Activating Dormant Innovation: Unlocking Defence and Dual-Use IP to Drive UK Strategic Advantage and Economic Growth

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The D Group

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Foreword

The D Group is a membership organisation for the companies and institutions that make our national ambitions a reality. Through our exceptional networks and convening power, we bring together business, government and academia to meet the challenges of driving the UK's economic growth.

We are very pleased to launch this report; we have covered a number of its core themes in recent years, and the Strategic Defence Review has given the issue further impetus and a necessary sense of urgency.

Now more than ever, the UK has both the opportunity and the need to create a step change in our approach to surfacing and unlocking IP from our outstanding innovators and translating this IP into services that strengthen our National Security and drive economic growth.

Central to realising this ambition will be the collaborative approach taken cross business, academia and government, and we look forward to the opportunity to help create the necessary platforms to support this collaboration.

We are grateful to our members and stakeholders who have collaborated on this report and look forward to continued engagement in this critical area.

Finally, we are grateful to the team at Ploughshare for their sponsorship of the report – we hope this paper continues to drive meaningful discussions across the defence eco-system and beyond.

Robin MacKenzie
Managing Director, The D Group

Introduction

Over the past decade, the UK has invested more than £20 billion in defence R&D, generating a vast portfolio of intellectual property. This early-stage IP, spanning AI, autonomy, energy systems, health tech and advanced materials, holds transformative potential far beyond the battlefield and across many other sectors. However, outside of core programmes and other recognised exploitation pathways, much of it remains invisible, non-reusable and underexploited today.

Unlocking this IP is no longer optional: it is mission-critical to:

- Equip our Armed Forces with otherwise hidden next-generation capabilities
- Strengthen the UK's sovereign industrial base and reduce reliance on fragile global supply chains
- Drive economic growth through dual-use innovation and exports
- Deliver the Defence Dividend — turning national security investment into national prosperity.

There is a strategic need and opportunity to identify, unlock and scale this underutilised IP, aligning with the goals and recommendations outlined in the Strategic Defence Review to build upon a "whole-of-society" approach to national resilience.

This paper sets out to demonstrate both the challenges faced by members of the defence innovation eco-system and the opportunities that lie ahead. With a united approach, there is the chance to transform dormant IP into deployable capability, drive cross-sector innovation and realise both strategic and economic value for the UK.

Hetti Barkworth-Nanton CBE
Chief Executive, Ploughshare

Executive Summary

As the UK advances towards its 2.5% defence spending target amidst escalating global tensions, a significant opportunity remains underexploited: valuable intellectual property (IP) trapped within both government defence establishments and private sector supply chains. Strategically significant R&D with dual-use potential is becoming a stranded asset – neither fully deployed for defence advantage nor commercialised for broader economic benefit and wider sector application.

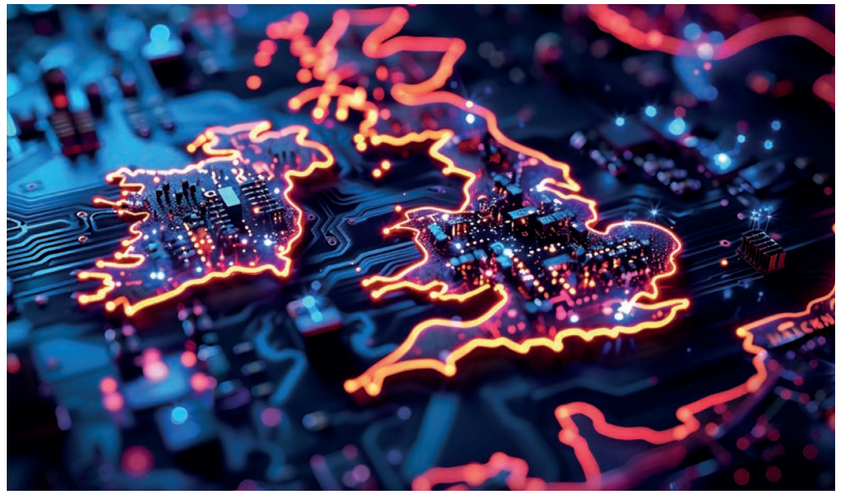
Despite significant investment, challenges persist outside of core programmes over how defence and adjacent IP should be navigated, deployed and commercialised – with limited structured support for understanding available funding, identifying needs and matching existing solutions. Known challenges include unclear implementation roles, fragmented delivery channels and lack of visibility around who does what. This innovation inertia risks slowing progress toward the Strategic Defence Review's core objectives of building sovereign capability and resilient supply chains, as well as preventing the UK from maximising its competitive edge in priority technologies like AI, autonomous systems and cyber resilience.

This paper proposes a set of strategic initiatives to identify, unlock and scale underutilised IP, as called for within the Strategic Defence Review.

Through targeted engagement with key stakeholders across government, industry and academia, this proposal seeks to explore how to resolve the challenges that currently prevent dormant innovation from being unlocked, to accelerate capability delivery, boost exports and support regional development and workforce growth.

KEY FINDINGS

- There is both a significant need and opportunity to unlock untapped IP potential, driving both economic growth and enhanced national security in tandem.
- There are a recognised set of systemic issues that impede successful early-stage innovation projects from reaching operational deployment, many of which are being tackled directly by the establishment of the NAD and UKDI. These include:
  - Effective client-side articulation of the needs rather than product requirement.
  - The complexity of navigating government bodies and civil service channels.
  - How R&D is commissioned in projects, often across multiple parties, meaning there is no clear owner, accountability, or follow-on funding to take it to market.
  - Access to the right funding at the right point of the innovation cycle.
  - The length and complexity of procurement cycles within the defence sector.
  - Building effective and trusted relationships between primes, integrators and SMEs/scale-ups.
- Innovation and IP currently developed often address isolated needs without being part of a coherent or systemic approach, with examples of excellence serving as exceptions rather than the norm. They are rarely integrated into wider national infrastructure or cross-sector initiatives, missing the opportunity to deliver scalable and repeatable outcomes.
- The recent announcements around the establishment of UKDI demonstrate a clear intent to address these systemic issues and creates a 'once in a generation' opportunity to drive a fundamental step change.
- This paper's key findings point to several priorities for action:
  a) **Reframe dual-use:** the term carries different meanings across stakeholders. To unlock its potential, clearer language and a taxonomy are needed to highlight genuine opportunities, enable cross-sector alignment and avoid the risk of dual-use becoming a limiting label.
  b) **Embed culture change:** wartime conditions have shown the pace at which innovation can be adopted. The question is how to sustain this urgency and translate it into peacetime processes.
  c) **Clarify markets and needs:** success depends on innovators demonstrating a deep understanding of customer requirements, regulatory contexts and barriers to entry. Without this, access to both funding and new markets often remains limited.
  d) **Think beyond projects:** too many initiatives stall once the initial funding or proof-of-concept ends. Embedding multi-sector goals into procurement and funding models from the start can extend innovation trajectories and unlock sustainable revenue streams.
  e) **Leverage relevant sector knowledge:** achieving valuable dual-use outcomes depends on sector-specific expertise. Adapting a dual use taxonomy could provide the lens through which opportunities are assessed, matched and scaled.



Through targeted engagement with key stakeholders across government, industry and academia, this proposal seeks to explore how to resolve the challenges that currently prevent dormant innovation from being unlocked, to accelerate capability delivery, boost exports and support regional development and workforce growth.

- To help drive this forward, a 'whole of eco-system' approach will be needed to develop collaborative mechanisms to surface, share and adapt IP across domains. Key players such as government, primes, SMEs, academia and regional combined authorities and clusters must operate with increased transparency and clearly articulate needs and requirements.
- The eco-system needs support beyond the role of individual stakeholders – translators and intermediaries are critical in bridging the gap between key players and facilitating greater collaboration.

NEXT STEPS

The UK government, private sector and academia have significant portfolios of defence innovation ripe to be developed across other sectors, but systemic barriers are holding it back from being effectively translated into scalable applications, commercialised at pace and integrated into wider markets. Driving this stagnation are challenges in procurement flexibility and infrastructural limitations, funding misalignment and confusion around the concept of 'dual-use'.

