Digital tech to tackle healthcare challenges: apply for funding

UK businesses can apply for a share of up to £9 million to develop more effective and efficient treatments through the Industrial Strategy Challenge Fund.

There is up to £9 million for businesses with ideas to develop novel digital technology solutions for healthcare challenges.

Funding is provided by UK Research and Innovation and delivered by Innovate UK.

Find out more about the Industrial Strategy Challenge Fund.

Accelerating the development of digital innovations

Advancing new and novel digital technologies could significantly improve outcomes for patients, and provide cost benefits for healthcare providers.

The digital health technology catalyst aims to accelerate the development of digital health innovations and grow the sector.

Health-tech firm FundamentalVR has previously received funding through the catalyst. The company is leading a project to develop a VR surgical training platform for students to practice and gain confidence before operating on people. More
This competition is part of the Industrial Strategy Challenge Fund to deliver leading-edge healthcare in the UK. This £181 million fund will transform how we develop and manufacture medicines and other healthcare products, such as digital technologies, to get the right drugs and treatments to patients when they need them.

Read more about digital health and medicines manufacturing projects that have recently received funding.

Improving on the current system
We are looking for projects that span a variety of technologies, markets and healthcare needs and improve on the current health and care system.

There are 2 competitions that businesses can apply into, depending on the stage of their project:
- up to £1 million for feasibility studies
- up to £8 million for collaborative research and development

Technologies you could look at include:
- virtual and augmented reality
- artificial intelligence and machine learning
- the Internet of Things
- data analytics and security

Your idea could be for use in a clinical or non-clinical setting. This could include digital technologies to:
- support clinical decision-making
- improve access to healthcare, support treatment compliance or patient-led management
- improve the patient experience from disease prevention through to diagnosis, treatment, recovery and long-term care
- overcome privacy challenges with managing, sharing and exploiting data
- create significant improvements in quality, speed, costs and outcomes

Feasibility studies competition information
- the competition is open and the deadline for applications is midday on 31 October 2018
- to lead a project, you’ll need to be a UK-based small or medium-sized business (SME)
- SMEs can work alone or collaborate with others, including businesses, NHS organisations, universities, research and technology organisations, public sector organisations or charities
- your project can last up to 12 months and have total costs of between £50,000 and £75,000
- businesses could get up to 70% of their project costs
- projects must start by 1 April 2019

Find out more about this competition and apply.

Collaborative research and development competition information
- the competition is open and the deadline for applications is midday on 31 October 2018
- to lead a project, you’ll need to be a UK-based SME
- you will need to collaborate with others, including businesses, NHS organisations, universities, research and technology organisations, public sector organisations or charities
- your project can last up to 24 months and have total costs of between £300,000 and £1 million
- businesses could get up to 70% of their project costs
- applicants that meet a quality threshold will be invited to interview from 7 to 11 January 2019
- projects must start by 1 April 2019

Find out more about the collaborative research and development competition and apply.
STFC External Innovations runs a Challenge Led Applied Systems Programme (CLASP) to support the application and commercialisation of STFC research in industrial, environmental and societal grand challenges.

Up to £2m will be available in this call for projects which seek to maximise the practical impact of STFC-funded research and innovation to advance or address at least one of the grand challenges by:

• fostering global economic performance, and specifically the business competitiveness of the United Kingdom;
• increasing the effectiveness of public services and policy;
• enhancing quality of life, health and creative output.

Applications should aim to address market needs ideally by working closely with the end users. The application should also consider data ownerships, ethical issues and appropriate regulatory pathways. A business plan is required to provide exploitation plan(s) with support from appropriate industrial and other collaboration to ensure route to market.

CLASP Challenge Areas

Applicants for this call must state how their proposed research and planned activities will advance at least one of the industrial, environmental and societal challenges facing the UK and other countries. CLASP encompasses UK and global strategic challenges including:

• Those faced by industry (challenge areas within the Industrial Strategy Challenge Fund);
• Areas of Research Interest developed by the government departments within the UK (https://www.gov.uk/government/collections/areas-of-research-interest);
• And global challenges outlined in the UN Sustainable Development Goals.

