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.

UK joins forces with international experts to tackle global challenges

- New UK research collaborations to tackle global societal challenges like using clean technology to tackle climate change
- UK experts will work with researchers in US, Israel and China to stop the spread of infectious diseases including Zika and Ebola
- projects will be joint funded by partner countries around the world

Scientists will receive a new £60 million cash boost to work with researchers across nine countries to tackle some of the world's biggest environmental and health challenges.

The funding announced today by Business Secretary Andrea Leadsom will be matched from international collaborators from countries including India, China, the US and Japan. It brings the total UK investment in international scientific collaborations to more than £1.5 billion.

New projects include:

- working with the USA, Israel and China to examine how interactions between humans, livestock, wild animals and crops can spread infectious diseases
- joining US experts to examine subpolar ocean currents in the North Atlantic and the impact on world climate
- partnering with Chinese colleagues to create products and services to help older people in our ageing society

Business Secretary Andrea Leadsom said:

> The UK has a well-earned reputation for world-class research and innovation. Programmes like the Fund for International Collaboration have put us at the forefront of a global network of academic and business partnerships tackling some of humanity's greatest challenges, from the impact of climate change to critical

> health issues.
>
> As we prepare to leave the EU on 31 October, each of these projects reflect our wholehearted commitment to continuing our track record of driving forward international collaborations in science and research and making the UK a science superpower. These ground-breaking initiatives will not only help tackle major issues, including the spread of infectious diseases, they will create jobs and drive economic growth across the UK.

The investment is the second wave of the government's Fund for International Collaboration, overseen by UK Research and Innovation (UKRI) – the government's research and development agency. It will support these projects over a 4-year period, helping to maintain the aim of promoting the UK as a world-class destination to generate and access research and innovation.

UK Research and Innovation Chief Executive, Professor Sir Mark Walport, said:

> The partnerships announced today underline the critical role that international collaboration will play in addressing pressing global challenges, from climate change to deadly diseases such as Ebola and Zika.
>
> The Fund for International Collaboration demonstrates that the UK's research and innovation community will be at the forefront of efforts to tackle these problems, delivering benefits that will be felt here in the UK and throughout the world.

This is the second wave of funding from the Fund for International Collaboration. Under the first wave, announced in January, projects included collaborations with Japan. These are now being led by UK universities with Japanese academic colleagues and include:

- a venture to improve trial versions of vaccines for HIV – a joint University of Oxford and Hokkaido University project
- an investigation into how sleep can help the memory – link up between Bristol University and RIKEN
- an investigation into how plant cells divide to help improve crop yields – University of Edinburgh and Nagoya University

The Fund for International Collaboration is managed and administered by UK Research and Innovation.

Fund for International Collaboration Wave 2

Calls and projects announced today in wave 2 of the Fund for International Collaboration:

The changing North Atlantic ocean and its impact on climate

Investigation with the USA to examine the subpolar ocean currents in the North Atlantic and the impact on world climate.

These currents are important for the Earth's climate, keeping the UK relatively mild in winter compared to other countries at similar latitudes to Canada and influencing the global climate through their impact on surface temperatures, precipitation, wind strength, hurricanes and even rainfall in the Sahel desert, Amazon and parts of the US. Any changes and influences could have lasting impact on the environment and life in the ocean.

UKRI council: Natural Environment Research Council – Funding £5.1 million

Next generation transdisciplinary international research collaborations in ecology and evolution of infectious diseases

A joint project with the USA, Israel and China will examine the interaction between humans, livestock, crops, wild animals and plants that can lead to diseases spreading.

Many diseases cross these species barriers and can lead to the emergence and transmission of infectious diseases such as Zika, Ebola, African Swine Fever and Anthrax.

Lead UKRI council: Biotechnology and Biological Sciences Research Council (BBSRC) – UKRI funding £8.3 million

Healthy ageing flagship challenge

The UK will work with Chinese colleagues where society faces similar challenges around healthy ageing to see how new products and services can help people as they age.

The research aims to understand the biological, medical and social drivers and implications of these challenges. Research council: ESRC, MRC and Innovate UK – UKRI funding: £8.3 million

Diabetes partnership initiative

Working with experts in Canada to examine how diabetes can be treated better.

5 million people in the UK suffer from diabetes at a cost to the NHS of approximately £14 billion a year, or 10% of the total NHS budget. Globally, the prevalence of diabetes has nearly doubled since 1980, from 4.7% to 8.5% of the world's adult population.

