

Centre for
Entrepreneurs

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THE MILITARY ENTREPRENEURSHIP MANIFESTO

JUNE 2018

Centre for
Entrepreneurs

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ABOUT THE CENTRE

The Centre for Entrepreneurs (CFE) is the UK's leading entrepreneurship think tank. It researches the economic and social value created by entrepreneurs.

The Centre was launched in 2013 by Sunday Times columnist and serial entrepreneur Luke Johnson, in partnership with the Legatum Foundation. In 2017, CFE joined forces with the New Entrepreneurs Foundation to form a unified charitable foundation to undertake research, campaigns and programmes to advance entrepreneurship across the UK.

Since launch, the Centre has advocated in-prison entrepreneurship programmes, uncovered how entrepreneurs are reviving seaside towns, championed refugee entrepreneurs and shattered negative stereotypes affecting women entrepreneurs. It has also published never-before-seen data on migrant entrepreneurs, angel investors, annual company formation rates, and local authority SME spending.

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FOREWORD

The military has and will always be my passion. Having served three tours in Afghanistan, I know first hand the outstanding talent of Armed Forces personnel. They are brave leaders and expert problem-solvers. Their contribution to the defence and prosperity of the UK is considerable, but it does not need to end when they retire from military service.

I entered politics after 11 years of service with a view to improve the care of our veterans. As an MP, I have repeatedly stood up against the injustices faced by former service personnel. But unless there is a “problem” with them, they are often forgotten.

Ex-forces have so much to offer. It’s not sympathy or an excess of gratitude that they want but an opportunity to continue to contribute to the UK in civilian life.

Entrepreneurship offers them the chance to utilise their abilities fully. And there are many successful examples. CybSafe, Drone Defence, Go Ape, Inzpire and Sky Futures, and so many others, are founded and led by ex-forces. Creating a pathway to train more ex-forces to become entrepreneurs is something we should all support.

While entrepreneurship should be encouraged across all sectors, it is those who go on to build businesses in the defence sector that could transform

the Armed Forces’ capabilities. Service leavers can draw on personal experience to deliver innovations that tackle real-world challenges. And crucially, they understand the importance of end-user input and testing, to ensure innovations are adopted.

During my own time of service, new technologies could transform our capabilities to fight and, importantly, save the lives of serving personnel and those we were defending. But this did not happen as often as we would have liked. Innovation should be like everything else in the military: part of the battle rhythm that makes us one of the greatest fighting forces in the world.

This manifesto sets out five simple but achievable recommendations that will allow the Armed Forces to embrace ex-forces personnel in defence innovation. I hope that the MOD implements its recommendations.

Johnny Mercer MP

FOREWORD

Innovation is key to Britain's future success. It creates new industries, grows economies and underpins social progress. For the UK to remain secure and prosperous, our military must also innovate. The new strategy for defence innovation presented in this manifesto – with ex-forces at its heart – can kickstart an exciting new era for the UK military and the UK's defence and security sectors.

Innovation is most often led by entrepreneurs. They have the drive, resilience and problem-solving capabilities required to move industries and countries forward. Entrepreneurs comes in all shapes and sizes, but they most certainly include former service personnel.

Ambitious service leavers could build the next generation of defence and security startups, but too often we don't make the most of their potential when they retire. This potential can only be released by giving them the proper, systematic opportunity and infrastructure.

The insight of ex-forces in matters of defence and security give them a real edge. In defence, the problem isn't in finding new technologies nor in buying them; rather, it is in our service personnel actually getting their hands on them. This is a terrible waste of time, talent and resources.

It's these gaps this manifesto seeks to address. True entrepreneurship is disruptive and for the MOD, any restructuring and recalibration of strategy may present challenges. But the results will be worth it.

The UK should aim be the most innovative in the world in all sectors of society. These recommendations provide the groundwork for a new start in the Armed Forces and defence and security sectors. It gives us a chance to maximise talent and resources to the benefit of our security and prosperity.

What this manifesto offers is the template to a revolution in defence and security innovation. And I fully endorse it.

Oliver Pawle

Chairman of the New
Entrepreneurs Foundation
(home of the Centre for Entrepreneurs)

EXECUTIVE SUMMARY

Over the next ten years, the UK government has a projected commitment of £179.7 billion to its 'Equipment Plan.' Innovation spending is part of this plan. But how will this sum be spent; and to what extent will end-users be involved in new equipment design and testing? These are questions we consider in this report, where we argue that ex-service personnel should be integral to future innovation in the UK military and our wider defence and security sectors.

The Armed Forces' role in protecting our freedom and prosperity is widely recognised. And the positive impact of Armed Forces personnel extends well beyond their time in service. Upon returning to civilian life, many go on to apply their experience to the benefit of businesses, charities and the public sector.

But the UK can do more to capitalise on the unique skills and experience that our ex-forces possess. Taking inspiration from the United States, Israel and other UK government agencies, the Armed Forces should unleash the entrepreneurial potential of its service leavers.

Ex-forces entrepreneurs often have deep technical expertise that could be used to create high-growth tech startups. Many remain in the defence, security and information sectors, creating a new generation of British defence companies, and could revolutionise innovation procurement for the MOD.

This Military Entrepreneurship Manifesto is a celebration of the contribution that service personnel make and the continued positive impact they can have in building the next generation of high-growth defence startups. Our recommendations present a vision for harnessing the entrepreneurial potential of ex-forces.

The Centre for Entrepreneurs makes the following recommendations to maximise military entrepreneurship:

1: LAUNCH ENTREPRENEURSHIP BOOT CAMPS FOR SERVICE LEAVERS

There are many experienced service leavers with the skills and ambition

to launch high-growth technology companies. But business startup support offered through Careers Transition Partnership is marketed and tailored towards those interested in self-employment or small business.

