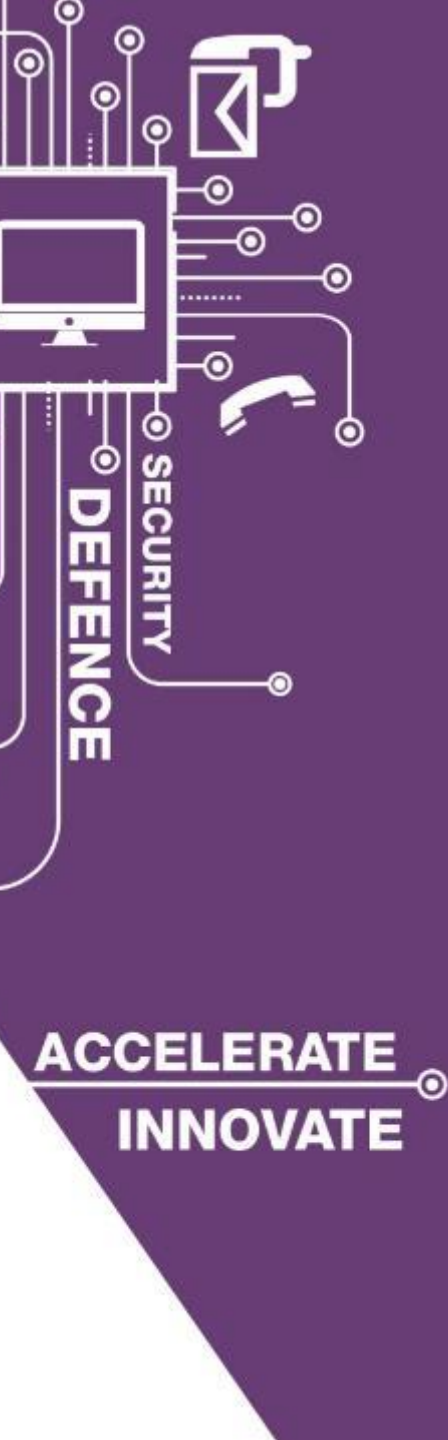


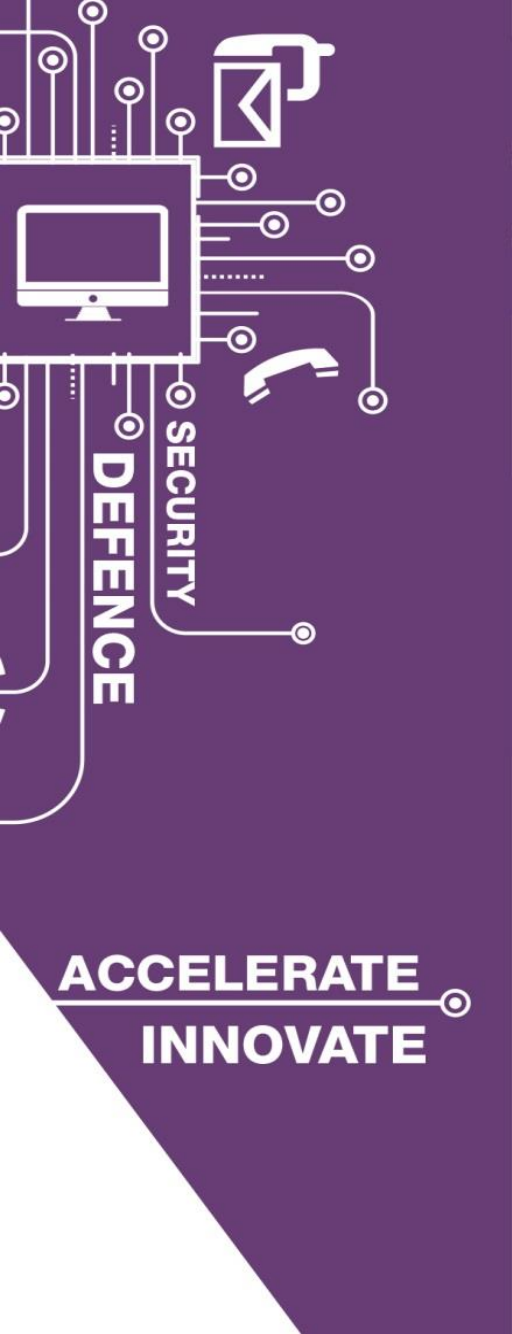


Defence and Security
Accelerator

Invisible Shield Launch

29 April 2020





Defence and Security
Accelerator

Welcome and Housekeeping

Rachael Colling, DASA Delivery manager
Graeme Reid, Dstl Competition Lead

Housekeeping

- Please keep lines muted



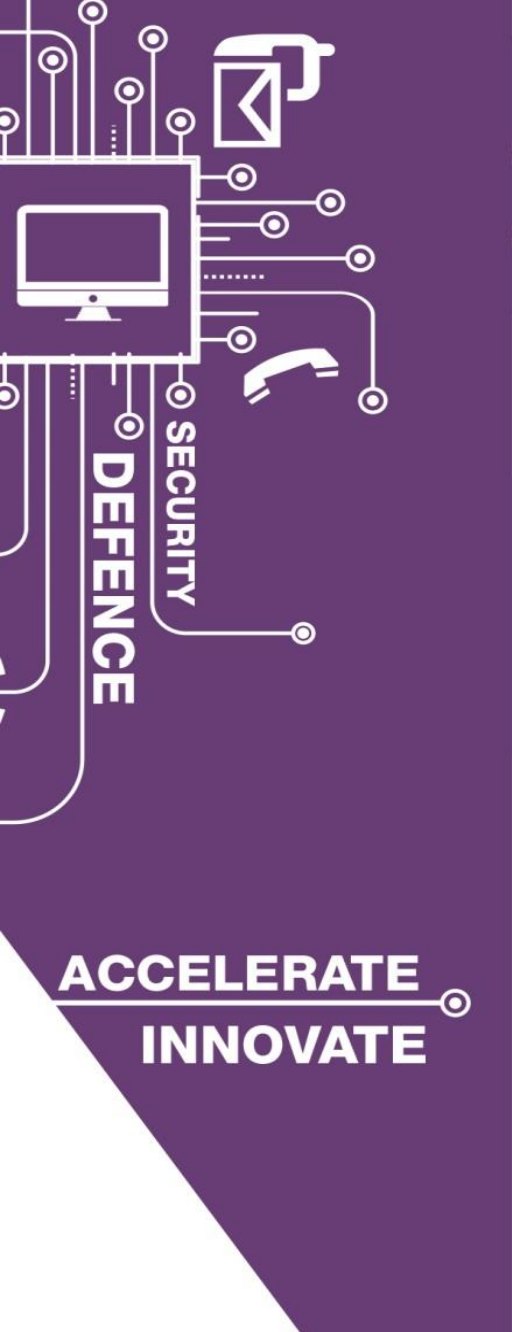
- We are using audio only, please turn off camera
- Today's event will be recorded for internal reference
- Q&A session via Slido (www.sli.do): #DASA
- Today's slide pack can also be found attached in the guidance email

Welcome (cont.)

- Security considerations:
 - Competition is being run at the OFFICIAL classification, which is equivalent to UNCLASSIFIED.
 - No OFFICIAL-SENSITIVE or higher classified matters are to be included in today's presentations, the Q&A or the bids.
 - Sensitive topics include:
 - Current UK capabilities and operations
 - Defence capability gaps or vulnerabilities
 - Details of specific threat devices
 - This talk will discuss generic targets and technologies only.
 - Please raise any classification queries with DASA.

Agenda

| Time | Description | Presenter |
