Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
TRILATERAL RESEARCH LTD	ML enabled Risk Identification & Assessment in Child Exploitation	£433,688	£303,582
Lincolnshire Police		£50,000	£50,000
NWG NETWORK		£16,037	£16,037

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Funders Panel Date: 02/07/2019

Project description - provided by applicants
This project aims to significantly advance risk assessment practices in public and private sector organisations by applying machine learning techniques to the analysis of big data. In collaboration with the police and wider agencies supporting the local safeguarding children's board, this project will create disruptive algorithms to power STRIAD, our cloud-based data-driven risk assessment platform. This project will address a use case that focuses on the computation of risk and vulnerability which is pivotal to protecting young people exposed to the threats of sexual and criminal exploitation and to identify those likely to reoffend. STRIAD will be easily accessible, adaptable and scalable and will boost inter-agency cooperation, allowing organisations to pool data in an ethical, secure and privacy-considerate manner, enabling ground-breaking analysis and rapid identification of risk. Advanced data-driven risk identification and risk assessment results in informed service budget planning, and optimized allocation of resources. Most of all, it empowers early intervention and reduces the likelihood of harm to the most vulnerable in society.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SWYTCH TECHNOLOGY LTD	Project REVO: Hybrid eBike Sharing Technology	£348,676	£244,073
MARTEX ELECTRONICS LIMITED		£49,687	£34,781

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Project description - provided by applicants
Swytch Technology and Insat International are working together to deliver a revolution in e-bike sharing. This project will create a truly multi-purpose hybrid e-bike: a fast and lightweight bicycle with cargo carrying utility features that can meet your daily transport needs. The e-bike is paired with a groundbreaking new removable power bank that provides up to 10 miles of electric-assisted range, while being small enough for users to carry in their pocket and charge their own devices as well. E-bikes are currently held back from shared schemes by high cost and high weight -- but this project aims to transform the market through innovation. Swytch Technology are pioneering experts in modular e-bike technology, having achieved market traction with the Swytch e-bike Conversion Kit.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ZEG.AI LTD	Automated Texture Generation for E-commerce	£325,654	£227,958
CYANAPSE LIMITED		£125,999	£88,199

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
There has been a surge in demand for 3D assets mainly due to emerging technologies such as Virtual Reality, Augmented Reality, 4K games, robotics, and photo-realistic rendered images for e-commerce. However, 3D asset generation remains time consuming and completely manual. This has limited the use of 3D assets to high budget movies and advertisements. ZEG.ai has developed a world-first 3D AI that allows for massive generation of 3D assets using intuitive approaches: 1) uploading an image 2) textual or voice descriptions, or 3) inference from spatial context. This enables faster 3D asset generation, enabling anyone to build and use 3D models through a simple web API. 3D modelling of any physical item comprises shape and texture. ZEG.ai has built the technology that allows you to rapidly build the 3D shape. However, creating and applying textures to a 3D shape is still a manual and slow process. In order to tackle this challenge, ZEG.ai has partnered with Cyanapse to create an AI tool that allows for the automatic generation of textures using a single photograph. Cyanapse will be leading the machine learning research aspects of the project and will work together with the ZEG.ai team to create a proprietary tech that is immediately usable in the 3D workflow. The key technical innovation of this project involves the development and validation of new generative deep learning models for texture synthesis for realistic 3D object creation in the context of e-commerce items. The ability to generate high-quality and realistic 3D object building with such ease will have a revolutionary impact on industries that require 3D graphics modelling and design.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CAMBRIDGE RESPIRATORY INNOVATIONS LIMITED	Intelligent inhaler proof-of-concept (INTELLIHALER)	£493,299	£345,309

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Cambridge Respiratory Innovations Limited (CRiL) has been awarded a grant by Innovate UK to develop a proof-of-concept dosage actuator device for a fixed or variable dose inhaler. The actuator will be triggered by the user's respiratory performance, based on CRiL's innovative N-Tidal technology that determines respiratory function through the analysis of the Tidal Breathing CO2 waveform shape. This project will deliver the important foundations for personalised, variable dose inhalers, where the amount of medication delivered is regulated by the patient's lung function. 400 million people globally have either asthma or COPD. The primary method of providing medication for these conditions is through either metered dose inhalers or dry powder inhalers. Currently, medicines adherence with these is poor, because there is no natural feedback from the medication. CRiL's N-Tidal technology will transform the diagnosis and management of chronic cardio-respiratory conditions. Using Tidal Breathing CO2 waveform shape analysis CRiL can differentiate between respiratory conditions and the state of the condition. CRiL intends to utilise this unique and innovative technology to the delivery of inhaled medication for respiratory conditions. This INTELLIHALER project will deliver a proof-of-concept of the dosage actuator device. The project will focus on the three areas for commercial success: * **Power consumption:** It is essential that we can identify ways to minimise the power consumption of the intelligent inhaler actuator, so that it has long in-use service. * **Sensor signal:** The device will require a new, smaller configuration of CRiL's market-leading CO2 sensor, delivering a high quality signal to noise ratio to drive the CRiL's advanced analytical techniques and parameterisation. * **Cost:** The volume production cost of the actuator must be sufficiently low that it will be attractive to healthcare payers when packaged with pharmaceuticals and biologicals. CRiL will work closely with industry advisers, as well as with specialist subcontractors which have in-depth knowledge of their existing technology. **The INTELLIHALER project will deliver the game-changing ability to control the amount of medication provided to a patient using analysis of their respiratory performance**, determined by parameters in their Tidal Breathing CO2 waveform shape, which is an established but under-used respiratory biomarker. **This will deliver, for the first time, personalisation of inhaled medication**. This INTELLIHALER project will also lead to improved medicines adherence and patient activation, because the patient will recognise that they are receiving the appropriate dosage of the medication for their respiratory condition at that time.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PRA WORLD LIMITED	A circular solution to paint recycling	£198,225	£138,758
CROWN PAINTS LIMITED		£14,988	£7,494
KINGSPAN INSULATION LIMITED		£189,224	£94,612

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Over 300 million litres of paint is sold in the UK every year, with approximately 55 million litres remaining unused. Only 1% of this waste is reused or remanufactured; the rest goes into the domestic waste stream, going into landfill or disposed of as hazardous waste at substantial cost to local authorities. There is currently no technology available for recycling waste paint. As well as the huge volume of paint that is disposed of annually in the UK, there is an estimated 100 million litres stored in sheds and garages. This represents a significant environmental and economic problem. Currently, only a third of household waste recycling centres (HWRC) accept waste paint as a segregated waste; the immediate cost of providing facilities to collect and sort the paint outweighs the estimated 40% saving presented by recycling versus incineration and landfilling. Unless new technological routes for reusing and recycling these wastes are found, they will continue to be disposed to landfills, incineration, stockpiles or illegally dumped. Through this 18-month industrial research project, we will develop a process to treat the 80% of unused paint that is water-based, including the waste that is otherwise unsuitable for reuse or remanufacturing, providing an alternative source of raw materials for use as pigments and as functional fillers for thermal insulation manufacture. The valorisation of waste paint will allow it to be relabelled as a valuable raw material, providing an economic incentive to provide waste collection facilities and making a significant contribution to the circular economy.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MIMICA AUTOMATION LIMITED	Automated RPA	£496,041	£347,229

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Robotics Process Automation (RPA), the use of software to perform repetitive office work (e.g., customer on-boarding, KYC), promises to dramatically boost competitiveness by cutting costs, eliminating human error, and increasing delivery speed. Not surprisingly, RPA is a top strategic priority for most enterprises. However, deploying RPA is tremendously expensive: teams of analysts and developers require months to put in place a single automation, with a price tag of up to £100,000\. These costs derive from three highly manual steps: (1) identify suitable processes for automation; (2) describe identified processes at a click and keystroke level; (3) translate these descriptions into RPA programs. We have a new vision for RPA: automatically generate programs from human observation. We propose to turn recordings of clicks and keystrokes into RPA programs, automating Steps 1-3 above. We brought a product to market automating Step 2 in early 2018; this project focuses on Steps 1 and 3\.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PLURAL AI LIMITED	A data-driven 'knowledge engine' for financial analysis	£495,250	£346,675

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Investment into companies is a fundamental driver of economic growth and competitiveness, helping to foster innovation and improve productivity, however research shows that 60% of M&A deals actually destroy value. The global M&A market is valued at ~$4 trillion, meaning ~$2.4 trillion is wasted. This can be attributed to poor quality data and unscientific analysis in due diligence, with analysts unable to accurately assess market risks and opportunities, resulting in overestimated deal synergies and valuations. Financial analysis is hampered by the need to analyse and extract information from multiple, hard to parse, heterogeneous data sources (company websites, research reports, financial statements, social media, etc.), which requires human analysts to sift through thousands of documents and manually crunch numbers. A lack of sophisticated tools and data science expertise means financial analysis remains unsophisticated and error-prone. The whole process is time and cost intensive and ultimately unable to scale given exponentially increasing amounts of web data. To address this challenge, Plural AI has developed a first version (Minimal Viable Product) of a data science platform for financial analysis, using natural language processing, machine learning and knowledge graph technology, which is capable of generating potential acquisition targets or estimating the size of a market. The proposed project will build upon this early achievement to develop a fully automated and scalable 'knowledge engine' specifically for financial analysis. Unlike traditional search engines, which match keywords to available third-party results, Plural AI's knowledge engine adopts a computational approach by parsing the question and generating a bespoke answer, which can be audited for sources and workings. This allows users to answer very niche/complex questions to which answers currently do not exist. This project focusses on proving the feasibility of fully automating the concept mining and knowledge base creation, enabling the engine to handle a wide array of financial queries at full web scale. This involves automatically determining which sources are trustworthy, and generating entities, concepts, and links of interest - thus providing a fully scalable, disruptive solution for improved financial analysis. The initial target application is the corporate finance industry, in particular for deal origination use cases, where need and interest has been established; however strong transferability is envisaged to any research/analysis work. Benefits include improved, rapid investment decision making, leading to increased investments and optimised returns; significant cost and time savings; ultimately bringing robust, scientific decision-making to the finance market.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CALLA LILY PERSONAL CARE LTD	Adaptable & high-speed robotic handling and packing of a complex new feminine hygiene product	£497,536	£223,891