There should be an intensive, multi-day entrepreneurship boot camp targeting service leavers with the potential to lead high-growth ventures. This would make sure they have the skills, mindset and tools to start and scale a company. Such a boot camp should be based within a respected Armed Forces academy to reinforce the programme's quality and relevance. We suggest Shrivenham.

2: TURN DASA INTO A REAL BUSINESS ACCELERATOR

The Defence and Security Accelerator (DASA) is not a business accelerator programme in spite of its name. It should be. DASA should follow a similar model to GCHQ's Cyber Accelerator and become a cohort-based accelerator programme that nurtures the rapid growth of defence, security and information sector startups.

The accelerator should offer equity-free investment, expert guidance, mentoring, office space, networking opportunities, and access to capital. This could be delivered in partnership with an established accelerator programme, in the same way that GCHQ works with Telefónica's Wayra.

3: LAUNCH A MILITARY ENTREPRENEURSHIP HUB

A military entrepreneurship hub should be created to provide a workspace and community for entrepreneurs, investors, industry partners, the MOD and others. This will allow all stakeholders to interact and explore new ideas.

Shared innovation facilities lead to faster project execution, better technical performance, and a creative organisational culture. The hub should seek to replicate sector-focused startup innovation hubs such as Level39, 'the fintech hub'.

4: RECOGNISE THAT JHUB CURRENTLY HAS THE ONLY EFFECTIVE INNOVATION MODEL – EXPAND IT

jHub was established in recognition that the MOD needed to test a new innovation model. Right now, it is a relatively small programme that is experimenting with how to get new innovations into the hands of end-users. jHub is able to identify market-ready technologies, pilot them in a military setting within six months and then procure them immediately after.

This is a strong platform for growth. jHub now needs more talent on its team to identify new commercial innovations and pilot them for military adoption. Ex-forces with entrepreneurial experience and training would be ideal as entrepreneurs-in-residence.

5: CREATE INNOVATION LABS TO CONNECT END-USERS WITH INNOVATORS

In defence, the end-users' experience and insight often does not reach those developing new products. Worse still, innovations rarely get tested with service personnel before they are expected to use them in the field.

Innovation labs should be launched in military facilities across the UK to allow for more engagement between innovators and the Armed Forces. All new innovations should pass through the innovation labs.

INTRODUCTION

More than any other institution, the Armed Forces excel at producing personnel with leadership skills, discipline and organisational prowess.¹ What is often underestimated is their technical, engineering and technology capability and, critically, their appreciation of how technical products and systems will have to stand up in the real world.

Ex-forces personnel have, therefore, an important potential role to play in the pursuit of innovation, especially in defence and security-related scenarios. It's our contention that they can become the leaders of a new generation of high-growth defence and security startups. This will both enable the MOD to stay ahead of emerging threats and establish the UK as a new technology hotbed that could offer significant export potential.

The UK Armed Forces should take inspiration from Israel, the United States, and other UK government agencies where service-leavers have been able to unleash their full entrepreneurial potential and add significant economic value.

Strong motivations drive innovation in all sectors of society², and service personnel are driven to "be the best." After leaving the Armed Forces, many continue to work in the defence, security and information sectors. But although the MOD is well aware of the potential of service leavers, the opportunities to use their entrepreneurial talents to drive military innovation are not fully realised.

Little research in the UK has been done on the motivations, challenges and successes of service-leaver entrepreneurs. In recognition of this knowledge gap, the Warwick Institute for Employment Research, in partnership with Qinetiq and X-Forces, are leading an 18-month study titled, 'Self-employment and the Armed Forces Community', and is expected to be released in October this year.³ Existing evidence does, however, suggest that members and former members of the Armed Forces possess entrepreneurial characteristics.⁴ These include determination, problem-solving capabilities, and judicious risk-taking. The latter is particularly important in the military innovation context, where the MOD has changed its innovation

strategy from being risk averse to embracing it as an official policy.

A number of organisations are working to release that potential. X-Forces, a community interest company launched in 2012, has partnered with Careers Transition Partnership (CTP) – the official provider of Armed Forces Resettlement – to offer workshops, training and government-backed Start Up Loans to help service leavers into self-employment and business startup. X-Forces also works with various military charities to extend support to spouses, reservists and others in the military community. Since launch in 2012, it has helped set up more than 1,300 business and provided almost £12 million in debt finance.⁵

Heropreneurs, launched as a charity in 2009, is a community of successful entrepreneurs and military veterans that provides free mentoring and expert advice to help ex-forces set up and run their own businesses.⁶ It is backed by many serving and retired military leaders and politicians, even receiving an endorsement from the prime minister.⁷ In 2018, it launched the Heropreneurs Awards in partnership with The Telegraph. The awards will play an important role in identifying and celebrating successful ex-forces entrepreneurs. As the awards scheme grows, it has the potential to create role models that will inspire many more service leavers to pursue entrepreneurship.

TechVets, launched in February 2018, is a not-for-profit helping UK veterans and service leavers into the cyber security and technology sectors. It has the endorsement of former commander of Joint Forces Command, General Sir Richard Barrons. TechVet's first initiative is 'The Veterans' Digital Cyber Academy', run by Immersive Labs, which delivers free training and works with industry partners to secure employment

opportunities upon completion. It is now on its second cohort, with a total of 700 participants. Still in its infancy, TechVets is a promising new organisation that is well placed to design and run a range of exciting initiatives to better connect service leavers and the tech startup community.

But there is a need to support the creation of more high-growth startups founded by ex-forces.

The potential of ex-forces in the defence innovation space was not addressed in the MOD's 'Advantage through Innovation' prospectus. This is the focus of our manifesto. Ex-forces entrepreneurs have the potential to use deep technical expertise to create high-growth tech startups. Reservists too have the potential for this: they already have additional skills from working in civilian life and will likely already have a more realistic view of the market. These will be the pioneering teams that drive defence innovation.