|---------------|-------------------------------|---|
| 10:00 – 10:05 | Welcome | DASA Invisible Shield Competition Lead, Dstl |
| 10:05 – 10:20 | DASA Overview | Innovation Partner, DASA |
| 10:20 – 10:30 | Background to the Competition | Deputy HoC Cap SP, UK Strategic Command, FP ECM Delivery Team Leader, DE&S |
| 10:30 – 10:40 | Users Perspective | Representative from 225 Signals Sqn |
| 10:40 – 10:50 | Competition Context | ECM Group Military Advisor, Dstl, ECM Group Principal, Dstl |
| 10:50 – 11:00 | Challenge 1 | Senior Principal Engineer, Dstl |
| 11:00 – 11:10 | Challenge 2 | CIED ECM and CEME Land Principal Advisor, Dstl |
| 11:10 – 11:20 | Challenge 3 | Invisible Shield Competition Lead, Dstl |
| 11:20 – 11:35 | Key Information | DASA |
| 11:35 – 12:00 | Q&A | All |
| 12:00 | Event Close | |



Defence and Security
Accelerator

DASA Overview

Peter Wilkins

Innovation Partner, South East



Defence and Security Accelerator

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

Scope



Any level of development



Any science, technology or service



Anyone with a good idea



Any route to market

The **Defence Innovation Initiative** was launched by the Defence Secretary in 2016:

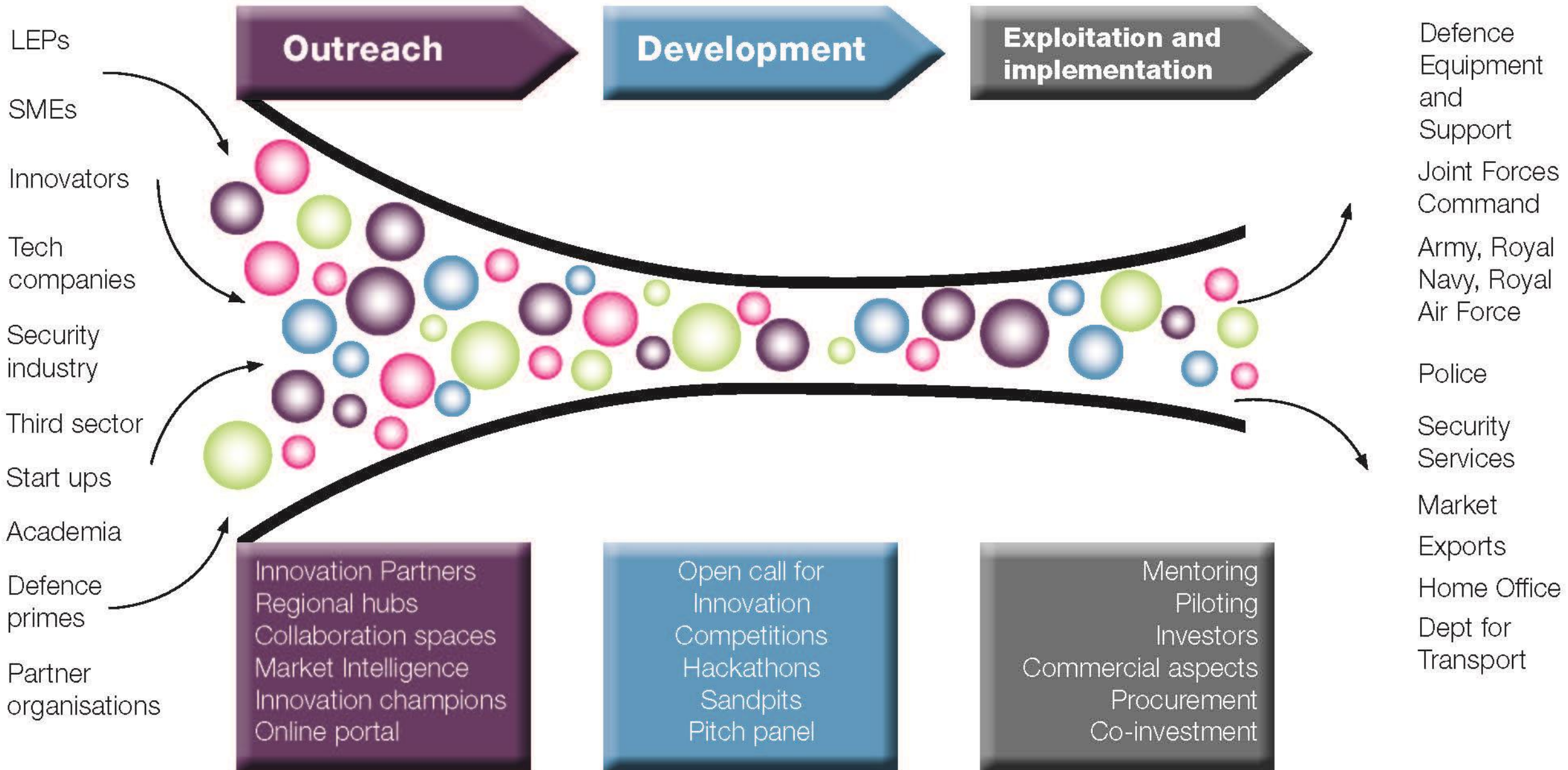


Defence Innovation Fund
£800m over ten years



Defence and Security Accelerator
launched in December 2016

DASA Operating Model



What do we want?

Products, services and ideas across a range of technology readiness levels (TRL)



Low
TRL 2 - 4
6-9 months
up to ~£90k



Mid
TRL 4 - 6
1 year
up to ~£250k



High
TRL 6+
Value varies
Length varies

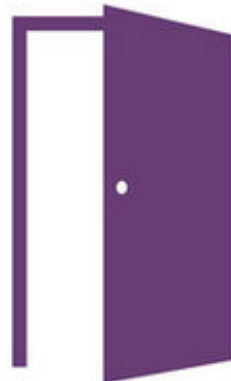
Apply online



Defence and Security Accelerator

Part of [Defence Science and Technology Laboratory](#)

Open Call For Innovation



[Accelerator events](#)

[Submit a proposal](#)

[Accelerator funding competitions](#)

[Accelerator Open Call for Innovation](#)

[Terms and conditions and contract guidance](#)

