the institutional pathway it establishes.

Yet Project OCTOPUS is also a warning. Thirty critical components were initially sole-sourced from China and Ukraine; early production consumed fifty labour-hours per unit against a fifteen-hour target,[87] and bureaucracy consumed much of the UK first-mover advantage: "*revolutionary in June 2025. Now it's average and behind… but it won't be allowed to fail.*"[88] Political significance sustains a programme that would otherwise have perished. A pathway will be established; it is unlikely anyone will be able to follow it. Project OCTOPUS risks being the exception mistaken for replicable reform.

## Nine recommendations to the institution

"*Ukraine is the graveyard of NATO hubris*"[89]

"*Whoever integrates uncrewed systems into the way we fight like the Ukrainians will be best prepared for the next conflict*"[90] Al Carns MP, Minister for the Armed Forces, MOD

The recommendations that follow are split into four clusters. Taken together they describe a system, not a menu: signal what you want correctly, buy it differently, build the conditions for it, and know what you are building toward. Each rests on the same foundational finding: the barriers are self-imposed; the legal freedoms are broader than believed; the constraint is institutional architecture; and the architecture is a policy choice. Ukraine is the graveyard of NATO hubris not because its innovation was uniquely exceptional, but because it exposed what is structurally possible when policy permits it.

[82] UK digital skills and communications expert: interview, dated 23rd Jun 2026.
[83] Ministry of Defence, "The Defence Investment Plan," GOV.UK, June 30, 2026, https://www.gov.uk/government/publications/the-defence-investment-plan.
[84] Ibid.
[85] Ibid.
[86] Senior DE&S commercial official.
[87] Ibid.
[88] Serving UK Army officer.
[89] UK defence technology company programme manager. Interview, dated 05th March 2026.
[90] Chatham House, "Al Carns – Acting on the SDR: Britain's Defence in 2026," YouTube (Chatham House, February 25, 2026).

**Cluster 1: The Demand Signal**.

That from which everything stems. What the centre signals to industry, how the marketplace is engineered, and how procurement is structured. These three recommendations share the underlying mechanism of centre-to-industry signalling.

**1. Show the Money**. Contracts, not policy statements, drive industrial behaviour. The UK will struggle to build genuine capability if it does not write large enough cheques: John Ridge of the NIF identifies this as the single most addressable structural failure.[91] The corrective is re-centralising a ringfenced, deliberately uncommitted budget under the NAD – deployed to back defence unicorns offering foundational sovereign capability. The compounding issue for re-centralising is Treasury fiscal rules that treat private co-investment as public borrowing[92] – a structural barrier the NAD must.

In parallel, the UK should join the DSRB. The bank is expressly designed to solve the market failures this research identified – constrained access to capital, under-financed defence SMEs and insufficient scale in critical supply chains. Membership would not replace domestic reform, but it would provide a mechanism through which public guarantees could unlock disproportionately larger volumes of private investment, without waiting for wholesale reform of domestic fiscal rules. Where geopolitics and the desire for a UK-led defence finance initiative preclude DSRB membership, the MDM must be expanded accordingly. That would require substantially greater capital and financial instruments capable of mobilising private investment, not joint procurement funding alone. Its governance must also preserve sufficient national discretion to prevent collective decision-making from becoming a new constraint on the speed and sovereignty it is intended to support. The DSRB is designed to 'show the money'; any credible alternative must demonstrate how it will do the same.

Re-centralisation at the top does not conflict with formation-level delegation (Recommendation 5): the two are structurally complementary. Centralisation buys what only the centre can buy – exquisite capability, strategic mass and supply chain resilience; delegation buys what only the edge can buy – tactical relevance and adaptation speed. One interviewee with a clear-eye of the scaled manufacturing issue recommends a 'paying-capacity-forward' model: rather than waiting for a crisis to commission manufacturing capacity, ringfence the funding, contract the expertise and prime the supply chain – held in readiness like a fire service, paid for before the emergency that will need it.[93] Success is not having to deploy it. If you do, success is that nobody had to ask whether it would be there.