Proposals align to UK’s Official Development Assistance (ODA) commitment should be submitted to ODA programmes, such as GCRF or Newton Fund.

Call dates

Opens 1 November 2018
Closes 6 December 2018
For more information go here
STFC B4I Roadshow for Agri/Food/Drink Sector

£8M Now Available to Support UK Industry in Boosting Productivity
Come and hear how STFC added value to companies in Agri/Food/Drink sector.

On Wednesday 14 November STFC will be hosting an event to show how we can help address the current challenges in the Agri/Food/Drink sector. Learn how we have assisted the likes of Unilever and Tetra Pak® to overcome difficult technical challenges and added value to these companies.

This event offers companies who need to overcome problems that restrict their productivity and competitiveness, an opportunity to discuss their issues with world leading experts and learn how to access some of the £8M in funding available to this programme.

Register on Eventbrite

What does STFC have to offer?
STFC funds and operates a number of large science facilities offering research and development access to commercial users and can provide access to advanced experimental and computational tools to address challenges in all aspects of the food production and packaging supply chain.

Why should you attend?
• Learn about funding opportunities
• Talk to the coordinators of the B4I funding scheme
• Discuss your challenge with world leading scientists
• Identify potential projects with STFC experts
• Understand how to access leading edge research infrastructure
• Partake in the facility tour at Harper Adams University, including the Dairy Crest Innovation Centre, Poultry and crop and environment research centres.
• Network with other agri-food companies

Example collaborations with the Agri/Food/Drink Industry
Here are the web links to some STFC facilities case studies on agriculture, food and drink:
• Understanding the microstructure of ice cream (Unilever);
• Neutrons could reveal how pesticides protect crops (Syngenta);
• Using Raman spectroscopy to test the quality of coconut cream (Coconut Collaboration Ltd);
• Tetra Pak® Beverage Carton Packaging Sterilisation Using Electron Beams (page 3);
• Combating foot and mouth;
• Elemental mapping of wheat grain;
• Killing microbes, not the taste.

Credit: STFC Food Network+
STFC appoints new Executive Director for Business and Innovation

STFC Executive Chair, Professor Mark Thomson, announced the appointment of Dr Kate Ronayne as STFC Executive Director, Business and Innovation after a rigorous and competitive recruitment exercise. Dr Ronayne brings long experience of working within STFC over many years, starting within the Central Laser Facility and for the last 10 years in key innovation and business development roles.

Her particular task will be to further develop the effective transfer of knowledge between STFC, industry and other organisations, and to improve the economic impact of our STFC’s science and facilities. As a member of the Executive Board, she will also help to shape STFC’s overall future priorities and plans. She takes up her role in October.

Dr Kate Ronayne Credit: STFC
STFC and Teledyne e2v, a leading supplier of technologies and components for industry, have formed a strategic relationship that will advance the world’s next generation of particle accelerator technologies and bring exciting new opportunities for UK industry.

Through this agreement Teledyne e2v will gain access to the Compact Linac accelerator and radiation enclosure at STFC’s Daresbury Laboratory, supporting the development of new products and integrated RF and X-ray systems. Meanwhile, for STFC, the agreement will deliver specialist technical support for the Compact Linac, provided by Teledyne e2v, which manufactured a number of the original components.

The Compact Linac is a compact electron beam and X-ray linear accelerator that is extremely applicable to industry market areas such as security scanning, healthcare and environmental applications. Housed in a fully supported radiation test enclosure, it provides a ready-made space for industry and the research community to test X-ray and electron beam generation technologies and systems.

Professor Susan Smith, Head of STFC’s Daresbury Laboratory, said: “STFC’s collaboration with Teledyne e2v will deliver long term benefit to both accelerator science and to industry. Working with such a high profile industrial partner is a tremendous opportunity for STFC to co-develop new X-ray beam generation technologies for both research and industrial solutions, and clearly demonstrates our ability to support UK businesses in the area of particle accelerators and their associated components and systems.”