Our five recommendations capitalise on the unique experience and skills that our ex-forces possess. This manifesto has been drafted in consultation with numerous stakeholders – members of the Armed Forces, ex-forces entrepreneurs, the business startup community, military charities and academia – to present a clear vision for harnessing the power of UK innovation and the entrepreneurial potential of ex-forces.

This manifesto is complementary to the policy recommendations of previous innovation advisors that have consulted the MOD, building upon historic guidance and advocating new approaches. It is a celebration of the invaluable work already being done in this area and of the significant contributions ex-forces make in their civilian lives.

CONTEXT

THE POTENTIAL FOR INNOVATION IN THE UK MILITARY, AND DEFENCE AND SECURITY SECTORS

Historically, the UK military has been one of the most innovative in the world. The ingenuity of the Armed Forces has protected our freedom and prosperity. But new threats are always on the horizon and the Ministry of Defence has recognised that “innovation is key to maintaining our advantage in the future.”⁸

The UK defence market is sizeable; the combined turnover of the UK aerospace, defence, security and space industries was £72 billion in 2017, employing 363,000 people.⁹ Furthermore, the UK is the second largest exporter of defence products and services, with exports of \$120 billion between 2007 and 2016.¹⁰ UK defence spending was the fifth largest in the world, amounting to

£35.3 billion between 2016 and 2017. This represented 2.2% of GDP in 2016. Innovation spending, which forms a fraction of total defence spending, has led to direct benefits for the UK economy. Since 2005, investment in innovation has created 585 jobs and increased exports by 70%. Additionally, it has attracted £140 million in further investment for spin-out companies since 2015.¹¹

In recent years, increasing attention has been paid to innovation in defence. In the ‘Advantage through Innovation’ prospectus, published in 2016, the MOD set its agenda for innovation spending into the future. The MOD set aside £800 million over ten years in an ‘Innovation Fund’ to encourage better collaboration with industry, academia

and other stakeholders to boost the competitive advantage of UK defence.¹² In parallel to this, the government also committed to ‘The Equipment Plan’ from 2017 to 2027, which is projected to cost £179.7 billion, including a £6 billion contingency.¹³ This funding is to ensure that the Armed Forces are well supported and have the latest technologies at their disposal.

The UK can learn effective innovation procurement models from the international market – albeit UK defence spending is dwarfed by the US. In 2016, the US spent more on defence and security than the following top nine combined – a \$604.5 billion budget. The proposed budget for the US Department of Defence in 2019 is \$686 billion.

RECOMMENDATION ONE

LAUNCH ENTREPRENEURSHIP BOOT CAMPS FOR SERVICE LEAVERS

Service leavers and reservists with entrepreneurial potential should go through intensive, multi-day entrepreneurship boot camps.

Following interviews with ex-forces entrepreneurs, it became clear that the most ambitious service leavers do not see the value in the self-employment and business startup workshops that are currently delivered through the Career Transition Partnership. This support is not suited to the acceleration of high-growth startups, the founders of which are forced to look elsewhere for mentoring and resources.

Our proposed boot camp fulfils the demand for a more intensive programme suited to service leavers' entrepreneurial ambition. It would deliver executive education in entrepreneurship, business leadership

and management skills to prepare participants to start and scale a company.

There is currently no programme like this within the military.²¹ But the UK's leading business schools have extensive experience designing and delivering such executive entrepreneurship programmes. London Business School, Warwick Business School, or Cranfield University – particularly given the latter's Shrivenham campus – could help design and deliver the boot camp.

The premise that entrepreneurship can be a learned skill is implicit in any entrepreneurial training.²² But the delivery of that education in a structure and format that is short and intense is unique to the boot camp. This is an opportunity for service leavers and reservists to build the skills, tools and networks that they may not possess. These skills are crucial in the early years of a high-growth venture when entrepreneurs have few resources and need to engage with others to scale up.²³

The idea of a military entrepreneurship boot camp is not untested. In Canada, the Prince's Operation Entrepreneur (POE) conduct their own seven-day intensive boot camp to help transitioning Armed Forces members and veterans "rapidly advance their entrepreneurial and business skills and knowledge."²⁴ The programme serves as a springboard into business formation. To date, POE have 370 boot camp graduates which has led to over 250 businesses being started.

In the UK, current support for ex-forces is also largely tailored to small business creation. The support they receive is impressive, but we identify a need for advanced entrepreneurship training for ambitious service leavers. The purpose of a boot camp, therefore, is not to foster small business creation. Instead, it should be designed and branded as an intensive course that delivers entrepreneurial skills and training required to start and scale a high-growth business.

THE PURPOSE OF A BOOT CAMP, THEREFORE, IS NOT TO FOSTER SMALL BUSINESS CREATION. INSTEAD, IT SHOULD BE DESIGNED AND BRANDED AS AN INTENSIVE COURSE THAT DELIVERS ENTREPRENEURIAL SKILLS AND TRAINING REQUIRED TO START AND SCALE A HIGH-GROWTH BUSINESS.

To date, there has been little research into the actual process of transitioning from the military to entrepreneurship.²⁵ But there is evidence to suggest that challenge-based entrepreneurship – that which a boot camp would simulate – can “compel and enable entrepreneurial initiatives.”²⁶ This is because the environment forces the participants to adapt and shape their perceptions and skills, acquire new skills fast and use their existing skills in innovative ways. The boot camp would serve as an intense learning environment, in which they are able to channel their discipline, persistence and risk tolerance into an entrepreneurial context.²⁷

The boot camp should start as a pilot, be evaluated rigorously and then scaled up if proven successful. Continued evaluation is needed to ensure that the benefits remain as the boot camp grows.²⁸ We recommend it operates selectively, running a handful of times per year with small

cohorts. The boot camp should reside in a respected Armed Forces academy that reinforces the quality of the programme. We suggest the Defence Academy at Shrivenham.

