DEFENCE AND SECURITY ACCELERATOR (DASA)
ANNUAL REVIEW 2018 - 2019
INNOVATION FOR A SAFER FUTURE
OUR VISION

Our vision is for the UK to maintain its strategic advantage through the most innovative defence and security capabilities in the world.

OUR MISSION

We find and fund exploitable innovation to support UK defence and security quickly and effectively, and support UK prosperity.
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELCOME</td>
<td>4</td>
</tr>
<tr>
<td>WHO WE ARE</td>
<td>5</td>
</tr>
<tr>
<td>OUR STRATEGY</td>
<td>6</td>
</tr>
<tr>
<td>REVIEWING THE YEAR</td>
<td>7</td>
</tr>
<tr>
<td>OUR PERFORMANCE</td>
<td>8</td>
</tr>
<tr>
<td>UPDATE ON INCUBATOR PROGRAMME</td>
<td>13</td>
</tr>
<tr>
<td>BUILDING THE DASA TEAM</td>
<td>14</td>
</tr>
<tr>
<td>CASE STUDIES</td>
<td>15</td>
</tr>
<tr>
<td>NEXT STEPS</td>
<td>19</td>
</tr>
<tr>
<td>FINANCIAL STATEMENT</td>
<td>20</td>
</tr>
</tbody>
</table>
In DASA’s second year we have become a fully capable delivery organisation working at pace to benefit a wide range of defence and security customers. I’m proud of the DASA team and what we have achieved together, thanks to the support of the Defence Science and Technology Laboratory (Dstl), Ministry of Defence, Home Office, Department for Transport, and across the military, police and emergency services.

Innovation is a team sport where collaboration is vital. As part of a thriving innovation ecosystem, DASA has played a key role in Defence’s ambitious and bold vision - to create an enterprise that is ‘innovative by instinct’, where ideas are readily generated and exploited to deliver innovative solutions to Defence’s challenges.

We have successfully built a UK-wide innovation network of private sector, academics and individuals, including many who had not worked in defence and security before, helping suppliers to gain customer contracts and place their capability into the hands of the user. Our regional Innovation Partners have grown their reach, building sustainable relationships and helping others understand the challenges of defence and security, and enlisting their help in solving them. Our exploitation team provides a vital link to end users, helping suppliers to understand how they can maximise the potential of their innovation within the context of defence and security. We have funded 144 organisations – nearly two-thirds going to small and medium-sized enterprises – investing £37m in 226 projects in this financial year.

We have rapid, agile processes and systems which provide robust, balanced decisions based on simple and clear criteria – desirability, feasibility and viability – and can place contracts within three weeks of the decision to fund.

Our process is specifically designed to be straightforward and our short form contract makes it easy to work with us. To benefit small businesses, we do not take any equity or Intellectual Property, and usually provide 100% of the funding without requiring matched funding. However, our approach is flexible and we occasionally use different terms and conditions which are always stated at the start of a competition.

DASA is going from strength to strength. We continue to learn and will become even more effective in future. Together, we will succeed in making the UK a safer and more prosperous country, with defence and security capabilities at the cutting edge of innovation.
WHO WE ARE

DASA is a cross-Government team of around 50 people from a wide range of backgrounds including Defence, security, the private sector and academia. We are co-located with Dstl at Porton Down and are piloting a London Hub based at Imperial College, White City. We have 12 regionally based innovation partners, covering the length and breadth of the UK including offices at Harwell and Cranfield University.

DASA is part of the Defence Innovation Directorate in MOD, reporting to the recently appointed Director Defence Innovation, Clare Cameron. We are governed by a Board of Director level representatives from across our customer base. We work closely with our policy and strategy colleagues in the Defence Innovation Unit (DIU), who provide co-ordination across Defence and administer the Defence Innovation Fund.
OUR STRATEGY

To help UK defence and security maintain strategic advantage over its adversaries we will:

- build an innovation network of government, private sector, academics and individuals for defence and security, including those who have never worked with us before.
- understand the requirements of defence and security stakeholders and help them scout out, develop and exploit innovative ideas, inform decision making and find potential solutions to their challenges.
- find, fund and support industry, embracing small and medium-sized enterprises and academia to develop their innovative ideas into exploitable products and services for defence and security customers.
- work collaboratively to form partnerships, co-ordinate and complement existing activity, and avoid any duplication, to enhance the overall innovation ecosystem.
- experiment with novel methodologies and innovative approaches to facilitate accelerating delivery of the best solutions.
REVIEWING THE YEAR

The figures reported below cover the FY18/19 to 31 March 2019

799 Proposals received

- 207 Academic (26%)
- 455 SMEs (57%)
- 131 Large / Prime (16%)
- 6 Government Entity (1%)

£36.8m Funding

- £21.9m Chief Scientific Advisor (CSA)
- £10.9m Defence Innovation Unit (DIU)
- £3.6m Security (Home Office, Department for Transport)
- £0.4m Army

119 of the 226 proposals funded were from SMEs

40% proposals from suppliers new to DASA

52%
WE SAID WE WOULD....

1. BE MORE VISIBLE

During 2018-2019, we have worked hard to improve our visibility by attending industry leading events across the UK.

- We have delivered keynote speeches at Defence Procurement, Research, Technology & Exportability (DPRTE) 2019, at an event with the Weapons Science and Technology Centre (WSTC) and the Three Counties Defence and Security Expo. We have exhibited at the International Security Expo, Defence Vehicle Dynamics (DVD), BAPCO annual conference and the Security and Policing event.

- We have hosted a series of DASA led events, showcasing supplier projects and encouraging innovation from across industry and academia to tackle defence and security challenges - from the Supplier Showcase and hackathons to collaboration events and demonstration days.

- Our Innovation Partners have been out and about, leading briefings and one-to-one meeting sessions with small and medium-sized enterprises, industry primes and academia across the UK. This has included hosting joint events with partners including the Scottish Centre of Excellence in Satellite Applications (SoXsa) and attending regional Defence and Security Equipment International (DSEI) roadshows.

- In July 2018, DASA took up residency at the Translation & Innovation Hub (I-HUB) in White City, establishing a partnership with Imperial College London. The Minister for Defence Procurement, Stuart Andrew MP, visited the I-HUB in February 2019 to see for himself how the partnership allows DASA to access new and innovative start-ups and academics from a variety of disciplines.
2. WORK WITH ORGANISATIONS AROUND THE WORLD

We have been building international relationships.

- Working with the Office for the Defense Secretary in the US, we ran our first truly joint competition looking at finding solutions for mitigating the threat from Chemical, Biological and Explosive munitions found on the battlefield. This received 32 proposals from the US, UK and around the world, with a total of 7 projects funded at phase 1, worth almost £700k. The US is keen to follow this competition up with further collaboration.

- We have engaged with the US non-for-profit venture Hacking 4 Defence (H4D) and are supporting a UK pilot. H4D is an entrepreneurial approach to solving pressing national security and defence problems where teams of postgraduate students apply the ‘Lean Launchpad’ methodology to rapidly develop a minimum viable product (solution) within a university term. They are running pilots with King’s College and Imperial College London for which DASA will provide a challenge as well as the problem sponsor and mentors to support the participants.

- Working with the Defence Science and Technology Group in Australia, we ran a competition looking for innovation in joining together specialist materials, with £1m of available funding. £500k was provided by Dstl’s Materials for Strategic Advantage Programme in the UK and $900k in a parallel Australian competition from Small Business Innovation Research for Defence (SBIRD). 70 proposals were received, with 14 preferred projects involving collaboration between both Australian and UK suppliers to deliver the work. Phase 2 and wider UK-Australian discussions are already taking place to establish further opportunities to collaborate.

- DASA competitions are open to the best ideas from around the world, with 10% of received proposals coming from overseas suppliers. In this financial year we have funded 18 overseas proposals.

- DASA has received briefing requests from a number of other countries, including Canada, France, Germany, Singapore, Norway, the Netherlands and Finland, and work is on-going to seek out opportunities to collaborate further.
WE SAID WE WOULD....

