UKRI Coronavirus Hub

The UKRI Coronavirus Hub gives you the latest information on the vital work of UKRI and our community in response to the crisis, what grants and awards we have made, and our continuing call to fund your ideas to limit the outbreak and protect life.

For more information please go here
Contents

UKRI Coronavirushub 1
STFC Calls 3
Next generation home vision testing (SBRI competition) 4
5G enabled road and rail transport trials in the West Midlands, round 2 5
STFC Knowledge Exchange 2021 Webinar 6
Planners Fast Track UK’s Vaccines Manufacturing and Innovation Centre 7
STFC team involved in ground-breaking study to find a truly green aviation power system 9
Hartree Centre and Diamond Light Source to help transform electric vehicle technology 11
STFC welcomes six new start-ups to its national space-tech business programme 13
STFC spin-out acquired 15
Alder Hey develops AI ‘chatbot’ to help staff manage Covid-19 crisis 17
Hartree Centre supports engineering students’ race to Formula One 19
External Innovations Team and Innovations Club contacts 21
STFC Calls

CLASP 2021; Healthcare and Energy

STFC runs a Challenge Led Applied Systems Programme (CLASP) to support the application of STFC research to help address key science challenges facing the UK in the defined areas. In 2021 the CLASP call is aimed at Energy and Healthcare global research challenge areas.

An Expression of Interest (EOI) stage for this call will open on **10 November 2020** and close on **14 January 2021**. Further specific call information and guidance notes will follow soon. For more general information about CLASP please follow this [link](#).

Further information is available by contacting wendy.carr@stfc.ac.uk or Edward.Mansfield@stfc.ukri.org

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Knowledge Exchange Funding

STFC offers a diverse portfolio of knowledge exchange schemes, designed to allow funding of projects from initial development right through to commercialisation. These schemes are designed to facilitate the transfer of STFC funded research into an industrial setting over a number of different stages of commercialisation.

**Innovation Partnership Scheme (IPS)**

- To transfer technology and expertise developed through STFC funding to the marketplace in partnership with industry and other academic disciplines.

**Follow-on Funding (FoF)**

- To support proof of concept for a project following on from STFC funded research. Partner not permitted.

**IPS Fellowships**

- To develop an institution’s capacity for knowledge exchange and commercialisation from STFC-funded research.

The next funding call for all of these schemes will open on the **18th of December** with a closing date of **18th February 2021**.

For more information, please go [here](#)
Next generation home vision testing (SBRI competition)

Organisations can apply for a share of £100,000 inclusive of VAT, to develop remotely deployed vision testing.

**Competition closes:** Wednesday 18 November 2020

This is a Small Business Research Initiative (SBRI) competition funded by NHS Scotland. The aim of the competition is to pioneer remote vision testing.

Successful applicants will receive 100% funding and have access to advice from NHS Forth Valley, NHS Ayrshire and Arran, NHS Fife and NHS Grampian.

This is phase 1 of a potential 2-phase competition. A decision to proceed with phase 2 will depend on the outcomes from phase 1 and assessment of a separate application into a subsequent phase 2 competition.

Only successful applicants from phase 1 will be able to apply to take part in phase 2.

**Phase 1: research and development contracts, feasibility study**

The first phase involves research and development (R&D) contracts being awarded to demonstrate technical feasibility of the proposed solution. A total of up to £40,000, inclusive of VAT, is allocated to this phase.

Feasibility study R&D contracts will be up to £10,000, inclusive of VAT. This is for each project for up to 3 months.

We expect to fund up to 4 projects. The assessors will consider fair value in making their evaluation.

We would welcome bids from a single entity that bring together sector specialists.

**Phase 2: research and development contracts, prototype development and testing**

The second phase will involve up to 2 R&D contracts being awarded to businesses chosen from the successful phase 1 applicants. Up to £30,000, inclusive of VAT, will be allocated for each contract, in order to develop a prototype and undertake field testing for up to 9 months.

The contract is completed at the end of phase 2, and the successful business is expected to pursue commercialisation of their solution.

Any adoption and implementation of a solution from this competition would be subject of a separate, possible competitive, procurement exercise. This competition does not cover the purchase of any solution.

For more information please go [here](#).
5G enabled road and rail transport trials in the West Midlands, round 2

UK registered businesses can apply for a share of up to £2.5 million to support development of 5G enabled transport innovations. This funding is from West Midlands 5G (WM5G).

**Competition closes:** Wednesday 2 December 2020 11:00am

West Midlands 5G (WM5G) will work in partnership with the Department for Digital, Culture, Media and Sport (DCMS) and the West Midlands Combined Authority (WMCA) through Transport for West Midlands (TfWM).