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Application presented by a British company that is focused on the development of new production machinery needed to produce an innovative new femcare product. The new innovation has been created by a gynaecologist that wishes to create a hybrid tampon and pantyliner combination that provides women with a step change in comfort and hygiene. The main idea behind this new invention is a very thin elastomeric membrane that links a tampon to the pantyliner. The device enables the tampon to be inserted and removed with minimal risk of exposure to menstrual fluid. The novel tampon has been used by thousands of women and provides improved protection from leakage, is more comfortable and has improved levels of hygiene. Fusing the best features of pantyliners and tampons the applicants are focused on a target $148mn in annual revenue by year 7 representing 0.5% of the $30bn annual global market. The applicant had developed and sells the new tampon that have been produced on a semi-manual process with cost-prohibitive production unit price. The business is developing new production machinery outside the scope of this application to resolve this issue. An unforeseen consequence of the Tampliner design is the routing and handling of the tampon component withdrawal string through the manufacturing process. This project seeks to conduct R&D to address a specific handling challenge when the Tampliner is at the end of the process and needs to be wrapped in environmentally friendly / sustainable wrapping materials. The flexible and unconstrained nature of the string means that at present Tampliners can only be wrapped by humans which is commercially unsustainable. The enclosed research project is required to enable the team to experiment with robotic systems, grippers, air flow, materials and wrapping equipment/process to resolve this challenge and ensure the team has a route to an automated wrapping process. The success of this project will be demonstrated by the successful and highly reproducible constraint of the string, folding and wrapping of the Tampliner in biodegradable packaging in well under 5 seconds per item.

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ENERGY INTEGRITY SERVICES LTD	EchoBolt Advanced Fastener Inspection for Wind Turbines	£242,508	£169,756
GE Renewable UK (Holdings) LTD		£50,126	£25,063
OFFSHORE RENEWABLE ENERGY CATAPULT		£101,084	£101,084

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The UK has significant wind power resources and leads the world in offshore wind power generation. In 2018 the wind industry provided 17% (57.1 TWh) of the UK electricity supply \[UK Energy Statistics, 2018\] and is forecast to increase substantially over the coming decade (National Grid FES). In order to ensure renewable energy can be deployed effectively to combat climate change and to ensure costs to consumers remain low the industry must continue to develop new technologies and operate more efficiently. Currently wind turbines incur significant cost and downtime associated with routine retightening of bolted connections that join wind turbine components together. This reduces the amount of power they can generate and increases the costs of operation. This project will develop a unique method for monitoring the condition of bolted connections without the need to regularly retighten, allowing wind turbine operators to reduce the risk of structural failure, substantially reduce maintenance costs, increase turbine production and lower the cost of energy to the consumer. This project will provide the basis for a UK technology to be exported to the global wind industry, creating skilled jobs, reducing the cost of energy to the consumer and allowing the increase in deployment and utilisation of wind farms helping to combat climate change.

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AUTSERA LTD	Virtual Immersive Social Training for Children with Autism	£73,308	£51,316

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Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Social and communication challenges blight the lives of hundreds of thousands of people with Autism Spectrum Disorder (ASD) in the UK and millions of their family members and carers. ASD is a developmental disorder which affects the way a person communicates with and relates to other people and the world around them. Social and Communication Skills (SCS) training is a necessity for individuals with ASD and should start as early as possible to be effective. Training books are good, but they are abstract on paper and can be difficult for users to engage with. Face to face social training by professional practitioners is effective. However, it can be costly, delayed due to limited resources, and sometimes even unavailable because of logistics. We are working to fill the gap in SCS provision by developing Autsera, a Virtual Reality (VR) training tool, providing SCS training for children with ASD at a fraction of the cost of effective social training solutions. The affordability of our product will allow both local authorities and carers to provide SCS training at an earlier age, more effectively, and more frequently. This can have a transformative effect on the quality of life, on mental health and job opportunities for people with autism, on the quality of life of their families and carers, and on the financial burdens on the economy in the short-term and long-term.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
VEXICA TECHNOLOGY LIMITED	Next Generation HDL Lighting	£498,678	£224,405

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Vexica Technologies Ltd, a manufacturer of high-end LED lighting systems, is seeking to develop a new high definition lighting (HDL) system for their customers. HDL is defined by the colour rendering index (CRI), where a CRI of 100 is the same as standardised daylight and HDL has a CRI\>96\. Vexica have a novel approach to achieving HDL which they believe will cause significant market disruption due to the unique characteristics the final product will have. Better lighting improves well-being, especially in health care environments. The technology may also find application in other sectors. Their patent/ literature searches have revealed no other similar technology and they will patent the result if successful. Their route to market will be through their existing sales channels and Vexica expect to generate a significant number of jobs at their manufacturing plant in Leeds; as well as supporting their UK supply chain.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RECHIP FLOOD DEFENCE LIMITED	RECHIP FLOOD DEFENCE – PROVIDING PROTECTION AGAINST THE ENVIRONMENT WHILST SAVING THE ENVIRONMENT	£412,464	£226,855

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Flooding and waste plastic pollution are 2 global environmental catastrophes that are continuing to get worse. Flood damage affects c.17000 UK properties per year, costing £1.3billion. Additionally, 5.2million(1-in-6) properties/assets, worth £200billion are in Flood Risk 3a/3b Zones (FRZ's) with \>1%/year probability of flooding causing considerable disruption&distress to those affected. Limited availability of development land is SINGLE BIGGEST barrier to meeting national housebuilding targets (300K needed/year to address targets). To meet government targets, 10% of development applications approved by Local Authorities are now in high-FRZs- planning guidance requiring use of non-permeable building materials, but the lack of effective flood-barriers for external doors renders these pointless. Climate change is expected to increase flooding incidence&impact with £1billion/year government investment required to maintain current defence levels. Meanwhile, UK's waste plastic arisings (WPA) ~5.2MNt/year, is set to increase to ~6.3MNt/year by 2030\. Due to China's 2018 WPA import ban, UK has a reprocessing gap of 350,000t/year. Despite the urgency and scale of both of these issues, technological advancements which effectively prevent flooding or efficiently recycle/reuse waste plastic are not yet available, with those under development costly, limited in width, bespoke (further expense), made from non-recyclables. Rechip's interdisciplinary team expertise including construction and engineering seeks to overcome limitations of current methods to deliver the first and only flood defence system in the world made from 100% recycled plastic using patented Rechip(tm) technology that can be installed without tools or training in minutes and provides 100% effectiveness from water ingress. This solution has a novel deployment and sealing system ensuring 0% leakage with a single board protecting up to 800mm in height. Rechip's technology takes waste plastic to create a solid rigid panel. Each panel uses the equivalent of 660 plastic bottles. This refined plastic is a new workable material that can be transformed in to a solid rigid panel. With support from Innovate UK, a 12-month programme of research is required to deliver a pre-commercial prototype internally and externally tested and certified. If successful, the solution has the potential to truly revolutionise flood protection with global exploitation potential delivering 191:1 benefit-to-cost ratio, with 5:1 being the target set my central government. The project will deliver export led growth for Rechip, healthy profits and follow on tax returns, increased employment and further opportunity for R&D investment.

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OXFORD NANOSYSTEMS LTD	electroFLUX: Electronics cooling enhancement using micro and nanostructures	£495,912	£347,138

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Oxford nanoSystems Ltd (OnS) is a high-tech start-up that has developed a unique coating technology to improve the efficiency of heat transfer. OnS was founded in 2012 and has spent the past 6 years developing nanoFLUX -- a nano-coating which dramatically improves the efficiency of two-phase heat-exchangers such as evaporators. Up to now, OnS has focused on the air conditioning and refrigeration markets, whose primary benchmark is to reduce the evaporator size to save environmentally damaging refrigerants and reduce production costs. The world-wide thermal management market is huge (\> 9.6 B$) and of key interest to OnS. Looking into future applications Oxford nanoSystems acknowledges the EU's drive for higher energy efficiency in data centres. One of the largest problems is the inefficiency of the cooling system. Improving these cooling systems, for example in data centres or in electric cars is a clear target when it comes to reaching the new climate goals as reaffirmed by the Katowice Climate Conference 2018\. In this project Oxford nanoSystems will study their newly developed microFLUX technology to develop a fully functional electronic cooling unit. With microFLUX, OnS has the unique opportunity to develop a hyper-effective system that will revolutionize the high powered electronics cooling markets.