**2. Engineer the Marketplace**. The demand signal and the marketplace that carries it must be engineered together. BRAVE1 is the instructive case: it bypassed Ukrainian MOD dysfunction rather than fixing it, showing that bypass can be sufficient where reform is slow or politically unavailable. The counter-cautionary note also comes from Ukraine: even under existential conditions, demand signal clarity is not automatic – Ukrainian private companies held spare industrial capacity they could not deploy because the government gated the signal to domestic customers only. [94] The lesson for the UK is that a credible demand signal requires deliberate architecture; it does not emerge from urgency alone.

In practical terms this means the NAD brokering coalitions – running competitive consortium-formation processes rather than expecting industry to self-organise.[95] The NAD alone can see every corner of the demand signal, meaning no other actor can do it. Removing startup barriers to sector entry – commercial and practical – completes the task.

[91] Ridge.
[92] Barrons.
[93] Senior UK Manufacturing Officer.
[94] Ukrainian defence industry insider. Interview, dated 02nd April 2026.
[95] senior uk manufacturing officer.

### A note on Intellectual Property: OBI (Overtaken By Iteration)?

Defence treats intellectual property as sacrosanct; the consumable layer challenges that logic. Sort systems into three tiers by how fast iteration destroys their design value. Exquisite systems, such as submarines, jets and complex weapons, hold design value for decades: protect that IP absolutely. Attritable systems hold it for years: protect it selectively. Consumable systems, such as FPV drones, one-way effectors and interceptors, face an electromagnetic environment that evolves faster than any protection regime can extract value from a design. Their designs age in months; iteration overtakes them. OCTOPUS proves the point: "*revolutionary in June 2025*", yet arguably "*average and behind*" within a year. [96]. In this tier, hoarding IP protects a wasting asset at the price of scale.

Yet IP value does not disappear; it migrates from the design to the speed of adaptation. As stated already, Ukraine's edge lies in 'integration intelligence' – the know-how to adapt, assemble and field at pace – rather than in owning any single design. Open-architecture drones make that shift visible: cheap, bare boards, fitted for but not with the latest software and hardware, so any component can swap in as the threat changes.

Together, open architecture and IP policy reset the rules of the game in favour of pace, scale and component compatibility. Mandate common interfaces; buy the service, not just the thing; and encourage the sharing of consumable-layer designs deliberately across Allies and industry, so production multiplies faster than the adversary can iterate against it. None of this is radical: since 2019, US law has required major defence programmes to adopt a Modular Open System Approach (MOSA) wherever practicable.[97] Nor does it ask firms to work for free. Pay companies for the next design, not rent on the last one.

The test for any acquisition is simple: if iteration will overtake the system before the contract completes, its IP should be released, not guarded.

**3. Set New Game Rules: Buy Volume at Speed, Buy it Open, and Pay at Commitment**. The demand signal does not just direct industry; it shapes the industrial base that responds to it. Privileging mass, pace, and cost-per-kill over exquisite specification of the ask forces a broader base – one built for replication and simplicity, with surge capacity. But the decisive reform is how the UK pays. The incremental contracting model discussed above is the structural cause of the 'valley of death', not its symptom.[98] Redefining contractual 'delivery' as the placing of an irrevocable order for components – not the physical arrival of a finished platform – could be seen to shift stock and supply chain risk to the MOD. However, tempered by open-book costing, auditable payment milestones, stock ownership and reuse rights where procured by government funds, it would allow businesses to be paid at commitment and pre-positions industrial capacity before it is urgently required.[99]

Insisting on open-architecture products and incentivising iteration over IP fixation complete the picture: an MOD that pays on arrival rather than commitment, buys vendor-locked bespoke products, and rewards the protection of legacy IP over iteration pace will always be too late and too thin.

**Cluster 2: The Commercial Model**.

What the UK buys and who has the authority to buy it. These two recommendations address the procurement relationship itself – they are about *how* to buy, not what.

**4. Buy Fewer Commodities; Buy More Solutions**. Capability-as-a-Service (CaaS) models – outcome-based contracts paying for performance rather than upfront assets as seen in Ukraine – structurally embed user-producer proximity by converting procurement from a transaction into a sustained relationship with adaptation and iteration built in from the start. A senior MOD capability procurement official identifies the conceptual direction: "*maybe we're procuring a*

[96] Serving UK Army officer.
[97] 'Defense Standardization Program: Modular Open Systems Approach', Www.Dsp.Dla.Mil, US Department of Defense, 2019, https://www.dsp.dla.mil/Programs/MOSA/.
[98] Senior UK Manufacturing Officer.
[99] Ibid.