Together they will invest up to £2.5 million in innovation projects that develop a new service or product. These must improve road and rail operational efficiency, provide better-connected transport or improve traveller experience. Innovate UK, part of UK Research and Innovation, will manage the competition process.

This competition will support projects up to 12 months in duration.

Your project must trial using 5G in the West Midlands.

Projects will be awarded grant and monitored by WM5G.

You must consult with Transport for West Midlands (TfWM) if the transport monitoring and control system:

- needs to integrate with the physical road or rail networks
- requires data

You must also ask TfWM to provide a letter of support for your project. Consultation days will be published specifically to review projects and gain understanding prior to letters of support being issued. Please apply for these appointments through the WM5G website.

You must consult with a mobile network operator (Vodafone, O2, BT or 3) to confirm 5G functionality is available for your project in the West Midlands.

You must include a public or private communications network provider or a communications integrator as a partner or a sub-contractor in your consortium.

For more information please go [here](#)
STFC Knowledge Exchange 2021 Webinar
13 October 2020 – 9am

STFC offers a diverse portfolio of knowledge exchange schemes, designed to facilitate the transfer of STFC funded science and technology into commercial applications. This event will highlight the opportunities available to potential applicants in 2021.

We offer two main schemes (please visit our webpage for more information)

- IPS and Follow on Fund aim to drive STFC funded research and technology towards a commercial position
- CLASP asks researchers to apply STFC funded research and use it to address challenges in a thematic area

At the event, there will be:

- Advice on making applications.
- The opportunity to ask questions about the STFC Knowledge Exchange schemes.
- Presentations from representatives from various government agencies highlighting some of the relevant challenges in their sectors.
- Presentations from previous recipients of both schemes.
- An opportunity to hear an update from UKRI on Commercialisation plans.
- An opportunity to listen to Innovate UK outline funding opportunities for later stage commercialisation projects.
- Across the 2021 KE schemes, up to £4.5M in total is available to fund a number of projects spread over two IPS calls and the CLASP call (the dates of which can be found below).

**CLASP EOI:** Opens 10th November 2020, closes 14th January 2021

**CLASP Full stage:** Opens 11th March 2021, closes 20th May 2021

**1st IPS:** Opens 18th December 2020, closes 18th February 2021

**2nd IPS:** Opens: 24th June 2021, closes 2nd September 2021

The CLASP challenge areas for 2020/21 will be Healthcare and Energy, (please see the website for some example themes).
Planners Fast Track UK’s Vaccines Manufacturing and Innovation Centre

The Vaccines Manufacturing and Innovation Centre (VMIC) will be a highly specialist facility located at Harwell Science and Innovation Campus, playing a critical role for the UK in manufacturing vaccines for COVID-19 and beyond.

The Vale of White Horse District Council gave the centre priority planning status to enable its construction, allowing work to start on the build months before planning permission was granted.

Due to COVID-19 and VMIC’s national and international significance, the council took a different approach and fast-tracked the application process, meaning that much of the planning work taking place behind the scenes was carried out simultaneously to construction work.

Dr Neil Geddes, STFC Executive Director for National Laboratories Science and Technologies, said: “This is a welcome milestone in the VMIC project, which helps to reinforce the importance of the Harwell campus as a research hub for the UK.”

An additional government grant of £93 million was awarded to VMIC in May 2020 to expand the facility’s capabilities and bringing forward operational readiness to 2021, a year head of the original scheduled date.
Alongside this, VMIC has invested in more technology to increase its manufacturing capacity 20-fold, to be capable of producing 70 million pandemic vaccine doses in 4-6 months.

The additional funding is delivered by UK Research and Innovation, as part of the UK Government’s Industrial Strategy Challenge Fund, and is in addition to an original £65 million grant, with a further £10 million provided by industry partners and other businesses.

VMIC’s location at the Harwell campus will make it a pillar organisation of the Harwell HealthTec Cluster and give it crucial access to national facilities including Diamond Light Source, the Rosalind Franklin Institute, the Research Complex at Harwell and the Science and Technology Facilities Council’s Rutherford Appleton Laboratory, as well businesses in the global and UK Life Sciences sector.
STFC team involved in ground-breaking study to find a truly green aviation power system

A team from STFC has recently completed a joint Proof of Concept study with the company Reaction Engines to determine whether the company’s innovative thermal management technology could be combined with STFC’s world-class catalysts to create a truly green aviation system based on ammonia fuel.