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OBSERVE TECHNOLOGIES LIMITED	Advanced machine learning for management of salmon farms	£430,078	£301,055

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Production from wild-capture fisheries has remained at approximately 90m tons/year globally since 1990\. There is no significant scope for growth of fishing, and the FOA reports that a third of global stocks are already being fished beyond sustainable limits. During this same time frame, aquaculture output has increased from less than 10m tons in 1990, to now providing half of all fish eaten around the world. The only feasible and sustainable option to meet growing global demand for fish is through continued growth of aquaculture. Salmon farming is arguably the most advanced form of aquaculture, with 73% of the world's salmon production being farmed. Farming takes place in large nets in sheltered bays, and most farmed salmon comes from Norway, Scotland, Chile and Canada. There are significant concerns over environmental contamination from salmon farms, in particular due to wasted feed contaminating the local environment. Moreover, especially with UK salmon farming, almost all of the suitable locations are already exploited. Salmon farming output is therefore largely limited primarily by the availability of licenses, which is in turn limited by the environmental impact of salmon farming. Thus the only practical measures to increase production are to improve productivity, and to minimise environmental impact, which can be achieved by reducing the quantity of wasted feed. This project uses state-of-the-art computer vision and machine learning methods to optimise the feeding process. The aims are to improve productivity through optimal feeding (i.e., faster growth of the fish), and to reduce the amount of feed that is wasted, which is a major cost for fish farms as well as having environmental impact. Reduced environmental impact through improved farm management could potentially enable further growth of the aquaculture industry by allowing regulators to grant further licenses for new farm sites, or to increase the capacity of existing sites.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
THE MARKET MOGUL LIMITED	Mogul News: A novel Automated Fact Checking tool utilising state-of-the-art machine learning approaches and natural language processing	£277,490	£158,169
Liverpool John Moores University		£99,264	£99,264

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Project description - provided by applicants
The authenticity of news has become a longstanding issue affecting businesses and society, both for printed and digital media. Currently 56% of people do not trust the news and 67% of those who distrust complain of bias (Reuters, 2018). The emergence of 'fake news' is fast becoming a significant challenge for modern society, with 83% of people viewing it as a major threat to democracy (Flash Eurobarometer, 2017). As a result, fake news has become a focal point for the public while attracting interest from regulatory authorities and the wider government. One of the main concerns of fake news stories is that they can polarise society, particularly during political events (democratic process can be impacted by fake news around elections and referendums), it has been estimated that 10 million people saw fake news headlines on Facebook during and after the 2016 Presidential election (Guardian, 2018). Fake scandals have led to racism, harassment, intimidation and damage to reputation. News organisations are failing to tackle this rising issue as most current incumbent media companies rely on manual fact checking which is expensive (~£7 per article of editors' time) and time consuming, leading to mistakes and an inability to scale-up production of articles. Mogul's proposed solution will address the market need for decentralised, automated and reliable fact checking tool/news aggregation source through building on advanced machine learning approaches in natural language processing by utilising deep learning to detect inaccuracies and inconsistencies in the news articles, without compromising freedom of speech. The solution will utilise a layered approach to analyse articles and identify relevant features to understand the context of news narratives. Advanced recurrent neural networks (RNN) with Long Short Term Memory (LSTM) and Gated Recurrent Unit (GRU) models will be trained with a composite of valid and fake news articles alongside additional, open and relevant datasets to provide enhanced verification. The output from this architecture will be a voted probability score, obtained from the models composed during decision making, which will be used to provide a visual prompt to editors using a scoring system -- who will then complete a final review of the corrected claims through a specialised UX. For complex claims that cannot be validated through the database-checking system, the actions and determination of the editor will be recorded and fed back into the algorithm through a feedback loop to continuously train the algorithm.

Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
TESKALABS LTD	Market research of Quantum Random Number Generator-based encryption platform for Cooperative Intelligent Transport Systems (C-ITS)	£26,055	£18,238
CRYPTA LABS LIMITED		£3,880	£2,716

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Random numbers are a critical component of encryption/cybersecurity which currently relies heavily on Pseudo Random Number Generators (PRNG). These algorithms are deterministic & vulnerable to hacking. Increasing interconnectivity of our devices (IoT) is now leading to an accelerating rise in frequency and impact of both hacking & cybercrime. Both trends illustrate the critical importance of proper security for devices and communications. An effective way to address the problem is to use Quantum Random Number Generators (QRNG). The inherent entropy at the core of quantum mechanics makes quantum systems a perfect source of randomness. However, existing QRNG technologies are large, expensive and only optimal in static environments, e.g. server farms. TeskaLabs and Crypta Labs are co-developing QRNG products which can provide miniaturised, end-to-end encryption without reduction in device speed/encryption rates. Example use cases for our technology include critical infrastructure, healthcare, military communications, transport and logistics. There is an urgent need for encryption for the newly expanding Cooperative Intelligent Transport Systems (C-ITS) mandated by the European Commission as part of a multi-billion-euro infrastructure programme. C-ITS will define security standards to allow road users and traffic managers to share information and use it to coordinate their actions. Exchanging data between different actors in the transport system means supply and demand can be matched in real time, leading to a more efficient use of resources, be it a shared car, a container or a rail network. Digital technologies help reduce human error, by far the greatest source of accidents in transport. They can also create a truly multimodal transport system integrating all modes of transport into one mobility service, allowing people and cargo to travel smoothly from door to door. And they can spur social innovation and ensure mobility for all, with the emergence of new players and new forms of value creation such as the collaborative economy. Communication between vehicles, infrastructure and other road users is also crucial to increase the safety of future automated vehicles and their full integration in the overall transport system. Road safety and traffic efficiency could vastly improve -- enabled by highly secure and robust digital connectivity between vehicles and between vehicles and transport infrastructure. This project will conduct a regional and industrial feasibility study on a QRNG-based encryption platform to evaluate the market opportunity for the technology within C-ITS, together with prospective routes to market and potential industrial partners for propelling the chip & software towards commercialisation.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PPP Group	Development of a surface functionalisation technology to upcycle the pyrolysis outputs	£85,871	£60,110
CRESCO INNOVATION LTD		£51,620	£36,134
PRA WORLD LIMITED		£183,892	£128,724

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
End-of-Life Tyres (ELTs) are among the most problematic sources of solid waste, due to the large volume consumed & their inherent durability. Incineration, gasification and pyrolysis are three main ELT management routes, with former two being responsible for environmental pollution and negative effect on the circular economy through loss of valuable materials. ELT Pyrolysis with a potential to reclaim valuable materials & prevent harmful emissions is still commercially unattractive. Over the last 15 years, a significant R&D efforts have been devoted to valorise pyrolysis outputs to enable its commercial uptake. One of the most important pyrolysis output fraction is carbon black (CB) which, when reclaimed, purified and reused, can inject a significant economic leverage. Through this 18 months industrial research project, we will prove the techno-economic viability of our solution 'Valor+' to valorise pyrolytic char for end use applications in paints, powder coatings and plastics. Novelty of Valor+ lies in imparting bespoke surface functionality using a modified jet milling process and without any additional heat requirements. Our growth projections for Valor+ are to achieve a 5Yrs ROI of 6:1 and increase our FTEs by 5 following market entry in Q2-2022, based on our estimated project costs of £2.25m over next 3Yrs.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
KERATIFY LIMITED	An advanced Skin Care Test Platform for UV Chemical Filters	£463,683	£324,578

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The skin is the protective outer layer of the body. It is effective in preventing damage from a range of biological and environmental agents during its lifetime including pathogens, UV radiation and pollution. Despite its effectiveness in this task, the skin requires the application of topical agents to enhance and improve its function. One such product are sunscreens, which are required to prevent the effects of excessive UV exposure that can lead to the formation of skin cancer. Although sunscreens have a clear therapeutic function, in Europe they and other skin care products are regulated as cosmetics, meaning they are subject to the animal testing ban (in place since 2013). The problem is there are many examples where scientists have not been able to provide suitable human replacement laboratory tests for the animal experiments. This means that some sunscreens and skin care product development has all but halted in Europe as the safety of these new products cannot be ensured. Keratify is creating new technology to improve laboratory skin testing so that new cosmetics, including sunscreens, can be developed safely.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
POWER CABLE SERVICES LIMITED	The development of a 220kV ac subsea cable repair joint	£403,144	£181,415
OFFSHORE RENEWABLE ENERGY CATAPULT		£94,061	£94,061

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The UK is currently a world leader in offshore renewable energy, with a 2020planned offshore wind generation capacity of 18GW produced through several large offshore wind farms. Installation of 10-15,000km of expert cables and 5,000km of array cables is projected by 2030to reach a potential capacity of 39GW. The project covers the design, development and testing of a cable joint for use subsea for AC voltages up to 245kV. This will provide the marketplace with an independently supplied joint along with specialist personnel trained in its installation. Wind farms under construction and those in the development stage will be using cable up to this voltage for transmission either within the wind farm itself or for transmission back to the interconnected grid. Sometimes these cables develop faults which accrue significant costs primarily driven by the value of constrained power generation during the outage. Currently these repairs are implemented by the original supplier of the cable which limits competition and results in extended repair times and associated high costs. There is a real need to have a suitable product readily available to enable a repair to be undertaken to restore the connection. The project includes the training of cable jointers to ensure a UK base of experience is available to facilitate repair work.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SENSIZE LIMITED	A low-cost and disruptive supply chain optimisation and asset tracking system	£495,603	£346,922

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Reusable packaging is becoming increasingly common across supply chains -- for example the thick green plastic boxes displaying fruit and vegetables in supermarkets. They are robust and can be reused many times, making them an environmentally-friendly solution. These containers can however become a challenge as they are easily lost in the complexity of most supply chains (left idle in warehouses, diverted elsewhere due to lack of space or damaged goods, wrongly filled with other items instead of being returned or being stolen). According to the 2015 Reusable Packaging Forum, **15-20% of reusable packaging goes missing**, with numbers consistent across many industries -- that's approximately **1.4bn crates that are lost each year in Europe alone**. At Sensize, we have developed a proof of concept system for monitoring supply chain assets worldwide using the latest IoT technology that can track packaging throughout its life-span (5-10 years) and provide information on its condition (via temperature, accelerometer and tilt sensors) so that: * Reusable packaging owners can control their valuable assets and ensure they are being used for the single cycle their clients paid for; * Stakeholders across the supply chain can identify weak links and mis-managed warehouses, improving efficiency and rotating stock more quickly; * Stakeholders can avoid theft and damage (e.g. frozen food kept at the wrong temperature, items being dropped, etc.); * Plastic waste from lost/abandoned packaging is minimised; * Food waste is reduced (according to BCG, widespread adoption of digital supply chain tools could reduce the problem by $120 billion annually); * Costs can be reduced across the whole supply chain. Our solution has already generated considerable interest from the market, including the world leader, but it still has limitations. With support from InnovateUK, we will perform the industrial research necessary to simulate real world utilisation, refine the technology and develop a protype demonstrator tracking system. This will also be able to perform supply chain analytics and implement optimised communication and power management strategies. Incorporated in November 2016, Sensize Ltd is a Cambridge-based company dedicated to monitoring supply chains worldwide using the latest IoT technology. Reusable packaging objects are fitted with trackers that monitor location and the environment and send the data to the company's back-end system, hosted in the 'Cloud'. This generates actionable intelligence for supply chain users. After timely delivery of our disruptive project, we will **create 265 jobs** and generate accumulated **profits of £71 million** by 2025 (143x ROI).