3. BUILD OUR PARTNERSHIPS

DASA has been working hard to develop its partnerships across Government, industry and academia this year.

- Through DASA’s outreach team, established right across the UK, we are linked to eighty UK universities, have received proposals from 70 of them, and are funding projects from 43. Our reach into the UK academic research base is extensive, and forms a significant proportion of our interactions.

- Via the Defence Growth Partnership and the UK Defence Solutions Centre, DASA is forging significant relationships with all the key defence suppliers in the UK, and taking steps to grow these further from both a supplier and customer perspective. DASA’s investment in Defence and Security Industry Partners will build up our collaboration with these organisations with a view to better exploiting the outputs from our competitions into the UK’s defence sector.

- DASA’s investment in a new Northern Ireland Innovation Partner, set to work alongside Invest NI’s new pilot programme – the National Defence Exploitation Programme – will bring together small and medium sized enterprises based in Northern Ireland and industry prime suppliers across the UK.

- We are deepening our relationship with national and local business support organisations right across the UK, including Innovate UK, Northern Defence Industries, Local Enterprise Partnerships, and a range of incubators, accelerators, catapults and science parks. These linkages are greatly increasing our reach into the supplier base in sectors well outside the usual security and defence suppliers, thus encouraging innovation from the cutting edge into our programmes.

- For the first time, we have run market events for Defence Logistics ‘Supply Chain Data Integration’ and the Royal Navy on the HMS Queen Elizabeth Aircraft Carrier. We also partnered with the Ditchley Foundation to run a cross-government event with security stakeholders on ‘Grappling with Digital Disclosures’.

- We have joined up customers on areas of mutual interest, including the Department for Transport and Home Office on ‘Tackling Knife Crime’, and stakeholders on ‘Behavioural Analytics’. The Department for International Development and UK Research and Innovation have invested in our MOD ‘Autonomous Last Mile Resupply’ competition leveraging the innovation for humanitarian purposes as well as for defence and security.

- We held our first competitions directly for the military front line commands, including the British Army’s ‘Stopping it in its Tracks’ and the Royal Navy’s ‘Get the Ship in Shape: accounting for, and tracking, personnel’. We also took part in the Army Warfighting Experiment, running our first DASA large scale end user demonstration.

- This year, we have worked directly with Defence Equipment and Support, in collaboration with the UK Defence Solutions Centre, to support delivery of a competition entitled ‘Capability Proving.’ Four suppliers were selected to provide innovative solutions to key strategic future demands for UK defence in autonomy and big data, receiving combined investment and support worth over £4 million from the MOD’s Defence Innovation Fund and £6 million from industry partners for full development, as announced by the Minister for Defence Procurement, Stuart Andrew MP.
WE SAID WE WOULD....

4. TRY NEW THINGS

It’s been a year of building new services.

- We ran our first two hackathons supported by BeMyApp, Microsoft and Oracle. The first was on Real World Incident Response, working with the MOD’s Information Systems and Services, the Home Office and Police. Data from a real terrorist incident was released and hackers used their skills to ingest, access and analyse the data to detect the suspect.

- The second hackathon was for the Defence Support Network and the Defence Innovation Unit on ‘Defence Logistics’. Data from the C130J Hercules Platform was provided and hackers were required to analyse and share this structured and unstructured multi-source data. We are now working with customers and participating suppliers to take forward solutions.

- We have launched our market exploration services, offering sandpit events and capability calls. These have been very popular with our customers. They warm up the market to the challenge, provide confidence to customers that a competition will be worth undertaking (sometimes supporting business cases for competitions), and help us to scope or frame the challenge better for a competition.
WE SAID WE WOULD....

5. INTRODUCE A NEW ONLINE PORTAL

We have phased out our old competition portal which was used by suppliers to submit proposals and introduced a new online portal, known as the Enterprise Collaboration Service (ECS) which is provided by Salesforce.

• We have now got a world leading, cloud based, secure, online service to manage all our competitions enabling us to receive, assess, moderate and select proposals for funding.

