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Seasons Greetings from Innovations
In 2018, the STFC will be running three calls for applications for the Innovations Partnership scheme, the Follow-on-Fund and the IPS Fellowship scheme.

Each call will close at 16:00 on the following dates:

- 30 January 2018
- 15 May 2018
- 4 September 2018

How to apply

Applications must come through the Je-S system.

In addition to a completed proforma, further documentation must be uploaded as separate pdf documents, these include:

- Six page case for support (Mandatory)
- One page Gantt chart (Mandatory)
- Data Management Plan (Mandatory)
- Letter of Support from Technology Transfer Office (Mandatory)
- Letter of Support from Project Partner (Mandatory)
- Letters of Support from organisations interested in the project (Recommended)
- Covering Letter (Optional)

Applications will be rejected that do not follow mandatory Case for Support headings - see guidance notes revised in August 2017.

All documentation must be submitted by the closing date. We cannot add any extra information that arrives after this date. Any additional documents such as CVs, extra results, pathways to impact statements, list of publications etc. will be removed and not sent for review.
The FASS ‘finding explosives hidden in electrical items’ innovation network event was held in London on 28 November 2017.

Details of the completion of the two challenges that make up the Defence and Security Accelerator competition can be found at Future Aviation Security Solutions (FASS): finding explosives hidden in electrical items.

Event summary
Accelerator Innovation Partner Jim Pennycook opened the innovation network event by welcoming the delegates and gave an overview of the day which signposted the research funding opportunities for innovative science and technology providers in this themed competition.

FASS programme overview and keynote address
Tim Cook, Programme Manager for the Department of Transport briefed the audience on the Department of Transport (DoT) FASS programme – the background, current projects currently being funded and future plans to address the barriers to innovation in aviation security.

Parliamentary under Secretary for the Department of Transport Baroness Sugg CBE gave the keynote presentation.

Competition briefing
After coffee break, Tim Cook then gave the audience an overview of this competition and highlighted key points. James MacDonald gave a science and technology perspective and Andy Price provided an airport perspective which brought the challenges to life.

Competition process and overview
Information on the competition’s scope, process and key milestones was briefed by Emma Howe, Accelerator Competition Manager.

How to work with DASA
Mike Madden, Open Call for Innovation Lead then gave an overview and update on DASA and then outlined how organisations can work with the Accelerator and gave advice on how to submit good proposals for funding.

The competition closes at noon on 17 January 2018.

All queries will be answered by email. Send queries to our competition FASS@dft.gsi.gov.uk and DASA accelerator@dstl.gov.uk email inboxes.
Ideas for cutting-edge innovations: apply for business funding

UK business can apply for a share of up to £19 million to help them develop products and services of the future.

Innovate UK has up to £19 million to invest in the best ideas for new innovations in a wide range of technology and business areas.

Projects could fit into one of Innovate UK’s 4 priority areas of emerging and enabling technologies, health and life sciences, infrastructure systems and manufacturing and materials, or be outside them.

Game-changing innovations
Applications should be for game-changing innovative ideas that will lead to new products, processes or services ahead of the field in any sector of the economy.

They can range from feasibility studies through to experimental development that is closer to commercialisation.

Find out more about our open funding programme.

Competition information
• the competition opens on 11 December 2017, and the deadline for applications is 28 February 2018
• projects must be led by a business working alone or with other organisations or researchers
• we expect projects to range in size from £25,000 to £1 million depending on the type of research, and to last between 6 months and 36 months
• businesses could attract up to 70% of their total project costs

Find out more about this competition and apply.
Tackling disease with healthcare innovations: apply for funding

Businesses can apply for a share of up to £12 million to develop or test innovative ways of diagnosing, preventing and treating disease.

There is up to £12 million to support projects that are developing or testing out new healthcare products, technologies or processes.

This funding is available through the Biomedical Catalyst, a partnership between Innovate UK and the Medical Research Council that supports innovative opportunities in the life sciences.

Find out more about how we support innovation in health and life sciences.