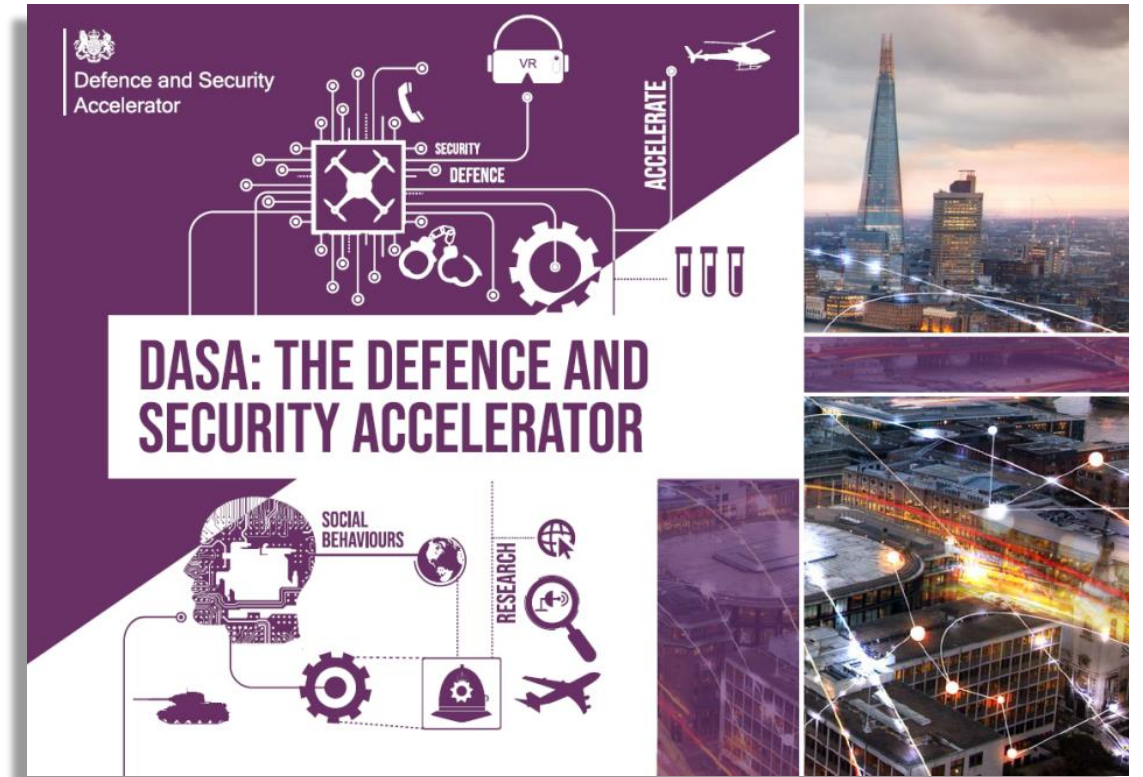
24 January 2018 — Notice

Defence and Security Accelerator (DASA) Open Call for Innovation

The Open Call is looking for innovative ideas on how we can improve the defence and security of the UK. Your idea could be a concept, product or service, at...

Why work with us?

- 100% funding – no match funding
- cross-Government focus
- simple and easy way to access defence and security
- access to end users and technical advice
- always open for ideas

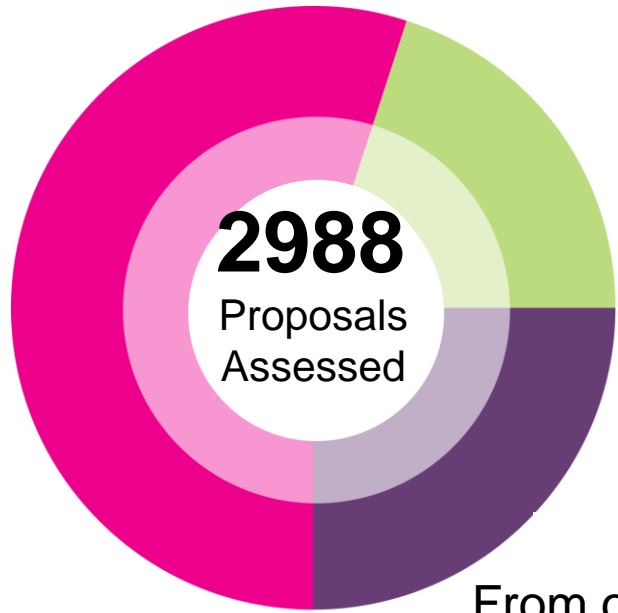


Why work with us?

- benevolent terms and conditions
- No equity required
- Intellectual Property stays with you
- rapid contracting, including short form contract
- we work to exploit your idea
- events to bring together Government, end-users, private sector and academia



What's different



Academic
Large
SME

From over **1250** organisations

Dec 16 – Mar 20

Defence
&
Security

Exploitation

3
weeks
to contract

Open
Call for
Innovation

Outreach

>> **ANY TRL**

>> **FAST TRACK**

>> **1 PAGE PITCH**

>> **PITCH PANELS**

>> **HIGHER MAX BIDS**

>> **SHORT FORM CONTRACT**

>1000
Trained
assessors

40%
new
recipients

Bigger
team

Cross
Gov't

Investment of
£101.2m

Funding agreed for
645 projects



Security
£13.4m

MOD
Science
£53.4m

Phase1
£105k

Phase2
£306k

FLC
£9m

Defence
Innovation
Fund
£25.4m

Phase 1
1:5
successful

DASA: delivering innovation at pace

Dec 16 – Mar 20

Open Call

Emerging Innovations

- Early stage
- c.£50,000 and £100,000
- c.3 and 10 months

Rapid Impact

- End in a trial/demo
- 3 years until exploitation
- c. £100K - £350K

Innovation Focus Areas

- Novel radar detection
- Regenerative Medicine
- Airport/Railway Safety
- Banknotes
- Chemical substitutes

Previous competitions

- FASS: Explosives hidden in electrical items
- Improving Crowd Resilience (ICR)
- Autonomous Last Mile Resupply
- Future of Aviation Security
- Beyond Battery Power
- Synthetic Biology
- Autonomous Hazardous Scene Assessment
- Don't Blow It! safely eliminating chemical and bio munitions on the battlefield
- Point of Care Diagnostics on the front line
- The Invisible Battlespace