*capability now, not a piece of hardware or even a piece of software*"[100]. The operational evidence is a UK-registered defence technology company's delivery model in Ukraine – not platforms, but a service encompassing configuration, training, maintenance, and twenty-four-hour real-time support to Ukrainian end-users, with airframes leaving the production line in different configurations from those entering it.[101]

CaaS is perhaps the ultimate embodiment of Horowitz and Pindyck's 'innovation as a process'[102]. It converts the proximity that Ukraine institutionalised by necessity into a procurement philosophy of constant iteration. The MOD stops buying a product and starts buying solutions.

**5. Delegate Dollars and Decisions**. Having engineered a better marketplace, the system must let commanders use it. A proportion of budget should be delegated to formation level (e.g. Division, Air Group, Carrier Strike Group) with authority and the means to purchase consumable UAS directly from industry, as required for operations and training. Such delegations would require commercial officers embedded at formation level as a wieldable command tool. The model is BRAVE1-inspired, with the US UAS-cleared Blue List as the blueprint. [103] Run by the US Defence Innovation Unit, the Blue List is a live bank of government pre-approved commercial UAS, ready for purchase by authorised commanders with delegated authority. It structurally enables commanders to bypass central procurement processes. Like BRAVE1, the blue-list logic does not wait for procurement reform – it routes around it.

**Cluster 3: The Innovation Environment.**

The regional, educational and regulatory conditions within which innovation either happens or does not. These two recommendations address the enabling conditions for innovation rather than the acts of procurement.

**6. The Power of Ecosystems**. Hereford's New Model Institute for Technical Engineering (NMITE)[104] and the user community there embody what Regional Innovation System literature finds: proactively-leveraged proximity between industry, armed forces, and academia generates informal hubs that dispersed actors cannot replicate[105]. While one working node is not a validated national thesis, it is proof of concept reportedly costing approximately 25% of traditional higher education establishment costs, with between 50 and 100 other UK cities meeting the criteria for replication.[106]

Other private entities have identified the power of physically 'clustering' ecosystems – one seeking to capitalise on Defence's estate-rich situation by affording SMEs access to local, classified collaboration space for engagement with Defence users and academia;[107] another offering pooled drone testing facilities.[108] Both of these initiatives offer facilities traditionally available only to Primes. While nascent, the very existence of concepts such as Churchill House and Catapult are indicative of the sector building the infrastructure Defence will need, yet has not yet ordered – it is a gamble that the 'say' turns into some 'do'.

Generating proximity however, is easy; leveraging it is what avoids more empty catapult hubs. The Ukraine lesson was low-cost, high-engagement structures that build whole-of-society orientation toward national security[109] and cohere teams around *problems*, not *solutions*. Under the 100-Year Partnership banner, NMITE and establishments such as the Kyiv Aviation Institute represent a ready-made bilateral opportunity – a direct channel to the world's most operationally

[100] Senior Capability Procurement Official.
[101] UK defence technology company programme manager.
[102] Horowitz, 'What Is Military Innovation and Why It Matters'.
[103] https://bluelist.appsplatformportals.us/ as cited by a senior British Army officer: Interview, dated 24th February 2026.
[104] A UK higher education engineering and technical college established in 2021. Notably it partners with the UK MOD and Defence Sector in delivering courses focused on defence autonomous systems technology (e.g. MEng in Drone Technology (Autonomous Robotics and MSc in Radio Frequency Engineering).
[105] Asheim et al. 'Regional Innov ation Systems'.
[106] Jesse Norman MP. Interview, dated 03rd March 2026.
[107] Mick Cataldo (co-founder, Churchill House).
[108] Marketing, 'New National Drone Testing Centre to Help Unlock Britain's £45bn Drone Economy', Satellite Applications Catapult, 29 September 2026, https://sa.catapult.org.uk/news/new-national-drone-testing-centre-to-help-unlock-britains-45bn-drone-economy/.
[109] Ukrainian defence industry insider.

tested defence-technology educational environment that the UK could propose – while initiatives such as Churchill House and Catapult offers ways of establishing the type of regional infrastructure necessary to enable SMEs to cohere around.

