News story: Innovation loans to demonstrate infrastructure systems: apply now

Small or medium-sized enterprises (SMEs) working on late-stage infrastructure systems projects can apply for a share of £10 million in a pilot loans competition – the first opportunity to access Innovate UK's new alternative financial support scheme.

This loans competition aims to help businesses overcome barriers to scaling up innovation in infrastructure systems. It will do this by enabling them to demonstrate their ideas work as expected in real-world applications with users, and take their solutions to market.

It was announced today at Innovate 2017.

Smarter, better infrastructure

The growing, ageing population, increased urbanisation and urgent need to reduce carbon emissions calls for new and novel infrastructure solutions. But developing, testing and commercialising new ideas in this sector can be risky.

You could get an innovation loan of up to £1 million for a first of a kind deployment of infrastructure technologies.

Demonstrator projects must be in one of Innovate UK's priority areas. These are:

- smart infrastructure, adding intelligence to improve physical infrastructure or the design process
- urban living, addressing the challenges people face in urban areas in order to improve user experience and lower costs. This could be:
    - 'hard' systems, such as energy, transport, waste, water and communication
    - 'soft' systems, such as security, law and justice (for example, public order and safety), health, wellbeing, social care and education
    - 'environmental' systems such as green spaces and waterways
- energy supply and systems, specifically improving the value proposition, affordability, emissions and security of energy
- connected transport, looking at solutions that move people and goods more efficiently and sustainably, and make transport more secure, user-centric and accessible

Introducing innovation loans

This is the first time Innovate UK has run a loans competition.

Innovations need different types of funding support depending on how close they are to market. Getting the right funding at the right time can scale up businesses' productivity and growth.

We believe that a patient, flexible loan scheme will be useful for innovations that are near to market, where there is less risk involved.

A pilot loan scheme worth up to £50 million will be offered over the next 2 years. Loans will be made through Innovate UK Loans Ltd, a wholly owned subsidiary of Innovate UK.

About the infrastructure systems loan competition

- the loans competition is open, and the deadline for registration is 10 January 2018
- you could get between £100,000 to £1 million to cover up to 100% of eligible project costs
- this opportunity is for UK-based SMEs
- applications can only be made by single SMEs
- loans are for late-stage experimental development only
- they are available for up to 10 years
- there is a briefing event for applicants on 16 November 2017

Press release: Funding for £84 million for artificial intelligence and robotics research and smart energy innovation announced

- Four new research hubs will develop robotic technology to improve safety in off-shore wind and nuclear energy
- £68 million from the Industrial Strategy Challenge Fund for artificial intelligence and robotics research announced
- Government also commits to £16 million worth of funding for smart energy systems innovation

More than £68 million of investment from the Industrial Strategy Challenge Fund for robotics and artificial intelligence projects aimed at improving safety in extreme environments has been announced by the government.

This investment will develop robots and artificial intelligence able to take

on jobs in the freezing depths of the North Sea, dealing with extreme environments in the process of nuclear energy production, the hostile vacuum of space, and heat of deep mining.

In her keynote speech to the Innovate UK Conference in Birmingham today (8th November), Climate Change and Industry Minister Claire Perry set out how British experts and innovators are leading the world in this new sector, receiving support from the Industrial Strategy Challenge Fund.

The government is working with business and academia in order to encourage investment in robotics and artificial intelligence – a priority area of the Industrial Strategy.

Almost £45 million will be used to set up four new research hubs based at the University of Manchester, University of Birmingham, University of Surrey and Heriot-Watt University in Edinburgh.

The centres of excellence, managed by the Engineering and Physical Sciences Research Council (EPSRC), will be responsible for developing robotic technology to enable safer working environments in space and deep mining and the hazardous and harsh environments of nuclear energy and off-shore wind.

As well as receiving government investment, the four hubs will be supported by £52 million of industry support from commercial and international partners, and UK Space Agency is co-funding the University of Surrey hub.