The Compact Linac can be configured with either a 3.5 MeV accelerating cavity designed by Lancaster University and STFC, or a commercially available 6 MeV Linac. The ability to test products within such a flexible system makes the system extremely applicable to industry. It will enable Teledyne e2v to assess the impact of new products and system designs against the wider performance and reliability aspirations of its customers, enabling Teledyne e2v to develop optimised solutions meeting current and future customer needs.

As with all particle accelerators, the system is highly complex, with a number of particularly specialised and bespoke components. Teledyne e2v will provide the technical support to ensure that the Compact Linac system can continue to provide a reliable platform for industrial engagement.

Dr Ewan Livingstone, President of RF Power Commercial at Teledyne-e2v, commented: “Teledyne e2v is delighted to be collaborating with STFC. The collaboration provides Teledyne e2v with access to the Council’s world class facilities and people. It is a fantastic platform for joint innovation and is already helping us to accelerate the development of new products and solutions for our customers.”
Neutronstudycouldmakeplasticeducationmore environmentally friendly

Research carried out at the UK’s neutron and muon beam research facility could help to make the process of making plastic more environmentally friendly.

The environmental issues surrounding plastic are well-documented, with recent headlines highlighting the issue of waste plastic being dumped in the ocean. But it is not just the material itself that has an impact on the planet, as the manufacturing process itself also causes issues.

One of the chemicals currently used as a catalyst (an additive to help speed up the process), called VCM, is toxic and potentially explosive – but a staggering 13 million tons is created every year for plastic production.

Researchers from the UK, China and the USA have used the Merlin instrument at STFC’s ISIS Neutron and Muon Source facility to investigate a substitute chemical that is more environmentally friendly, called a gold-on-carbon catalyst.

Although the gold-on-carbon catalyst does work, scientists don’t yet know how. The study carried out at ISIS will help to fill in the gaps of current knowledge, so a more environmentally-sound catalyst can be produced, without losing performance.

For more information, visit the ISIS website.
Researchers at the Rutherford Appleton Laboratory have welcomed the new £14 million investment into the UK’s Catalysis Hub that will support a nationwide research programme.

Funding is provided by the Engineering and Physical Sciences Research Council, which is also part of UK Research and Innovation along with STFC.

The Hub, which is based on the Harwell campus in Oxfordshire, makes extensive use of the expertise of the staff at STFC’s Central Laser Facility and the world-leading ISIS neutron and muon source. Three institutions – the University of Bath, Cardiff University, and the University of Manchester – will lead three of the Hub’s themes.

This funding will allow the continuation of a collaborative research program across the UK in this important research area, with 25 universities directly involved in projects and over 45 involved in a wider network across the catalysis community.

The Hub is focused on building the UK economy through designing new catalysts and processes for clean water, sustainable energy and low carbon, and resource-efficient manufacturing of fuels, plastics and chemicals.

Part of this new funding will ensure technique development through two science work packages, one of which, on data analysis, processing and curation, is being led by STFC’s Scientific Computing Department.

You can read more on the EPSRC website, or on the UK Catalysis Hub website.
Researchers at the Centre for Quantum Technologies in Singapore have expertise in building rugged and compact QKD instruments for spaceflight Credit: CQT

The early demonstration of new quantum space technologies, through the latest collaboration between the UK and Singapore governments, could lead to more secure online activity for consumers in everything from financial transactions to online conversations.

The £10 million initiative between the UK and Singapore governments is to build and fly a satellite quantum key distribution (QKD) test bed. Through this collaboration, Singapore and the UK will co-develop “QKD Qubesat”, a satellite based on the CubeSat standard that will use a pioneering QKD technology to test the secure distribution of cryptographic keys over globe-spanning distances.

Satellite-based QKD is emerging as an un-breakable communication technology, far more secure than existing encryption techniques. This new joint quantum technology satellite mission opens access to a global market thought to be worth up to US$15 billion (£11.5 billion) over the next ten years. The collaboration aims to build on both countries’ efforts to grow the space and quantum technologies sectors by staking a claim in the emerging QKD market. The satellite will be operational in late 2021.

In the UK work will be led by the STFC’s RAL Space facility which will contribute its expertise in innovative space technology and optical links needed for beaming QKD signals. In Singapore work will be led by the Centre for Quantum Technologies (CQT) at the National University of Singapore (NUS) which will contribute its expertise in the building of rugged and compact QKD instruments.