**7. Reform the Regulatory Environment**. The UK's regulatory environment does not just slow defence innovation; in two specific ways it stops successful models from scaling. The first is the liability architecture. A senior DE&S commercial official describes a seven-year qualification programme for a complex weapon, run after the supplier has already certified it safe – arguably independent double-checking rather than genuine risk reduction.[110] The same is true of systems already in use with Allies – the MOD insists on its own safety test.[111] A model in which manufacturers certify and carry legal liability, and the MOD stops re-checking their certification, would compress those duplicative cycles. The UK already applies a version of this logic to equipment it sends to Ukraine, which it treats as 'sold as seen'.[112]

The second constraint is subtler, because the rule itself is sound. Before soldiers can field a novel lethal system, specialists must certify it safe and lawful, through the Defence Ordnance Safety Regulator and an Article 36 legal weapons review. The problem lies in how the UK meets that requirement for new technology. A UK military drone programme officer explains that his team built its own safety cases outside the normal equipment safety process. They do not comply with that process, but bespoke waivers allow the team to demonstrate safety regardless. Securing such waivers depends on his direct access to the regulator and Defence lawyers – a scarce resource.[113] The route works for one small, high-priority programme. It cannot work for twenty, because each would consume the same finite specialists. The workaround that let innovation happen therefore caps how far it can spread.

None of this argues for lighter safety. As one UKDI official observed, no minister can explain to a bereaved mother why the MOD removed a safeguard.[114] The reform is to scale the safe route, not abandon it: more regulatory capacity, standing safety cases and permissions for whole categories of system, and recognition of Allied clearances. Any scaling ambition that ignores this constraint will likely fail.

**Cluster 4: The Sovereign Foundation**.

The strategic destination the first seven recommendations exist to serve. Selectivity is required – the objective is not sovereign *self-sufficiency*, but sovereign *indispensability*. Just as Taiwan's strategic position derives from advanced semiconductor fabrication rather than complete control of the computing stack, the UK's opportunity lies in owning the critical subsystems and foundational digital architecture on which modern defence capability depends. Whatever is deemed 'indispensable', it is clear that sovereign solutions take time. Now is the time to choose which ones matter, and build them.

### The sovereignty Warning

In June 2026 the United States government, citing national security authorities, ordered the suspension of all foreign-national access to Anthropic's Fable 5 and Mythos 5 models – arguably the most capable commercially released AI model in the world – three days after its launch. The directive applied to every non-US person on the planet, allies included; access was restored a few weeks later.[115] It was not the first switch Washington has thrown. On 3 March 2025, the United States paused all intelligence sharing with Ukraine for 8 days,[116] while at various times in the Ukraine war, Elon Musk has reportedly refused to allow Ukraine to use Starlink for offensive strikes into Russia, by blocking Starlink terminal use.[117]

[110] Senior DE&S commercial official.
[111] Barrons.
[112] Senior DE&S commercial official.
[113] UK Military UAS programme Officer.
[114] Senior UK government procurement officer.
[115] George Hammond and Joe Miller, 'White House Lifts Ban on Anthropic Models', FinancialTimes, Financial Times, July 2026, https://www.ft.com/content/137ddb71-852f-438c-ad76-25e2dc43486b.
[116] Ana Faguy, 'US Pauses Intelligence Sharing with Ukraine', *BBC News*, 5 March 2025, https://www.bbc.co.uk/news/articles/cwygxvvrd8do.
[117] Joey Roulette et al., 'Musk Ordered Shutdown of Starlink Satellite Service as Ukraine Retook Territory from Russia', *Reuters*, 25 July 2025, https://www.reuters.com/investigations/musk-ordered-shutdown-starlink-satellite-service-ukraine-retook-territory-russia-2025-07-25/.

The precedent must be clear: access to allied capability can be revoked overnight, without warning or appeal. Britain cannot own everything, but it must choose which switches it will hold. This research concludes that a foundational data network is not a procurement item to be competed or outsourced.