Minister for Climate Change and Industry Claire Perry said:

> Britain leads the world in innovation and technology and through the Industrial Strategy Challenge Fund, we are making £68 million available to projects in robotics and artificial intelligence with applications in clean renewable energy generation to ensure the UK is the place new technology is nurtured.
>
> Next week, I will be at the COP23 conference in Germany, and it will be abundantly clear there that, if we want to truly make a difference to our climate as well as take advantage of the economic opportunities of our transition to a low carbon economy, it will come down to continued innovation.

The investment announced by the Climate Change and Industry Minister today also includes:

- £4.3 million for the Natural Environment Research Council (NERC) to fund five research projects at the National Oceanography Centre (NOC), and the Universities of Exeter and Southampton, to develop sensors capable of working in the ocean’s extreme conditions
- £16.5 million for a collaborative research and development competition, run by Innovate UK, with winners set to include more than 70 businesses, 13 universities and 10 research organisations
- funding of £3 million for 17 studies which focus on demonstrating how

> artificial intelligence can operate in extreme environments, following a separate competition run by Innovate UK

Professor Philip Nelson, Chief Executive of the Engineering and Physical Sciences Research Council, said:

> These new Robotics Hubs will draw on the country’s research talent to nurture new developments in the field of robotics and provide the foundations on which innovative technologies can be built.
>
> The resulting outcomes from this research will allow us to explore environments that are too dangerous for humans to enter without risking injury or ill-health. The Industrial Strategy Challenge Fund is helping us achieve a joined up approach to research, discovery and innovation.

Ruth McKernan, Chief Executive of Innovate UK, said:

> These pioneering projects driven by the very best minds in UK research and industry exemplify the huge potential of what can be achieved through the Industrial Strategy Challenge Fund and the long-term benefits for the UK economy.
>
> These are just the first competitions in robotics and AI, there will be further opportunities for businesses in the coming months.

Professor Duncan Wingham, Chief Executive of the Natural Environment Research Council, said:

> These sensors will help us to better understand our oceans, helping us to manage them sustainably for the future. The projects will develop ambitious new technologies that work in hazardous and extreme environments, maintaining the UK’s world-class status in marine robotics.
>
> Other industries, such as the water, aquaculture and industrial waste, are also likely to benefit from these technologies.

Today’s announcements follow the publication of the industry-led Made Smarter review, which predicted Britain’s manufacturing sector could unlock more than £450 billion over the next decade and create thousands of jobs if it successfully embraced digitisation, robotics and artificial intelligence.

Alongside the Department for Digital, Culture, Media and Sport, BEIS has also been working with Professor Dame Wendy Hall and Dr. Jerome Pesenti to establish how to grow the UK can grow and support its burgeoning artificial intelligence sector.

In April, the government announced £1 billion of investment through the Industrial Strategy Challenge Fund for cutting-edge technologies to create jobs and raise living standards. Other areas receiving government support include cutting edge healthcare and medicine, battery storage and satellite and space technology.

Ahead of attending climate change talks at COP23 in Germany next week, the Minister also announced £16 million for research into two new smart energy innovation competitions, which build on Government's ambition to fund over £2.5 billion in clean technology innovation, as set out in last month's Clean Growth Strategy.

These will focus on creating technologies which will reduce demand on the electricity grid at peak periods and to increase demand at times when low-carbon generation is at its peak, saving money and cutting emissions.

These new competitions will also be used to explore ways that smart energy systems can help to reduce energy use by schools, and small hospitality businesses.

This comes following the government publishing its Smart Systems and Flexibility Plan in July this year, which set out a range of measures to reduce the regulatory burdens of making our energy system more smart.

The minister also announced the winners of the first phases of two energy innovation competitions looking into the feasibility of energy storage and non-domestic demand side response, with £400,000 awarded to nine companies across the UK.

Notes to editors:

Summaries of the EPSRC hubs:

National Centre for Nuclear Robotics Led by: Professor Rustam Stolkin, University of Birmingham
ISCF funding: £11.3 million

Project partners: Universities of Bristol, Edinburgh, Essex, Lincoln, West of England, Lancaster University, Queen Mary University of London.

The National Centre for Nuclear Robotics will aim to develop advanced robotics and AI technologies for nuclear industry applications. These are required to help deal with nuclear waste, and alleviate the need to send humans into hazardous environments. These advances are also needed to maintain and monitor the UK's existing nuclear power stations, and facilitate the safe building and operation of new-build nuclear power-plants.