The findings of this study could have huge implications for the aviation industry and the wider UK target of being carbon neutral by 2050. With a follow-on demonstrator integrating the technology into a ground-based test engine planned, zero emissions flight could be a reality in a matter of years.

The project came about through the Harwell Cross Cluster Proof of Concept Programme that unites organisations across the energy, space and life sciences sectors, creates collaborations and provides funding that moves research from theory towards commercial success. Funding is provided by STFC and the programme is driven by the Harwell Campus Clusters.

Decarbonizing the aviation industry is one of the great challenges of our age. Most modern aircraft are powered by kerosene and the emissions generated from this method of propulsion contribute a significant amount to the total global greenhouse gas production.

Photo by form PxHere
The new propulsion system was devised by Reaction Engines and investigated by a team from STFC’s ISIS Neutron and Muon Source Research Facility and STFC’s Technology Department. It would have the potential to efficiently crack the ammonia fuel using heat harvested from the jet engine through ground-breaking heat exchangers to provide a zero-carbon fuel blend of ammonia and hydrogen that burns stably just like jet fuel. The density of liquid ammonia allows for conventional aircraft configurations to be used and it may be possible to retrofit into an existing engine, resulting in a zero-carbon jet that could start serving the short haul market well before the 2050 target currently set by the industry.

Professor Bill David from STFC and the University of Oxford had this to say regarding the potential of ammonia as a jet engine fuel: “We are optimistic about progress having recently completed the first stage of laboratory tests where we successfully produced the combination of ammonia and hydrogen that mimics jet fuel. Our next step is to scale up to small aviation scale and we are confident that we will achieve this goal. Green ammonia storage and real-zero ammonia-hydrogen fuel mixtures have the potential, not only to enable carbon-free, and indeed guilt-free, aviation but also, in time, to completely remove our dependence on fossil fuels.”

Dr James Barth, engineering lead at Reaction Engines added: “The combination of Reaction Engines’ transformative heat exchanger technology and the STFC’s innovative catalysts will enable development of a game-changing class of green ammonia-based aviation propulsion systems. Our study showed that an ammonia-fuelled jet engine could be adapted from currently available engines, and ammonia as a fuel doesn’t require a complete re-think of the design of civil aircraft as we know them today.”
Hartree Centre and Diamond Light Source to help transform electric vehicle technology

A new research and development project that aims to transform electric vehicle powertrain technology, will be supported by the Science and Technology Facilities Council’s (STFC’s) Hartree Centre. In addition, Diamond Light Source, which is funded by STFC and the Wellcome Trust, will provide access to X-ray facilities for measurements.

Both facilities are working closely together on the three-year OCTOPUS Project, a multi-partner research study funded by the Office for Low Emission Vehicles (OLEV) in partnership with Innovate UK, as part of UKRI.

The OCTOPUS project involves a number of academic partners as well as a mix of small, medium and large enterprises. This includes the luxury car brand Bentley, that aims to integrate the technology developed into a high performance car to demonstrate its potential.

The consortium led by Advanced Electric Machines (AEM), a spin out from the University of Newcastle, will be collaborating to develop a new high-speed automotive powertrain, the components of a vehicle that convert the engine’s power into movement.
Michael Gleaves, Deputy Director of STFC’s Hartree Centre said that their contribution will speed up the time needed to develop the new powertrain: "We will be providing a computational model that promises to transform electric vehicle powertrains. This will be a multi-physics model, or 'digital twin', of the innovative new motor and associated electronics. We will also provide the High Performance Computing platforms required. The model we create will then be verified against highly accurate measurements taken at Diamond Light Source."

Diamond Light Source works like a giant microscope, harnessing the power of electrons to produce bright light that the technologists can use to measure parts of the engine with a high level of precision. It will take measurements from physical engines using the unique Joint Engineering, Environment and Processing (JEEP) beamline (I12). I12 will be used to image the motor at full speed and measure temperature changes, as the performance is pushed and the temperature in the motor increases.

The data collected will then be used by the Hartree Centre to verify the accuracy of the computational model. This will enable the project to use the precise measurements to aid power delivery to the motor, something that will improve the overall efficiency of the powertrain, ultimately creating innovative high-performance electric vehicle technology.
STFC welcomes six new start-ups to its national space-tech business programme

The Science and Technology Facilities Council (STFC) has announced six pioneering UK start-ups that have successfully secured a place on the world’s largest business incubation programme for space tech start-ups.

The European Space Agency Business Incubation Centre United Kingdom (ESA BIC UK) is part of ESA Space Solutions, with successful ESA BICs across Europe, supporting start-ups that are using space technologies to innovate and develop game-changing new products and services.