Ask for help through our Innovation Partner network

Regional Innovation Partners

South West – Mark Darvill

South Central – Ben Whitaker

South East – Peter Wilkins

London (inside M25) – Ralph Wilkins/Tony Collins

East Anglia, north Home Counties – Tim Higginson

South Midlands – Andrew Peaty

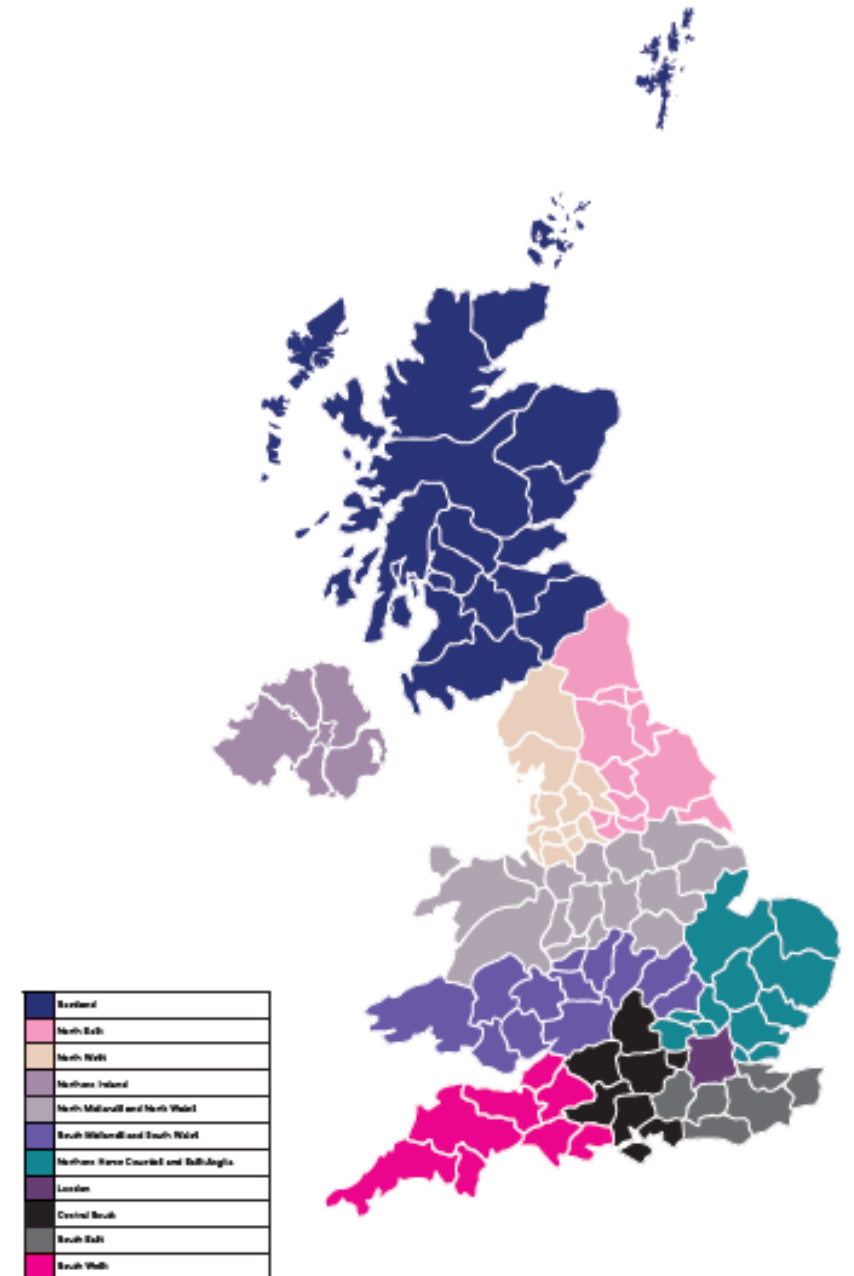
North Midlands – Dudley Hewlett

North West – Jonathan Jones

North East – Anna Taylor

Scotland – Deb Carr

Northern Ireland – Linda Galloway



Contact us



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accelerator@dstl.gov.uk



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Defence and Security Accelerator



Strategic Command



INVISIBLE SHIELD DASA Launch Event

Colonel N S C Venn Royal Marines
Deputy Head Capability Special Projects

Force Protection & Explosive Ordnance Disposal Electronic Countermeasures

Defence Equipment Plan Overview

Steve Westwood
FP ECM Delivery Team Leader
29 Apr 20



Introduction

- Defence Equipment & Support (DE&S) is the MODs procurement agency for ECM in support of Force Protection (FP) of deployed forces in the UK and around the world as well as specialist ECM for Explosive Ordnance Disposal (EOD) experts.
- There are several projects that will replace in-service equipment with a new, architecturally aligned, suite of systems for pan-military use over the coming 3 to 4 years followed by an evergreen support model especially designed to enable the adoption of best of breed, value for money technology insertion through life.
 - **Project CRENIC.** FP ECM for the Army, Navy and Air Force ground forces providing protection in the land and littoral domains.
 - **Future EOD ECM.** EOD ECM for Military Aid to the Civilian Authorities (MACA).
 - **Future EOD Electronic Surveillance.** EOD Electromagnetic Environment Situational Awareness.