• So far, our network consists of 4000 supplier organisations, registered on ECS. ECS also has a Customer Relationship Management tool and our network of innovation partners are finding the new CRM service invaluable in managing engagement with industry and academia within their regional areas. Using agile methodology, ECS has been delivered in increments and there is more to do to improve the service and adding additional functionality such as a shared collaboration space.

• We are pleased with our progress to date and are excited about the future vision for ECS as the single defence portal for innovation.
WE SAID WE WOULD....

6. PILOT A DASA INCUBATOR PROGRAMME

DASA has developed options for the most appropriate model to achieve the aim of offering opportunities for collaboration and mentoring to start-ups, small and medium-sized enterprises (SMEs) and others, to enhance their ability to deliver defence and security innovation over the long-term.

DASA is piloting an option to co-locate Government alongside defence and security focused industry and academia, to facilitate a collaboration environment. This initiative would allow businesses to develop innovative and exploitable solutions to address defence and security threats and capability gaps and provide support to ensure businesses’ survivability and growth. Should it prove successful, MOD will consider whether this model could be replicated regionally.

Through this initiative, DASA aims to achieve the following key objectives:

- A collaborative space for Government stakeholders to engage with SMEs, Primes and academic institutions to understand private sector barriers to delivering innovation and build better processes and pathways to ensure exploitation of innovation.
- Development of SME innovations and businesses to meet Government defence, security and prosperity objectives.
- Active industry engagement in nurturing and growing SME innovation through access to networks, mentoring and finance.
- Through academic and industry partnerships, access to trialling and testing facilities to build and test innovation in order to inform SME business growth post DASA funding.
- Provide evidence for MOD to judge whether co-location and creating a collaborative space for Government, academia and industry is the right approach to finding and funding innovation over the long-term.
7. BUILD THE DASA TEAM

We have strengthened our team.

- At the end of the last financial year (2017/18) we had grown to 36 people and talked about building the team up to 51 people in order to meet demand and better support our stakeholders. We have exceeded our target, attracting a group of highly talented and experienced recruits whilst at the same time retaining our existing workforce with minimal turnover.

- Reflecting our team values of customer focus, openness, courage, integrity, inclusivity, respect, and accountability, we have great staff engagement and our annual staff survey in October showed an improvement in scores for all but one area, training and development. This is one of our focus areas for next year.

Over the course of this year we have:

- Extended our Innovation Partner network including international coverage and a dedicated partner for Northern Ireland.
- Built our exploitation function, most recently employing an Access to Finance expert.
- Staffed our London Hub partnered with Imperial College London.
- Increased our operational delivery team, including our first directly-recruited post-graduates.
- Strengthened our support services team.
- Engaged a critical friend to challenge our thinking and provide expert advice.
- And employed a professional Storyteller.
THE KROWD: PUBLIC REASSURANCE AT THEIR FINGERTIPS

Innovation Summary
Event goers and venue crowds will, for the first time, have security at their fingertips with the launch of a groundbreaking app, The Krowd® and its KrowdSafe™ service for venue security teams.

The app aims to transform safety in crowded places, enabling on-site security and the public to engage directly and communicate quickly in potentially suspicious scenarios, which means every person in the crowd with a smartphone becomes a deterrent to would-be terrorists.

DASA Exploitation
The first contract and annual subscription to KrowdSafe and other Krowd services will be at the Broadgate Quarter. The Broadgate Quarter comprises of two of London’s pre-eminent office buildings, with an average daily footfall of 6,000 people. This service will help alert security and maintenance concerns to building management who can swiftly investigate and resolve.

The app will also be used for the first time at the Exeter Guildhall shopping centre and will be the official event app and child safeguarding solution for the Planet Earth Games in 2019.

This is the first market exploitation under DASA’s ‘Increasing Crowd Resilience’ (ICR) Programme which is funded and commissioned by the Home Office as a direct response to the 2017 terror attacks, intending to accelerate crowd safety innovations and technologies.