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BLAKBEAR LTD	Non-destructive wireless monitoring of food quality using near zero-cost printed electrical gas sensors	£324,728	£227,310
COVERIS FLEXIBLES (GAINSBOROUGH) UK LIMITED		£33,941	£16,970
Imperial College London		£97,092	£97,092

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Food waste is a huge problem. In the UK alone we throw away 7.3 million tonnes of food each year. This equates to £13 billion. 4.4 million tonnes of this wasted food mountain was perfectly edible. Reducing food waste, without any compromise to the safety of food, is a major commitment at the Food Standards Agency. Heather Hancock, Chairman of the Food Standards Agency has recently welcomed the publication of guidance on setting product shelf life, and explaining what factors affect the expiry date of a food product. This intervention by the FSA indicates their support and receptiveness to initiatives which prevent safe food from going to waste. Sell-by dates indicate when the supermarket should remove the food from sale. Use-by dates are added to perishable foods such as meat and fish to indicate that the food needs to be eaten by this date, as it could prove harmful to health past this date. Regulation (EU) No 1169/2011 covers the use of use-by dates. Most sell-by and use-by dates are based on the results of one-off laboratory bacteria tests and microbial modelling. The food industry has understandably adopted a fail-safe policy on product "life", due to the multiple variables on how the item will be handled through its life-cycle. There is no incumbent technology commercially available for measuring spoilage in food packaging, meaning that there are currently few technology-led solutions to tackle and reduce this problem. Given the fact that the UK sources 50% of its food from abroad, reducing food waste and managing resources more efficiently are of paramount importance for building a resilient food supply. BlakBear Ltd build new chemical sensors, electronics and software to help the world feel, understand and improve itself. In this project, we plan to develop ultra-low cost packaging sensors for fish and meat products, to reduce waste and prevent foodborne diseases arising from spoiled foods. The project consortium is made up of three partners: BlakBear Ltd (Business Lead), Imperial College (Academic) and Coveris Flexibles Gainsborough Ltd (Commercial Partner).

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BMLL TECHNOLOGIES LIMITED	Data Features for Market Abuse Detection: A Requirement of MiFID II Legislation from Financial Regulators	£498,580	£349,006

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
BMLL Technologies is a company that has spun-out of the research labs at Cambridge University. BMLL's product is a unique platform as a service offering, allowing financial services companies that are active in this field to undertake quantitative research, data analysis and algorithm development. The BMLL product is a web-based platform that enables analysis of the most granular financial data in the world and seamlessly couples this data with the latest advances in big-data and machine learning. The data BMLL works with is commonly described as "big-data", being in excess of 10PB in size. The platform works whereby a user calls data for a range of securities from global trading venues and then applies that data to large clusters of computers in the cloud, combining the data and the computational resource with novel toolbox analytics to solve problems relating to how markets are regulated and policed in a fair fashion. BMLL's customers include the likes of global tier one investment banks, the world's leading hedge funds and asset managers, as well as financial regulators, central banks and academic research groups. Market data and analytics is a high value field, second only to payroll costs in the financial services sector, estimated at $28 billion in 2017 with Bloomberg and Reuters accounting for 60% of that market. BMLL's offering is proving highly-disruptive in the field enabling users to experience significant cost savings as well opening the market to a whole new range of users who previously were unable to access this data. BMLL boasts world leading scientists such Maureen O'Hara who sits on the SEC Equity Market Structure Advisory Board and Doyne Farmer who is Professor of Mathematics at Oxford University. Over 75% of the BMLL staff hold PhD qualifications in hard sciences from leading universities. The InnovateUK project funding enables BMLL to offer a data features market abuse toolbox to enterprise users. This toolbox catagorizes the "statistical signatures" of abuse. This is the first commercial offering of such a product with existing users of abuse detection building and maintaing them in-house. Abuse detection meets the requirement of several pieces of new financial legislation including MiFID II and regAT. This legislation requires companies to be able to detect abusive behaviour in their algorithms both pre and post trade, ensuring the makets are fair and efficent for all participants.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
NANOGENICS LIMITED	Development of a breakthrough anti-fibrotic gene therapy to improve surgical outcomes and reduce re-admission rates for patients with severe glaucoma.	£494,648	£346,254

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Lifetime risk of permanent sight loss or blindness was estimated to be 1/5 of people globally (DeloitteAccessEconomics-2017). \>2M people(UK) live with sight loss significant enough to have a drastic impact upon their daily lives, with the cost estimated at £28.1Bn (RNIB-2017). Glaucoma is the second leading cause of blindness, with 500,000 UK residents affected by open-angle Glaucoma.

Current treatments for Ocular Fibrosis prevention are Mitomycin-C and 5- Fluorouracil, both of which were originally intended for use in chemotherapy and are used off-label (not intended use-case). Such treatments have limitations including poor targeting, increased off-target cytotoxicity leading to drastic side effects (blindness, tissue-damage, infection). The development of a targeted ocular fibrosis prevention treatment is considered one the greatest unmet needs in clinical ophthalmology (Expert.Rev.Opthamol.10:65-76).

NanoGenics are a SME specialising in the development of drug delivery technologies and have used over 90 years of combined experience to address key barriers effecting their wide-scale adoption. NanoGenics have developed LipTide-ECP105, an innovative Ocular Fibrosis prevention treatment at a competitive price which is suitable for global market implementation that uniquely offers:

*Payload protection within peptide nanoparticle surround by a lipid layer to facilitate endosomal release.

*Targeted delivery using specific peptide sequences displayed on the surface.

*Completely novel siRNA sequence targeted at reduce fibrosis and scarring in post-glaucoma surgery.

LipTide-ECP105 will revolutionise post-surgical Glaucoma treatment using targeted therapeutics that reduce toxic side-effects and cost associated with topical treatments, with broad drug delivery potential. Glaucoma therapeutics market is estimated to be worth \>$7.6Bn by 2026(CAGR:2.9%)(TransparencyMarketResearch-2018), with ophthalmology being a clear initial route to market for gene therapy technologies (Spark-Therapeutics&Nightstar-Therapuetics).

NanoGenics aim to address this unmet need through the development of LipTide-ECP105, an innovative drug delivery method at a competitive price, suitable for global market implementation that uniquely offers:

*Payload protection within peptide nanoparticle surround by a lipid layer to facilitate endosomal release.

*Targeted delivery using specific peptide sequences displayed on the surface displayed in the cysteine loop.

*Completely novel siRNA sequence targeted at reduce fibrosis and scarring in post-glaucoma surgery.

Building on successful _in vitro_ and _in vivo_ studies with initial toxicology/efficacy results proven, a 15-month programme of research is required to prepare LipTide-ECP105 for human clinical trials. LipTide platform also offers vast potential as a breakthrough gene therapy delivery route within the drug

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delivery market, offering many advantages to treat a broad range of indications (e.g.neuroblastoma/cystic fibrosis/cancer-to be explored) over traditional Adeno-Associated Virus (AAV)/lentivirus payload delivery.

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Innovate UK

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Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
INFIGEAR LIMITED	Link Chain: Enabling efficient, lightweight and long-lasting mechanical motion	£349,973	£244,981
Brunel University London		£66,754	£66,754
University of Bath		£83,162	£83,162

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
New Motion Labs (NML) is solving one of the biggest fundamental problems in mechanical engineering, making large mechanical power transfer over a large surface area possible and thereby making traditional gears, roller-chains and belt drives obsolete. NML's vision is to undertake fundamental innovation in the mechanical sector, enabling lightweight and efficient mechanised motion. Initially spun-out from University College London and steered by the Deep Science Ventures Accelerator programme (which provided both guidance on the value proposition and initial pre-seed investment that has been used to manufacture the Proof of Concept). **World Changing Drive Technology** NML's innovation is the biggest breakthrough in power transmission technology since the invention of the roller-chain first observed in drawings by Leonardo Da Vinci more than 500 years ago. With current chain technology, over 60% of the transmitted power is acting on only one tooth and chain link at any one time, leading to high mechanical wear and is the reason why expensive metals are required for both chains and sprockets. NML's chain dramatically reduces wear by sharing the transmitted force over all of the teeth on the sprocket at the same time, this leads to an ~86% reduction in peak stress compared to a conventional roller-chain, enabling a 10 times increase in sprocket lifespan and 3 times increase chain lifespan. Mechanical wear does not have to be a primary consideration anymore; meaning that different materials such as self-lubricating plastics and carbon fibre with additional benefits such as hygiene, cost and weight reductions can be used in chain and transmission design.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
FILIGREE TECHNOLOGIES LIMITED	Wire: Arming business professionals with the tools of data science	£497,960	£348,572