To unlock this potential, a whole-of-eco-system response is needed. This means strategically considering wider exploitation pathways across more sectors for early-stage IP, enabling this IP sharing through formalised systems and supporting trusted intermediaries to drive collaboration and de-risk partnerships. With the right leadership and new delivery models, the UK can turn dormant innovation into real-world capability, strengthening national security and driving economic growth. →

Recommendations

The D Group

Strong Leadership and Ownership	
Issues Fragmentation and silos of actors across defence innovation eco-system	**Actions required** Whole eco-system to collaborate and support the operationalisation of unifying bodies and initiatives such as UKDI
Stranded IP and dual-use uncertainty	Focus on identifying 'quick wins' that will support concept of dual use and stranded IP – leveraging Regional Innovation Teams, Regional Engagement Teams and third-party technology transfer and commercialisation partners
Lack of clarity and visibility around existing needs and requirements	Establish clear narrative – framing the opportunity/the need, specific and working examples of progress and plans to tackle change
Clear Investment and Funding Pathways	
Issues Funding fragmentation and uncertainty	**Actions required** Leverage formation of UKDI to create real clarity on sources of funding from government and associated agencies (Innovate UK, Make UK, Catapults)
Access to capital barriers and dual use perception risk	Build regular platforms that bring together Private Finance and eco-system to build market understanding
Greater Visibility and Transparency	
Issues Limited awareness on the existing 'needs' and 'solutions'	**Actions required** Through NAD, create catalogue of 'needs' and 'solutions' within defence as platform to explore opportunities
Dual-use confusion and commercial barriers	Adapt a new taxonomy to enable 'dual use' - both national security needs from wider markets and existing national security solutions 'out' to wider agencies and commercial markets
Lack of feedback and clarity on why certain projects have not progressed	Build systemic 'feedback loop' to ensure transparency relating to future of newly developed IP
Adaptable Procurement and Agile Processes	
Issues Rigid procurement policies in the defence sector	**Actions required** Through NAD, leverage experience of COVID/Ukraine together with assessment of wider market processes to standardise new procurement approach
Ownership confusion and commercial crossover barriers	Identify barriers and enablers to ensure IP can be fully exploited across multiple opportunity areas
Embracing Connectivity and Partnership	
Issues Siloed activities that result in stranded IP and risks duplication	**Actions required** Create a 'whole of eco-system' platform and network dedicated to unlocking potential and driving enhanced security and clear economic growth
Geographic concentration of innovation that can leave regional potential untapped SME disconnect	Build and deploy a regional engagement model to support the formation of the 'regional engagement teams' in one region that can be deployed/ replicated across multiple regions
'Whole of Eco-System' and Cross-Platform Intermediaries	
Issues Dormant and underutilised IP that could be deployed into wider sectors/markets	**Actions required** Through NAD, audit and identify gaps in capability relating to key priority/focus areas including: • Shift for mono to multiple uses within defence and national security • On-boarding commercial applications into national security • Capitalising on defence related IP into wider sectors/markets
Necessity of connective intermediaries to identify high potential IP and support the commercialisation journey to growth	Leverage existing intermediaries and organisations to accelerate key opportunities identified

Section 1

Unlocking IP in Defence: The Current Landscape

CONTEXT

Amid growing geopolitical change and rapid technological advancement, the United Kingdom's defence and dual-use innovation eco-system stands at a transformative moment. The latest Strategic Defence Review signals a commitment not only to strengthen military readiness, but also to cultivate a more agile, innovation-driven industrial base. This renewed focus presents significant opportunities for a wide range of actors, including primes, SMEs, academia, regional authorities, private investors and government bodies.

As highlighted in the National Security Strategy, "the UK defence industrial base will be redefined to include academia, dual-use civilian-military companies, financial services, technologists and trade unions."[1] The recent launch of the UK Defence Innovation (UKDI) body reinforces this vision, establishing a central hub to connect innovators with operational needs and support the development of dual-use technologies across sectors. With the UKDI poised to play a "pivotal role in implementing the SDR's recommendations by breaking down barriers between defence and commercial innovation, ensuring that game-changing technologies can be rapidly identified, developed, and deployed to the front line",[2] these efforts aim to further enhance the UK's early-stage innovation eco-system, providing increased guidance and capital for technologies that address both defence and civilian applications.

> For the past decade, funding gaps and lack of access to capital have exacerbated the problem. While early-stage proof-of-concept work may be supported, there is rarely a bridge to sustained investment for scaling or adaptation into other domains.

This landscape of increased investment and systemic support, combined with lessons learned from recent operational challenges, is designed to accelerate collaboration, rapid testing and deployment of high-impact solutions. By embedding a culture of dual-use thinking across programmes, the UK can harness the power of early-stage IP to deliver strategic advantage, strengthen national resilience and drive sustainable economic growth across multiple sectors. The next step is ensuring the right structures, partnerships and pathways are in place to turn this potential into reality.

KEY CHALLENGES AND OPPORTUNITIES

Stranded IP and Untapped Potential

The UK's defence innovation landscape is marked by an abundance of valuable intellectual property that often remains dormant or underutilised within government departments, defence primes, SMEs, academia and the wider supply chain.

This "stranded IP" issue stems from systemic barriers that prevent ideas from moving beyond their initial project contexts. A recurring problem is that innovations are often developed in response to specific contracts or programmes, but once the project ends, the associated IP is left without a pathway to further use or wider commercialisation. Stranded innovation potential represents a lost opportunity on two fronts: economic growth and national security. If unlocked, existing IP could be repurposed for multiple-use applications, delivering both commercial returns and strategic advantage. However, without clear ownership and the necessary mechanisms to bridge the gap between development and deployment, these innovations remain confined to silos, unable to

[1] https://www.gov.uk/government/publications/national-security-strategy-2025-security-for-the-british-people-in-a-dangerous-world/national-security-strategy-2025-security-for-the-british-people-in-a-dangerous-world-html

[2] https://www.gov.uk/government/news/launch-of-new-body-to-harness-innovative-tech-for-the-uks-armed-forces#:~:text=UKDI%20will%20be%20the%20focal,the%20dual%2Duse%20technology%20sector.:

realise their full value across the defence eco-system or to be adapted for wider application in other sectors such as health, transport or energy.

For the past decade, funding gaps and lack of access to capital have exacerbated the problem. While early-stage proof-of-concept work may be supported, there is rarely a bridge to sustained investment for scaling or adaptation into other domains. This lack of continuity can discourage SMEs from engaging with defence in the first place, as they cannot absorb the risk of stranded products.

One of our defence primes shed some light on this inherent problem for SMEs:
"If you're an SME ... given the financial base of the company and the relatively short horizon time they're looking for, if you're not going to make money on the IP, you've somehow got to commercialise it pretty quickly."

Across the defence sector, there also remains a clear issue with transparency – too much IP is stranded without clarity on the reason why. In many cases, feedback on why certain projects have not progressed is not shared, with limited understanding about whether work has been effective and impactful or not. One respondent commented on their experience that IP sometimes becomes stranded because the client has:
"...changed their mind on the programme – not that the need has gone away, but they've changed their mind on how they're going to do the programme."

One interviewee who leads innovation in a UK SME shared their experience of developing a training support application, commenting:
"We built something which was very impressive, and the customer loved it."

> If you're an SME ... given the financial base of the company and the relatively short horizon time they're looking for, if you're not going to make money on the IP, you've somehow got to commercialise it pretty quickly."

Despite strong interest from both military advisors and technical authorities, there was no follow-on funding or "phase two" after the initial phase ended.