The Robotics and Artificial Intelligence for Nuclear (RAIN) Led by: Professor Barry Lennox, University of Manchester
ISCF funding: £11.9 million

Project partners: Universities of Oxford, Liverpool, Sheffield, Nottingham, Lancaster, Bristol and the UKAEA's RACE centre.

The Robotics and Artificial Intelligence for Nuclear (RAIN) Hub involves robotics and nuclear engineering experts across the UK and international partners from the US, Italy and Japan. It will undertake world-leading research and develop innovative technologies to address the challenges facing the nuclear industry, from decommissioning and waste management to fusion, plant life extension and new build.

Offshore Robotics for Certification of Assets (ORCA) Led by: Professor David Lane, Heriot-Watt University ISCF funding: £14.3 million

Project partners: Universities of Edinburgh, Oxford and Liverpool, Imperial College London

The ORCA Hub will develop robotics and AI technologies for use in extreme and unpredictable environments. The Hub will create robot-assisted asset inspection and maintenance technologies that are capable of making autonomous and semi-autonomous decisions and interventions across aerial, topside and marine domains.

Future AI and Robotics for Space (FAIR-SPACE) Led by: Professor Yang Gao, University of Surrey ISCF funding: £6.7 million

Project partners: Imperial College London, Universities of Edinburgh, Liverpool, Salford and Warwick

The aim of FAIR-SPACE is to go beyond the-state-of-the-art in robotic sensing and perception, mobility and manipulation, on-board and on-ground autonomous capabilities, and human-robot interaction, to enable space robots to perform more complex tasks on long-duration missions with minimal dependence on ground crew. FAIR-SPACE is co-funded by the UK Space Agency.

Additional information:

- The new Industrial Strategy Challenge Fund (ISCF) was announced in November 2016 by the Prime Minister as part of the Government’s wider industrial strategy.

- The funding from the ISCF will be spent across 6 key areas over the next 4 years, driving progress and innovation that will create opportunities for businesses and sectors across the UK.

- The government has worked with businesses and academics to identify core industrial challenges, where research and innovation can help unlock markets and industries of the future in which the UK can become world-leading.

- The Clean Growth Strategy was published last month and has innovation at its heart.

- The government will invest £1 billion supporting the take-up of ultra-low emission vehicles, including helping consumers to overcome the upfront cost of an electric car and developing one of the best electric vehicle charging networks in the world.

- The UK's low carbon economy has the potential to grow in the region of 11 per cent per year up to 2030, meaning that in just 13 years it could support as many as two million more jobs and export up to £170 billion in low carbon goods and services each year.

- The winners of the first phase of the Energy Feasibility Study Competition were:

Highview Enterprises Ltd., London for liquid air energy storage;

SSE Renewables Developments UK Ltd in Perth, focused on power-to-gas;

ITM Power Trading Ltd in Sheffield, focused on power-to-gas; and

Cumulus Energy Storage Ltd in Rotherham, focused on Copper/Zinc super-storage batteries

- The winners of first phase of the Non-Domestic Demand Side Response competition are:

DuckDuck Ltd., London, focused on cloud based energy management;

Totem Sustainable Solutions in Wells, focused on intelligent energy saving platforms;

Flextricity Ltd., Edinburgh focused on demand-response portfolios;

Kiwi Power, London focused on demand response aggregation; and

Innovatium LLP, Windsor focused on an innovative liquid air production and storage system.

News story: Chair's speech marks Parole Board's 50th Anniversary and looks at the future for parole

The Parole Board marked its 50th Anniversary with an event held in collaboration with HM Prison and Probation service and organised by the

Butler Trust.

Speakers from across the justice system gave speeches on the “past, present, and future of parole”, including The Rt Hon David Lidington MP, Secretary of State for Justice, who gave the keynote speech.

Nick Hardwick, Chair of the Board, gave a speech looking back at the past 50 years in parole and also looking forward to what the Board can do to further improve parole for prisoners, victims, and the general public:

PDF, 352KB, 9 pages

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PDF, 783KB, 10 pages

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He said: “In a short space of time we have made real progress towards reducing the backlog, improving how we deal with IPP cases, implementing a digital way of working, and training over 100 new Parole Board members.