UKRI council: Medical Research Council – UKRI funding £2 million

Built environment and prevention research scheme

A partnership with Australia will examine how people's urban environment can

have an impact on health.

The project will support the government’s Prevention is Better Than Cure vision, which proposes a move to a system which predicts and prevents poor health, by supporting world-leading research to explore the links between the environments we live in and non-communicable diseases such as heart disease, cancer and diabetes.

UKRI council: Medical Research Council – UKRI funding £2.1 million

Artificial intelligence and society

A joint programme with Japanese experts will explore how artificial intelligence digital technologies can help society evolve and benefit society and its economy.

UKRI Council: Economic and Social Research Council – UKRI funding £2.1 million

Collaboration on artificial intelligence: building competitive, resilient economies and societies

Working with colleagues in Canada, this project will allow UK specialists to examine ways of supporting innovative AI research in social sciences and humanities; health and biomedical sciences and natural sciences and engineering to tackle societal changes.

UKRI council: Economic and Social Research Council – UKRI funding £5.2 million

Globalink doctoral exchange scheme

A UK and Canada partnership will support the exchange of doctoral students between the two countries, fostering long-term research networks and collaborations that will ultimately attract talent to the UK and maintain the UK’s reputation for research and innovation excellence and contribute to economic growth.

Across UKRI Councils – UKRI funding £1.4 million

Global incubator programme

Working with colleagues in Canada, Singapore, India and USA, to help businesses to easily build collaborations and partnerships and explore the potential of overseas markets.

UKRI council: Innovate UK – UKRI funding £3.3 million

Digital transformation in humanities research: UK-Irish collaboration in the digital humanities

Working with Irish partners to preserve artefacts digitally, making them more

accessible to researchers and the public.

UKRI council: Arts and Humanities Research Council – UKRI funding £4 million

UK-USA business innovation bridge

Working with US funding partners at federal and state level, the Business Innovation Bridge will forge connections in new technology areas like advanced materials, high value manufacturing and renewable energy projects.

UKRI council: Innovate UK – UK funding £5 million

UK-India extreme photonics innovation centre

The joint UK and India scheme will use particle and x-ray beams which have the potential to revolutionise a range of areas of healthcare, such as high-resolution imaging, therapeutic and biomedical applications to tackle health problems.

UKRI council: Science and Technology Facilities Council – UK funding £4 million

UK-Canada: understanding and adapting to a changing environment

A new UK-Canadian multidisciplinary research collaboration will deliver innovative understanding and systems to help local communities adapt to environmental change incorporating traditional knowledge.

The programme will help our understanding of the impact of environmental change and identify new technological, engineering, social, health, cultural and economic responses.

UKRI council: Natural Environment Research Council (NERC).

Other funding linked to wave 1

Social sciences and humanities connections

The joint UK Japan programme examines how the arts, humanities and social sciences can identify common interests to enable future collaborative research activity to benefit society.

UKRI councils: Economic and Social Research Council and Arts and Humanities Research Council – UKRI funding £650,000

Chancellor fast-tracks Spending Round to free up departments to prepare for Brexit

Sajid Javid said the Treasury will carry out an accelerated exercise to ensure departments and devolved administrations have the financial certainty they need to deliver their plans on public services next year.

The Spending Round, which is due to complete in September, will support the commitments made by the Prime Minister since he came to office including the recruitment of 20,000 extra police officers and his ambition for additional funding for schools, as well as delivering the government's promises on the NHS.

This will ensure the Government continues to keep borrowing under control and debt falling by meeting the existing fiscal rules.

The Chancellor of the Exchequer, Sajid Javid, said:

> We will get Brexit done by October 31 and put our country on the road to a brighter future.
>
> The Prime Minister and I have asked for a fast-tracked Spending Round for September to set departmental budgets for next year.
>
> This will clear the ground ahead of Brexit while delivering on people's priorities.

Chief Secretary to the Treasury Rishi Sunak said:

> This Spending Round will give financial certainty to departments' plans for next year.
>
> We will invest in the priority areas of schools and policing, while delivering our promises on the NHS, defence and Official Development Assistance (ODA).

A one-year Spending Round completed in September will give Government the time and space to focus on delivering Brexit. The next multi-year Spending Review will now be carried out in 2020.

This summer's work will set departmental day-to-day spending budgets for 2020/21.