UK Science Minister Sam Gyimah said: “Science has no borders and this is a brilliant example of our world leading space sector using technology to benefit consumers, keeping our data safer than ever before. Our commitment to science is at the heart of our modern Industrial Strategy and international collaborations are vital to putting the UK on the world stage as an innovation superpower.”

The UK investment in this programme is part of the Industrial Strategy commitment to develop new manufacturing and export opportunities for the UK space sector and vital infrastructure for UK telecommunications as well as safety and resilience for the country. The QKD Qubesat mission is closely aligned with the UK National Quantum Technology Programme which has established close links with industry in the UK and overseas and is exploring a diversity of technical approaches for commercial benefits to be gleaned.

Researchers at the Centre for Quantum Technologies in Singapore have expertise in building rugged and compact QKD instruments for spaceflight Credit: CQT

UK and Singapore collaborate on £10m satellite project to develop next generation communications networks

Innovations Newsletter
UK and Singapore collaborate on £10m satellite project to develop next generation communications networks

Collaboration with Singapore in this field takes place against the backdrop of strong and deep links between the two countries in a wide range of science and innovation fields, recognised through the signing of a bilateral Innovation and Research Partnership in 2014.

Existing systems to facilitate the secure electronic transfer of information are becoming increasingly vulnerable. The public key algorithms that handle the secret keys to lock and unlock encryption will be easily broken as quantum computers come into use. These systems currently underpin the security of 99% of the world’s data communications from mobile banking and payment systems to smart home devices.

Quantum Key Distribution provides an alternative that can be seamlessly integrated onto the network systems we already use. It is resistant to all known computational attacks, including from future quantum computers.

Dr Chris Mutlow, Director of STFC RAL Space said: “As the UK’s national laboratory for innovative space technology development, this is exactly the kind of mission we are here for. Alongside our international partners, we will provide a vehicle for technology readiness-raising and rapid space qualification of quantum technologies. This mission puts the UK ahead of our competitors in quantum communications. It will enable the space sector to tap into new manufacturing and export opportunities that will help the UK achieve its ambition of capturing a 10% share of the estimated £40 billion global space market by 2030.”

A space-based QKD system will ensure security over national and international distances, at a lower cost to alternative, ground based fibre infrastructure.

On this new collaboration with the UK, Mr George Loh, Director, Programmes at the National Research Foundation (NRF) in Singapore said: “Singapore has developed deep research capabilities in quantum technologies through our past investments in the Centre for Quantum Technologies. Singapore and UK share the same outlook to leverage research & innovation to develop capabilities and derive benefits for our respective countries. This collaboration with UK is significant for both countries, in bringing together our experts to demonstrate satellite-based QKD communication capability. Singapore will also bring in local companies to develop and commercialise products and services in the QKD market, as well as other forms of space and quantum technologies.”

Dr Artur Ekert, Director of CQT said: “Having access to quantum-secured communication is a smart step for cybersecurity. We already have trials over fibre for secure communication within Singapore, building on CQT’s decade of development of this quantum technology. Reaching into space with our UK partner is a strategic move towards global data security.”
RAL Space is helping turn carbon dioxide into rock

STFC RAL Space is contributing to a unique project that will advance the provision of cleaner and cost-effective geothermal energy across Europe and the World with reduced emissions of carbon and sulphur.

The core of this project is the application of an innovative technology, recently developed and successfully demonstrated at a pilot-scale in Iceland, which can limit the emissions from geothermal plants by condensing and re-injecting the gases released back in to the Earth’s subsurface, or turning them into commercial products.

The RAL Space team will be working on the development of prototype laser sensing systems to accurately measure sulphur isotopes at geothermal field sites across Europe. Isotopic signatures can help in understanding the chemical processes happening in the subsurface rocks.

The project, made up of a group of 18 partners across Europe, have received a EUR 16 Million grant from the Horizon 2020 Research and Innovation programme and the funding contributes to the GECO project, GECO standing for ‘Geothermal Emission COntrol’.