Krowdthink
The Krowd App was developed by Krowdthink, a start-up innovator based in Devon. The company has grown with the help of the Home Office funding (around £241k), employing several new consultants from behavioural science, police, security and specialist technology backgrounds.
**£1M INJECTION INTO PIONEERING NEW SPACE TECHNOLOGY**

### Summary
The development of a new generation of pioneering British deployable satellite antennas by Oxford Space Systems (OSS) has been boosted following a £1m MOD investment. In collaboration with the Defence Science and Technology Laboratory (Dstl) and the Defence Innovation Fund, this is the largest contract placed with a first-time supplier by DASA.

**Europe’s first flight proven satellite antenna**

The ‘wrapped rib’ antenna is lighter, less complex and more cost-competitive than those currently available commercially. The antenna will be exclusively developed in the UK by OSS. It will make the UK the first European country with the capability of a flight-proven parabolic deployable antenna.

The lighter weight of the ‘wrapped-rib’ antenna means it can be transported to space more efficiently at less expense. This is critical in an industry where launch costs are high. The MOD funding will assist OSS to increase the antenna’s size and its performance to meet the needs of defence.

### UK space capability
The new antenna will be used to meet the needs of fine-resolution Low Earth Orbit Synthetic Aperture Radar (SAR) imagery. SAR permits all weather Earth observation, irrespective of time of day or night. This provides unique advantages for both civil and defence applications. The technology will enable the UK to deploy a number of antennas in space, providing more accurate and frequent satellite images.

The technology consists of a specialist carbon-fibre composite and utilises origami engineering techniques to create a unique, compact, deployable antenna. This results in an antenna that is compact and light weight when folded for easy portability and deployability but can unfurl to several metres when in space, just like a large pop-up umbrella.
Bright Structures Ltd, a micro SME from Devon, has developed the world’s first man-portable, long-span rescue/assault bridge, aptly named EasiBridge.

At 85% lighter, 80% more compact, and many times cheaper than incumbent Infantry Assault Bridges, we invested around £77k under the Open Call for Innovation, to adapt the product range for defence and wider government use.

We facilitated military trials of a wide range of new gap crossing, force protection and difficult access capabilities, resulting in seven new capabilities being developed. EasiBridge exhibited their capability at Army Warfighting Experiment 2018 in front of a large military and commercial audience, leading to collaboration with Hippo Multipower and QinetiQ. Trialling the products has provided further evidence that the innovation could have wider government uses.

EasiBridge can be adapted for civilian applications, particularly for emergency and rescue services. The EasiRoof “Lite” offers lower-cost, light-duty roof support (trusses) for disaster relief or emergency accommodation; introductions to the Department for International Development have been established.

EasiBridge has achieved its first military sale to the Royal Engineers, through the Army Rapid Innovation and Experimentation Laboratory (ARIEL) in February 2019.

“Easibridge capability is showing a lot of promise and, I think, represents all that is good about SME innovation in Defence – in this case literally a man in a shed!”

Lt Col Martin Clark, DASA Military Advisor

“I cannot tell you the renewed impetus this project has given us. After 3 years scratching around the wilderness, staring at nothing other than financial oblivion, the last several months have already started to change everything. Exactly what the Defence and Security Accelerator was intended to do, I’m sure.”

Stephen Bright, Director, Bright Structures Ltd
MAN PORTABLE KIT FOR INstant METAL REPAIRS

Rawwater is creating a portable back-pack spray kit for the military to carry out instant emergency metal repairs in the battlefield. The Instant Metal Patch (IMP) has been developed to date within the nuclear sector.

It works by spraying a patch that solidifies instantly over the damaged area, to seal holes, cracks, positive and negative pressure leaks. It can also be used to seal cracks under water, and leaks from fuel tanks without the necessity to empty the tank. DASA investment of £245k via the Defence Innovation Fund for a 12 month project will fund the development and production of a prototype back-pack for use across the armed forces.

This innovation could provide, for example, an armoured vehicle crew with an effective tool to quickly and safely repair holes in a fuel tank damaged under fire.

EFFECTIVE EBOLA VACCINE RESEARCH

DASA investment has supported the Defence Science and Technology Laboratory (Dstl) and the University of Liverpool in achieving a better understanding of the Ebola virus (EBOV) infection, for the creation of more effective vaccines or therapies.