Requirements

- These projects are adopting the Land Cyber and Electromagnetic Activities (CEMA) Architecture (LCA) as a foundation of interfacing standards against which to build next generation systems. (See further information slide)
- There are several use cases in scope for first generation systems:
 - Dismounted Soldier protection – soldier worn for protection of a section of soldiers or smaller specialist groups,
 - Vehicle Mounted protection – to protect the host platform,
 - Static base protection – to be located at vulnerable points around base locations,
 - Light Scale EOD – Soldier portable systems for EOD scenarios,
 - EOD Incident Control Point –from host platform or carry forward using remote control or autonomous vehicles,
 - EOD SA – informing the EOD operator of the local EM environment to inform decision making.
- Through future adaptations, wider missions sets will be added:
 - Electronic Warfare, Electronic Surveillance and Counter Unmanned Air Systems connected into the Single Sigint Battlespace (SSB) and Intelligence networks.

How and When?

- FP and EOD projects will first establish contracts, through UK competition, with Systems Integrators (SI).
 - Consortiums or companies who are selected to design and deliver ECM systems compliant with the LCA,
 - Supported by an Ecosystem of suppliers from whom the SI will select best of breed components/solutions.
- The Ecosystems will be administered by the SI but the Authority (the MOD) will retain the rights to oversee procurement decisions and, where there is a specific need, direct certain procurement actions.
- The Future EOD ECM SI competition is underway with a target contract award of Q1 2021 (calendar year) subject to approval of its Full Business Case (FBC).
- CRENIC begins its SI competition in late June, subject to MOD Central Approval of its Outline Business Case (OBC). Target contract award is late 2021 subject to approval of its FBC.
- The outcomes from DASA will be assessed for adoption into these EP projects.

- CRENIC Project Updates and the latest information on the Land CEMA Architecture can be accessed via an AWARD Data Room.
- Access can be obtained by applying via the following link:
<https://award.bravosolution.co.uk/fecm/web/project/103/register>





225 SIG SQN (ECM(FP)) EQUIPMENT UPDATE

SGT JOHNSTON

225 SIG SQN (ECM(FP)) DASA UPDATE

CURRENT ISSUES – MOUNTED

- Power – Specifically Civilian Vehicles – L1&2 Users
- Design – Integration of the equipment – L1&2 Users
- Programming of the equipment – L2 Users only



225 SIG SQN (ECM(FP)) DASA UPDATE

CURRENT ISSUES – DISMOUNTED

- Weight – L1 Users only
- Power – SOPs – L1 Users only
- Antenna – Orientation – L1 Users only
- GPS – Requirement L1&2 Users



225 SIG SQN (ECM(FP)) DASA UPDATE

CURRENT ISSUES – STATIC

- Environmental Control – L1&2 users
- Back-up power – L1&2 users



225 SIG SQN (ECM(FP)) DASA UPDATE**TRAINING****L1 Users**

- Collective training and equipment
- Simulation and emulation devices

L2 Users

- Testing and training
- Interoperability
- Operation assurance
- Test and evaluation



225 SIG SQN (ECM(FP)) DASA UPDATE

CHALLENGE CONSIDERATIONS

- Power Distribution Unit (PDU) – low input, high input
- Vehicle Integration Kit (VIK) – placement of equipment
- Future proof
- Single filling port – One cable type
- Lighter equipment – ManPack
- ManPack (MP) – Built in GPS
- Antenna orientation
- Environmental Control

Dstl C-IED Background Information



Requirement History



OP BANNER



OP TELIC



OP HERRICK



Military Need



**Electronic
Countermeasures
“Force protection
to save lives”**

Scenario-Use Cases

- ECM is an additional layer of protection
- Breadth of use case:
 - Recent operations
 - We have requirements to operate in diverse environments
 - Emerging environments
- Ideas for new and novel techniques welcomed
 - Integrate into current ways of working
 - Invite new ways of working to exploit emerging technology

What is an IED?

An IED is an explosive device fabricated in an improvised manner, but with varying degrees of professionalism (from “cobbled together” to industrially mass-manufactured). An IED typically comprises of the following components:

- Power source
- Wires
- Explosive initiator
- Explosive charge
- Trigger mechanism
- Electronic circuitry (range of functions)
- Often exploit commercially available technology



How IEDs Are Used

IEDs are a force-multiplier for individual actors and armed groups lacking access to conventional munitions; with a niche need which cannot be met through another method; and/or who perceive themselves to be at a disadvantage in conventional engagements.

