# Revolutionising electromagnetic hardware for Defence

Effectiveness in the increasingly congested electromagnetic environment is critical to future defence and security operations. We need to harness the advances in metasurface technology and smoothly integrate these innovations into devices and onto platforms to maintain an electromagnetic tactical advantage for the front-line.

Advantage may be realised by sensing and communication superiority over an adversary. This applies equally to enhancing your own capabilities, degrading those of your adversaries, or being better able to differentiate your own signals from those in the congested environment. Advanced metasurfaces science will allow better control electromagnetic waves, thereby giving an operator the ability to understand the battlefield better, communicate further and more securely, and do this more cheaply and with a smaller device footprint than the current technology.

To remain at the forefront of electromagnetic developments, the Defence and Security Accelerator (DASA) Metasurfaces competition is, once again, reaching out to experts in the private sector and academia. We want to talk to all innovators who are researching, experimenting or innovating with the latest breakthroughs in metasurfaces technology with the purpose of unlocking new and enhanced applications, device and system performance.

Phase 1 saw the successful placement of 12 contracts across 9 companies, with a combined value of nearly £900k. Building on the success of Phase 1, and in collaboration with the Ministry of Defence (MOD), we are seeking new and follow-on proposals incorporating metasurface science to gain a technological advantage, primarily for defence and security, but also for dual use application alongside partner civil sectors. Phase 2 will culminate in a practical demonstration of the work to defence and security end users, therefore we are expecting technology readiness level (TRL) 3 and above to be achievable.

The competition is aimed at people who are interested in exploiting and showcasing their good ideas to harness metasurfaces for improving electromagnetic hardware and systems. We are keen to promote teaming between organisations from across industry, academia, and broader supply chains to develop the role of metasurfaces in relevant applications.

To encourage collaboration and enable innovators to find out more about what has been achieved to date, we will be launching Phase 2 at a demonstration day for Phase 1 on 5 September 2019 at Aston Villa FC, Birmingham. To support connection to dual use and civil opportunities, we expect to be joined by representatives from InnovateUK and the Knowledge Transfer Network. To attend, sign up at Eventbrite.

In parallel to this competition, the Advanced Vision for 2020 and Beyond

competition is seeking novel optics and materials (challenge 1) for which metasurface-based solutions can be applicable. If a proposal is submitted to both competitions, it should clearly outline duplications of costs and works. This competition will be holding a launch and collaboration event on 4 September in London, further information can be found on Eventbrite.

At least £500,000 is available for the Metasurfaces Phase 2 competition which will close at midday on 31 October 2019. We anticipate contracts for projects of up to 12 months' duration to be placed by February/March 2020.