“Looking to the future, there is much more that we can do to make the system more open and transparent.

“For justice to be done, it should be seen to be done. Therefore we will consult people about how we can make the Parole Board more accessible to victims, prisoners, and the public.”

Martin Jones, CEO of the Parole Board said:

“This was a wonderful opportunity to mark the Parole Board’s 50th Anniversary, to reflect on how parole has changed during that time, and to have a forward look at what the future holds for parole. A big thank you to the Butler Trust for facilitating this event and our partners from across the

justice system who are joining us as speakers and attendees."

The Butler Trust is a charity organisation that "recognises, celebrates, develops and disseminates outstanding work and best practice across UK prisons, probation and youth justice."

Press release: Foreign Secretary visiting Washington to reaffirm UK commitment to the Iran nuclear deal

During his first visit to Washington since President Trump's decision not to certify the Iran nuclear deal under US domestic legislation, the Foreign Secretary will meet foreign policy leaders from both parties.

Speaking at the start of his visit, Foreign Secretary Boris Johnson said:

> The Iran nuclear deal makes the world safer. That's why it is vital that the international community sticks to the deal. It is working and has, so far, resulted in Iran giving up 95 percent of its uranium stockpile. These are the points I will be making in my meetings in the United States this week.
>
> Supporting the nuclear deal does not mean we should not call out and take action against disruptive Iranian behaviour elsewhere, including its ballistic missile programme and the unjustified detention of British dual-nationals. However, it is vital that we do not conflate the issues on which we should rightly condemn Iran and a deal which is neutralising the threat of a nuclear-armed Iran.
>
> It took thirteen years of tireless diplomacy between the UK, US, our European partners and Iran to make the world a safer place. Now is not the moment to put that at risk but rather it is time for the US and UK to draw on the strength of our relationship and to focus on addressing Iran's destabilising activity in the region.

In two days of meetings on Capitol Hill, the Foreign Secretary will meet with Speaker Paul Ryan, House and Senate Majority Leaders Representative McCarthy and Senator McConnell, and the Chairmen and Ranking Members of the Senate Foreign Relations and House Foreign Affairs Committees, Senators Corker and Cardin, and Representatives Royce and Engel.

Speech: Global MilSatCom conference 2017

Let me begin by saying what a great privilege it is to speak at this conference. I am sure Harriet Baldwin would have expressed a similar sentiment if she not been obliged to attend to pressing business overseas, for which I apologise on her behalf.

As an arts graduate, I cannot profess to be a leading expert on orbital mechanics. But I am an enthusiast for space, and have been so since, as a 10 year old, I was taken by my parents to a mountain top in Fiji, where we then lived, to watch the re-entry of an Apollo mission. This was a magical experience for me. Not only was this a shooting star with men in it, as it appeared to me, but I realised that it was a very significant moment because my parents awoke my sister and I at one am to begin the journey to the mountain, an hour of the day I had never seen before!

And later in my life, as a tank soldier prone to getting lost at night, trying to read a map with a red torch and red contour lines, I marvelled and thanked the Lord for the arrival of GPS navigation. Still later, as a Brigade Commander in Iraq, I was hugely grateful for what satellite communications could do for us.

So I'm pleased to now find myself as the commander of the UK's Joint Forces Command, responsible, amongst other things, for C4ISR, including cyber, special forces, and joint warfighting, because I am in a position to put my enthusiasm and belief in space to good use.

The UK has been a space faring nation for decades. We launched the first Skynet satellite in 1969. Since then, you and your colleagues have built a thriving space industry, generating a turnover of £14 billion a year and employing about 40,000 people in the UK.

The UK is a world leader in certain technologies: 40% of the world's small satellites are built in the UK, and a quarter of the world's telecommunication satellites. And the space systems and services generated by the UK space sector support a wide range of applications across wider society: more than £250 billion of our gross domestic product is supported by satellite services.

Satellites are the reason we can make mobile phone calls, take money from cash machines, ensure our emergency services get to where they need to, and a whole range of activities vital to our daily lives.