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Project description - provided by applicants
Filigree Technologies Ltd is pioneering the use of technology to transform financial and numerical modelling for business. The project seeks to meet the market demand for innovative products and services that can address current deficiencies in the supply of industry-relevant, efficient and accessible data-science modelling and analysis tools. The company anticipates that the resulting product will rapidly expand its UK market share and enter global markets, driving profit growth and further investment in technology development and commercialisation. Filigree also expects that the resultant product will catalyse profitability and growth for UK industry, supporting further investment in UK R&D.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DESIGN LED PRODUCTS LIMITED	VEHICLE – Vertically-intEgrated Homogeneous LumInance Colour Lighting Enterprise	£124,400	£87,080
CENTRE FOR PROCESS INNOVATION LIMITED		£119,077	£119,077
DYCOTEC MATERIALS LTD		£120,389	£84,272
OSHINO LAMPS (UK) LIMITED		£40,819	£24,491

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The project objective is enabling the transition from 2D planar LED light-guides to 3D formed materials. In this feasibility study, innovative stretchable conductive materials will be employed with thermoforming processes and surface optics to demonstrate the potential of such 3D functional lighting to the automotive sector.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CREDENCE FILTRATION LTD	Industrial research into low cost, chlorine free, swimming pool water treatment systems suitable for global retrofit markets, using natural algicides, micro-dosing and advanced phosphorous control techniques.	£177,867	£124,507

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The project will investigate innovative (chlorine free) methods of reducing the current size, complexity and cost of pool water treatment technology via the formulation and micro-dosing of natural compounds which have potential to control algae and pathogens. The project will combine this with existing knowledge in phosphorous control for greater algal and pathogen inhibition with minimal chemical usage. The project will result in a more environmentally sustainable pool water treatment technology as an alternative to chlorine with lower running costs , improved swimmer experiences and lower maintenance burdens.With over 10m existing pools globally, the results of the project are particularly relevant to the price sensitive retrofit market. Even low levels of adoption would lead to annual savings in the region of 2m tonnes of CO2 per year.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CONNECTED PLACES CATAPULT	Digital EIA	£61,392	£61,392
LIQUORICE MARKETING LIMITED		£34,772	£24,340
OPEN INNOVATIONS LTD.		£47,483	£33,238
QUOD LIMITED		£49,919	£29,951
TEMPLE GROUP LIMITED		£17,724	£10,634

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Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
EIAs are regulated by EU/UK legislation and are a crucial part of the design evolution and approval process for development, infrastructure, forestry, agriculture and other projects. Its purpose is to ensure that the environmental and social effects of proposals are understood prior to decisions being taken and to aid public participation in decision-making. Consultation with the public is a key feature of an EIA. The methods and outcomes of the EIA process are reported in an Environmental Statement (ES), which is a lengthy technical document containing a mix of data which is difficult to navigate, read and complicates public engagement in the process. A non-technical summary of the ES is also required, although this does provide a high-level summary with limited access to data. Once submitted, data contained within is publicly available, however it is not standardised or machine-readable (e.g. unlabelled .pdf documents, data-tables as graphics etc.). This means that ESs are time-consuming to produce and present a further barrier to effective public participation in the decision-making process. Furthermore, digital technology is not being exploited to capture data or deliver efficient and effective ways of producing ESs -- falling behind the pace of other industries harnessing technology to drive productivity (e.g. FinTech, PropTech). Currently, consultants and platform providers are trialing new solutions to make the ES more readable and engaging. However, these are not making the underlying data accessible - in most cases the data remains hidden behind slick interfaces or graphics. As more organisations develop different approaches to presenting ESs it becomes increasingly important that different users (developers, local communities, planning consultants etc.) can access the underlying raw data and information from an authoritative source. This will enable investment in new software solutions that gather, analyse and present environmental information in a more effective and efficient way. The Digital EIA project seeks to understand the feasibility of a national platform that provides data required to generate and host ESs. We will: * Examine the underpinning user-needs and explore the feasibility and economic impact of new Digital ESs; * Carry out user-research, capturing the required outcomes for collecting and assessing the relevant data; * Explore relevant changes needed to transform the sector; * Develop a prototype that demonstrates the functionality of the proposed platform; * Consult with key national and regulatory stakeholders to develop a roadmap for the implementation of a Digital EIA platform; and * Outline legislative and technical changes required to unlock its route-to-market.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
HALO AUTO LIMITED	Halo 360° Smart Security System for the Automotive Industry	£499,841	£224,928

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Buying a car is second only to buying a property in terms of monetary value. In 2017, 43,308 cars were reported stolen in the UK (DVLA, 2017). This number is predicted to increase in 2019\. Fraudulent claims including crash for cash scams are also on the rise, costing the insurance industry £1.3 billion in 2017 (Association of British Insurers, 2017). These issues increase premiums and cause nervousness amongst drivers. Whilst the automotive industry has focused on developing autonomous and electric vehicles there has been a lack of investment and innovation around vehicle surveillance and AI security. The use of Dash Cams is increasing within the consumer and commercial markets, and whilst they offer some level of security surveillance and comfort regarding insurance disputes, they are far from intelligent and cannot be relied upon in every accident or hit and run case. Halo's smart solution offers drivers the ability to have complete peace of mind whilst on the move and parked, safe in the knowledge that in any incident the liability will always lie with the perpetrator. Halo can detect break-ins before they happen and can alert the owner via a mobile app, enabling them to sound the alarm. Our aim is to increase road safety by reducing crime and fraudulent insurance claims. This will ultimately empower drivers and reduce insurance premiums.

Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ZZISH LIMITED	Personalised open resource recommendation for students	£485,129	£218,308

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Zzish is building a "virtual teaching assistant", a software application that helps the teacher personalise their teaching in the classroom to each student. In particular Zzish aims to be able to recommend to teachers the best resource or app, from the millions available, to help each individual student progress the fastest and allow teachers to use any resource or app for a fixed annual subscription fee. It is a transformational product that will save teachers hours of time each week and make it easy for teachers to give every students the best resource or app available to help each progress. It also solves a huge problem for resource creators and app developers making it easy for creators who make the most effective resources to get traction and revenue in the market irrespective of their budget or sales capability. The most effective resources will make money. Moreover, as new and more interactive learning experiences are created, Zzish makes it easy for creators to measure how effective their creations are, whether it is a pdf, a mobile app, a YouTube video or immersive VR experience. Zzish is already a world leader in helping teachers personalise their teachers to students through its Quizalize and Zzish Hub products with 200,000 teachers signed up to the platform already and 450,000 monthly active students using the product each month from 170 different countries. Zzish are already helps teachers improve student results in end of year exams by 8%-10% based purely on the insight that they provide teachers in the classroom. However this project will take the product to an entirely new level by adding personalised resource and app recommendations for the teachers to support personalising their teaching even further and helping students make even faster and greater progress. Moreover, Zzish is having a big impact on teacher motivation, bringing new life to teaching careers by reducing teacher workload and allowing them to have the impact on students that they find rewarding.

Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ORTHONIKA LIMITED	Novel manufacturing process and material development for an innovative load bearing hydrogel for use in orthopedic implants	£467,589	£327,312

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Orthonika, an SME spin-out from Imperial College London, has developed novel load-bearing polymer materials for use in orthopaedic implants and is now planning to transfer manufacturing from the bench into a production environment. These exciting materials have the potential to address key healthcare challenges associated with soft tissue injuries such as the need for a total meniscus replacement (TMR) in the knee. Hydrogels have long been thought of as highly promising materials for soft tissue replacements, potentially opening up new markets for orthopaedic implants. Their adoption, however, has been hampered by poor mechanical properties and low fracture toughness. Orthonika's novel hydrogel has impressive mechanical properties and a fracture toughness that is superior to the standard crosslinked PVA hydrogels currently in use for orthopaedic applications, and even to the articular cartilage itself. The TMR seeks to address a high unmet clinical need - despite the high prevalence of meniscus injury, treatment options are limited and today's standard of care for a severely damaged meniscus is partial or complete removal. Unfortunately, this procedure is known to create additional problems and lack of a meniscus is a major risk factor for osteoarthritis, a chronic and debilitating joint condition associated with abnormal wear of articular cartilage, affecting more than 4 million people in the UK. An estimated 50% of partial meniscectomy patients are diagnosed with osteoarthritis as a result. Orthonika's product replicates the structure and function of the natural meniscus, providing a durable device that can be implanted with minimal invasion and fixed securely to the bone to withstand the rigor of physical activity - an option not currently available to patients with severe meniscus injury. This solution fulfils a clinical care gap between palliative care practices and total knee replacement, restoring knee function and preventing the onset of osteoarthritis. A number of technological challenges will be addressed in scaling-up a complex free radical polymerisation process in an oxygen void environment whilst incorporating a pre-formed anatomically shaped ultra-high molecular weight polyethylene fibre-reinforcement. Orthonika is sub-contracting elements of this work to UK-based Contamac, an experienced and award-winning supplier of polymers for contact and intraocular lenses for over 30 years. Together we will plan and develop a robust manufacturing process and quality management system to establish whether material and implant can meet our rigorous target specifications. If successful in manufacturing our novel hydrogel at scale, we can address other orthopaedic device opportunities.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
AVS ADDED VALUE SOLUTIONS UK, LTD	Development of high power solar panels for power demanding CubeSat missions	£231,925	£162,348
LIGHTRICITY LIMITED		£206,981	£144,887
OPEN COSMOS LTD.		£61,082	£42,757

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
CubeSats are small, standardised satellites consisting of one or multiple 10x10x10cm3 units, with ~1kg per unit. They play an increasingly important role in commercial spaceflight and are being considered for more and more commercial and scientific space missions, due to the low-cost and low-risk approach. The size and mass constraints of CubeSats generally put a limitation on the available area for solar arrays and therefore power generation capability. This in effect limits the types of applications that can be flown on CubeSats. A number of commercial applications require very high power for enabling new generations of payloads (Earth Observation or space-based Telecommunications) or for operational reasons (for pointing-towards-Earth sensors or cooling-from-Sun-heat devices). These missions currently have to fly on much larger satellites that can provide the needed power. A significant increase of power available to CubeSats will be a game-changer by enabling a whole new range of missions to fit into the CubeSat format, drastically reducing the risk and cost associated with these missions. This project aims to establish a design for a high power solar panel system which can be integrated onto the standardised CubeSat platforms. The project aims to build an engineering model of a solar panel and perform integrated testing with a CubeSat. The high power solar panel system will feature innovative solutions to increase the power generated by the panel, while maintaining the mass and size restrictions. Novel solar panels and mechanisms will be combined into one system to deliver a more than 60% increase in power generated on CubeSats compared to the current state-of-the-art.