Once developed the prototype system will be deployed across several test sites in Iceland, Germany, Italy and Turkey.

You can read more about the project here.
New UKRI system needs community input on Horizon 2020 grants

A new system has been rolled out as a first step towards supporting the continuity of funding for UK organisations which have been awarded grants from the European Union’s flagship programme for science and innovation, Horizon 2020. UK Research and Innovation (UKRI) is asking recipients of Horizon 2020 grants to input basic information about their awards into a bespoke portal. This will ensure that UKRI can keep UK researchers and businesses informed of the next steps if the government needs to underwrite Horizon 2020 payments.

The UK and the EU’s intention is that UK researchers and businesses will continue to be eligible to participate in Horizon 2020 for the remaining duration of the programme.

This is set out in the Financial Provisions of the draft Withdrawal Agreement, which has been agreed by both UK and Commission negotiators, and was welcomed by the other 27 EU countries at March European Council.

As a responsible government, however, the UK Government is planning for all eventualities to ensure that cross-border collaboration in science and innovation can continue after EU exit.

Science Minister Sam Gyimah said: “It is imperative that we support our world-class researchers, businesses and scientists to continue to collaborate with EU partners after exit. While we do not want nor expect no deal, it is right that we plan for every eventuality. The launch of the new UKRI portal today is the next step in our commitment to the recipients of Horizon 2020 funding that we will guarantee funding for the duration of the programme.”

In July of this year an extension to that guarantee said that funding for UK participants successfully bid for from exit day until the end of 2020 would also be guaranteed by the UK government, in a no deal scenario.

In August the UK government announced that if the underwrite needs to come into effect, UKRI is the partner of choice to deliver it.

To ensure UKRI is ready for that eventuality, specialist teams have developed a bespoke portal designed to capture basic information about recipients’ grants and identify a relevant contact at the participating organisation for the project, likely to be the LEAR (Legal Entity Appointed Representative), so that they can be informed of the next steps in the process.

Those in receipt of Horizon 2020 grants need to input their information into the system as soon as possible.

UK Research and Innovation Chief Executive, Professor Sir Mark Walport, said: “It is extremely important that, if required, the underwrite guarantee for Horizon 2020 funding is administered effectively and UKRI is committed to putting in place the mechanisms that will support this. I urge our partners in research and business to work with us to capture the information we need via this portal.”

Further information

You can access the portal here.

The portal contains contact details of who to go to in the event of an enquiry.

An overview of the UK’s relationship with Horizon 2020 and a Q and A which clarifies the UK’s eligibility to participate in Horizon 2020.

UKRI has prepared a Q and A about the portal (PDF, 286KB).
Researchers at STFC's Central Laser Facility have congratulated the three winners of this year’s Nobel Prize for Physics: Arthur Ashkin, Donna Strickland and Gérard Mourou.

Dr Emma Springate is the Artemis Group Leader, and said: “I vividly remember reading Donna Strickland and Gerard Mourou’s (research) paper during my first year as a PhD student. The journal was unusual at the time in listing author’s full names, so it was the first time I realised that this hugely significant laser had been built by a woman – also while she was a PhD student. It made a big impression on me. I met Donna Strickland for the first time only a few years ago, and she is very down-to-earth. I hope she realises what a huge impact she has had on me and many other women in the field.”

CLF Director Professor John Collier said: “We are delighted that a Nobel Prize has been awarded for the invention of laser techniques that have fundamentally shaped how our lasers here at CLF operate. Arthur Ashkin, Donna Strickland and Gérard Mourou’s work changed the face of high power lasers everywhere.”

You can read the full citation from the Nobel Committee here.
UK contributes to New International Research Infrastructure Plan

The fifth Strategy Report and Roadmap 2018 of the European Strategy Forum on Research Infrastructures has been launched, with substantial contributions from key UK research organisations, reinforcing the importance of the UK as a major global centre of research and innovation.

The ESFRI Roadmap 2018 demonstrates the high merit and potential of European collaboration in developing an interoperable Research Infrastructure ecosystem and its importance as a key asset of Europe. The new Roadmap covers the ESFRI Landmark portfolio of 37 long-term engagements in all fields of science and 18 ESFRI Projects, with 6 new entries in the Energy, Environmental research, Health and Food and Social and Cultural Innovation domains.