- Used offensively or defensively
- Exploit friendly Tactics, Techniques and Procedures
- Often emplaced to target forces when they are at their most vulnerable
- Target high value assets or individuals, to instil terror and/or to inflict casualties
- Provide an obstacle to friendly action
- Shape the battlefield to their advantage
- RC technology used to increase target discrimination

Background Summary

- Why we are doing this:
 - Expand the pool of innovate ideas and approaches .
 - This supports our future model, looks to draw on approaches from a range of suppliers, and this call is intended to help build that pool
 - This call is C-IED focus, but there are other DASA calls that have a broader Cyber and Electromagnetic Activities (CEMA), but there are linkages
- What we are interested in:
 - Interested in recent advances in other Military & Civil markets that could enhance ECM protection
 - To utilise or be informed by the RF spectrum to provide an area of protection.
 - “RF scalpel not sledgehammer”
- What we are not interested in:
 - COTS Market equipment
 - Concepts that are too immature they cannot be advanced quickly

Challenge 1

To capture and analyse RF signals using novel spectrum survey techniques

Freepik.com

Background

- The range of technologies operating in the RF spectrum continues to grow
- Operating at higher frequencies
- Increased interest in Cognitive / White Space technologies
- Signalling / coding schemes are increasingly efficient and varied

Rationale

- Increasing our understanding of spectrum occupancy has a number of benefits but primarily
 - Allow capability to be optimised for the reality of the environment we are operating in.

Information is Available

- There are plenty of sources of RF Spectrum data available to us
 - From ECM
 - Other Sensors
 - Future ECM systems

The Challenge

- Find innovative ways to better exploit the data
 - Be able to analyse complex, congested electromagnetic environments
 - Ranging from a modern city to a contested battlefield
 - In Real Time
 - On the platform
 - What is the here and now?
 - What is changing?
 - Post Task
 - What did we encounter

Expectations

- Novel approaches and proof of concept demonstrations
- On the platform
 - Person, Vehicle etc.
 - Not Server Farm
- We won't be releasing any spectrum information
 - We are interested in novel approaches
- Not looking for hardware designs e.g. receivers

Challenge 2

To neutralise targets in a timely and effective manner

Freepik.com

Background

- RC devices used in IEDs often use locally available commercial communication modules and systems.
- Increasingly these incorporate interference avoiding techniques, wide operating frequencies and error correction scheme for resilience. All pose an increasing challenge for ECM.
- We need a collection of different techniques to enable us to counter current and future devices in the congested electromagnetic environments.

Summary (1/2)

- Ideally seeking:
 - RF based
 - effects to neutralise a device via its RC link and radio receiver or potentially via other IED components.
 - Novel techniques
 - needed to address modern communications technologies, not just more noise/power.
 - Frequency agile
 - techniques that can be employed wherever in the spectrum potential threats may appear.

Summary (2/2)

- Ideally seeking:
 - Broad effectiveness
 - against a range of threats within or across technology areas. Must consider technology evolution.
 - Areas of effect
 - interested in a range of effects from large area to local personnel protection for different missions.
 - Minimised collateral
 - impact on both UK, coalition and civilian RF systems nearby should be considered.

Expectations

- Interested in proof of concept/technique demonstrations.
- Does not need to be a complete system.
- Proposals should also highlight:
 - Any prior target information needed to deliver effect.
 - Any significant power / data processing requirements.
 - Whether neutralise effect is temporary or permanent.

Challenge 3

**New or novel hardware and
ancillaries (system components)**

Background

- This challenge is looking to address a broad range of issues around delivering an ECM system/effect.
- Hardware that enables the deliver effects (in an efficient and reliable manner)
- User quality of life enhancements

De-risking Hardware

- Importing recent advances in communications hardware to the ECM use case:
 - Amplifier, filter and RF generation concepts etc.
- Key considerations non-functional
 - Reliability
 - Cognitive burden
 - Serviceability
- Key considerations functional
 - Wideband
 - Reconfigurable (Multiple uses of the spectrum & multiple roles)
 - Start of mission
 - On the fly

De-risking Hardware

- This is not the user's primary role
 - Efficient hardware, to reduce weight size power
- Novel antenna concepts to improve performance and lower the RF and visual signature
 - Roof clutter
 - Limited Space on vehicle
 - Visual Signature
 - Not cumbersome
 - Wideband
- Other
 - Concepts that could be taken forward to ease the users burden within in the near term

Challenges Summary

- **Challenge 1: To capture and analyse RF signals using novel spectrum survey techniques**
- **Challenge 2: To neutralise targets in a timely and effective manner**
- **Challenge 3: New or novel hardware and ancillaries (system components)**



Key Information

Rachael Colling – DASA Delivery Manager



Key Dates

- Competition Launch: Today
- Competition Close: 01 July, midday (BST)
- Contracts Start: September