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Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PHOS CYCLE LIMITED	Phos Cycle. Expired Fire Extinguisher Powder - Recycling Feasibility Project	£381,289	£266,902
CYLINDER DISPOSAL SOLUTIONS LTD		£1,000	£700
University of Wolverhampton		£112,915	£112,915

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The Phos Cycle Feasibility Study is an economic and technical feasibility project to investigate chemical and mechanical engineering solutions to the challenge of successfully recycling 'Expired Fire Extinguisher Powder '(EFEP). This innovative project aims to provide a comprehensive solution to the problem of disposing of a product which currently results in landfill and/or illegal dumping. An indication of the scale of the problem is that over 36,000 tons of EFEP needs to be disposed of annually in the UK and EU Working in collaboration with the University of Wolverhampton and with assistance from the University of Birmingham, the Phos Cycle project will consider a variety of chemical and mechanical processes, to recover the valuable components of this waste product so that can be applied back into commercial industries. Our project will help develop a clearer understanding of how the fire safety industry globally can achieve a higher positive impact on the environment. The materials which we aim to recover will also have a positive environmental impact on our target market by offering them a green alternative. Our vision is to recycle 25% to 30% annually of EFEP within 3 years on behalf of fire extinguisher collection and disposal companies in the UK and beyond. Our project aims to make the UK the innovative hub for waste recycling of fire extinguishers.

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Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
FRACTAL LABS LTD	Distributed ledgers Enabling Application for sme Loans (DEAL)	£458,781	£321,147

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Vision - UK SMEs face a £29.3 billion finance gap (UK Finance, 2019). Lenders struggle to assess SME finance applications due to complex, inter-linked issues. Issues include poor access to SME financial data, bespoke and manual SME Contracts and SME debt securitisation. Whilst lenders are investing in technology to assist financing for large organisations, they cannot for SMEs as SMEs are only average 2% of lenders' revenue, individual SME financing requests are too small and SME finance application assessment too complex. **Market** - There is a £22.0 billion global opportunity to provide SME finance assessment and securitisation to lenders. **Key Objectives** - DEAL, an ambitious Industrial Research project by UK-based SME Fractal, will develop radical innovations and realistic exploitation plans addressing UK and global market demands for accurate, quick and cost-effective SME finance application assessment and securitisation. **Focus and Innovation** - DEAL focuses on Industrial Research to prove the concept of innovative technology to address market issues. **Risk** - DEAL's innovation and ambition makes the project technically and commercially risky. Risks have been minimised, with robust risk management and mitigation plans developed. **Team** - Fractal has the necessary skills/experience to manage and complete this project successfully. **Value** - DEAL has been carefully planned by Fractal's experienced technical and commercial team to maximise innovation, chance of project success. DEAL delivers UK-wide value-for-money and impact.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
AKA MEDIA LIMITED	VR SMART	£157,296	£110,107
MODUX LIMITED		£71,880	£50,316

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Globally, there has never been a more dangerous time to report the news. The Committee to Protect Journalists says 99 media workers were killed in 2018, the highest in years. Our vision is to revolutionise the way journalists protect themselves in emergencies by training in high-pressure, immersive scenarios. Using cutting-edge VR technology and biometric data, journalists will be able to practise skills and improve decision making under stress in ways that are more immersive and responsive than ever before. Hostile environment and first aid training saves lives but it is currently expensive and time-consuming, costing media companies tens of millions of pounds and taking busy journalists out of the newsroom for up to a week. These training courses are not easily repeatable and most journalists experience significant skill fade within months or even weeks. Cost and inconvenience also prevent many local journalists and freelancers from receiving training, yet news organisations increasingly rely on them to go into dangerous situations. Using stories based on real events from protests, terror attacks and other emergencies, Also Known As (AKA) and project partners, Modux, are prototyping a virtual reality (VR) experience that responds to the stress levels of a participant. This project will investigate how state-of-the-art ways to measure the stress hormone cortisol can drive the narrative of the training scenario. This VR experience will be delivered in conjunction with industry-leading trainers at leading news companies in the UK. The findings of the project will increase the potential of immersive training beyond journalists to all professions operating in dangerous or high-stakes environments such as humanitarian and aid workers, emergency responders, diplomats and corporate travellers. AKA is an immersive tech company run by two former foreign correspondents with years of experience working in hostile environments for major global news outlets. Based on their own experience of a life or death emergency in the field and after months of ethnographic research into the needs of colleagues, they are teaming up with immersive training and psychology experts to vastly improve the training on offer. Project partners Modux, along with psychologist and VR veteran Professor Robert Stone, have produced world-first training simulations for defence and corporate clients, such as the Royal College of Defence Medicine, the Royal Navy, police and firefighters. Combining their impressive body of research with AKA's storytelling acumen, they will develop innovative products that go beyond anything on offer in the VR training market.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Innovate UK

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Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
WORLD FEEDS LIMITED	Autonomous feeding station and feed blocks for lumpfish cultivation.	£340,528	£153,238

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
There is an undeniable need for greater volumes of healthy lumpfish to control outbreaks of sea?lice on farmed salmon. Presently conventional fish feed pellets are used to feed lumpfish. However, these feeds are nutritionally deficient and cause cataracts in lumpfish further, feeding efficacy is reduced and sea lice numbers continue to proliferate. Salmon production in Norway and Scotland has been falling by approximately 260,000 tons (10%) a year; this is costing the salmon industry around £278m a year in lost produce. Sea?lice control has escalated to £383m in Norway alone from 2015\. Aquaculture farms presently resort to anti-parasitic medicines as an alternative to lumpfish to control sea-lice amongst salmon. These alternative treatments are toxic, can impact upon water quality, effect local wildlife, impart an unpleasant taste/odour to fish flesh and finally reduce the quality and safety of the fish for consumers. Conventional fish feeds are deficient in vital nutrients and as a result cause eye cataracts and further stunt growth. Further, conventional feeds are not designed to take into account lumpfish physiology and feeding preferences. It is of significant importance that new technological developments are used to address these technical and commercial issues in an effort to increase stocks of lumpfish and thereby healthy farmed salmon. Impact: (1) Better lumpfish health; (2) Greater production of lumpfish; (3) Greater production of quality salmon; (4) Quality product for the consumer.

Innovate UK

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Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
PLAYMOB LIMITED	Playmob: A novel gaming engagement platform to build emotional connections with audiences and drive positive behaviour change	£499,310	£349,517

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Consumers wouldn't care if 70% of brands disappeared, highlighting a distinct lack of engagement between consumers and brands. The way brands communicate through advertising has come under recent scrutiny, accused of being disruptive and untrustworthy.

Meanwhile, brands who do engage emotionally are reaping rewards of outperforming the stock market by over 200%, with the opportunity to unlock £800bn in revenue.

Brands such as Diageo have committed to investing over $2bn in purpose-driven content, realising that emotional connection and shared value is the secret to building long-term engagement with consumers. Unilever are also seeing brands in their Sustainable Living Plan outperform those which are not. With commitments from brands and evidence that consumers want more meaningful engagement, Playmob's platform is the first of its kind to help brands understand what people care about and forge meaningful, sustainable relationships in a fun, engaging way.

The key to addressing this challenge and opportunity is better intelligence on values and the ability to reach people non-intrusively, in a way they understand, on their terms. By having a 2-way conversation through gaming around meaningful topics, consumers will not only see the positive potential of brands, but feel heard and see the direct ability they themselves have to effect change.

Playmob utilises (and creates) playable-ads distributed via existing mobile games, as a route to reach 2.4bn people who play for 16 billion hours per week and are 98% engaged. Reaching people through gaming is fun, engaging and provides a means to gather real-time behavioural insights. And this also represents a way for Playmob to build future B2C relationships to further advance our own capability, business model and ROI.

This project aims to:

1\. Build deep behaviour insights into 30 second playable-ad formats, building a suite of reusable game engines, which will sit on an automated platform, enabling brands to select the right engine for their audience/objectives and customise accordingly. Machine learning will improve results over time.

2\. Gather real-time data/analytics to contextualise and commercialise data, building a deeper understanding of values and actions to support and deliver 1) real-world action and 2) policy change.

3\. Track long-term behaviour change against the SDGs.

With IUK support, a 12-month programme of Industrial Research is required to build on existing technology/partnerships and advance Playmob's position as market leader in values-driven data, with a view to full commercialisation of the B2B platform in 2020\.