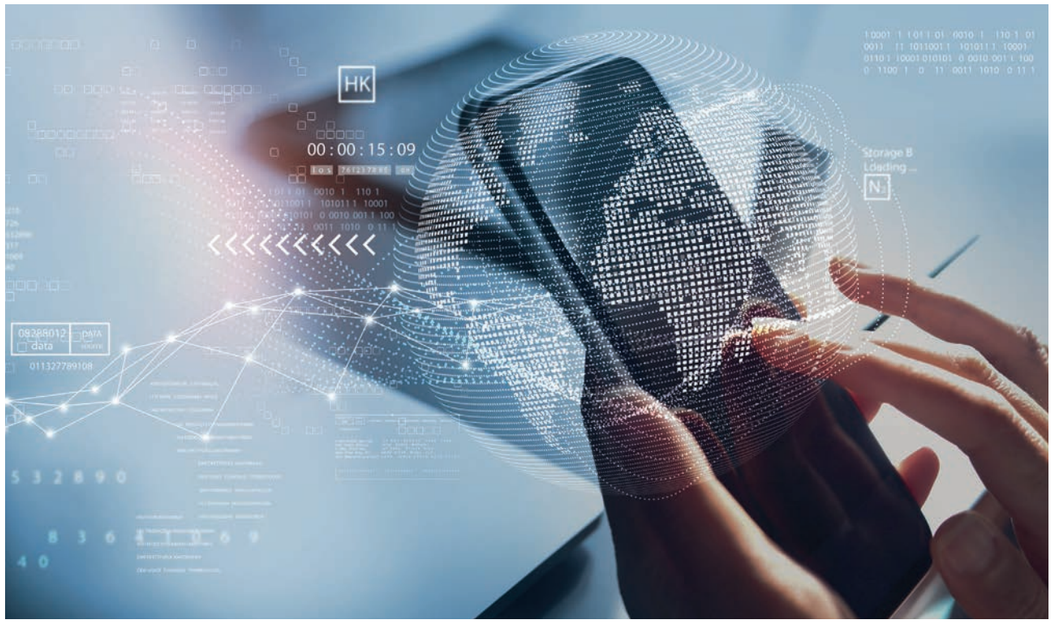
This experience reflects a common issue in the defence innovation pipeline: early-stage projects receive initial funding but stall due to factors such as budget cycles, procurement delays and lack of continuity, leaving promising capabilities unused. For innovators, limited feedback and a lack of transparency over why projects fail to progress can leave them in the dark on how to adapt or re-engage.

A Lack Of Visibility
A clear articulation of problems and customer needs is essential to unlocking stranded IP, particularly in newer and unexplored areas such as air and space domain integration. Without understanding the real problem statements, it is more difficult to develop effective solutions.

Increased visibility across the eco-system is critical to assess both needs and solutions and to match potential partners effectively. This could be achieved through effective cataloguing, which links problems that have been specified and solutions that have already been developed, while also highlighting emerging needs and newly identified challenges. Whilst there are existing solutions and summaries, making this kind of asset more broadly available would have the potential to enable direct connections between 'problem' owners and potential IP solutions from a wider community.

Key questions that such a system should address include:
- What are the customer needs?
- What solutions are already available?
- Where are the gaps?
- Which partners have relevant expertise?
- How can new or emerging technologies be applied to meet these needs?

One interviewee highlights the importance of alignment between company and customer R&D investments:
"We have our own IRAD (internal research and development) plans, which we try to align with customer needs. What would really help is if we could align our IRAD investments with the customer's R&D funds, so we get more collective value by combining pots of money. That can be quite hard to do, so any greater fidelity from both the customer and us to expose them to our IRAD goals – and align them – would make better use of resources … This really calls for a reset towards a partnership-based R&D model."



Notably, having better visibility of customer technologies and priorities through the establishment of the NAD role will make alignment far easier, ensuring R&D spend is focused on genuine needs.

Another prime tells us: *"If the approach is where, which is what we're advocating for, you treat every delivered asset platform not as a single thing, but as a combination of multiple things and you retain in the way that you procure it… what you have is a true system integrator whose job is not is not to deliver 500 of the things that were initially contracted, but to deliver the best overall solution through the life of the program."*

The establishment of UKDI suggests that this challenge is understood and could help ensure that all stakeholders, from primes to SMEs, can contribute their expertise and solutions, creating a more collaborative and effective pathway for deploying underutilised IP across a range of cross-sector platforms.

Procurement and Infrastructural Limitations
Procuring military equipment brings with it a "unique set of challenges".[3] With a limited supplier base driven by stringent national security requirements and the highly specialised nature of defence technologies, inescapable factors tend to constrain competition and value for money. Lengthy development cycles, evolving requirements and legacy contracts often result in cost escalations, delayed deliveries and unplanned expenses to maintain ageing equipment and avoid capability gaps.[4]

These procurement dynamics have particular implications for dual-use innovation. Within the defence eco-system, the rigidity of the process has historically presented a challenge for SMEs and scale-ups, who must navigate complex government entities to bring technologies to market. Defence procurement has been historically designed around bespoke solutions for narrowly defined problems, rather than exploring existing technologies that could be adapted or repurposed across multiple domains. This approach can limit the visibility and deployment of innovations with potential civilian or cross-sector applications, constraining the broader impact of the UK's defence IP base:

[3] https://researchbriefings.files.parliament.uk/documents/CBP-9566/CBP-9566.pdf
[4] https://researchbriefings.files.parliament.uk/documents/CBP-9566/CBP-9566.pdf

- When a technology is developed for one specific programme and cannot be adapted elsewhere, its commercial potential and cross-domain effectiveness becomes limited.
- Innovations with potential civilian or multiple-use case applications remain trapped in a niche military context.
- Scale-ups and SMEs see limited return potential if their solutions are locked into a single narrow contract with no route to wider adoption.

However, this is changing. The Ukraine experience has shown that commercial products can be militarised more quickly and cheaply. Organisations such as jHub, part of UKDI, have been working with civilian application providers too as part of spiral development.

The challenge of breaking out of a platform-specific approach to procurement was highlighted as a barrier by one of the primes we spoke to, who told us: *"Having a vertically-integrated prime, or vertically integrated sort of contract, does stifle the ability to use the IP across more contracts."*

An SME who participated reinforced this point in relation to the process of IP procurement. Because IP tends to be procured and funded around a specific need or application, the wider potential cross-government or dual use civil and military application is limited. However, this infers a change to the approach to funding and risk.

> If the approach is where, which is what we're advocating for, you treat every delivered asset platform not as a single thing, but as a combination of multiple things and you retain in the way that you procure it… what you have is a true system integrator whose job is not is not to deliver 500 of the things that were initially contracted, but to deliver the best overall solution through the life of the program."

"If we said, all right, give us £100 million for the intellectual property of this thing we've developed, they'd say, 'We haven't got the money in this budget for that, maybe next year.' But we could build it for them and then charge them for its use. The IP, however, would still belong to us – it's only £10 million because we'd hope to sell it to 10 other organisations.... it's a risk that us as the manufacturers of the intellectual property take."

These insights highlight the opportunity in developing more flexible and collaborative IP frameworks that fairly balance risk, reward and access across the eco-system.

From 'good in a crisis' to strong core processes

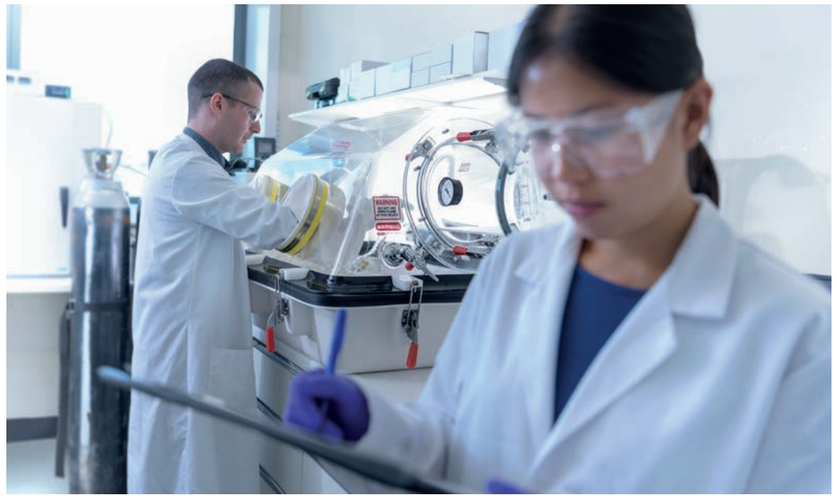
Several interview participants noted that while the procurement process is often slow and rigid, crises can act as powerful accelerators, enabling rapid procurement and deployment that would not occur under normal conditions. As Andrew Gartside from Maersk put it: *"Often a particular crisis, conflict or issue can very quickly drive that whole piece, and Covid is a really good example of that. More recently, the Ukraine conflict demonstrates the speed by which a crisis or conflict can cut through and enable rapid international Government/Industry collaboration across borders."*

This is reflected in the UK's steadfast commitment to provide military assistance to Ukraine, a pressing example of the Europe-first defence and security position outlined in the SDR.