Additionally, the entrepreneurship boot camps would be suitable for service personnel on career intermission. The purpose of intermissions is to allow service personnel to develop experience and skills that they would otherwise not gain in the military. But they would still require the more intense training of the boot camps to give them the best starting chance.

An internal culture with an emphasis on deference can stifle innovative thinking. For returning service personnel and reservists, the boot camps could instil a mindset to challenge the status quo. This is noted as a particularly Israeli spirit of entrepreneurship, what Dan Senor and Saul Singer identify as ‘chutzpah’. This is an audacity that permeates

through all aspects of life and is even willing to challenge rigid hierarchies, such as military command.²⁹

In summary, the boot camp has several desirable outcomes. The first is that graduates can apply what they have learnt to found new startups. These new startups can be fed directly into the Defence and Security Accelerator (see recommendation two) or into the military entrepreneurship hub (see recommendation three). Alternatively, the skills acquired from the boot camp could be used to train entrepreneurs-in-residence for jHub (see recommendation four) and to train personnel to manage new innovation labs (see recommendation five). The boot camp should also be open to service personnel on career intermission and reservists, which could help stimulate internal innovation.

RECOMMENDATION TWO

TURN DASA INTO A REAL ACCELERATOR

The Defence and Security Accelerator (DASA) is not a startup accelerator programme in spite of its name. It should be.

DASA should change its innovation model from challenge-based procurement to one that fosters the growth of innovative new companies in the defence, security and information sectors.

Accelerators support early-stage, growth-driven companies by providing training, mentoring and financing. They are highly selective, fixed-term, and cohort-based, culminating in a graduation or 'demo' day.³⁰ In its current format, DASA professes to do something very similar but does not nurture the startup ecosystem that is required for effective innovation development.³¹ Rather than helping to create and grow new defence

and security companies, DASA is instead largely engaging with well-established firms. As a real accelerator, DASA would help fill the gap in support for early-stage defence firms wanting to sell to the MOD.

DASA awards contracts to defence firms to complete specific challenges. However, there is little gain from new technologies that are not adopted or even tested on the intended user. This is often the case with such contracts. Innovation is not just a process of invention but an application that benefits the end user.³² This can be a new piece of equipment for frontline soldiers or a new cyber security technology that protects secret information from enemy interception. Procurement means nothing if the innovations are put on the shelf.

According to the release of public information regarding DASA funded contracts, between April 2016 and March 2018 there was a total of 242

contracts, of which 38% were classified SME contractors.³³ This means that the vast majority of contracts are won by a handful of large defence firms. Because the MOD is the only meaningful customer in the UK defence market, competition only takes place between suppliers. Under the current model, however, supply-side competition is prematurely ended, and innovation suffers as a result.³⁴ No competition actually occurs during the phase of innovation development.

There is serious concern that the MOD is no longer innovating and is instead returning to a 'conspiracy of optimism'. This is a term that has been used since the 1990s and it describes a relationship that exists between MOD and industry, "each having a propensity, in many cases knowingly, to strike agreements that are so optimistic as to be unsustainable in terms of cost, timescale or performance."³⁵

AS A REAL ACCELERATOR, DASA WOULD HELP FILL THE GAP IN SUPPORT FOR EARLY-STAGE DEFENCE FIRMS WANTING TO SELL TO THE MOD.



This is reinforced by the fact that the MOD has been dependent on a small number of large defence firms and joint government and industry partnerships since the division and privatisation of the Defence Evaluation and Research Agency in 2001.³⁶ These partnerships are headed by a small number of parties who have vested interests in maintaining the status quo.

As an accelerator, DASA, and the MOD more generally, will be forced to partner with a multitude of startups they have never engaged with before. The most radical and disruptive innovations are more likely to come from 'outsiders', who offer fresh perspectives on both new and old challenges faced by the MOD.³⁷ DASA, in its new form, could be far better in ensuring the MOD remains open to outsiders and is not monopolised by the handful of well-established, larger defence firms.

There are many examples of successful accelerator programmes in the UK and

abroad.³⁸ DASA, however, should look to those accelerators that partnered with government bodies. The GCHQ Cyber Accelerator is a good example.³⁹ In partnership with Wayra, part of Telefónica Open Future, GCHQ is helping to build the next generation of cyber-security startups. The accelerator offers teams world-class personnel, funding and technological expertise to allow them to expand capability, improve ideas and devise cutting-edge products to outpace current and emerging threats. This method then allows GCHQ to adopt those new innovations that best fit its needs.

In Israel, the secret military intelligence corp, Unit 8200, has been praised for the developing the "blueprint for Startup Nation."⁴⁰ It has formed an accelerator of its own, EISP. Team 8 is another accelerator that has intimate links to national security, founded by Unit 8200 alumni. Both accelerators look for the ability of teams to learn quickly, adapt to change and tackle the impossible, applying the

same rigorous standards as the Unit.⁴¹ The iHLS Startup Accelerator is yet another example of this, focusing on homeland security. It helps startups grow rapidly and removes the barriers to entry in the defence industries, the military and the police.⁴² All three are part of the startup formula that is contributing to the success of so-called 'Silicon Wadi': a cluster of high-tech industries built around military, startup and VC communities in Tel Aviv.⁴³

As a real business accelerator DASA should offer investment, expert guidance, mentoring, office space, networking opportunities and access to capital. This could be delivered in partnership with an established accelerator programme, much like GCHQ works with Telefónica's Wayra. By doing so, it would transform the way DASA currently operates and significantly enhance its contribution to innovation in the defence and security sectors.

RECOMMENDATION THREE

ESTABLISH A MILITARY ENTREPRENEURSHIP HUB

There should be a military entrepreneurship hub – a physical space where startups can interact, establish relationships and explore new ideas with the MOD and other defence sector agents.