Notes

- this is a one-year Spending Round which will fund departments' 2020/2021 activities
- in 2020 a full Spending Review will be held, reviewing public spending in the round and setting multi-year budgets
- departmental day-to-day spending is financed through Resource budgets and covers important priorities such as pay or schools' running costs
- capital budgets, used for long term projects such as infrastructure, are already in place for 2020/21

RAF Typhoons scramble from UK and Estonia to intercept Russian aircraft

RAF Quick Reaction Alert (QRA) Typhoon fighter aircraft scrambled from RAF Lossiemouth, with an RAF Voyager from RAF Brize Norton, to monitor two Russian Bear maritime patrol aircraft approaching UK airspace.

Meanwhile Typhoons deployed on NATO Baltic Air Policing also scrambled from Amari airbase to intercept a Russian Bear bomber and two Flanker fighter aircraft flying close to Estonian airspace.

Defence Secretary Ben Wallace said:

> Every day certain states are determined to push international norms and to test the UK's resolve. The threats to the international rules based system are on many fronts.
>
> The RAF is well equipped to stand sentry alongside our allies on the UK's and Europe's borders. I am grateful they are there 24/7 to uphold the UK's commitment to our security.

UK QRA launch

The QRA launch from RAF Lossiemouth took place after the two Russian patrol aircraft flew close to the international airspace of the UK's fellow NATO Allies. A co-ordinated response allowed Allies to monitor the aircraft until the RAF intercepted them.

Our fighters escorted them from the UK's area of interest and ensured that they did not enter either UK sovereign airspace. The intercept and monitoring was completed in international airspace throughout and conducted in a safe and professional manner.

The RAF routinely identify, intercept and escort Russian aircraft that transit international airspace. Russian aircraft frequently attempt to test NATO's level of readiness, as well as conduct intelligence-gathering missions. The rapid reaction of the RAF and by NATO allies serves as a reminder of NATO's cohesion and its ability to react.

In the UK, the RAF Typhoon and Voyager aircraft are held at a state of readiness every day, supported by engineering and airspace management personnel.

The lead RAF pilot of the Typhoons that intercepted the Russian aircraft said:

> Protecting NATO and UK airspace is what the RAF is here for, so today's mission gave us the opportunity to demonstrate that we will always police our area of interest and also how well trained the Typhoon force is for dealing with events like this.

Estonia QRA launch

The RAF Typhoons deployed on NATO Baltic Air Policing in Estonia intercepted a Russian TU-142 'Bear' Bomber, heading west close to Estonian airspace. The Typhoons then handed the escort over to Finish and Swedish QRA aircraft, before being tasked to re-intercept to maintain the escort of the TU-142 as its transited close to NATO airspace. The "Bear" had since been accompanied by two Russian SU-30 'Flanker' fighters.

This is a routine NATO mission for the Typhoons which provides reassurance that the UK is here to work in partnership with Estonia.

A Typhoon pilot from XI(Fighter) Squadron, attached to 121 Expeditionary Air Wing (EAW), was conducting Quick Reaction Alert (QRA) duty when the scramble was called. He said:

> We were scrambled to intercept a Russian TU-142 aircraft, routing west close to Estonian airspace. We then handed over the escort to our Finish and Swedish partners, as the aircraft continued West. We were then tasked to re-intercept and escort the TU-142 'Bear' which has since been joined by two SU-30 'Flanker''. These Russian aircraft transiting the Baltic region were not on a recognised flight plan or communicating with Air Traffic Control. The intercept was uneventful and conducted in a professional manner throughout.

The Royal Air Force is deployed on Operation AZOTIZE in Estonia in support of Baltic Air Policing.

This is the seventeenth QRA scramble resulting in an intercept since the RAF took over enhanced Air Policing (eAP) from the German Air Force on 3 May 2019

as part of Baltic Air Policing. The UK operates in support of NATO to reassure our allies and is a further demonstration of the UK’s commitment to the security of the region.

Elsewhere around the world RAF Typhoon jets are also deployed in the Falklands Islands on QRA missions, as well as operating in the Middle East on Operation SHADER.

PM call with Emir of Qatar: 8 August 2019

The Prime Minister spoke to His Majesty the Emir Sheikh Tamim bin Hamad al Thani of Qatar.

The leaders discussed the strength of the bilateral relationship between our countries and the Prime Minister reiterated the UK’s offer to support Qatar in delivering a safe and successful World Cup.

The leaders agreed on the importance of de-escalating regional tensions with Iran, and the Prime Minister added that the UK hopes to see a swift resolution to the Gulf Cooperation Council dispute.