Defence is just as dependent. More than 90% of the platforms and systems that constitute the UK military equipment programme are dependent on space to some degree. It is space based capability, much of it benefitting from US

investment, that has enabled modern information warfare and precision attack. It is this dependence, combined with our appreciation of the growing threats and hazards, which has led us to increase the attention we are giving to space.

How are the risks increasing? From both natural and manmade sources. There are the dangers of ‘space debris’, remains of previous spacecraft orbiting the Earth that travel at speeds of up to 17,500 miles per hour, and environmental hazards like geomagnetic storms, which can damage Earth orbiting satellites.

We also have to recognise that potential adversaries see the reliance on space by the UK and our allies as an important vulnerability, and are developing weapons that can exploit that vulnerability. Russia and China have both admitted to developing direct ascent anti-satellite missiles.

This should concern all of us: the testing of such weapons in 2007 by the Chinese government created at least 2,000 pieces of space debris, threatening the sustainability of this shared domain.

But there are positive changes taking place as well, principally around commercial investment in space related R&D. As in the field of micro-electronics, it is no longer governments and defence departments who are driving innovation, and this is leading to greater accessibility and lower costs. Which is good, because our demand for space services continues to increase.

Be it new launch capabilities, mega-constellations, or satellites that provide on orbit repair and refuelling, the space market is evolving in a way that opens up new opportunities for the further exploitation of space.

As this market continues to develop, we will work together to ensure the continued security of the space domain. We cannot take this for granted: our dependence is great and growing, and the space environment becomes progressively congested and competitive. Gone are the days when we could launch satellites into space and expect them to operate unchallenged.

Our government recognises the vital importance of working closely with industry on these matters. That is why it published a National Space Policy and acknowledged the importance of space to our prosperity and security in the 2015 Strategic Defence and Security Review.

This included a number of commitments. One was to invest in space surveillance capability, enabling us to further assess space threats, risks and events, both natural and man made. Another was to invest in multi-signal satellite navigation receivers, which will enhance the resilience of the armed forces and emergency services to the loss or disruption of GPS service. And a third was the commitment to enhance our Space Operations Centre and invest in a ballistic missile defence radar that would also enhance our space situational awareness.

As we develop our strategy and capabilities in response to these changes, we

will look to secure our freedom of action in, to and from space, fully exploiting its military and civil potential. The emerging themes of our space strategy are as follows:

- optimising space support to the front line, making sure our forces can absolutely depend on getting the services they need
- enhancing the protection and resilience of space based assets, keeping safe the space assets that underpin our military and civil national security, and
- complementing cross-government space activity, to maximise the opportunities that arise from coordinating matters of security and prosperity

Nick Ayling will elaborate on these points in the next session, and Air Commodore Nick Hay will discuss in more detail how this applies to our future military satellite communications capability. So let me finish by highlighting the overarching importance of strong relationships to the delivery of our ambitions.

We must work closely with our industrial partners in the space sector to exploit innovative emerging technologies.

We must work closely with our allies, following the principles of "international by design" to deliver joint force advantage in space, much like we do in every other domain.

As with every other aspect of Britain's safety and security, it depends not just on our own efforts, but on working with our allies to manage common threats and hazards that face us all. And this is at least as true in space as anywhere else.

Our relationship with the US on space has traditionally been close: the radar at Fylingdales has long contributed to US led networks. And as we develop the next generation of Skynet we will ensure it is as interoperable as possible with US and allied systems. This will be made possible by the framework provided by the Combined Space Operations initiative, through which we are seeking a safe, secure and resilient space environment.

And the UK's departure from the European Union will not prevent us from working with our European neighbours on matter of space security. As well as working bilaterally with member states, the UK will seek the closest possible participation in EU space programmes such as Galileo, commensurate with the contribution that UK government and industry has made to date, and where we can continue to add real value.

In conclusion, space offers great opportunities. But the strategic context is much like it is here on Earth: becoming less certain, with increasing threats that will take skill and commitment to manage successfully. And that is what we must do. You must judge us by our actions rather than our words as we pursue these goals, but I very much hope you will work closely with us, and our allies as we seek to protect our interests and enhance our capabilities.

I look forward to our continued close working between defence and industry on military programmes, particularly Skynet 6.