Innovate UK

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Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
CARBONCHAIN.IO LIMITED	Utilizing Distributed Ledger Technology & Smart Contracts to Improve Commodities Trading	£330,000	£231,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
CarbonChain's project is to develop an end-to-end commodities trading platform utilizing Smart Contracts & Distributed Ledger Technology (SC/DLT) to reduce costs and enable faster settlement of commodities trades. A wide array of industries are increasingly turning to SC/DLT to reduce costs and increase transparency across their supply chains. Shipping company UPS is utilizing SC/DLT to increase transparency in their shipping supply chain. Food giants Nestle and Unilever use Smart Contracts to increase visibility in tracking produce as it moves through the supply chain. Even the World Food Programme is using SC/DLT to improve food aid distribution efficiency to refugees across the globe. However, companies in the commodities sector (mining, oil & gas, agriculture, etc) have yet to embrace SC/DLT on a large scale. In particular, the process by which commodities are traded is still paper-based and has not changed significantly in the past century. With commodities margins consistently declining over the past 25 years, companies are facing increasing pressure to effectively engage with technology to reduce costs and drive growth. Given the increasing urgency of this problem, we have identified an opportunity for companies in the commodities sector to utilise the game-changing technology of SC/DLT to: * Automate trade processes & remove middlemen, reducing the cost & time needed to settle commodities trades * Improve visibility and quality of real-time information to increase the efficiency initiating and reviewing trades * Eliminate back-office and unnecessary processes to enable a greater trade volume and profitability We believe that the practical application of SC/DLT can help commodities companies settle commodities trades cheaper and faster, ultimately improving profitability alongside sustainable growth. CarbonChain's leadership team has significant experience to execute this project, having worked across multiple functions (trading, technology, supply chain management, strategy, banking and M&A) and sectors (steel, aluminum, copper, diamonds, oil & gas etc) in the commodities industry, and having already piloted a commodity trade for a London based steel trader via our InnovateUK funded, SC/DLT powered, Proof of Concept. To ensure long-term success, we are supported by our industry partners, CRU International (a London based commodities business intelligence company providing pricing, data, consultancy, and market & business analysis to commodities industry players) and the International Steel Trade Association (a London based trade body for companies involved in steel trading).

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Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
B.G.B ENGINEERING LIMITED	MFB4WTG	£258,178	£90,362

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
This project will develop an innovative brush and assembly for slip rings initially targeted at the wind turbine market that will address issues of maintenance, life expectancy, current capacity, and safety. As the wind turbine market is predicted to grow at 17% per year through to 2030 and turbine sizes increase, the issue over maintenance and unplanned downtimes for turbines becomes a critical issue. This project will develop a longer life and higher performance module that will support the OEM need to have a more reliable wind turbine. The resulting technology will be applicable to a range of markets that use slip rings.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ECOINSECT LIMITED	EcoInsect Research Project: Black Soldier Fly Prototype Production Facility and Product Validation	£378,188	£264,732
Harper Adams University		£16,594	£16,594
University of Reading		£102,697	£102,697

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The 'Insects for Feed' phenomenon has transformed from a novel concept into mainstream commercial reality worldwide. The Black Soldier Fly continues to garner strong international interest with its versatility, emerging as a leader in the commercial bio-conversion of organic waste. However, achieving commercial scale production is not straight forward and further research is needed to establish viability to compete as an alternative protein source. With this project, EcoInsect will launch a prototype facility focused on improving efficiencies through automation and will validate the inherent benefits of Black Soldier Fly products.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
INVISIBLE SYSTEMS LIMITED	Smart Building Compliance System	£221,534	£155,074

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Regulatory compliance is a constant burden for all companies subject to those regulations. It can play a significant role in reducing productivity and can cost businesses many thousands of pounds. SMART Building Compliance Systems will help businesses to accurately and efficiently schedule, monitor, process, manage and comply with EHS compliance data -- through the use of smart IoT sensors, cloud and mobile technologies as opposed to traditional, manual methods, therefore improving efficiency and reducing cost energy, carbon etc. This system will help organisations in achieving and maintaining EH&S Compliance. The system will incorporate low cost and low powered IoT Sensor (NB-IoT) to automate testing of emergency lighting, smoke detectors, fire alarm etc. The system will also help to comply with BRC Food Safety by monitoring temperatures in Fridges, Freezer & Cold Rooms in food factories and hotels. A cloud software for Realtime reporting of data for workflow and compliance reporting purposes will also be developed in this project.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DIGITAL REALITY CORP LTD	Understanding structures, contents and conditions of real-estate using Artificial Intelligence	£387,410	£232,446

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Digital Reality Corp. captures and publishes 3D information about real-world interiors - our technology has already been used to create millimetre-accurate spatial data for residential real estate. Our aim is to unlock new insights into the built environment that will revolutionise the real-estate industry, where our demand is high amongst our client base. The project proposes to develop at Artificial Intelligence (AI) system to understand the structure, contents and condition of the built environment. Understanding these three attributes of a building has applications across many verticals in the real-estate ecosystem.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
NEWTEC VASCULAR PRODUCTS LIMITED	'StentSeal' – an innovative vascular surgery device to prevent 'endoleaks' in endovascular stent-graft placement	£200,160	£140,112

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The aorta is the largest artery in the body, leading from the heart down to the abdomen. Atherosclerosis (a common condition where arteries become clogged with plaques, causing them to harden and narrow) weakens and thins the vessel walls and aneurysms can occur, which can rupture, causing massive internal bleeding and rapid death if left untreated. The standard treatment method for an Abdominal/Thoracic Aortic Aneurysm (AAA/TAA) repair is open surgery, however endovascular aneurysm repair (EVAR) procedures - minimally invasive methods where an endovascular stent graft is inserted via a catheter through a small incision in the groin - have become increasingly popular with benefits including reduced risks (especially for older/unfit patients), shorter hospital stays, quicker recovery, reduced complications and lower mortality rates. Whilst endovascular stent-graft placement has revolutionized the treatment of AAA/TAA, it is not without complications. The effective functioning of the stent-graft depends upon a very close fit between the stent and the vessel wall; however, patients with atherosclerosis are highly likely to have calcified plaque deposits and other vessel wall abnormalities which can compromise the effective fit of the inserted stent. ~40% of patients experience blood leakage (endoleaks) around the outside of the stent-graft, which can result in the aneurysm refilling and continuing to grow. Repair of Type I endoleaks (most critical) requires additional surgery and treatment which is expensive, increases complications, risks and mortality. Current approaches focus on the 'repair' of endoleaks once presented. There is a clear unmet need for a device that can actively 'prevent' the costly and life-threatening problem of endoleaks in endovascular stent-graft placement. Newtec Vascular Products has patented a novel vascular surgery device 'StentSeal', designed to **prevent** endoleaks through creating a perfect seal between the stent graft and the vessel wall, and improve outcomes in both AAA and TAA repair (with transferability to other vessels). Impacts include significant cost savings, improved patient outcomes, reduced complications/mortality and improved cost-effectiveness of EVAR. The focus of this project is to prove the feasibility of the approach through detailed market research and materials investigation, device design and concept development (progressing the concept to TRL3). Project outputs will inform next stages of R&D (prototyping, pre-clinical testing, first-in-man clinical trial), prior to commercialisation in the global Aortic Stent Graft market, estimated to reach $4.5billion by 2028\. The project will deliver significant export led growth for Newtec, a substantial ROI, increased employment and further opportunity for R&D investment.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SQUIRREL FINANCIAL WELLBEING LIMITED	FinPower	£483,588	£338,512

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
FinPower leverages Open Banking Account Information And Payment Initiation API Specifications to develop a plug-in budgeting app for any bank account that ensures the payment of regular bills while allowing customers to access their money in the usual way. By automating budgeting and ring-fencing income for paying bills, Squirrel will develop and app that reduces friction using digital banking, increases trust in 3rd party fin tech providers and helps avoid overspending and encourages saving for low and middle income earners.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
FERGUSSON'S ADVANCED COMPOSITE TECHNOLOGY LIMITED	Daedalus	£334,769	£234,338
Imperial College London		£140,651	£140,651

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
This project will bring together state of the art material innovations to develop structurally lighter and tougher aircraft cabin flooring panels that can meet the stringent Fire, Smoke and Toxicity (FST) requirements of commercial aerospace interior applications. Such light-weight, damage resistant panels would substantially reduce the lifecycle operating cost of cabin flooring and substantially reduce CO2 emissions through reduced fuel burn. Experimental mechanical and FST testing will be combined and enhanced with numerical methods to create a quick and dynamic development process. These innovations include the use of novel polymer resin formulations and proprietary foaming processes recently developed (but for other applications) to provide better impact resistance and strength after impact than existing cabin flooring materials, as well as controlled and understood fire-resistant and fire-retardant mechanisms. Collaboration with the HAZE lab at Imperial College London (ICL) will be key to better understanding the physical phenomena dominating the ignition, combustion and flame propagation of the different materials under aerospace FST testing regimes. By improving the damage resistance of cabin flooring panels the lifecycle maintenance and operating costs of not only cabin flooring panels, but entire commercial aircraft, can be reduced . Additionally, the weight savings in the panels will lead to substantial reductions in fuel burn associated with the panel lifecycle in, and consequent CO2 emissions from, commercial aircraft.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EQUIPROFILE LTD	EQUIPRO - Equine Quantifiers: User-Interactive Performance Rating for Operators (RESUBMISSION)	£328,376	£229,863
University of York		£126,790	£126,790