This hub should be made open to the public and be hosted by a third party “to leverage knowledge assets and stimulate information exchange and experimentation.”⁴⁴ Shared communal spaces and infrastructure have been proven to encourage innovation.⁴⁵ The hub should seek to replicate sector-focused startup innovation hubs such as Level39, ‘the fintech hub’, which currently hosts almost 200 startups.

The design of the military entrepreneurship hub should follow a model of open innovation. Open innovation is the paradigm that assumes that firms should use both external and internal ideas and paths to market.⁴⁶ The benefits of shared innovation facilities are well documented: evidence shows that greater openness leads to faster project execution, better technical performance and higher revenues.⁴⁷ Organisational culture lies at the heart of open innovation: the freedom of individuals to think, create and share their ideas with others will produce the best results.⁴⁸

Dell is one company that has rejuvenated its corporate culture by engaging with startups. In 2013, it launched Dell for Entrepreneurs. The umbrella organisation provides startups with access to a variety of resources, mentoring, marketing advice and financial support.⁴⁹ Formal partnerships

with startups like this have distinct benefits. Dell has claimed significant benefit, principally in identifying new technologies and business partners that it otherwise would not have discovered.

Startups are able to disrupt this internal culture: internal staff, external partners, future employees and other agents are sent a strong signal that the MOD is ready and willing to be more innovative. They are more cost-effective and efficient than contractual relationships and formalised programmes are more visible to the wider startup community. They can, therefore, be engaged with more easily.⁵⁰

In a similar way, the military entrepreneurship hub should aim to produce an environment that is trusting, open to risk-taking, but also highly competitive. An ecosystem

THE MILITARY ENTREPRENEURSHIP HUB SHOULD AIM TO PRODUCE AN ENVIRONMENT THAT IS TRUSTING, OPEN TO RISK-TAKING, BUT ALSO HIGHLY COMPETITIVE.



such as this will stimulate innovative thinking.⁵¹ The MOD should provide the leadership in this space for both the short and long-term challenges in the defence and security of the UK.⁵² The hub would provide service leavers in the startup community with easy access to new networks, which is often a challenge in the present environment.⁵³

The MOD, far more than most other institutions has a mandate to secrecy. This is, of course, essential but it can also be a great inhibitor to innovation. Many corporations have experienced the same difficulties, apprehensive about embarking on open innovation projects for fear that they might expose sensitive information about their weaknesses. After embarking on a programme, many recognise that their concerns were overblown and instead relish in the advantage they had just acquired over their competitors.⁵⁴

This physical space will need a strong online presence. A public ledger with relevant contact and participation information of all startups, academics, investors, suppliers, customers and other stakeholders will create an open more engaging virtual presence. This can serve as a powerful promoter for innovators. The Defence Innovation Marketplace in the US is an example of a comprehensive online catalogue for all relevant information about how to engage with the Department of Defence.⁵⁵ Not all information would need to be made public and the most sensitive information could remain undisclosed. However, the purpose of this would be to aid information and data sharing, as well as direct cooperation between participating parties and external agents.

In this way, the MOD and its partners become far more accessible to all actors interested

in innovation. Although there are security considerations involved in this, the third-party host would be able to provide much of the practical implementation of this virtual infrastructure. This follows a recommendation made by the RAND Corporation that the internal MOD IT systems remain firewalled, whilst a trusted partner take responsibility for the shared virtual platform and data sharing.⁵⁶

The aim of the military entrepreneurship hub should be to become the world's most connected community in the defence, security and information sectors. In short, it should support defence, security and information startups by giving them access to a network of contacts inside the Armed Forces. It should also provide access to talent, infrastructure, and a route to testing their innovations directing with military personnel.

RECOMMENDATION FOUR

BUILD ON THE JHUB MODEL

jHub should be expanded. Ex-forces with entrepreneurial experience and training would be ideal entrepreneurs-in-residence to help identify new commercial innovations that the military should pilot, procure and adopt.

jHub was established in 2017 when the MOD recognised that it needed a new model for innovation. Previous MOD innovation recommendations argued the need for smaller and experimental approaches. Under the wing of the Joint Forces Command (JFC), jHub is the only innovation taskforce in the MOD that reports directly to a 4-star commanding officer.

While it does not conduct any of its own R&D, jHub aims to connect technology and talent through rapid procurement of market-ready technologies. In other words, jHub is a “brokering service within JFC that matches problem sets to solutions in the commercial sector with the aim of gaining new technologies or processes into the hands of the JFC user.”⁵⁷ jHub is deliberately located away from the MOD near Shoreditch.

It has adopted its own startup mentality, which has facilitated the creation of new partnerships with suppliers.

What makes the jHub innovation model effective is its speed. jHub aims to assess and pilot new innovations within six months before being taken to the JFC Innovation Board for procurement.

The closest counterpart is the Defence Innovation Unit Experimental (DIUx) in the United States⁵⁸, which accelerates commercial technologies for the US military. In an April 2018 visit to Silicon Valley, representatives from JFC and jHub met with DIUx to discuss their approach to developing innovation, including how its ecosystem has benefited from strong links with investors and the entrepreneurial community at large.⁵⁹ While DIUx has enormous available funding, jHub has committed to learning from its US counterpart and appointed a liaison officer to do so.

In the UK, the NHS Innovation Accelerator (NIA) operates in a different manner but has a similar mission to jHub. It is a fellowship programme launched by NHS England in 2015 and delivered by UCL Partners and Academic Health Science Networks (AHSNs). NIA's aim is to support clinicians, SMEs and academics to scale their innovations within the NHS. Unlike other accelerators, it focuses not on developing new ideas, but on getting

them taken up by the health service.⁶⁰ To date, NIA claims that over 1,200 NHS organisations are using NIA innovations.⁶¹ Placing end-user adoption at the heart of the innovation is clearly a superior model.