In 2025 alone, the UK completed delivery of nearly 50,000 military drones to Ukraine in under six months, in addition to 20,000 drones provided in the same period via the UK-Latvia co-led drone coalition. The UK has committed £350 million this year to increase the supply of drones from 10,000 in 2024 to 100,000 in 2025.[5]

Andriy Dovbenko, Founder and CEO at UK-Ukraine TechExchange, notes: *"Ukrainian innovation was unleashed because of changes in the procurement process – the procurement process in technological weaponry, in military tech, has been very much simplified. The UK government has a very effective programme which works well and has been a great success in Ukraine. More than what can simply be learnt from Ukraine, you must buy from Ukraine so that you can harness its rigorously battle-proven defence tech innovation."*

[5] https://www.gov.uk/government/news/uk-ramps-up-ukraine-military-support-with-150-million-of-vital-air-defence-and-artillery-ammunition-delivered-in-just-two-months



As it stands, procurement rigidity is coupled with an absence of a formalised, cross-sector platform for cataloguing, matching and sharing IP between government, primes, SMEs and academia. A platform like this could offer greater visibility through a centralised mechanism, while also providing a clearer articulation of end-user problem statements and capability gaps. Without this transparency and accessibility, many viable solutions currently remain invisible to those who could benefit from them and promising technologies risk stalling before they reach deployment.

Funding Challenges

The funding journey, from grant to early-stage investment and beyond, is complex across many domains, and defence is no exception.

Access to capital has historically presented a substantial barrier for many SMEs in 2025, particularly in the years preceding the most recent SDR. Chris Arthurs, VP of Innovation at Hadean, claims: *"There's a patient capital question – the more of that that's available, the more experimentation you can do with the things that currently sit on the shelf and push them forward. Another common issue that shows up all the time is that TRL and innovation funding pots have a terrible habit of falling off the cliff at around TRL 6."*

Underpinning funding gaps is a consistent problem with narrative framing, with many innovators and end-users struggling to communicate needs and solutions effectively.

Andrew Gartside argues that it is not just the solution itself that matters, but how it is articulated. Securing capital can depend on how the technology or solution is presented to investors: *"Sometimes it is not always possible to understand what it does, what it solves, and the approach to market. As a result, the value proposition is lost, even though the solution itself might be exactly what the problem owner requires."*

However, in line with commitments made in the Strategic Defence Review, recent government pledges to increase investment aimed at strengthening the defence innovation eco-system and support dual-use technologies presents a promising future for utilising stranded IP across both military and commercial platforms.

The launch of bodies such as UKDI, backed by a ringfenced annual budget of at least £400 million, signals a renewed drive to coordinate funding and accelerate the translation of innovative ideas from SMEs, academia, and industry into deployable solutions that deliver both defence capability and broader commercial impact. By joining up concepting, R&D, and operational delivery, creating a clearer pathway from innovation to procurement, it seeks to reduce fragmentation and provide new opportunities for growth. This interest, in turn, generates a renewed flow of capital, fostering greater private sector engagement and accelerating the transition of ideas into deployable capability.

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Dual-Use Disconnect

Report participants observed that ambiguity around the concept of 'dual-use', a term that is being used extensively at present particularly by the UK government, can present a substantial barrier to multiple-use cases of underutilised IP. For some members of the defence eco-system, 'dual-use' represents a vital opportunity to leverage commercial innovation for defence and vice versa. However, for others it holds a more negative and restrictive image. This disconnect means that what could be an enabling force often becomes a limiting factor.

The origins of dual-use:

The term 'dual-use' first emerged in the aftermath of the Second World War, originally referring to a small group of nuclear materials that could be applied in both military (weapons) and civilian (energy) contexts.

Over time, its meaning has broadened significantly to encompass innovation as well as control and is now applied to a vast array of companies whose products and services could address both defence and civilian needs.

Dual-use items (including physical goods, software, and technology) are those which can be used for civil and military purposes.[6] *The UK maintains a list of dual-use goods and technology that it considers to be 'export controlled'.*

Our research found the practical application of the term to be inconsistent; definitions vary between departments, funding bodies and industry players, creating uncertainty over eligibility for grants and hesitation from investors. Several interviewees noted that the label can limit academic and organisational focus, where moral or reputational concerns can make researchers wary of engaging with anything perceived as military, and for start-ups, where investors may be deterred by perceived market limitations or fears that "dual-use" makes regulatory approval harder.

> "There's a patient capital question – the more of that that's available, the more experimentation you can do with the things that currently sit on the shelf and push them forward."
>
> **Chris Arthurs, VP of Innovation, Hadean**

Chris Arthurs commented: *"If you have a problem and a technology that happens to sit in another domain, then great – map it over there. But as an innovator, I would never start by saying, "That's an interesting problem – I wonder if I can find a dual-use solution to it." I would look at the problem and ask, "How could we solve this?" Then, once we have a solution, I might realise, "Oh, this could also solve a problem over there as well." The concept of dual-use feels like it sits too far down the problem-solution pipeline. You could set up a business specifically to find dual-use solutions, but I think it's more of a marketing or positioning statement than a guiding principle for innovation."*

Many domains (air, space, cyber) are by definition both civil and military. Treating them as purely military or purely civilian limits strategic thinking and risks missing crucial opportunities for integrated solutions.

Andriy Dovbenko argues that in fundraising and commercialisation, emphasising multiple applications can be beneficial. However, in procurement, clarity on military purpose is critical to maintain focus during times of heightened threat.

Ensuring that a technology is fit for any sector requires a deep understanding of that sector, including its customers, users, regulatory requirements, accreditations, terminology, barriers to entry, economics and competitive landscape. To innovate at pace and maintain strategic advantage, the UK needs to reduce these barriers for new companies and clearly demonstrate where cross-sector synergies exist.

Creating a shared taxonomy that clarifies use cases, security thresholds and commercial options, can widen the potential for opportunities to be exploited across multiple sectors. Starting with simple and consistent needs (like improving power consumption) provide the necessary impetus to wider collaboration and exploitation of solutions across multiple domains.

[6] https://www.importexport.admin.cam.ac.uk/controlled-items/dual-use-military-goods-technology-and-software

Reframing Dual-Use

Interview participants agreed there was real value in redefining the dual-use narrative. With definitions varying across departments, funding bodies and industry players, this lack of clarity can create bottlenecks, from uncertainty over eligibility for grants to hesitation from investors who are wary of technologies being perceived as "too defence" or "too commercial" to succeed in either market.

During our interviews, one respondent highlights the need for properly structured dual-use technology programmes with clear government incentives, noting that fifty years ago, most technology originated in defence and then transitioned into civilian applications. *"Today, particularly in digital and AI, the flow is reversed: innovations are civilian first, and the challenge is determining how they can be applied in defence. This shift means we must partner beyond traditional boundaries to find solutions, as the pace of innovation in companies like Amazon and Google is far faster than in the defence sphere.*

Looking ahead to the next spending review, we need genuine dual-use technology programmes backed by the right government incentives, with clear agreements on funding responsibilities. Otherwise, there is a risk that the Ministry of Defence simply redirects existing resources to meet its own priorities, rather than fostering truly shared development. This requires constructive partnerships that balance relative costs, benefits, and spillover opportunities. Take quantum positioning, navigation, and timing, or atomic clock technology, as an example: while it may still be years away from deployment at the necessary accuracy, its first viable use could be in a nuclear submarine, where remaining submerged for long periods is critical and every surfacing needs to be optimised. In such cases, defence would likely be the lead or first-of-a-kind user."

Narrative reframing is not only about policy language, but also about operational mindset. As one participant notes, *"By defining a domain, you are creating a seam – and once you create a seam, an enemy will always look to exploit it."*

Many domains, whether air, space or cyber, are by nature both civil and military, meaning they must be treated as dual-use to avoid artificially constraining thinking. Peer competitors already exploit both civil and military elements in these domains to create advantage; the UK must do the same in order to keep up.

> Creating a shared taxonomy that clarifies use cases, security thresholds and commercial options, can widen the potential for opportunities to be exploited across multiple sectors.

A clearer, codified definition could allow innovators to identify and pursue viable pathways for both defence and civilian applications without unnecessary administrative or reputational barriers. It would also help procurement teams and funders make faster, better-informed decisions about where technologies fit and how they can be supported to scale.

