

# News story: Maximising Human Performance – Market Exploration

The Defence and Security Accelerator (DASA) and the Defence Science and Technology Laboratory (Dstl) are scoping the potential for an innovation challenge in maximising human performance, for the Ministry of Defence's Future Workforce and Human Performance Programme. To aid in the design of the potential challenge we are undertaking market engagement to provide us with an understanding of capabilities that currently exist or innovative ideas which could potentially address this challenge. This request for information is not a commitment to subsequently launch a formal DASA competition.

## **Background**

Dstl is seeking to research and develop new and innovative techniques to safely enhance performance of human operators. This research will investigate factors which limit or degrade the effectiveness of the operator, whilst delivering evidence-based guidance to sustain, enhance or augment their physical and/or cognitive performance at times of operational imperative. These techniques will be exploited directly in support of the UK's defence and security operations maximising the effectiveness of UK Government's investment in its personnel.

## **Challenge Areas**

Solutions will support personnel during training and operations, in preparation for rapid reaction response or for deployment on long duration, complex operations to a variety of different challenging environments. There are five challenge areas where we're looking for innovative capabilities to sustain, enhance or augment cognitive and/or physical performance:

1. Novel methods and interventions to optimise performance of people undertaking prolonged complex work (work that involves sustaining performance over long periods of time, weeks/months and possible cumulative effects). Work under this challenge could include, but is not limited to, research into the following areas: optimising sleep quality through the use of novel techniques/technologies, investigating new methods of improving performance when operating under sleep disrupted conditions, looking at novel approaches to maintaining alertness/countering fatigue, improving the quality of rest, enhancing speed of recovery/regeneration and enabling relaxation during any 'down' time. We are not looking for advice on sleep hygiene or how to manage jet lag; we want to see truly novel investigations into new techniques, tools, technologies and approaches in this area.
2. The role of nutrition for enhancing performance. Work under this

challenge could include, but is not limited to, research into the following areas: novel nutritional supplementation as an ergogenic aid – investigating novel supplements which might enhance physical and/or cognitive performance during long duration training and operations. Submissions should be based on a sound scientific understanding of the basis of the potential effects (for example, understanding of the metabolism or neuroscience) and the ability to scientifically investigate any nutritional intervention.

3. Novel strategies to sustain or improve performance of complex cognitive tasks and ways to mitigate potential overload (investigating factors that can impact on performance of a complex cognitive task during a single 'shift'). Work under this challenge could include, but is not limited to, research into the following areas: investigating training methods that help personnel manage multiple diverse sources of information and assist decision-making, methods, tools or techniques to manage physical and cognitive fatigue that results from time on task, and maintain/improve performance during long shifts. We would also like to see ideas for research which aims to advance our ability to identify times when personnel are likely to become cognitively 'overloaded'. For example, research in this area might look at ways to measure cognitive 'load', improving our understanding of the links between cognitive performance, cognitive fatigue and workload and methods of measuring all of the above without interrupting a task.
4. Novel techniques to enhance human cognitive performance. Novel interventions for improving cognitive performance are in development, however, these interventions often lack the evidence base to be able to support their use, or they have an existing evidence base which doesn't go far enough from the point of view of defence and security. For example, a training intervention may have good evidence that it improves performance in a well-structured scenario, such as a set piece in sport, however, the evidence base doesn't exist to demonstrate that the intervention will translate into an improvement in performance in a complex operational situation, or that it could be widely applied to a broad spectrum of users with differing cognitive abilities. Work under this challenge should aim to address these types of issues and develop the evidence base needed to either support (or dismiss) existing and novel interventions.
5. Novel ways to optimise training and enhance readiness for deployment. Work under this challenge could include, but is not limited to, research into the following areas: the use of novel ergogenic aids, ways to make novel methods of training more accessible to defence and security trainers. The aim is to enhance cognitive and physical readiness to deploy and maintain performance on deployment.

Any future challenge end goal is to ensure the Ministry of Defence has the

most powerful capabilities available to enhance the physical and cognitive performance of personnel. The aim is to provide a toolkit of techniques, demonstrated to be effective, to apply during complex training and operations, leading to improved overall system performance and mitigation of information and physical overload.

## **What we want**

We are interested in innovative capabilities and ideas that aim to address one or more of the five challenge areas, at any level of maturity. Submissions should be provided by teams with the experience and knowledge necessary to establish sound scientific evidence for any potential technology or intervention. By completing the Capability Submission Form neither the Government nor yourselves are committing to anything, but your submissions will be used to help the Government focus the direction of the work and shape the requirements for a possible themed call in this area in the future.

## **What we don't want**

We are not interested in receiving ideas for literature reviews, plans for paper-based studies or marginal improvements to existing capabilities. This is not a competition and therefore we are not asking for costed proposals at this stage. This is a market engagement request for information exercise and we do not commit to subsequently launch a formal DASA competition.

## **How to submit a Capability Submission Form**

Complete the attached one page form (noting the word limits) and then email it to [accelerator@dstl.gov.uk](mailto:accelerator@dstl.gov.uk) by 16 November 2018 with Maximising Human Performance in the subject line.

Please only provide details of one product/capability per form. If you have a number of potential solutions then please submit multiple forms.

If you have any questions then please email [accelerator@dstl.gov.uk](mailto:accelerator@dstl.gov.uk) with Maximising Human Performance in the subject line.

## **How we use your Information**

Information you provide to us in a Capability Submission Form, that is not already available to us from other sources, will be handled in-confidence. By submitting a Capability Submission Form you are giving us permission to keep and use the information for our internal purposes, and to provide the information onwards, in-confidence, within UK Government. The Defence and Security Accelerator will not use or disclose the information for any other purpose, without first requesting permission to do so.