**8. Pursue Subsystem Sovereignty as UK Industrial Strategy**. The sovereign control of critical subsystems – energetics, seekers, and rocket motors – every nation needs to build any credible weapons programme. The argument for this built sequentially across the dataset. A UK defence investor identified the manufacturing hollowing that post-Cold War peace dividends caused;[118] the challenges of replicating a Ukrainian wartime model shaped by very different circumstances;[119] a defence technology company programme manager identifies the right lesson as production architecture: distributed, scalable, COTS-based manufacturing processes that can surge and relocate on demand.[120] A senior procurement official then delivers the final step: the correct UK industrial strategy target is not replicating Ukrainian production architecture, but owning the subsystems that underpin sovereign weapons production – thus strengthening the resilience of allied supply chains.[121] Where OCTOPUS depended on China and Ukraine as sole sources for over thirty critical components, a UK that owns those subsystems seeks to control such vulnerability at source.

**9. The UK's Own DELTA Network: Foundational Digital Architecture Enshrined in Policy**. "*I don't think people understand how truly fundamental the network is to warfighting*", Boswell observes.[122] Ukraine's DELTA supplies both the logic and proof of concept; where is the UK's own version? DELTA works as the military equivalent of iOS and Android: a common platform every application builds to – the backbone of open architecture. Notably, Ukraine chose in 2023 to host DELTA's cloud components outside its borders, to protect them from missile and cyber-attack.[123] Sovereignty therefore means control of the architecture, not the location of every server. Britain has already committed the money: the SDR pledged more than £1 billion to a Digital Targeting Web by 2027;[124] the deeper lesson is the network it must run on. This recommendation asks for a policy decision, not a new programme: designate the Web's data and network layer as sovereign foundational architecture, owned and controlled by the UK, built to open standards any vendor can plug into, and never procured as a vendor-locked product.

## Conclusion: From Innovation to Capability

"*Innovation is necessary, but is not sufficient*"[125]

Ukraine's advantage does not lie in any single technology, nor in iteration speed alone. It lies in shortening the cycle between battlefield problem, technical response, operational absorption and production at scale. Its system connects users, producers, capital and purchasing authority closely enough that learning becomes material effect before the enemy can respond. Technology is the visible output; the underlying capability is the architecture that repeatedly produces, adapts and replaces it.

Britain possesses many of the component strengths required to do the same: deep capital markets, world-class research, operational experience, advanced technology firms and a defence budget now rising substantially. What it lacks is the institutional machinery connecting those strengths reliably and at speed.

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[118] UK defence investor. Interview, dated 10th February 2026.
[119] Senior Capability Procurement Official.
[120] UK defence technology company programme manager.
[121] Senior DE&S commercial official.
[122] Boswell.
[123] Kateryna Bondar, 'Does Ukraine Already Have Functional CJADC2 Technology?', Csis.Org, 2024, https://www.csis.org/analysis/does-ukraine-already-have-functional-cjadc2-technology.
[124] Ministry of Defence, 'UK to Deliver Pioneering Battlefield System and Bolster Cyber Warfare Capabilities under Strategic Defence Review', GOV.UK, 29 May 2025, https://www.gov.uk/government/news/uk-to-deliver-pioneering-battlefield-system-and-bolster-cyber-warfare-capabilities-under-strategic-defence-review.
[125] Brig J Hadfield, Commander 20th (UK) Armoured Brigade. Interview, dated 19th October 2026.

The architecture of inaction is not free. Britain already pays for it through, lost industrial capacity, higher unit costs, foreign dependency and diminished mobilisation time. Reform would not eliminate cost; it would make the cost of preparedness explicit and deliberate. Such preparedness does not require maintaining wartime production in peacetime. It requires understanding that industrial readiness is not the sum of current output, but rather assured expansion capacity measured against the time available. Nor does it require new strategy documents. The 'say' half of the ledger is full; the test of seriousness is now entirely in what the UK does.

Reform therefore begins with demand. The indispensable first move is to empower the National Armaments Director with a ring-fenced, deliberately uncommitted budget and the authority to translate strategic priorities into credible multiyear contracts. Demand is the organising variable: without it, private capital will remain cautious, manufacturing capacity will remain intermittent, SMEs will remain trapped between demonstration and scale, and delegated purchasing will distribute scarcity rather than adaptation. The centre must buy what only the centre can: exquisite capability, strategic mass, retained capacity and resilient supply chains. Formations must then be empowered to buy what only the edge can identify: immediate operational relevance and adaptation.