Quicker, more effective healthcare

Projects in the Biomedical Catalyst could:
- help to prevent or manage chronic conditions
- lead to better detection or diagnosis of disease
- that treat disease or offer potential cures

In this funding round there are 2 competitions.

Late-stage projects

Up to £8 million is available for late-stage projects that test a well-developed concept and demonstrate its suitability in a relevant environment.

A late-stage project can include:
- initial human proof-of-concept studies
- demonstration of clinical utility and effectiveness
- demonstration of safety and efficacy. This includes phase I and II clinical trials
- developing production mechanisms
- prototyping
- market testing
- intellectual property protection

Competition information
- the competition is open, and the deadline for applications is 7 February 2018
- projects must be led by a small or medium-sized enterprise (SME), working alone or with other SMEs or research organisations
- we expect projects to range in size from £200,000 to £4 million and to last between 1 and 3 years
- businesses could attract up to 70% of their project costs

Find out more about the competition for late-stage awards and apply.

Primer awards

A further £4 million is available in primer awards. This is for projects that carry out technical evaluations through to proofs of concept in a model system.

A primer project could include:
- experimental evaluation done at laboratory scale
- initial demonstration using in vitro and in vivo models. It does not include human clinical trials such as safety or efficacy
- exploring potential production mechanisms
- early-stage prototyping
- product development planning
- intellectual property protection

Competition information
- the competition is open, and the deadline for applications is 7 February 2018
- projects must be led by an SME, working alone or with other SMEs or research organisations
- we expect projects to range in size from £200,000 to £1.5 million and to last between 1 and 2 years
- businesses could attract up to 70% of their project costs

Find out more about the competition for primer awards and apply.
Faraday battery challenge: funding for research into automotive battery technologies

The Faraday Battery Challenge was launched by Business and Energy Secretary Greg Clark in July 2017 as part of the Industrial Strategy Challenge Fund (ISCF). The Faraday Battery Challenge is an investment of £246 million over four years, set up to help UK businesses seize the opportunities presented by the transition to a low carbon economy and to ensure that the UK leads the world in the design, development and manufacture of batteries for the electrification of vehicles.

Battery research from fundamental research through development and innovation to industrial scale up is being supported by the Faraday Battery Challenge via three elements:

• £78m for a new ‘application-inspired’ research programme coordinated at a national scale - a large part of this is being led by the Faraday Institution.

• £88m Innovation programme to stimulate collaborative research and development with co-investment from industry – derisking and enabling the steps to get from research through to manufacturing at scale.

• £80m Scale-up programme to allow companies of all sizes to rapidly move new battery technologies to market through the creation of an open-access National Battery Manufacturing Development Facility.

The winners of the first round of the Innovation Feasibility Studies and Research and Development competitions and the Scale-up competition were announced by Greg Clark on 29th November 2017.

Innovate UK will be opening the second round of Faraday Battery Challenge: Innovation competitions on 22nd January 2018, with a deadline for applications on 28th March 2018.
Faraday battery challenge: funding for research into automotive battery technologies

Working together with the Department for Business, Energy and Industrial Strategy (BEIS) and Innovate UK, the Knowledge Transfer Network (KTN) will run a Competition Briefing event where the scope of these competitions will be launched.

These competitions will support a range of innovation activities around materials, cell and battery manufacturing for Automotive applications.

About the event:
The event, hosted by the Knowledge Transfer Network, aims to:

• Provide an overview of the ISCF and Faraday Battery Challenge
• Provide details of the second round of Faraday Battery Challenge: Innovation competitions
• Provide a facilitated networking programme from the KTN that maximises your chances of securing suitable collaborators for your ideas
• Through a series of pitches from organisations link early research to targeted industrial applications to assist with exploitation and collaboration
• Innovate UK and KTN staff associated with the competitions will be on hand for advice and answer questions.

Further details and full agenda will follow.

Who should attend:
This event will benefit entrepreneurs, innovators and researchers who can expand their work in the areas of battery chemistry, raw materials, materials processing, cell components, cell, module and pack assembly and vehicle integration, cell production methods, and any aspect of the future electric vehicle battery supply chain.