What jHub now needs is access to talent: an experienced workforce with a diverse skill set.⁶² Entrepreneurial ex-forces are ideal to fill this talent gap, because they have the advantage of inside military experience and knowledge, as well as entrepreneurial insight into the latest commercial innovations. Ex-forces entrepreneurs who have already created market-ready innovations should engage with jHub to sell to the MOD. Ex-forces can also play a role as talent spotters, working as entrepreneurs-in-residence to discover startups whose innovations are already in the market that could be adopted for military use.

A pipeline to secure this talent is therefore required. This leads onto our recommendation for an entrepreneurship boot camp for service leavers (see recommendation one). For jHub's purposes, the successful completion of this training should be sufficient for service leavers to then fulfil the role of entrepreneur-in-residence. Additional experience in the military entrepreneurship hub (see recommendation three) is also desirable, which many boot camp graduates may go into after their training.

RECOMMENDATION FIVE

CREATE INNOVATION LABS TO TEST INNOVATIONS WITH END-USERS

In defence, the end-users' experience and insight do not often reach those developing new products. Innovation labs should be launched in military facilities to allow for more engagement between innovators and serving personnel.

In the defence sector, the main challenge to innovation lies in the lack of adoption of new technologies. All too often in defence, the end-users' experience and insight does not reach those developing new products. As a result, many innovations are sidelined or not adopted.

High-functioning innovation labs, situated in the midst of the potential market, will help address this challenge.

Innovation labs should be launched in several military facilities across the UK. This would allow for the greatest scope of engagement and to establish a close relationship between innovators and the Armed Forces. These

spaces would allow experimentation and user testing of new products and services by service personnel. Innovation labs will also prevent innovation occurring within the military entrepreneurship hub and elsewhere from becoming overly 'insulated', far removed from the MOD's needs.⁶³ The innovation labs are a conduit that allows innovators to communicate directly with end-users without being tangled in MOD processes.

Service leavers with entrepreneurial experience and training would be ideal to manage these facilities. This would optimise – in the words of the MOD – the “exploitation” of ex-forces' talent for the purposes of enhancing innovation.

The value that ex-forces provide is not necessarily in the technical skill sets that they may have been trained in but in their enhanced problem-solving capabilities, honed through years of military service. Those who have completed the boot camp (see recommendation 1) would be those best suited to these roles. They have both military and entrepreneurial insight, and could determine the best application of new technologies in the pipeline. This expert engagement by service or former service personnel can secure multiple benefits: establish

new networks; enable the sharing of knowledge assets; form new bonds of trust between stakeholders.⁶⁴

Innovation labs will complement jHub. They will be a source of open innovation, at times developing entirely new ideas, and generally to a longer timeframe. jHub, on the other hand, looks for existing technologies to solve distinct problems.

They are also complementary to our other recommendations. Innovation labs will offer entrepreneurs in jHub, the military entrepreneurship hub, and DASA equal opportunities for end-user engagement. They should be run in according to jHub's criteria for piloting and experimentation.

Much like jHub, innovation labs should be headed by high ranking military officers with the executive authority to procure new innovations. This will reduce bureaucracy and lead to faster innovation procurement. Together with the support provided by the military entrepreneurship hub and DASA, innovation labs offer the opportunity for startups to engage directly with their intended end-users while also encouraging the competitive development of new innovations.

CONCLUSION

Innovation is key to the future success of the UK Armed Forces, but the MOD must unleash the entrepreneurial promise of service leavers to realise its potential.

To harness service leavers' talents, the MOD must change its approach to innovation. Most existing models do not take full advantage of the opportunities available. Our recommendations offer a way to transform the Armed Forces' relationship with startups in the defence, security and information sectors in favour of innovation.

The MOD has committed itself to engaging with emerging firms in the defence and security sector. However,

the role of startups in this space has been largely overlooked. Furthermore, the potential and contribution of service leavers in creating the next generation of innovations has also gone unrecognised.

Our five recommendations offer a blueprint to overhaul the current defence innovation model. The changes are necessary. Entrepreneurial training via the boot camps can produce the talent needed to drive innovation. The accelerator will provide the support needed for defence and security startups to grow rapidly. The hub will produce an entrepreneurial ecosystem that is currently lacking to bring all defence stakeholders together in one place. The expansion of jHub will rapidly increase its capacity to

deliver newly procured innovations; and the innovation labs will support all innovators in this endeavour.

Engaging in this new age of defence innovation can also produce a strong public image of ex-forces as the tech-builders of the future. It will lead to a step change in the way the public sees the ex-forces community, helping to dispel negative myths about this the community.⁶³ Ex-forces can lead the charge for an innovative defence and security sector.

The MOD must become more entrepreneurial if the British Armed Forces is to maintain its international advantage. While it may require some restructuring to tap into the latent entrepreneurial capabilities of service leavers, the gain to the UK's future defence and wider national prosperity will be well worth it.

REFERENCES

¹ Cogliser, C. C. and Brigham, K. H., 'The intersection of leadership and entrepreneurship: Mutual lessons to be learned', *The Leadership Quarterly* 15 (6), 2004. Bryant, T. A., 'Entrepreneurship', in Goethals, G. R., Sorenson, G. J. and Burns, J. M. (eds), *Encyclopedia of leadership* 1, 2004. Hope, J. B., Brian, O. and Mackin P., 'Factors affecting entrepreneurship among veterans', SAG Corporation Annandale, 2011. Napi, H. M., 'The effect of veteran's entrepreneurial leadership factors on entrepreneurial success in Malaysia', University Putra Malaysia, 2015.

² Nataraj, S., Shatz, H., Crane, K., Popper, S., Wang, X., and Feng, C., 'Creating an innovation system for knowledge city', Santa Monica: RAND Corporation, 2012.