Science Minister Amanda Solloway said: “The UK is home to some of the world’s most innovative space technology businesses, using satellites and artificial intelligence to transform our everyday lives – from developing more efficient transport networks to helping UK farmers increase their productivity. By joining the world’s largest space incubation programme, these six impressive UK start-ups will receive the support they need for their ideas to take off and succeed.”

The ESA BIC UK is a UK-wide programme, incorporating the Harwell Campus in Oxfordshire, Sci-Tech Daresbury in the North West, the Royal Observatory in Edinburgh and the new Space Park Leicester, which will open next year.
Managed by STFC in collaboration with ESA, and partly funded by STFC and the UK Space Agency, the ESA BIC UK programme helps businesses boost their competitiveness in an increasingly fierce and global marketplace. So far it has helped 91 start-up companies, of which 73 have graduated from the programme, collectively raising over £73 million in investment to date¹.

The six new companies to join the programme span a diverse range of sectors from using AR technologies to develop screen-based story-telling experiences, to developing new spacecraft propulsion systems, manufacturing light-weight metal components for the aerospace industry, and developing an AI training platform to get the most from Earth Observation data.

¹Data provided by Beauhurst

STFC’s Dr Sue O’Hare, Operations Manager at the ESA BIC UK, said: "I'm really excited to welcome these six dynamic and forward thinking start-ups to the ESA BIC UK, and I'm thrilled that, despite current economic uncertainty, we have continued to receive a healthy volume of applications to join our programme. Understanding the support that start-ups need is our speciality, and here our aspiring incubatees can take full advantage of the expertise, facilities and support we have across STFC to build technologies and businesses of tomorrow. "The UK is the leading funder in Europe for space business applications, and the valuable combination of funding, networks and access to STFC’s technical capabilities, not to mention being part of the world’s largest space incubation programme, is exactly what start-ups need to thrive and be successful.”
STFC spin-out acquired

vivaMOS Ltd, a high-growth potential, UK tech firm spun out of the Science and Technology Facilities Council (STFC) in 2015, has been acquired by a US multinational. Nordson Corporation, a global precision technology company, has announced the acquisition.

vivaMOS is a large-area CMOS X-ray detector company based in Southampton. The initial technology licenced to vivaMOS was developed for use in medical X-ray imaging by an image sensor design team based at STFC’s Rutherford Appleton Laboratory, on the Harwell Campus in Oxfordshire.

Dr Elizabeth Kirby, Director of Innovation at STFC, says that the acquisition is a ‘win-win’ for both companies: “We are delighted to see that our commercial model for spinning-out new businesses is generating success. STFC Innovations Ltd (SIL) was created by STFC to help take innovative technology coming out of our labs and departments to market.”

The technology will continue to be used by Nordson DAGE, a business unit within Nordson’s Test and Inspection division, to improve the quality and speed of their X-ray inspection equipment for a diverse set of end markets. Nordson DAGE is based in Aylesbury and Colchester, and it works with customers around the world.

vivaMOS has high-growth potential thanks to its leading technology and the market it operates in. Nordson will now help vivaMOS deliver and accelerate their growth plans.
Dan Cathie, vivaMOS CEO said that the acquisition will serve to accelerate the promising growth for vivaMOS: "We are very excited about this acquisition by Nordson, which will make us bigger, better, faster. We look forward to delivering our ambitious plans for the new combined X-ray Components business further and wider together, thanks to their market reach and strong brand image."

vivaMOS has a successful track record of bringing large area X-ray detectors to market, each of which are customised by application. Exciting new innovations in the pipeline will further extend their technology leadership position in the CMOS X-ray detector market.

Nordson Corporation designs and manufactures equipment used in the test and inspection of electronic components, technology-based systems for curing and surface treatment processes, as well as medical devices and component technologies.
Alder Hey develops AI ‘chatbot’ to help staff manage Covid-19 crisis

Alder Hey Children’s NHS Foundation Trust in Liverpool is developing, in collaboration with Artificial Intelligence (AI) experts at the Science and Technology Facilities Council’s (STFC) Hartree Centre, an AI ‘chatbot’ for staff, designed to help keep them updated to the latest information, such as during the Covid-19 pandemic.

The chatbot in development, which is called SALI (Staff Advice & Link Information), aims to quickly connect hospital staff with 24hr access to the latest information, policies and guidance relating to all matters Covid-19, from PPE fitting and training, to policy and guidance about self-isolation.