Not able to attend? This event will be webcast and you can register to join online here. There will also be further regional events in Newcastle (31st January) and Cardiff (date tbc).
Big Science Business Forum 2018

The Big Science Business Forum 2018 is taking place in Copenhagen, Denmark on 26-28 February 2018. The event will be an opportunity for European companies and other stakeholders to learn about Europe’s Big Science facilities’ future investments and procurements worth billions of euros. This will be an extensive event that includes presentations, exhibitions and one-to-one meetings, with 1,000 participants expected. Please see here for more information on why to participate.

Representatives from CERN, EMBL, ESA, ESO, ESRF, ESS, European XFEL, F4E and ILL will be present at the event; these facilities are some of the largest research infrastructures in Europe and together for the first time, they will present their future investment and procurement plans for businesses. In total, they will invest just over 10 billion euros in the next five years. This will require new suppliers and invites new businesses and SMEs into the Big Science market from a variety of sectors including materials, instrumentation, vacuum and cryogenics, mechanical and electrical components.

Registration for the event is open; you can register as a conference delegate which allows you access to the plenary and parallel session, exhibitions and one-to-one meetings, as well as participation in the welcome reception plus lunch and coffee breaks over two days of the event. The price of the event is 430 EUR excluding VAT.

The full programme for the event has been published along with detailed information on all of the parallel sessions. The parallel sessions offer industry in-depth knowledge for upcoming requirements at all of the Big Science organisations within the Big Science areas. The preliminary list of participants, exhibitors and sponsors is now available and is updated weekly.

The Science and Technology Facilities Council (STFC) are leading on the UK approach for the event as we manage the UK membership of the majority of the facilities. As part of this STFC are producing a brochure of UK companies for the event. The brochure is open to all UK companies interested in opportunities from Europe’s Big Science facilities; you do not have to attend the event to be included in the brochure. If you would like your company to be included in the brochure then please complete this form: https://stfc.onlinesurveys.ac.uk/bsbf2018 by close of play on the 9th January 2018.

Please visit the event website for further information.
STFC congratulates Professors Kip Thorne, Barry Barish and Rainer Weiss on receiving their Nobel Prize for Physics

STFC congratulates Professors Kip Thorne, Barry Barish and Rainer Weiss on receiving their 2017 Nobel Prize Medal and diploma for Physics in Stockholm from His Majesty the King Carl XVI Gustaf of Sweden.

The 2017 Nobel Prize for Physics went to Professors Kip Thorne, Barry Barish and Rainer Weiss, key figures in detecting the long-theorised ripples in space-time, for ‘decisive contributions to the LIGO detector and the observation of gravitational waves’.

The breakthrough detection in September 2015 which was announced in February 2016 was a truly international effort, with the UK playing a leading role, and captured headlines across the world ushering in an entirely new era of astronomy research. Key technological and computing advances for the project were made in the UK which enabled the historic first detection.

Dr Brian Bowsher, Chief Executive of the UK’s Science and Technology Facilities Council, said: “The award of the Nobel to Professors Kip Thorne, Barry Barish and Rainer Weiss is a celebration of their determination to push forward the area of gravitational research such that today, only two years since that first detection of gravitational waves, a whole new way to understand the Universe has been opened up. The award can also be seen as recognition of the contribution of many UK-based scientists and engineers to the breakthrough which was partly made possible by British advances in technology. It is exciting to contemplate what the LIGO and Virgo teams will learn next about the Universe as they continue to detect further gravitational waves.”

The first gravitational wave detection in 2015 was made possible by a technical upgrade to Advanced LIGO (aLIGO), relying heavily on initial UK capital funding and on technical and manufacturing expertise from UK universities – especially the advanced mirror-suspension systems.