³ Lyonette, C., Barnes, S-A., Owen, D., 'Self-employment and the armed forces community', Warwick Institute for Employment Research, 2018: <https://warwick.ac.uk/fac/soc/ier/research/fimt>

⁴ Avrahami, Y. and Lerner, M., 'The effect of combat service and military rank on entrepreneurial careers: The case of Israeli MBA graduates', *Journal of Political and Military Sociology*, 2003. Boldon, N., Maury, R., Armstrong, N. and Van Slyke, R., 'The state of veteran entrepreneurship research: What we know and next steps', Institute for Veterans and Military Families, Syracuse University, 2016. Haynie, J. M., 'Revisiting the business case for hiring a veteran: A strategy for cultivating competitive advantage', Institute for Veterans and Military Families, Syracuse University, 2012. Thompson, J., Aivy, G., and Lees, A., 'Social entrepreneurship - a new look at the people and the potential', *Management Decision* 38 (5), 2000.

⁵ X-Forces, June 2018: <https://www.x-forces.com/>

⁶ Heropreneurs, About us: <https://heropreneurs.co.uk/about-us/>

⁷ Sourced from: <https://www.pointsoflight.gov.uk/heropreneurs/>

⁸ Ministry of Defence, 'Advantage through innovation: The Defence Innovation Initiative', September 2016.

⁹ ADS, '2017 industry facts and figures: A guide to the UK's aerospace, defence, security and space sectors', ADS Group, 2017.

¹⁰ Ministry of Defence, 'UK defence in numbers', September 2017: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652915/UK_Defence_in_Numbers_2017_-_Update_17_Oct.pdf

¹¹ Ministry of Defence, 'Procurement at MOD': <https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement>

¹² MOD, 'Procurement at MOD'.

¹³ Ministry of Defence, 'The defence equipment plan 2017': https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/677999/20180125-EP17_Final.pdf

¹⁴ US Department of Defence, Fiscal Year 2019 Budget Proposal, 2018: <https://www.defense.gov/News/News-Releases/News-Release-View/Article/1438798/dod-releases-fiscal-year-2019-budget-proposal/>

¹⁵ Williams, L. C., 'DIUx gets a big boost in FY19 budget', FCW, 2018.

¹⁶ Senor, D. and Singer, S., 'Start-up nation: The story of Israel's economic miracle', Twelve, 2009.

¹⁷ Behar, R., 'Inside Israel's secret startup machine', *Forbes*, 2016.

¹⁸ Hipple, S. F. and Hammond, L. A., 'Self-employment in the United States', Bureau for Labor Statistics, 2016.

¹⁹ Obtained under a Freedom of Information request, Ministry of Defence, FOI2018/04771, April 2018.

²⁰ Ministry of Defence, 'Career transition partnership annual statistics: UK regular service personnel employment', 2018.

²¹ Cannon, L. R., 'A rationale of a veteran-specific entrepreneurial curriculum', Capella University, 2008.

²² Henry, C., Hill, F. and Leitch, C., 'Entrepreneurship education and training: can entrepreneurship be taught? Part I', *Education + Training* 47 (2), 2005. Matlay, H. and Carey,

C., 'Entrepreneurship education in the UK: A longitudinal perspective', *Journal of Small Business and Enterprise Development* 14 (2), 2007. Mitra, J. and Matlay, H., 'Entrepreneurial and vocational education and training: Lessons from Eastern and Central Europe', *Industry and Higher Education* 18 (1), 2004. Zimmerer, T. W. and Scarborough, N. M., 'Essentials of entrepreneurship and small business management', Pearson, 1998.

²³ Shaheen, G. and Myhill, W., 'Entrepreneurship for veterans with disabilities: Lessons learned from the field', Intar Leadership Center, 2009.

²⁴ Prince's Operation Entrepreneur: <https://www.princesoperationentrepreneur.ca/programs/boot-camp>

²⁵ Lyons, J. A., 'Veteran entrepreneurship: A phenomenological study of the lived experience of veterans' transition from military service to entrepreneurship, Capella University, 2014.

²⁶ Miller, D. and Le Breton-Miller, I., 'Underdog entrepreneurs: A model of challenge-based entrepreneurship', *Entrepreneurship Theory and Practice*, 2017.

²⁷ Haynie, J. M. and Shepherd, D., 'Toward a theory of discontinuous career in transition: Investigating career transitions necessitated by traumatic life events', *Journal of Applied Psychology* 93 (3), 2011.

²⁸ Bravo-Biosca, 2016.

²⁹ Senor, D. and Singer, S., 'Start-up nation: The story of Israel's economic miracle', Twelve, 2009.

³⁰ Cohen, S. G. and Hochberg, Y. V., 'Accelerating startups: The seed accelerator phenomenon', Massachusetts Institute of Technology, NBER, 2014.

³¹ Startup Genome, 'Global startup ecosystem report 2018: Succeeding in the new era of technology', 2018.

³² Bierly, P., Damanpour, F. and Santoro, M., 'The application of external knowledge: organisational conditions for exploration and exploitation', *Journal of Management Studies* 46:481-509', 2009.

REFERENCES

³³ Ministry of Defence, Accelerator funded contracts: <https://www.gov.uk/government/publications/accelerator-funded-contracts>

³⁴ RUSI Acquisition Focus, 'The conspiracy of optimism', RUSI, 2007.

³⁵ *ibid.*

³⁶ James, A. D., Cox, D., Rigby, J., 'Privatising defence research: Testing the boundaries of public private partnership: the privatisation of the UK Defence Evaluation and Research Agency', *Science and Public Policy* 32 (2): 155–161, 2005.