A wider broadening of the scope of what qualifies as "military" to explicitly include national resilience could also create a significant shift in how underutilised IP is perceived and deployed. This broader framing would recognise that many defence technologies, ranging from advanced communications to autonomous systems, are equally valuable in areas such as disaster response, critical infrastructure security, environmental monitoring and public safety. These innovations contribute to societal resilience as well as national security. By increasing the breadth of definition, there is an opportunity to feed into the eco-system a more diverse set of partnerships, making it easier to justify and sustain technology development that serves multiple strategic priorities.

Expanding Multiple-Use Cases

When it comes to deploying IP for potential civil or commercial applications, there are significant opportunities:

Space:

The growth of the global space economy, coupled with increasing threats to critical infrastructure, has made capabilities such as resilient satellite communications, quantum positioning, navigation and timing (PNT) and advanced earth observation highly valuable in civilian settings. In the maritime domain, for example, extreme weather events are becoming a major disruptor to trade and transport. →

Andrew Gartside said: *"The drought experienced in the Panama Canal is an example of how climate change can impact global trade. Equally, the space domain and satellite communications are extremely important to maintaining resilient supply chains. The increasing threat to these communications by our adversaries can result in the GPS jamming and spoofing of vessels in critical or congested shipping areas. Robust and high-grade cyber credentials are an essential component to continuing to enable supply chains."*

Our dependence on satellite-based systems carries not only operational vulnerabilities but also profound economic consequences: a recent London Economics report commissioned by Innovate UK and the UK Space Agency estimates that a nationwide GNSS (Global Navigation Satellite System) outage in the UK could cost approximately £1.42 billion in just 24 hours, and £7.64 billion over seven days.[7]

> Our dependence on satellite-based systems carries not only operational vulnerabilities but also profound economic consequences.

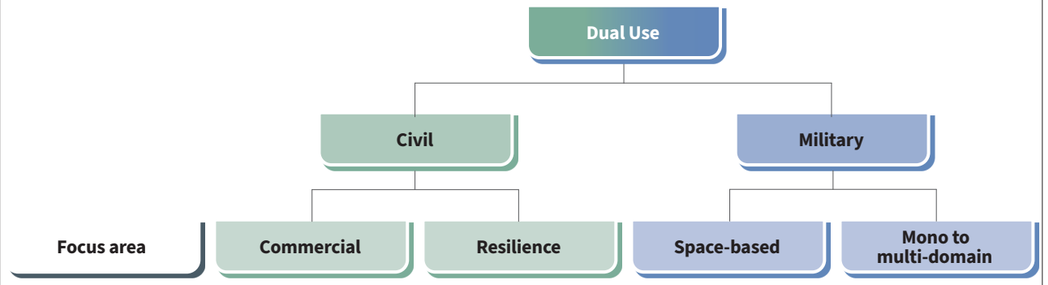
These vulnerabilities make a strong case for transferring proven defence capabilities into commercial hands, where they could enhance safety, resilience and operational continuity across multiple industries.

Space provides an interesting avenue for this. One participant spoke of the growing opportunities: *"There's a growing need from a commercial or market perspective for a range of different applications that people are talking about and seem to have potential. Space-based solar power is one that a lot of people have talked about a little bit further in the future. But in the short term it's things like debris removal or management of debris. In space, it's refuelling, which the US space force are driving, but other governments are looking at that in detail as well, and then there's sort of the wider bit servicing context of how we manage and make space more sustainable rather than a throw-away culture, which it has been to date, and manage the environment better."*

[7] https://www.gov.uk/government/publications/report-the-economic-impact-on-the-uk-of-a-disruption-to-gnss

New Dual-Use Taxonomy Classification System

The D Group



Demand	Specific need/solution	Specific need/solution	Specific need/solution	Specific need/solution
Protect: people and things	Drone defence for sports and other events	Drone defence for CNI (energy, water, transport, etc.)	Identification and information sharing	Battleground defences across air, land and sea
Secure: people and things	Surveillance and sensors for supply chains, warehouses and transport hubs	Cybersecurity solutions for national energy grids, water systems and healthcare networks	Space-based debris tracking and satellite servicing to secure communications, navigation, and surveillance systems	Multi-domain communication systems to secure personnel from potential threats
Monitor: threats and challenges	AI can monitor market threats, supply chain disruptions or corporate security risks	Early warning systems aimed to tackle natural disasters	Sensors can detect collisions, debris or any other unusual activity affecting both military and commercial operations	Threat detection (both physical risks and cyber-attacks)
Predict: future events	Data analytics can predict risk and opportunity across different markets	Home Office and MoJ: predictive policing	Earth observation satellites can detect environmental trends	Predictive modelling across all military domains
Information at Point of Need	Real-time insights from data dashboards	Live updates and early warning systems for natural disasters, terrorist attacks, etc.	Real-time environmental insights for natural disasters, conflict, etc.	Live communication networks for updates at all times
Data storage and security	Cloud storage to protect and secure confidential commercial data	MoJ - secure cyber systems to store confidential offender info	Secure storage and transfer of space-based data and communications	Safe storage of data while being accessible across domains
Training and upskilling	Energy sector	Nuclear	Space-based	Training across all military domains

Aerial:
Similar dual-use potential exists in areas such as uncrewed aerial systems, where advances in military-grade drones could be repurposed for civil applications, such as search-and-rescue, disaster response, agricultural monitoring and infrastructure inspection.

This potential could also be extended to national security:

- Legislation such as Martyn's Law sets the precedent for the use of technological protection measures as a response to terrorism and threats to national security.
- Multi-domain communication systems supported by drones and other aerial sensors could enhance the security of people and assets against potential threats
- Early warning systems and real-time environmental insights provide actionable intelligence for disaster response.

Cyber/AI:
There is limitless potential in expanding cyber technology designed for military use into other sectors, particularly for initiatives aimed at strengthening public safety and justice systems.

A participant referred to applications such as predictive policing, offender monitoring and digital evidence processing, where secure and resilient defence-grade solutions could transform efficiency and reliability in the criminal justice sector.
"Do we know the people? Do we know the market? No. But I could see us having an answer to the problem and then it would become dual use. It's no longer about defence of the of nation. This is about securing our judiciary."

The use cases are seemingly endless when it comes to cross-sector initiatives:

- AI and data analytics have the ability to monitor market threats, supply chain disruptions, corporate security risks and predict opportunities or risk across different markets.
- Cybersecurity solutions could protect critical energy grids, water systems, healthcare networks and confidential commercial or offender data.
- Sensors detect collisions, debris, or unusual activity affecting both military and commercial operations.

As technology advances at increasing pace every day, this is an opportunity that cannot afford to be wasted.

From platform to Multi-Domain Military Integration:
Pockets of single-source IP have the potential to be deployed across all military domains:

- Live communication networks and interactive data dashboards can deliver real-time updates to commanders and personnel, ensuring situational awareness and enabling rapid, coordinated responses across air, land and sea.
- Early warning systems can identify both physical threats and cyber-attacks across domains, allowing military operators to manage risks before they escalate.
- Secure, cross-domain data storage ensures sensitive information is protected while remaining accessible to authorised users, supporting operational readiness and continuity.

By integrating predictive, monitoring and communication capabilities across multiple domains, military forces can respond effectively to evolving threats and coordinate mission outcomes across all operational domains.

Dual-use Taxonomy
There is a significant opportunity to develop a new dual-use taxonomy that maps multiple-use cases across civilian and military domains.

This classification system could differentiate between key pathways for dual-use innovation – for example, direct transfer of mature technologies, adaptation of defence solutions for civilian problems and co-development of capabilities designed from the outset for both markets. By clearly framing these categories and the steps needed to move between them, the framework could enable greater collaboration, flag regulatory and security considerations and create more powerful commercial incentives for cross-sector IP deployment.

This illustration is designed to demonstrate how the framing of dual-use can evolve to give a clearer lens on 'opportunity' across multiple areas.
(*see table on page 15*).

Section 2

Key Players – The Defence and Innovation Eco-System

Unlocking stranded or dormant IP within the defence eco-system requires effective translation and communication across diverse sectors, disciplines and organisational cultures. One of the key systemic barriers is the disconnect between the worlds of academia, SMEs, primes and government agencies, each of which speaks its own language, operates on different timelines and follows distinct structures.

Without tight collaboration and a coherent understanding of the role each group plays, the road to success is limited. However, by pooling resources and sharing this unique knowledge, skills and experience, a greater chance of success exists.