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# Press release: Highways England working in tandem with Sustrans to help cyclists

To help cyclists and walkers navigate its road network the company is working closely with Sustrans to help provide safer crossings and connect cycle schemes on England's busiest roads with the charity's 16,505 mile National Cycle Network.

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This network criss-crosses the country, linking villages, towns and cities – and with 4.4 million people using it every year for commuting and leisure, the partnership will benefit cyclists up and down the country

Working with the charity is just one of the ways Highways England is making it easier for people of all ages and abilities to cycle and walk across and alongside its roads.

Highways England Head of Road Safety Richard Leonard said:

We want to make cycling and walking safer and easier – not merely locally, but across the country as a whole.

The National Cycle Network is a great initiative, and this project is a great example of how people can be encouraged to cycle and walk more – with obvious benefits to their health, safety and the wider environment.

The Department for Transport also recently awarded £1 million in funding to support projects repairing and upgrading sections of this popular network. Our overall plans to increase cycling and walking are set out in the 2017 Cycling and Walking Investment Strategy

Sustrans have identified a long list of opportunities and will be working together with Highways England to create a shortlist of schemes which can be quickly taken forward.

Anita Konrad, Sustrans' National Director, England said:

We are delighted to be partnering with Highways England and welcome this investment that will make it easier for more people to cycle

to work, the shops and for leisure.

Cycling and walking for local journeys is part of the solution to many of the challenges we face today, including road congestion, air pollution and high levels of inactivity. The schemes demonstrate how – with some practical design solutions and minimal interventions – we can address these challenges, and that retrofitting cycling provision can be done easily.

We hope to build on this partnership with Highways England, to make cycling safer, more attractive and easier for everyone, regardless of age and abilities.

Highways England has a £100 million dedicated cycling fund to provide improvements and new facilities which make it safer and easier to negotiate its roads. So far 80 new schemes have been built and 286 crossings have been improved, meaning it is now far easier than it was for cyclists to cross over motorways and major A roads.

People cycling or walking on the National Cycle Network linking London Stansted Airport with communities across Essex are already benefitting from £800,000 of improvements provided by this special fund. Cyclists can enjoy a safe and scenic route across the busy M11 motorway thanks to the Highways England project to restore the one mile route between Birchanger village and the airport.

Previously, people commuting on bikes to and from the airport were having to navigate the tricky junction 8 of the M11, and were often put off using what was little more than a dirt track. Resurfacing sections of the path, putting up new signs, and clearing overhanging vegetation has provided an attractive, traffic-free way to commute to the airport.

Some 200 schemes, worth £100m, will be on the ground by 2020/21. Over the past three years, 80 schemes have been built and a further 30 are due to be completed by spring 2019.

Another scheme completed this year is at a busy junction near Ellesmere Port in Cheshire. A £1.1 million scheme has created a new 320 metre cycleway through the Two Mills junction, which is used by more than 37,000 vehicles every day.

The A540, which runs between Chester and Hoylake, is popular with cyclists and the new path, which is shared by cyclists and pedestrians, runs along the southbound A540. The route crosses two new islands on the A550 at the Two Mills junction before continuing along the A540. New traffic lights and crossings also make it easier to cross the A550 and a new high-friction road surface has been laid to reduce the risk of collisions.

Highways England published its [Cycling and Accessibility Strategy](#) in 2016, and has recently published an [annual report](#) detailing the progress made so far. This includes integrating cycling and accessibility needs in the early stages of scheme design and working closely with key stakeholders to deliver

schemes which suit the needs of communities..

## **Designated funds**

Highways England is working to achieve a target to deliver 150 cycling schemes by the end of Road Investment Period (2015-2020), and 200 cycling schemes by 2020/21 after the government set up the £100 million dedicated fund for cycling in its Road Investment Strategy. This £100 million fund forms part of the £250 million designated fund for Cycling, Safety and Integration.

Designated funds are a series of ring fenced funds designated to Highways England by the Department for Transport to address a range of issues beyond the traditional focus of road investment.

There are 5 designated funds:

- environment – £300 million
- cycling, safety and Integration (CSI) – £250 million
- air quality – £100 million
- innovation – £150 million
- growth and housing – £100 million

More information about [Highways England's designated funds](#)

## **General enquiries**

Members of the public should contact the Highways England customer contact centre on 0300 123 5000.

## **Media enquiries**

Journalists should contact the Highways England press office on 0844 693 1448 and use the menu to speak to the most appropriate press officer.

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# **[News story: New competition: Many Drones Make Light Work Phase 3](#)**

The Defence and Security Accelerator (DASA) is launching Phase 3 of the 'Many Drones Make Light Work' campaign.

Phase 1 of the 'Many Drones Make Light Work' campaign was launched in August 2016. This phase sought proof-of-concept demonstrations of new and emerging technologies, systems and techniques to enable militarily useful swarming Unmanned Air Systems (UAS).

Phase 2 was focused on further developing and proving the effectiveness of specific swarming technology aspects as well as swarming enablers.

Phase 3 of this campaign is seeking to further develop and integrate technologies with the objective of demonstrating a swarming UAS capability, through a flight evaluation.

Phase 3 is open to the wider community to seek a complete technology base to deliver an integrated capability. Technology in this area has been rapidly developing since the original Phase 1 call and reopening the challenge allows other organisations who have been developing capabilities related to swarming UAS to contribute. We actively encourage Phase 1 and Phase 2 participants to contribute to this call as well as new suppliers.

Total funding of up to £2.5 million is available in Phase 3 to fund 1 or 2 projects. Full details are available in the competition document.

The competition closes on Wednesday 28 November 2018 at midday.

Queries should be sent to [accelerator@dstl.gov.uk](mailto:accelerator@dstl.gov.uk).

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