Much can begin within twelve months. The NAD can identify the capability areas in which demand is presently fragmented, consolidate requirements and place initial capacity-retention or advance-order contracts. Defence can establish a pre-approved catalogue for consumable systems, delegate controlled purchasing budgets to selected formations, and embed commercially-empowered officers alongside commanders. New contracts can require open interfaces, proportionate intellectual-property rights and staged payment against verified commitments rather than physical arrival alone. Regulators can begin developing standing safety cases for categories of system and identify Allied certifications suitable for mutual recognition. Ministers can also decide whether the UK will join the DSRB or equip the MDM with the capital, guarantees and financial instruments required to perform a comparable function.

In parallel, the NAD should begin actively engineering the marketplace: brokering coalitions of companies around priority capability problems and combining British manufacturing capacity with Ukrainian operational knowledge and technology. The UK-Ukraine 100-Year Partnership provides an immediate vehicle through which to give this approach institutional weight. Government should also draw up plans for regional defence-technology clusters, testing the replicability of the NMITE model and identifying where initiatives such as Churchill House could also enable cluster development. The Partnership should further connect UK academic institutions, including NMITE, with Ukrainian counterparts such as the Kyiv Aviation Institute. Within twelve months, these relationships should be exchanging operational experience and research practice, and developing collaborative technology programmes focused on Ukrainian battlefield needs.

Other reforms require agreement beyond Defence. Differentiated treatment of outcome-based private-finance structures will require careful work between the Treasury and ONS, not an accounting shortcut. Changes to liability, certification or intellectual-property arrangements may require regulatory or legislative intervention where contractual reform is insufficient. Sovereign control of energetics, seekers, rocket motors and foundational digital architecture will demand sustained investment across spending periods. None should delay the actions already available under existing authority; equally, none will be delivered by the NAD acting alone. The NAD should own the industrial demand signal and cohere delivery, while ministers must secure the wider fiscal, legal and cross-government settlement.

By 2028, success should be visible in behaviour, not another strategy. A smaller number of clearly prioritised capability areas should be backed by multiyear demand; qualified firms should be able to move from successful demonstration to repeat production without restarting the acquisition process; selected commanders should routinely purchase approved consumable systems within delegated authorities; and safety, security and contracting pathways should be repeatable without exceptional senior sponsorship. Private investment should follow credible orders, while the first sovereign subsystem and foundational-network priorities should be contractually secured.

By 2030, the test is harder. Britain should be able to demonstrate assured expansion capacity in selected capabilities, measured not simply by current output but by the time required

to reach operationally relevant volume. Its industrial base should retain the workforce, tooling, component access and distributed production needed to surge. Regional defence-technology clusters should be operational where initiatives such as NMITE and Churchill House have proved scalable, bringing Defence users, industry, academia, classified collaboration facilities and shared testing infrastructure into sustained proximity. Institutional partnerships established under the 100-Year Partnership should be producing joint UK-Ukrainian research, technology and capability-development programmes. The Digital Targeting Web should operate on sovereign, open foundational architecture rather than a vendor-locked product. Critical subsystems should be available through resilient UK or assured allied supply chains. Most importantly, projects such as OCTOPUS should no longer require exceptional political protection to navigate the system: others should be able to follow the pathway it established.

The strategic contest is not simply between technologies, but between learning systems. The advantage belongs to the side that identifies battlefield problems, converts them into solutions, absorbs those solutions into military practice and reproduces them at scale before its opponent adapts. Britain does not chiefly lack invention. It lacks an architecture that turns invention into repeatable capability at operational pace.

The market is already rewarding other nations that have moved quicker. Germany, Poland and the Baltics all enjoy early-adopter advantage that the UK has conceded.

This research was always more about Britain's choices than Ukraine's achievements. Ukraine demonstrates that innovation is not merely an outcome to be admired, but a process that can be systematically enabled and scaled. The architecture of our own inaction was always a choice. It remains one still.