UK experts hold a number of strategic and critical support roles providing leadership for ESFRI and the UK has substantial involvement in ESFRI’s six Strategic Working Groups (broad discipline strategic groups responsible for both the landscape analysis and the roadmap) and two Ad Hoc working groups.

In a joint statement by the UK delegation, from the launch event in Austria, Dr Gabriela Pastori from UK Research and Innovation (UKRI) and Professor Andrew Harrison the Diamond Light Source CEO said “There is a broad consensus in the UK that future competitiveness in a globalised knowledge economy depends on research capability. Research infrastructures represent long term strategic investments, providing competitive and open access to high quality facilities with a mission to enable and develop excellence and are an essential component of research capability in many scientific domains. Coordination of research infrastructures at European (and global) scale continues to be increasingly important, to drive joint strategies and joint investments, to ensure a continuous focus on excellence and that the level of investments remain at the cutting edge, to maximize effective use of public funds and the benefits of data sharing, and to fully exploit research infrastructures as innovation and skills hubs.”

“ESFRI is at present the most influential strategic instrument to enable this coordination and, with it, the scientific integration of Europe and the strengthening of its international outreach. The new ESFRI Roadmap includes new projects and landmarks with the UK as a major and active contributor and presents an interconnected landscape that aims to fully exploit synergies between scientific domains and promote interdisciplinarity.”

The UK is a prospective member in three of the six new projects announced in this latest roadmap and overall the UK is involved in just under half of all ESFRI projects and three quarters of all the landmarks announced at the launch event. In addition the UK leads four of the ESFRI landmarks, just over 10% of the total.

The issues of sustainability of Research Infrastructures, the impact on innovation, the construction of Open Science and the open data management are also addressed in the new document.

For more information, visit the European Commission website or the ESFRI website.

Download or browse the Roadmap 2018 online.
Laser research could make £18billion industry more efficient

STFC’s world-leading Central Laser Facility (CLF) has been instrumental in new research which might see efficiency savings being made in an industry worth billions to the UK.

Researchers from CLF and York University have used the ULTRA laser to develop a new technique to study chemical catalysts.

Chemical and pharmaceutical manufacturing is worth £18billion to the UK, and approximately 80-90% of the products made in the chemical industry are reliant on catalysts.

Chemical reactions can take a long time when left to be carried out naturally – so catalysts are used to speed up the process. In addition some chemicals only react at very low temperatures and a catalyst is added to help to lower the temperature quickly.

Despite catalysts being vitally important, very little is understood about how they actually work. Any step forward in understanding could result in making the process cheaper or more efficient, something which is crucial for such a huge industry.

CLF’s Ultra laser was instrumental to the research, as it is the only laser which can allow you to observe at the tiniest timescale how the catalysts actually work.

For more information on the experiment visit the CLF website.
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.

Innovations club: innovationsclub@stfc.ac.uk

External Innovations – 21st Century Challenges

Jason Green  Head of External Innovations  
Tel: + 44 (0)1793 442 014  Email: jason.green@stfc.ac.uk

Stephen Loader  Programme Manager  
Tel: +44 (0)1793 442 111  Email: stephen.loader@stfc.ac.uk

Ling Xu  Knowledge Exchange Manager  
Tel: + 44 (0)1793 442 104  Email: ling.xu@stfc.ac.uk

Katharine Hollinshead  21st Century Challenges Programme Manager  
Tel: + 44 (0)1793 442 068  Email: katharine.hollinshead@stfc.ac.uk

Helen Randell-Sly  ISCF Manager  
Tel: + 44 (0)1793 442 051  Email: helen.randell-sly@stfc.ac.uk

Administration

Andi Kidd  Office Manager  
Tel: +44 (0)1793 442 059  Email: andi.kidd@stfc.ac.uk

Pauline Thompson  Programme Support  
Tel: +44(0)1793 442 650  Email: pauline.thompson@stfc.ac.uk

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

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