³⁷ Lakhani, K. R., Jeppesen, L. B., Lohse, P. A., Panetta, J. A., 'The value of openness in scientific problem solving', HBS Working Papers, 2011. Mulgan, G., 'Innovation in the public sector: How can public organisations better create, improve and adapt?', Nesta, 2014.

³⁸ Benton, C., Mullins, L., Shelley, K., and Dempsey, T., 'Makerspaces: Supporting an entrepreneurial system', Michigan State University EDA Center for Regional Economic Innovation, 2014. Cohen, S., 'What do accelerators do? Insights from incubators and angels?', MIT Press Journals, *Innovations*, 8 (3–4), 2013. Miller, P., and Bound, K., 'The startup factories – the rise of accelerator programmes to support new technology ventures', Nesta, London, 2011.

³⁹ GCHQ Cyber Accelerator: <https://wayra.co.uk/gchq/>

⁴⁰ Behar, R., 'Inside Israel's secret startup machine', *Forbes*, 2016.

⁴¹ Reed, J., 'Unit 8200: Israel's cyber spy agency', *Financial Times*, 2015. Team 8: <https://www.team8.vc/about/about-us/>

⁴² iHLS Startup Accelerator: <https://i-hls.com/accelerator/>

⁴³ Devi, S., 'Business as usual', *Financial Times*, 2007. Cooper, C., 'How Israel became a start-up nation', In *The Black*, 2017.

⁴⁴ Freeman, J., Hellgren, T., Mastroeni, M., Paoli, G. P., Robertson, K., and Black, J., 'Innovation models: Enabling new defence solutions and enhanced

benefits from science and technology', Rand Corporation, 2015.

⁴⁵ Lalkaka, R., 'Technology business incubators to help build an innovation-based economy', *Journal of Change Management* 3 (2): 167–176, 2002. Tether, B. S., 'Who co-operates for innovation, and why: An empirical analysis', *Research Policy* 31 (6): 947–967, 2002.

⁴⁶ Chesbrough, H. W., 'Open innovation: The new imperative for creating and profiting from technology', Harvard Business Press, 2003.

⁴⁷ Anaya-Carlsson, K., and Lundberg, M., 'Results from 18 VINN excellence centres reported in 2012', Stockholm, 2012. Du, J., Leten, B. and Vanhaverbeke, W., 'Managing open innovation projects with science-based and market-based partners', *Research Policy*, 43, 2014. Hughes, A., and Kitson, M., 'Connecting with the Ivory Tower: Business perspectives on knowledge exchange in the UK', UK-Innovation Research Centre, Cambridge, 2013. Witty, A., 'Encouraging a British Invention Revolution: Sir Andrew Witty's review of universities and growth', UK BIS, 2014.

⁴⁸ Anderson, N., Potocnik, K., and Zhou, J., 'Innovation and creativity in organisations: a state of the science review, prospective commentary, and guiding framework', *Journal of Management* 40: 1297–1333, 2014.

⁴⁹ Raj, R., and Srivastava, K., 'Mediating role of organisational learning on the relationship among organisational culture, HRM practices, and innovativeness', *Labour Studies* 38: 203, 2013. Mocker, V., Bielli, S. and Haley, C., 'Winning together: a guide to successful corporate-startup collaborations', Nesta, London, 2015.

⁵⁰ Mocker, Bielli, and Haley, 'Winning together', Nesta, 2015.

⁵¹ Aghion, P., Bloom, N., Blundell, R., Griffith, R., Howitt, P., 'Competition and innovation: an inverted-U relationship', *Quarterly Journal of Economics* 120 (2): 701–728, 2005. Hippel, E. von, 'Horizontal innovation networks – by and for users', *Industrial and Corporate Change* 16 (2): 293–315, 2007. Leavy, B., 'A leader's guide to creating an innovative culture', *Strategy and Leadership* 33 (4): 38–45, 2005.

⁵² Sarros J., Cooper, B. and Santora, J., 'Building a climate of innovation through transformational leadership and organisation', *Journal of Leadership and Organisational Studies* 15: 145–158, 2008.

⁵³ Boldon, N. Y. and Maury, R. V., 'Bridging the gap: Motivations, challenges and successes of veteran entrepreneurs', Institute for Veterans and Military Families, Syracuse University, 2017.

⁵⁴ Nesta, 'Open innovation: From marginal to mainstream', Nesta, 2010.

⁵⁵ Defence Innovation Marketplace: <http://www.defenseinnovationmarketplace.mil/>

⁵⁶ Freeman et al., 2015.

⁵⁷ jHub, 'Working in the jHub', video, 2018: <https://www.gov.uk/government/news/working-in-the-jhub>

⁵⁸ Defence Innovation Unit Experimental: <https://www.dix.mil/work-with-us/DoD-Entities>

⁵⁹ Ministry of Defence, 'Joint Forces Command seeks out innovation in Silicon Valley', 2018.

⁶⁰ Nesta, 'NHS innovation accelerator': <https://www.nesta.org.uk/archive-pages/nhs-innovation-accelerator/> UCL Partners, 'NHS innovation accelerator': <https://udpartners.com/what-we-do/innovation/nhs-innovation-accelerator-ria/>

⁶¹ NHS Innovation Accelerator, About: <https://nhsaccelerator.com/accelerator/>

⁶² Birkler, J., Bower, A., Drexner, J., Lee, G., Lorell, M., Smith, G., Timson, F., Trible, W., and Younossi, O., 'Competition and innovation in the US fixed-wing military aircraft industry', Santa Monica, RAND Corporation, 2003.

⁶³ Nesta, 'Open innovation', 2010.

⁶⁴ Hughes and Kitson, 2013.

⁶⁵ King's Centre for Military Health Research Symposium, 'Military service and mental health: what are the real problems?', King's College London, 2012: <https://www.kcl.ac.uk/sspp/departments/warstudies/news/newsrecords/symposium.pdf>

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