GOVERNMENT

The UK government faces a range of challenges in unlocking underutilised intellectual property within the defence realm, which hinders the full potential of accelerated innovation across multiple sectors. However, the focus within the SDR highlights that the challenges are understood, and there are clear plans and proven examples that are changing the approach to how challenges are articulated, innovation is funded and agility is increased.

Alongside this, the absence of formalised platforms for sharing and matching early-stage IP (when it is mature enough to be shared) can potentially limit government's ability to coordinate and harness innovation effectively, leading to stranded IP that could otherwise benefit national security and economic growth. Programmes and initiatives already exist that bridge gaps between sectors, translating strategic defence needs into accessible problem statements and facilitating collaboration and knowledge exchange. Leveraging third-party expertise alongside government efforts means that these programmes can more effectively match innovators with opportunities and ensure IP reaches its fullest potential across

CASE STUDY
THE DEFENCE TECHNOLOGY EXPLOITATION PROGRAMME

The Defence Technology Exploitation Programme (DTEP), launched by DASA and supported by Innovate UK and ADS Group in 2021 as a new opportunity to apply for grant funding, aims to inspire companies to win new business, develop industrial capabilities, and provide new cutting-edge answers to defence problems at home and abroad, ensuring the UK expands its competitive, pioneering and world-class defence and security industries[8].

Individual grants of up to 50% of a project's value – to a maximum of £500K per grant – will be available through DTEP for collaborative projects between SMEs and larger suppliers, supporting the integration of novel technologies, materials and processes into Defence supply chains.

Recent awardees include:

- **SCI Semiconductors**, a leading cyber security company based in Cambridge, were awarded DTEP funding for their innovative approach to tackling the escalating problem of compromised computer integrity within military systems. SCI are collaborating with Ultra, a higher-tier supplier who specialise in mission focused technological innovations, who will provide mentoring for the duration of the project. SCI will receive a government grant worth 50% of the project value with the aim of developing innovative new solutions that meet UK defence and security challenges.[9]
- **Magtec**, who created a Permanent Magnet Motor that provides stronger power to submarine systems with reduced size and weight. The product will be used to reduce maintenance costs and increase submarine availability. Magtec is working with higher-tier partner MacTaggart Scott on developing and producing the Permanent Magnet Motor.[10]
- **Raplas Technologies** will be collaborating with BAE Systems on innovative 3D printing projects for defence applications.[11]

[8] https://iuk-business-connect.org.uk/opportunities/the-defence-technology-exploitation-programme/
[9] https://www.gov.uk/government/news/dtep-funding-for-sci-the-cheri-on-the-cake
[10] https://www.manufacturingmanagement.co.uk/content/news/magtec-awarded-funding-by-defence-technology-exploitation-programme/
[11] https://www.gov.uk/government/news/energetic-uk-sme-raplas-awarded-dtep-funding

both defence and civilian markets. By adopting more flexible funding models that encourage reuse, iteration and dual-use technologies, government can create a more innovation-friendly environment that reduces risk for industry partners. Providing stable, coordinated funding streams that support the full innovation lifecycle beyond early-stage research would substantially help sustain promising projects and accelerate deployment.

The challenge will be in successfully translating this intent into tangible results and enabling the creation of a more systemic, whole-of-eco-system approach to IP optimisation.

A crucial step towards this endeavour is the formation of UKDI. As their launch announcement states, it "will simplify and streamline the innovation system within MoD. It will take a new approach by moving quickly and decisively, using different ways of contracting, to enable UK companies to scale up innovative prototypes rapidly, by setting out a clear pathway, working with the rest of government, from initial production to manufacturing at scale".[12]

In the wake of the SDR, supporting strategic initiatives such as this will help strengthen the relationship between government and other key players in the defence innovation eco-system when maximising the potential of early-stage IP.

PRIMES

The lack of transparency around end-users' needs, solutions and capabilities can make it hard to match dormant IP, particularly that held within government or prime contractors, to relevant opportunities. This limits potential reuse or adaptation of technologies across different sectors. For primes, it often remains difficult to flexibly deploy or repurpose such IP across multiple projects or customers, which in turn can, at times, contribute to a culture of mistrust in their relationship with SMEs.

[12] https://www.gov.uk/government/news/dtep-funding-for-sci-the-cheri-on-the-cake

One of the primes we interviewed tells us: *"One of our top challenges is getting the trust of the SMEs that we're not here to steal technology, or we're not here to squash you. Actually, our job is to make you successful if you've got the best technology."*

However, participants who engaged in discussion for this report agreed that primes are well positioned to act as catalysts for unlocking underutilised IP within the defence eco-system and potentially further afield. Their scale, sector and technical expertise and established relationships give them the capacity to absorb risk and carry innovations through the notoriously difficult transition from concept to deployment.

When it comes to commercialisation routes, one SME spoke of the value on partnering with a prime who already knows the market: *"What I'll be looking for is a partner that is already delivering secure information systems or whatever it is you know, even if they even if they're just doing the facilities management for National Offender Management system or something, but somebody already deals with them that's connected to that, understands the challenges that we look for a partner."*

Primes also have the ability to "translate" between commercial and defence logics, acting as industry translators who understand both the strategic imperatives of the MoD and the practical challenges innovators face.

A technology leader in a prime told us: *"For us, it's our role as the prime to connect the best technology to the end user, fill in the gaps in the middle, to enable that to happen. And we think that's probably the only way of having a viable system going forwards."* This also extends to anticipating future needs and operating in R&D horizons where requirements may not yet be fully defined, but where projects must still be funded and developed to ensure long-term viability. In performing this role, primes often draw on additional specialist expertise and partnerships to support areas where internal resources or sector-specific knowledge may be limited. This approach helps bridge the gap between innovation and operational deployment, providing technical, commercial and regulatory guidance, and ensuring that promising technologies are effectively evaluated, adapted and scaled.

Defence primes can additionally invest in internal R&D and establish incubator programmes to nurture promising multiple-use technologies, facilitating the integration of civilian and military applications. By collaborating more closely with SMEs, academia and intermediaries, primes can help build formalised platforms for IP sharing and matchmaking, increasing visibility and reducing duplication across the eco-system. Their involvement also brings much-needed credibility and scale to emerging technologies, making it easier to secure follow-on funding and navigate complex

procurement pipelines. Most importantly, primes are motivated by the opportunity to generate new and diverse revenue streams, particularly when developing IP with non-military applications, creating a clear commercial incentive to support the wider innovation eco-system.

SMEs

Across interviews, there was a clear recognition that dual-use opportunities are not just about military adoption; commercialisation and civilian applications are critical for unlocking value from SME innovations.

SMEs are a vital engine of innovation within the UK's defence and dual-use eco-system, providing agility, specialist expertise and disruptive thinking that larger organisations often cannot match. Illustrating the breadth of SME capability, one participant said:
"We're not buying a spacecraft from Airbus or SSDL or anyone else. We've designed the structure, we've bought the propulsion suppliers. We've done all the software ourselves. We've done all this guidance, navigation, control and everything else was bought. The sensors were and put it all together. So, we've got national capability."

> We're not buying a spacecraft from Airbus or SSDL or anyone else. We've designed the structure we've bought the propulsion suppliers. We've done all the software ourselves."

This smaller scale allows SMEs to experiment rapidly with emerging technologies and explore both civil and military markets. Many breakthrough concepts, from advanced software solutions to cutting-edge sensor systems, originate in SMEs before being scaled through partnerships with defence primes, government programmes or commercial sectors. Their innovations often have natural dual-use potential, enabling new revenue streams outside of purely defence applications. However, systemic barriers such as lengthy procurement processes, high compliance costs, and limited visibility within complex supply chains can constrain their impact. Providing SMEs with clearer pathways to commercialise dual-use IP and connect with non-military markets is essential to unlocking the full value of the UK innovation base.