In a proof of concept programme funded by STFC, leading AI experts at STFC’s Hartree Centre, at Sci-Tech Daresbury in the Liverpool City region, have been using IBM Watson technology to develop the chatbot interface, linking directly into the hospital’s internal documentation to create a search capability that can provide answers to specialist user questions at any time.

Thanks to IBM Watson technology, SALI’s search features will have the capacity to extend beyond standard database queries, to search for relevant paragraphs and answers buried deep within documents to answer more obscure questions.
Using natural language processing technology, SALI can communicate with employees in a natural, conversational tone, to provide the latest guidelines, regulations and medical information. The innovation team at Alder Hey are now looking to extend this functionality to more services.

Mr Iain Hennessey, Clinical Director of Innovation at Alder Hey NHS Foundation Trust, said: "This proof of concept project is showing us what a great asset that technology, such as SALI, can be in times of real challenge, such as Covid-19. Having a strong partnership already in place with STFC’s Hartree Centre has enabled us build on our existing cognitive capabilities and move quickly, which is critical when it comes to exploring and developing new technologies that will support our staff."

Alder Hey has worked previously with the Hartree Centre to develop an AI chatbot specifically for patients on its website. Designed to personalise children’s healthcare and improve the patient experience.

Science Minister Amanda Solloway said: "I am delighted that some of our most talented innovators have stepped up to identify how new technologies like AI can help ease the day-to-day jobs of our amazing healthcare workers, who we all owe so much to."

Alison Kennedy, Director at STFC’s Hartree Centre, said: "SALI has real the potential to provide an efficient and effective way to provide fast and trusted information to the staff that need it in times of pressure. The Covid-19 pandemic has clearly highlighted our need to develop AI technologies to solve major challenges. This project is giving us valuable experience in designing the search tools for use in situations where the documented advice is not only changing frequently but which also presents in many different formats from numerous sources. This is a great example of how we can apply our expertise in AI and data science here at the Hartree Centre to help solve to real world problems and build resilience to new challenges in the future."
Hartree Centre supports engineering students’ race to Formula One

Researchers at STFC’s Hartree Centre are supporting a pioneering project led by the University of Bolton to prepare a new generation of engineers for the exciting world of Formula One racing.

Engineering students at the University of Bolton’s National Centre of Motorsport Engineering (NCME) have been preparing a 1981 Ensign N180B Formula One car to race again, which will be driven by three-time grand prix winner, Johnny Herbert. Operated and owned by former Formula 1 manager Bob Fernley, who has donated the car to the project, the Ensign F1 car last raced in the early 1980s, taking sixth place at the Monaco Grand Prix in 1986.

Project Ensign is the first of its kind and follows a call from motor racing star Lewis Hamilton for more diversity in this elite sport, to open up opportunities and inspire a new generation of engineering minds in students from all backgrounds. Forty seven of the 196 students in this project are from a BAME background.

As part of the project, in addition to installing a powerful V8 racing engine into the racing car, the students needed to digitally scan and create a map of the car’s aerodynamic performance, to make comparisons with modern-day racing cars and apply their learnings. In support of this, researchers at the Hartree Centre, based at STFC’s Daresbury Laboratory at Sci-Tech Daresbury, have provided the students with access to its powerful supercomputing and visualisation capabilities, to carry out Computational Fluid Dynamics (CFD) analysis, for the students to correlate against track data, which will enable to optimisation of aerodynamic modelling and performance of the car.
In the motor industry, CFD is a valuable capability in aerodynamic design, and for a Formula One racing car it is critical for accurately simulating wind tunnel tests, track conditions and aerodynamic behaviour. Highly specialised mathematical CFD modelling algorithms can quickly and accurately simulate the flow of air over and around a car, making it possible to virtually get inside and all around a vehicle to see how it performs.

Michael Gleaves, Deputy Director at STFC’s Hartree Centre, said: “Formula One is such an exciting sport which demands a whole range of important disciplines in engineering and science. At STFC’s Hartree Centre we are constantly collaborating with UK businesses, using high performance computing to address real life challenges. This is very much the case for the automotive industry, where it can help us improve and tweak designs faster, saving both time and money. In addition to this, as an organisation, we have a vibrant programme that supports students in STEM subjects across the board, and I’m thrilled that the Hartree Centre has been able to provide support to this highly worthwhile project. I wish these students all the best for this project and their future careers.”

Johnny Herbert has now driven the car at a private test in Anglesey, with a view to competing at the Masters Historic Festival at Brands Hatch at the end of August. The ultimate project goal is to race the car at the 2021 Historic Monaco Grand Prix.
External Innovations and Innovations Club contacts

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.

Innovations club: innovationsclub@stfc.ukri.org

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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.ukri.org