The project co-coincided with an Ebola outbreak in West Africa enabling a very informative analysis of collected blood samples. Sufficient compelling data was generated to achieve US Defense Advanced Research Projects Agency (DARPA) funding of $1m.

This research, which concludes in 2019, is evaluating the therapeutic use of defective genomes to restrict EBOV infection. As part of this research we have enhanced our understanding of the biology of defective EBOV particles and raised interesting questions concerning viral evolution. Additionally, the research has spun out into the advanced mathematical modelling of EBOV and other viral infections. This is supported using DARPA data and performed in conjunction with Dstl and the University of Leeds.
NEXT STEPS

Over the next year, in pursuit of our mission, we will continue to develop strong sustainable partnerships for mutual benefit with other innovation groups and industry partners that can help us be even more successful.

1. Build on our networks
We will build on the networks we have created and linked into across the UK and internationally, and find ways to bring innovators and customers together online and offline, through collaboration events, and the launch of our online shared collaboration space.

2. Exploit innovations
We will focus on exploiting the most exciting and game-changing innovations into the hands of frontline end-users, including by embedding DASA team members into the Army, Royal Navy, Royal Air Force, Joint Forces Command, and Defence Equipment and Support. We will work with others across defence and security to explore novel commercial approaches to speed up the acquisition of innovative products.

3. Build greater awareness of DASA
We will seek to build greater awareness of DASA across potential customers including broader security challenges, and do even more to join up common interests across Government and delivery agencies, forming communities of interest in key areas of capability innovation. We will also continue to explore and develop new services such as online data challenges and Innovation Labs to access innovation in the most efficient and effective ways.

4. Pilot a Defence and Security Innovation Hub
We will explore a pilot of a Defence and Security Innovation Hub, bringing together academia, industry and Government in a collaboration space to work on pressing defence and national security challenges, which could form the first of a number of regional hubs.

5. Provide collaboration opportunities
A key objective for DASA will be to provide SMEs with the opportunity to work collaboratively with Government and wider industry, and to assist with access to other sources of funding such as private equity. We will further explore co-investment models, and broker introductions for innovative businesses to potential customers in defence and security, including in the private sector.

6. Measuring our success
We will be taking a new approach to measuring the success of our innovation projects. We will track progress towards integration, implementation and in-service use as a capability for Defence and Security end users. Working with our suppliers we will be able to assess the impact of the innovations we have funded.

We’re always keen to hear ideas about ways we can improve, potential partnership opportunities and new ways of working: you can contact us on our email or via social media.

Over the next year, in pursuit of our mission, we will continue to develop strong sustainable partnerships for mutual benefit with other innovation groups and industry partners that can help us be even more successful.
# FINANCIAL STATEMENT: 2018/19

## Project funding

![Figure 1](image-url)  

**Operating costs**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount (£K)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Online Portal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third party supplier</td>
<td>366</td>
<td>Includes on-line submission service and cloud hosting</td>
</tr>
<tr>
<td>2. Outreach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending exhibitions and events</td>
<td>98</td>
<td>Includes regional events, exhibitions and trade shows</td>
</tr>
<tr>
<td>3. Specialist Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Specialist Support</td>
<td>14</td>
<td>Support to set-up of new competition methodologies</td>
</tr>
<tr>
<td>4. Staff costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a DASA staff</td>
<td>5,367</td>
<td>Includes secondees</td>
</tr>
<tr>
<td>b Non-DASA Support Staff</td>
<td>360</td>
<td>Supporting Services (e.g. Technical Partnering and Project Management)</td>
</tr>
<tr>
<td>c Support from imagery</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>d Training</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>e T&amp;S</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Operating Costs</td>
<td>Total</td>
<td>6,422</td>
</tr>
</tbody>
</table>
THANKS FOR READING

For more information about DASA’s work visit
www.gov.uk/government/organisations/defence-and-security-accelerator

DASA Innovation Partners can be contacted through accelerator@dstl.gov.uk
or 01980 950000 Option 3.