One challenge, the respondent continues, lies in intermediary layers: *"When exploiting our IP we often have to bid through primes that already have established relationships and infrastructure. While the prime may recognise the unique value we offer and incorporate it into their bid, they add their own elements and present the final solution to the customer. This means we are always one step removed, with less control and influence over the relationship, and less ability to fully exploit what we have. We are working within that system, but the government would get better value for money by going directly to companies like ours and similar organisations. We could certainly deliver more efficiently than the current approach."*

Reflecting on the evolving landscape for SMEs, an SME who participated said: *"I think it's changed. What would have happened four or five years ago is, Ministry of Defence quite rightly says we need innovation. We need agility, we need responsiveness and the people that are going to give us those sorts of attributes. There's not capability anymore, it's attributes. You only get those in an SME. So, primes in those days would turn around and say, OK, we're going to give this SME over here the cabling requirement, or asbestos removal. That's not what was needed – they wanted innovation, responsiveness, agility. I don't think that's now the case; the big primes are now looking to buy rather than build because they also need agility, responsiveness, and innovation – the faster they get to stuff, the faster they get to revenue."*

To realise their full potential, SMEs need both fairer access to opportunities and more direct engagement routes with both government and commercial customers. By providing SMEs with the ability to scale dual-use innovations into civilian markets as well as defence, the UK can ensure these companies remain a driving force for delivering innovative capabilities across sectors, creating new revenue streams, and strengthening national resilience.

ACADEMIA

Universities and academic institutions hold a wealth of valuable IP. However, much of this innovation remains locked within research settings, with several challenges associated with unleashing it for both defence and wider sector applications. These include:

- **Limited awareness of sector needs** – academic research agendas are often not aligned with defence or broader civil problem statements, leading to a mismatch between available solutions and operational requirements across multiple industries.
- **Commercialisation gaps** – many universities lack the expertise, networks or dedicated pathways to spin out ventures that can operate effectively in defence markets or in other sectors where the IP could be applied.
- **IP ownership complexity** – navigating intellectual property rights between universities, funding bodies and potential industry partners can delay or block progress across multiple applications.
- **Risk aversion** – academic institutions may be reluctant to pursue defence-related opportunities due to reputational concerns or perceived instability in defence funding, and this can also limit engagement with other high-value sectors.
- **Fragmented engagement channels** – university collaboration with both defence and other industry sectors often runs in isolation, making it harder for researchers to access funding and partnership opportunities.
- **The skills issue** – without clear incentives or career pathways, researchers with promising innovations may leave academia for roles in unrelated sectors, reducing the pool of talent that could translate IP into impact across defence and civil domains.
- **Limitations of Technology Transfer Offices (TTOs)** – while TTOs exist to manage IP and support commercialisation, many are under-resourced, highly risk-averse or primarily focused on sectors with faster return profiles than defence. This can result in a preference for licensing deals over the creation of spin-outs, or for partnering with known commercial players rather than engaging with emerging defence suppliers. Where spin-outs are pursued, they often lack the specialist market knowledge, procurement awareness and regulatory understanding needed to navigate both defence adoption and wider sector deployment. This combination of short-term incentives and low sector familiarity means many promising technologies fail to progress beyond the lab.

Despite these obstacles, significant potential remains. One interview respondent claims that in many cases the *"real IP is coming from start-ups and universities such as Oxford and Cambridge with dedicated labs."* This cements the need for an external third-party intermediary to help bridge the worlds of academia and industry.

REGIONAL CLUSTERS

When it comes to unlocking the potential of stranded IP, geographic barriers can present a significant hurdle. Defence innovation often clusters around large cities such as London or a handful of military hubs, leaving valuable regional potential untapped.

However, throughout interviews, it was emphasised that the UK's regional innovation clusters represent a significant asset for unlocking dormant defence and dual-use IP. These clusters bring together universities, SMEs, primes and public sector stakeholders in geographic prox-

CASE STUDY
NORTH EAST REGIONAL DEFENCE AND SECURITY CLUSTER (NERDSC)

The North East Regional Defence and Security Cluster (NERDSC) highlights how regional clusters can encourage cross-platform collaboration in strengthening defence innovation.

"The region brings together businesses, government agencies, and world-class universities — all working at the forefront of applied research, skills development, and technological innovation. With strong links to digital, chemical, maritime, advanced manufacturing, and offshore industries, the North East is uniquely positioned to support the UK's Defence and Security priorities. Backed by the Ministry of Defence (MoD) through the Defence and Security Accelerator (DASA), Regional Defence and Security Clusters like NERDSC were developed to foster collaboration, accelerate innovation, and help businesses bring new ideas to market through practical support and commercialisation." [13] *- NERDSC*

In tandem with North East Combined Authority (NECA) growth plan, which sets out how investment, innovation and high-value job creation can prosper in the North East, it makes the case that local leaders must be supported to shape the defence innovation eco-system with the sufficient autonomy and funding to deliver at pace.

[13] https://nerdsc.co.uk/

imity, creating an environment where ideas can move more quickly from research to prototyping to deployment. In many cases, they also act as gateways for civilian technologies to enter the defence market, and for defence IP to be adapted for commercial use.

A more deliberate national strategy to integrate regional clusters into the UK's defence innovation system could dramatically increase the rate at which underutilised IP is identified and scaled for use across all sectors.

CONNECTORS/TRANSLATORS

Without intermediaries and third parties who can act as translators, facilitators and connectors, valuable innovations risk remaining dormant, misunderstood or mismatched with potential applications. These connectors, with extensive knowledge of all sides, can help articulate complex technical concepts in terms that resonate with commercial stakeholders, frame industry-specific needs in accessible language for innovators and navigate the complexities of IP ownership, regulatory requirements and procurement pathways. The journey from innovation to deployable solution is rarely straightforward, and this is where specialist IP commercialisation partnerships can help identify high-value commercial opportunities and move otherwise "stuck" IP into active deployment and translate defence-originated innovations into new sectors. They can also ensure this IP is reusable and up to date; digitising, documenting, rewriting or revalidating prototypes often without direct access to the original innovators.

Beyond facilitating deployment, these intermediaries play a critical role in shaping the commercialisation strategy and impact of IP. By helping innovators evaluate market potential, prioritise projects and structure licensing or partnership agreements, they can unlock new revenue streams for businesses, take defence-originated technologies into commercial markets and ensure innovations reach their full societal and economic potential. This approach accelerates the adoption of dual-use technologies across sectors such as health, transport and energy, while strengthening national growth.

With this expertise, third party intermediaries are uniquely positioned to provide a neutral platform for cataloguing and matching IP assets with operational problems and investment opportunities.

CASE STUDY **NOBLEREACH**

NobleReach is a U.S. non-profit organisation that unites the *"entrepreneurial agility of the private sector, the ideas of academia, and the scale and purpose of the public sector to drive innovation toward solving our nation's technological challenges by inspiring the next generation of mission-driven changemakers".* [14] Their mission is to help *"tackle challenges of national significance"* [15], while accelerating the commercialisation of high-impact technologies.

Through a combination of capital investment, deep technical expertise and a proven methodology, NobleReach helps universities and research institutions identify and prioritise promising technologies. Working at both regional and federal levels, the organisation can provide funding, strategic guidance and a clear pathway to commercialisation. This includes connecting top technical talent with targeted business support, ensuring innovations are positioned for both market success and mission impact.

One notable initiative, the Emerge programme, integrates technology and business expertise to transform early-stage U.S. research and development projects into commercially viable ventures. In partnership with the Defense Advanced Research Projects Agency (DARPA), Emerge has demonstrated how academic research can be successfully translated into deployable solutions for national defence. Crucially, NobleReach has the capacity to take these projects all the way from the lab to market, leveraging its resources, networks and commercialisation know-how to bridge the gap between invention and implementation.

This model provides an encouraging example of how a cross-platform IP eco-system could function in the UK.

[14] https://noblereach.org/
[15] https://noblereach.org/

Section 3

The Path Towards Implementation

In an area that is complex and with a set of challenges that are often systemic, implementation will demand clarity of intent, coupled with the establishment of collaborative platforms and a focus on processes that enable success.

The eco-system needs a blend of formalised, structured mechanisms and informal platforms that support ideation, development, validation and eventual deployment. This has the potential to unlock both economic growth and enhanced national security.

Ultimately, a robust route to implementation needs to ensure that promising or proven IP is actively translated into deployable capabilities, commercial products or multi-use solutions, underpinned by clarity around funding, procurement, intellectual property rights, and cross-sector collaboration.

KEY FOUNDATIONS FOR DELIVERY

Underpinning a successful path for implementation are six key foundations:

Strong Leadership and Ownership
Clear leadership is required to drive systemic change when it comes to unleashing valuable IP within both government defence establishments and private sector supply chains. Leaders, whether within government, primes or intermediary organisations, must be empowered to take responsibility for end-to-end innovation delivery, including IP stewardship, commercialisation and cross-sector application. This also involves setting a strategic narrative that prioritises innovation adoption over procedural inertia. Visible champions are needed to encourage cross-sector collaboration and ensure progress does not stagnate.