You can watch videos of the Nobel Lectures of Professors Kip Thorne, Barry Barish and Rainer Weiss via the links below:

- Rainer Weiss - Nobel Lecture
- Barry C. Barish - Nobel Lecture
- Kip S. Thorne - Nobel Lecture

You can read Professor Weiss’s Banquet speech on the Nobel Prize website.
MPs join the campaign to inspire the next generation of engineers

Pledges of support for the Year of Engineering will help ensure young people across the UK can find out more about the opportunities of engineering careers.

More than 30 MPs have pledged their support for a national campaign to get more young people into engineering, joining government and industry in a united effort to tackle a major skills gap.

The Year of Engineering, which launches in January 2018, will see government work with hundreds of industry partners to raise the profile of engineering among young people aged 7 to 16, their parents and their teachers. This will include offering at least a million direct experiences of engineering to young people from all backgrounds – from behind the scenes tours and family days out, to school visits and the chance to meet engineering role models.

At an event in Parliament on 6 December, MPs from across the UK committed to supporting the campaign in their constituencies. Pledges included connecting schools with local engineering employers and encouraging businesses to take part in open doors events for schools and families.

Minister for the Year of Engineering and Transport Skills Minister John Hayes said: “If we are going to create a country fit to meet all new challenges, we need to train the next generation of highly-skilled British workers. Engineering and all it brings is at the heart of economic success and provides exciting opportunities of fulfilling careers through skills that will shape all our futures, but for too many employers a lack of skilled engineers is limiting growth. That’s why I am delighted to see so many of my colleagues determined to promote engineering. Their determination and dedication, enthusiasm and engagement will help to make the year of engineering not only a year-long campaign but a lifelong success. Now, huge opportunities exist as the government's strategic investment in infrastructure bears fruit. New skills, new jobs and new prospects will turn vision to reality, if we show young people, their parents and their teachers what engineering can mean: a career in engineering offers creativity, variety, the chance to innovate and so make a real difference.”

HMG Envoy for the Year of Engineering Stephen Metcalfe MP said: “The value of engineering skills is frequently underestimated, outdated perceptions of the profession are still widespread, and the industry continues to suffer from a lack of diversity in its workforce. The Year of Engineering aims to tackle these challenges, so it’s vital that the campaign is championed across government, parliament and industry. We know how much enthusiasm there is in all parts of the profession to encourage engineers of the future. We want this campaign to unite those ambitions, and I welcome these pledges of support from my fellow MPs which will be vital in helping to drive this across the country.”

The event was jointly hosted by government and the Institution for Engineering and Technology (IET), marking the publication of its annual Skills Survey report – which looks at the skills challenges faced by engineering and technology employers in the UK.

Nigel Fine, IET Chief Executive, said: “The IET 2017 Engineering and Technology Skills Survey highlights a buoyant sector with high value jobs being created. In order to deliver on the skills challenge we must ensure we have enough people with the practical and technical skills required by industry, and recruit widely from a diverse pool of potential talent, bringing in all sections of society. The cross-government Year of Engineering campaign will be an ideal way of celebrating the amazing contribution that engineering makes to society, and encouraging young people to join the profession. The IET is delighted to be supporting the campaign to highlight the exciting, creative and rewarding world of engineering.”

Hundreds of partners have signed up to support the Year of Engineering, including Siemens, the Science Museum Group, Ocado, Usborne, BAE Systems and Crossrail. Teaming up with partners from many different sectors, the government will deliver a year of UK-wide school visits, exhibitions and open doors events – all aimed at encouraging young people and their parents to take a closer look at engineering.

To find out more, visit the Year of Engineering partner website or follow the campaign on Twitter.
Space conference celebrates UK advancements in space science and Earth observation

Leading figures from the UK space industry gathered in Oxfordshire on 7 December to discuss the latest advances in space science and Earth observation, learn about some of the industry’s key technology challenges and to hear of the latest major announcements from the UK Space Agency and the Satellite Applications Catapult.

The eminent group of specialists from across research, academia, industry and international partners met at the UK’s main hub for space science, the Harwell Campus near Didcot, for the STFC RAL Space ‘Appleton Space Conference’.