Competition Process

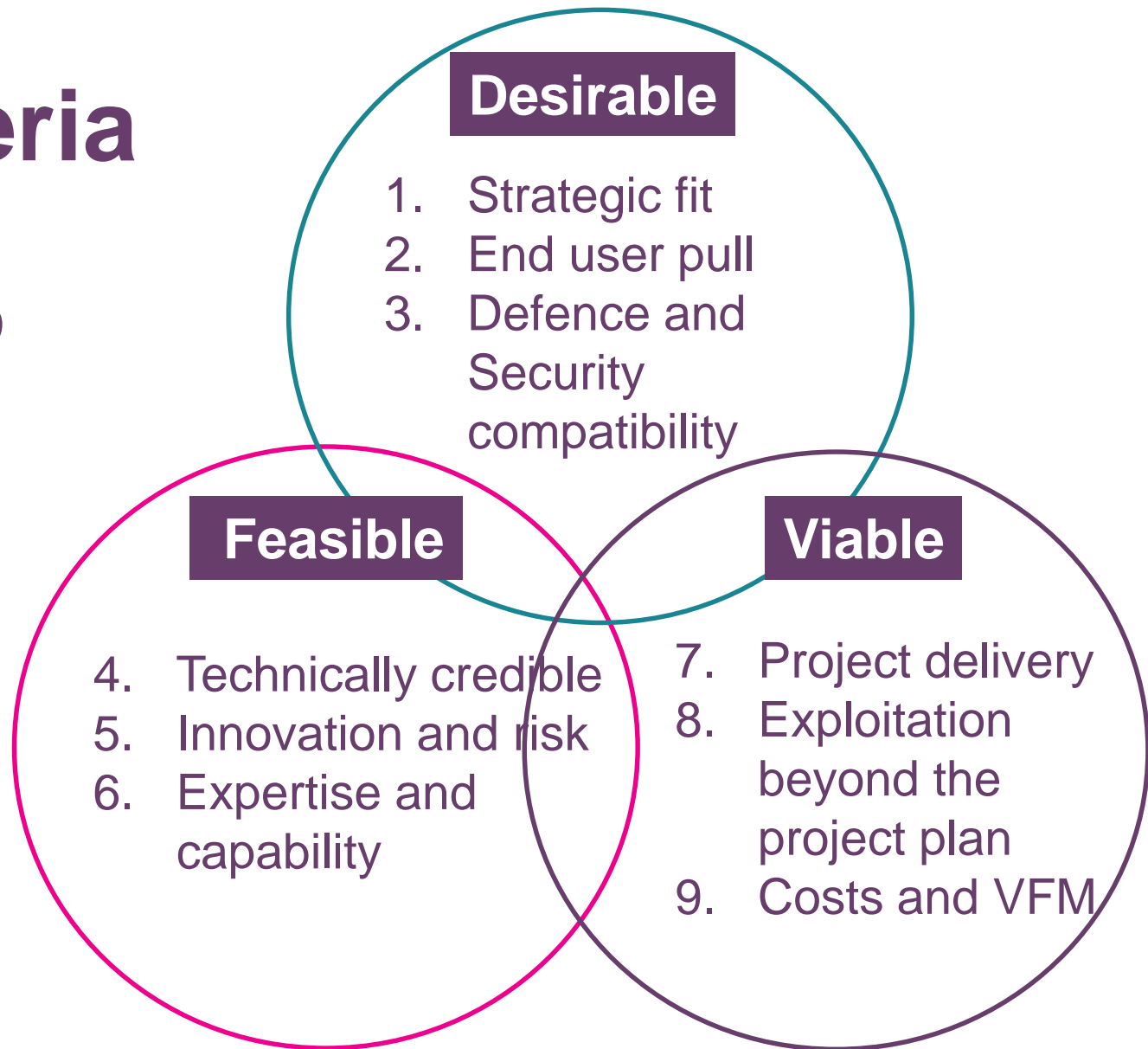


Assessment Criteria

Desirable – relevance to customer

Feasible – innovation, novelty, S&T focus

Viable – project and business viability



Apply for funding

DASA events

Market exploration

Login/Register for an account

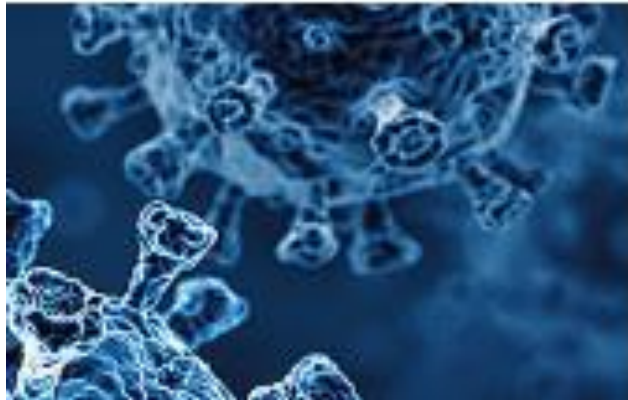
Contact us



See live and closed competition information and apply to a competition

Click here to register for an account

Click here to contact an Innovation Partner



8 April 2020 — News story

Coronavirus: £1million Defence innovation funding

Funding available for ideas and
development to boost Armed

- There are no word limits for proposals. Make sure there is enough detail but bear in mind that assessors have a maximum of 90 minutes per proposal
- Make sure you have the authority to accept terms and conditions prior to submitting

Supplier dashboard

Before you start, make sure you are able to address the following:

1. Is your project at the right stage for our funding?
2. Is your work plan complete?
3. Have you directly addressed the specific needs in our competition document?
4. Have you got a fairly detailed breakdown of expected costs?
5. Are you aware of what information may be held or released by the Accelerator?

[Read more](#)

[Start now >](#)



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<https://www.sli.do/>

#DASA

Thank you for attending!

- Bookable one to ones available on a first come first served basis on 6th May
- <https://www.gov.uk/government/organisations/defence-and-security-accelerator>



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