To address fragmentation and silos across the defence innovation eco-system, the whole eco-system must collaborate to support the operationalisation of initiatives such as UKDI. Similarly, to overcome stranded IP and dual-use uncertainty, efforts should focus on identifying 'quick wins' that advance dual-use opportunities and stranded IP, leveraging Regional Innovation Teams and Regional Engagement Teams.

Targeted Investment and Funding Pathways
Greater clarity over investment and funding would provide stronger coherence and strategic alignment across the defence innovation eco-system, with a more centralised approach holding potential to drive this forwards. By pooling resources and coordinating investment priorities, this could reduce duplication, streamline decision-making and ensure that promising technologies receive sustained support through the full development lifecycle. Centralisation would also allow funding to be more effectively targeted at dual-use innovations, helping SMEs and primes alike to align their internal R&D with government priorities while providing clearer visibility of available support. Interviewees emphasised that without coordinated funding, promising IP often stalls at key technology readiness levels (TRLs), leaving potential capabilities underexploited.

Looking ahead, building regular platforms that bring together private finance and the wider eco-system could strengthen market understanding and unlock additional opportunities for investment. The formation of UKDI presents a unique

> Ultimately, a robust route to implementation needs to ensure that promising or proven IP is actively translated into deployable capabilities, commercial products or multi-use solutions, underpinned by clarity around funding, procurement, intellectual property rights, and cross-sector collaboration.

chance to create real clarity on funding sources from government and associated agencies (Innovate UK, Make UK, Catapults, etc.), providing a foundation for sustained innovation and growth across the eco-system.

Greater Visibility and Transparency

To maximise the potential of stranded IP within the defence innovation eco-system and applying it to wider sectors, there needs to be a greater understanding of the roles, needs and solutions of its members:

- Who does what: clarifying responsibilities across government departments, defence primes, SMEs, and academic institutions ensures innovators know where to go for collaboration, funding, or operational support.
- What are the existing needs: transparent articulation of capability gaps, operational requirements, and national security priorities helps match available IP to real-world problems and avoids duplication of effort.
- What are the existing solutions: a centralised catalogue or "marketplace" for early-stage reusable IP would allow stakeholders to see what is already developed, underutilised, or deployable, enabling faster uptake and repurposing.
- How to unlock real value: third parties with specialist services can play a key role by identifying which IP has the greatest commercial and operational potential, and by guiding it through the commercialisation process to ensure it reaches the right markets.

Greater visibility also supports accountability and trust, helping SMEs and universities understand how their innovations can align with defence priorities. It encourages informed decision-making for funders and procurement teams and strengthens cross-sector collaboration by reducing uncertainty about where technologies might fit.

To encourage this, we recommend:

- Creating a catalogue of 'needs' and 'solutions' within defence as platform to explore opportunities.
- Adapting a new taxonomy to enable 'dual use' - both national security needs from wider markets and existing national security solutions 'out' to wider agencies and commercial markets.
- Building systemic 'feedback loop' to ensure transparency relating to future of newly developed IP.

> Leaders, whether within government, primes or intermediary organisations, must be empowered to take responsibility for end-to-end innovation delivery, including IP stewardship, commercialisation and cross-sector application.

By making both needs and solutions more explicit, the eco-system can move away from project silos and ensure that stranded or dormant IP is actively evaluated for both military and civilian applications.

Adaptable Procurement and Agile Processes

Reframing both the length and content of procurement is already underway and must be continued. In particular, the fine line between ensuring value for money and backing innovation needs to be addressed. IP will not be unleashed if it remains locked into specific products and platforms. To unleash potential, innovators will need backing in the longer term.

A segmented approach to processes will also be necessary and is already under way. It will be critical to ensure that the critical learning from recent responses to both COVID-19 and the war in Ukraine are distilled down into a targeted and actionable approach.

Embracing Connectivity and Partnership

Collaboration between all key stakeholders must be strengthened, particularly the relationship between the government and SMEs.

Small firms are often the source of agility, niche expertise, and innovative ideas, yet they can be excluded from scaled opportunities due to procurement hurdles, lack of visibility, or uncertainty around intellectual property ownership. Strengthening partnerships means creating models where SMEs can co-develop solutions with government customers or defence primes, rather than only acting as subcontractors, ensuring their innovations reach operational use.

Defence primes have a critical role to play in enabling this connectivity. With their resources, established customer relationships, and ability to scale technologies, primes can act as integrators that bring SME innovations into major programmes. Formalised partnership frameworks, such as joint bids, open innovation challenges, or shared IP arrangements, can help ensure SMEs retain value from their innovations while primes accelerate delivery to end users.

We also propose building and deploying a regional engagement model to support the formation of the 'regional engagement teams' in one region that can be deployed/replicated across multiple regions. Geographic concentration of innovation in centralised hubs such as London can leave regional potential untapped, making it crucial to maximise the talents of local eco-systems.

'Whole of Eco-System' Approach and Cross-Platform Intermediaries

Effective response will demand a 'whole of eco-system' approach, where all constituents play their part. But this is a complex eco-system, where alignment of objectives, capabilities and funding can each provide hurdles to effective delivery.

As mentioned previously, cross-platform intermediaries and third parties can play a vital role in bridging the gap between innovation and implementation. These bodies act as translators between Government's capability needs and the language of commercial technology markets, helping innovators navigate regulatory frameworks, IP rights, and procurement complexities. These intermediaries are particularly valuable in unlocking the potential in the dual-use space, where a technology's potential may be spread across defence, space, energy, infrastructure and commercial domains.

By applying targeted expertise, they can move "stuck" IP forward, de-risk opportunities for innovators and investors, and create clearer pathways to deployment. Acting as translators between technical innovation and market application, they help ensure that promising ideas are not lost in transition but instead matched to the right partners, funding models and operational needs. By combining technical due diligence with commercial know-how, these intermediaries are able to:

- Spot applications that inventors or owners may not have envisaged.
- Facilitate collaborations across sectors.
- Structure licensing or spin-out opportunities that accelerate market entry.
- Support the go-to-market and scaling of new businesses or licensed product lines.

In doing so, they reduce friction across the eco-system, provide confidence for both government and private investors, and help ensure that the UK can capture and retain the benefits of home-grown innovation.

They can also help connect regional innovation clusters, ensuring that breakthroughs in one part of the UK are shared across networks. Expanding the capacity and authority of these unifying entities, while ensuring they have the resources to operate at speed, would significantly improve the chances of stranded IP being commercialised and deployed.

This action plan brings together the key issues identified across leadership, funding, procurement and eco-system engagement, and proposes a set of strategic actions to address them. The recommendations focus on creating the conditions for sustainable growth in the UK's defence innovation base: strengthening ownership and coordination, clarifying funding pathways, embedding transparency, and enabling dual-use IP to flow across military and commercial markets.

> Looking ahead, building regular platforms that bring together private finance and the wider eco-system could strengthen market understanding and unlock additional opportunities for investment.

Conclusion

The UK stands on the brink of a significant opportunity. Its defence and dual-use innovation base is rich in IP, talent and technical ability, from exploring new frontiers in space to developing advanced cyber capabilities. However, unlocking this potential will require more than just new technologies. Without system-wide alliance and targeted change, these constraints risk stalling innovation that could otherwise enhance national resilience and generate significant economic value.

Real progress demands a 'whole-of eco-system' approach. This means reframing dual-use as a strategic asset, embedding reusability into programme specification, design and procurement, and establishing collaborative mechanisms to surface, share and adapt IP across multiple domains.

It requires leadership across the defence sector and beyond willing to embrace new models of accelerated innovation, such as those emerging in support of Ukraine and existing pockets of excellence. It also means backing the organisations positioned to act as trusted enablers to unlock, broker and de-risk partnerships across sectors. Crucially, this includes specialist intermediaries who can help innovators and government alike to value IP, prioritise the most promising projects and move them through the development pathway to market impact, generating new revenue streams while strengthening the UK's strategic advantage. If embraced, this approach could transform dormant potential into real-world capability, driving both security and growth.

METHODOLOGY

This report was based on D Group research through several in-depth interviews and evidence-gathering sessions. These were conducted with participants across the defence innovation eco-system, including individuals from defence primes, SMEs, consultancies and international partners.

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