Conference Chair Dr Chris Mutlow, Director of STFC RAL Space, said: “I am delighted to welcome friends and colleagues from the space sector to Oxfordshire. A wealth of ideas and enthusiasm is being shared today and I, personally, am looking forward to the challenges of the next year. These are exciting times for space and the many new investments announced today in this sector in the UK will enable more small companies to grow. The next year will also be exciting for RAL Space as we’ll be breaking ground on the National Satellite Test Facility, which will help UK companies to be more competitive in a global market.”

The keynote speaker was Dame Julia Slingo, who has recently retired as the Met Office Chief Scientist, and gave her 10 year forecast for climate science and the role of Earth observation.

Orbital Micro Systems, which established its UK headquarters in Harwell, signed a contract with the Satellite Applications Catapult to put its new miniaturized weather observing and forecasting technology into space. The shoebox sized satellite will be launched in autumn 2018 from the International Space Station.

Graham Turnock, Chief Executive of the UK Space Agency also announced support for small businesses with £200,000 of funding for 4 new business incubators to boost the number of start-up companies in the space sector across the UK. The UK Space Agency now supports 15 space sector incubators in 22 locations across the country, including the European Space Agency Business Incubation Centre run by the Science and Technology Facilities Council (STFC) at the Harwell Campus.

STFC RAL Space has already had significant involvement in over 210 space missions and as part of the UK’s Industrial Strategy is the future site of the £99 million UK government funded National Satellite Testing Facility. This year alone, the RAL Space team has been involved in missions to understand climate change, study the Sun, and rover development and as well being involved in projects from China to Brazil.
UK team develop laser to iron-out imperfections in metal

A new laser processing laboratory has been commissioned at the UK’s premier laser research facility with the aim of developing unique methods of treating metals for use in high-value manufacturing, for example in high stress machinery such as aerospace components.

The new tool being developed by laser experts at the Science and Technology Facilities Council’s (STFC) Central Laser Facility (CLF) will be capable of enhancing metal performance with much greater precision and in just a fraction of the time of traditional methods.

The laser is capable of advanced surface treatment by delivering powerful nanosecond pulses to the metal target. This sends shockwaves into the material, which compresses the atoms in the metal and leaves the structure locked in a compressed state.

This makes the metal much more resilient and resistant to cracks.

Dr James Nygaard, development laser scientist at CLF, said: “At CLF our lasers are among the most powerful in the world and have been used for a wide range of research such as probing the internal structure of matter under extreme conditions. We can harness the power of these laser technologies to solve real-world engineering problems and through the development of the laser shock peening technique there is potential to revolutionise the way metals for high-stress machinery are manufactured.”

The concept is similar to the traditional blacksmith’s hammer, but using a pulsed laser allows us to target precise areas on a structure – for example, the laser can be targeted at welds to add strength – and the compressive shockwave can be tailored by adjusting the laser parameters.

The laser shock peening technique is of specific importance to high-value sectors including nuclear power generation and aerospace, where aircraft engine fan blades can be laser peened to make improve their resistance to bird strike.

This new tool is powered by the in-house laser platform DiPOLE (Diode Pumped Optical Laser system for Experiments).

John Collier, Director of CLF, said: “This is the latest application to be developed by the team at CLF where we have used the experience of our laser experts to address potential problems for industry. Our next step will be to automate the technology using robotics to enable the treatment of large engineering components – this will save time and reduce costs, making the technique more broadly attractive to industry.”

The yellow robot arm is used to manoeuvre the metal samples into path of the fixed laser beam. Credit: CLF/STFC
External Innovations and Innovations Club

The External Innovations team manages the activities that aim to realise the impacts and benefits that flow from STFC’s investments in science and technology towards commercialisation through one to one brokering, events and a range of funding schemes.

If you wish to contact the teams for more information please see the following contacts and email addresses.

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The Innovations Club newsletter contains a selection of articles drawn from our partner organisations that we think you will find interesting. We welcome your comments innovationsclub@stfc.ac.uk