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The £8bn/yr equine sport and recreation sector, providing employment for over 200,000 people, is extremely well established. UK expertise in horse well-being and management is recognised worldwide, and this is reflected in UK exports of over £400m/yr. There are over 1 million horses in the UK at present. In a sector where the value of single horses can be estimated in millions, and even tens of millions of pounds, the physiological characteristics, performance, and well-being, of such horses is therefore of huge importance to owners, breeders, investors, buyers, and the sport-leisure industry. EQUIPRO will develop a combination of specialised bespoke sensors, and an advanced software analytics computer software package, the EQUIPRO system. This will be engineered to deliver an equine performance/health assessment capability which significantly exceeds the methods and techniques employed at the present time. Use of the EQUIPRO system will permit end users (for example, owners or potential purchasers/investors of horses, veterinarian practitioners) to be given detailed and objective health and performance assessments. Furthermore, performance traits can be identified and monitored in such a way as to assist with training strategies, to correct or improve parameters relating to the horse behaviour, or even to correlate with genetic/breeding data. Because of the high value of individual horses, and their value as components of a quite significant recreational business sector, this project will enable substantial business opportunities both as a UK based service sector, and in terms of franchising/licensing of the technology and expertise in home and overseas markets. In the veterinary field, professional equine evaluations can be expensive, with £1k fees not unusual. The ability for these services to be significantly enhanced by EQUIPRO, and the potential then for such systems to be sold to, and have impact in, veterinary practices, has obvious potential to create business opportunities both for Equiprofile Ltd, and for those end-users. This is an industry-academic collaboration, bringing together equine physiology experts at Equiprofile Ltd, and technical expertise in sensors, systems, and analytics, at the University of York. Such a combination of skills is essential to achieve a step-change in equine assessment and evaluation technology.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
TEQNOX LIMITED	Development of an advanced body protection system for sports employing air, foam and exocage technologies. Pro-SAFE	£193,382	£135,367

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Crushing injuries to the chest are the second largest cause of death in equestrian sport and recreation, second only to head injuries. Falls from height and at speed involve significant forces which can lead to life changing injuries, and in too many instances around the world, death. A 2010 study in the US found that accidents in the equestrian sector had the highest likelihood of requiring hospitalisation. Worryingly, the activity has the highest mortality rate of all sports globally. Compared to more regulated and high-profile hazardous activities such as motor sport, the equestrian industry to date has not been proactive in driving forward innovations in body protection. Suppliers in the sector generally state that they meet stipulated safety standards, but none has sought to raise the safety benchmark. Whilst there has been research, there have been no notable concerted efforts in the sector to move to understand how methods of protection currently used discretely (such as technical foams and textiles, air cushioning and engineered structures/exoskeleton) can be combined to provide for much-improved protection for the rider. From a commercial perspective, there is significant 'white space' globally in which a high-performance technology can be protected and exploited. In the Pro-SAFE project Teqnox will leverage its extensive knowledge of the issues, and its own IP-protected advances in equestrian body protection to prove the viability of a system in which the optimum combination of technologies is implemented to provide superior resistance to blunt & sharp impact, and crushing injuries. Development of solutions will be followed by extensive physical and mechanical testing, and crucially, by an extensive schedule of end-user evaluation. A positive outcome from Pro-SAFE will allow Teqnox to progress to pre-commercialisation activities, and to a significant UK and export market opportunities.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
KNOWLEDGE OFFICER LTD	A new approach to benchmarking the skills of companies and their employees, which then delivers the shortest and most efficient path to learning and career progression.	£409,296	£286,507

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Skill shortages are a major issue in the UK and arise because there are not enough people with particular skills to meet demand. The Open University estimates that skill shortages cost the UK £2bn a year in higher salaries, recruitment costs and temporary staffing bills. They can also significantly hamper growth. According to OECD research, the UK could boost its productivity by 5 per cent if it reduced the level of skill mismatch to OECD best practice levels. The whole world is looking for alternative, efficient and affordable education. Bill Gates summarised the problem nicely: "I read more than my share of textbooks," Gates says. "But it's a pretty limited way to learn something. Even the best text can't figure out which concepts you understand and which ones you need more help with." Software can be used to create a much more dynamic learning experience. Our aim at Knowledge Officer is to create the shortest and most efficient path to employment and career progression. Our e-learning platform technology builds a personalised learning path, helping the user to learn with purpose to achieve their career goals. We use a three-step process 1) Skills - artificial intelligence analyses job descriptions from the best companies in the world to pick out the most common and important skills. 2) Learning - we source the highest quality learning materials from around the web, create challenges, track your progress and allow you to compete with your friends - proven ways to learn more effectively. 3) Opportunities - once you've learned core skills, we'll match you with jobs and opportunities based on your criteria. Our solution understands the skills required for each job title on the market based on data from millions of job posts and public company profiles and finds the best-curated content that helps people gain those skills. This project will conduct challenging research to extend our technology so that given a job title or a career goal, and a location or industry, will list the required skills for the goal in this specific location and industry and also output a recommended learning path to get those skills. Working with early adopter partners, and learning professionals, the learning path will be further personalised/tuned based on a series of assessments the user undertakes during onboarding and while going through our existing learning journey.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EUROPEAN THERMODYNAMICS LIMITED	TEGMATIC – ThermoElectric Generator Magnesium-based mATerials for application in Internet Connected devices.	£237,900	£166,530
AVALON SCIENCES LIMITED		£24,736	£14,842

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Thermoelectric materials are capable of converting waste heat into electricity. It is forecast that there will be ~20bn connected devices by 2020\. Postulating 50% are battery powered, with 1-year battery lifetime, this would create demand for an additional 5bn batteries/year. Thereby, the use of thermoelectric generators for powering IoT devices is becoming very attractive. In addition, the use of Li-batteries is not recommended in some industries such as Oil&Gas Industry (OGI) due to their risk of explosion and their inefficiency over 80C. Thereby, OGI is moving towards thermoelectric energy harvesting to replace batteries in a wide range of sensing applications. The thermoelectric materials market is dominated by Bismuth Telluride (Bi3Te2) which exhibits the greatest figure of merit, zT up to 200C leading to it mainly being used for waste heat recovery within this range. Above this temperature, its zT dramatically reduces therefore becoming prohibitively inefficient. The current solutions to address the efficiency is the use of lead telluride (PbTe) at medium temperatures or silicon-germanium (SiGe) for \>500C. Other disadvantages are the toxicity and the high price of Tellurium due to its scarcity. The market therefore requires the following 1)more effective energy harvesters for applications at medium temperature (200-350C) ideal for the Oil&Gas Industry temperatures, and 2)Generating more power in smaller and more cost-effective devices for sensor applications. TEGMATIC will address these needs by developing magnesium-antimonide (Mg3Sb2)-based materials and their commercialisation. This cutting-edge material offers: 1)More efficiency, since MgSb-based materials outperforms the current state-of-the-art - Mg3Sb2 achieves a zT = 1.4, in comparison to 0.2 for Bi3Te2 at 300-350C. Also, MgSb-materials has significantly superior mechanical toughness (_KIC_ = 3.0 MPa*m1/2) than the State-of-the-art. 2)Less space and cost-effective: MgSb-based materials possess low thermal conductivity, so the leg length will be reduced by 40% decreasing the cost per module by 12-20%. Moreover, the raw material cost is cheaper for MgSb estimated at 9.5-11 $/Kg than BiTe 44.1 $/Kg. 3)Environmentally friendly: Magnesium and Antimony are non-toxic and abundant in the Earth. TEGMATIC is a collaboration between ETL and Avalon Sciences. ETL, a worldwide recognised innovative SME leader in the thermoelectric market, currently supplying ~2% of the global thermoelectric modules due in part to their in-house automated manufacturing. Avalon Sciences (ASL) is a manufacturer of borehole seismic equipment.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
IOLIGHT LIMITED	Lab Quality Portable Microscope	£138,568	£91,455

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
ioLight's market data shows that there is a large addressable market for a lab quality portable microscope for professional field science. Vets, biologists, botanists, agronomists, mycologists, farmers and other professional microscope users repeatedly tell us that they love the portability, image quality and ease of use of the existing ioLight microscope. They also like ioLight's images displayed live on a mobile phone, tablet or computer, which makes them easy to share or paste into reports. However, they need 3 additional features: 1. Selectable optical magnification to give higher resolution and wider field of view 2. Dark-field, and oblique illumination for imaging transparent objects, such as cells and sperm 3. A translation stage for methodical scans of slides to count eggs, sperm and cells The purpose of this project is to develop such a lab quality portable microscope without compromising the portability and ease of use of the existing product. The project will culminate with testing prototype microscopes with 20 potential customers, and produce design recommendations for a product that will subsequently be built and sold by ioLight. This project is innovative because ioLight has realised that by using imaging technology that is now available at low cost from the mobile phone industry, it is possible to build a lab quality portable microscope to meet the needs of the professional scientist. This market is largely unserved. Current offerings are either large, heavy conventional lab microscopes in a flight case, which are impractical, or handheld digital microscopes which have insufficient magnification. Further technical innovation is adapting the illuminator to provide switchable bright field, dark field and other illumination options. Innovative methods will be developed to provide 3 optical magnifications without using 3 entirely different lens systems in each microscope. The project will cost £138,568 and last 16 months.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BRADFORD METALLURGY LTD	Development and Optimisation of "The Bradford Process"	£465,031	£325,522

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Bradford Metallurgy has developed a new, novel process which directly reduces titanium dioxide to titanium metal. The process is both faster and cheaper than currently established methods (Kroll, Armstrong or FFC). This project will accelerate the development of the process to allow faster realisation of technical demonstrators (scale of production and components) and attainment of commercial interest to bring the process to market, and result in significant availability of lower cost titanium powder. This will allow industries and sectors who wish to but currently do not use titanium; due to the prohibitive cost, to access this resource.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SUNDEALA LIMITED	Development of innovative panels for furniture and construction, with enhanced strength, made from 100% recycled material and 100% recyclable at end of life	£488,675	£293,205

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Development of innovative panels with enhanced strength properties, made from 100% recycled material and 100% recyclable at end of life

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
UNI4U LTD	Intelligent matching system for university applicants	£141,447	£99,013

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

Innovate UK Smart Grant Programme - Intelligent Matching System for University Applicants

This project (lead by UNI4U Ltd) aims to develop a scalable and personalised product to match students in the UK and internationally with their ideal UK universities and courses.

Over a million students enter undergraduate and postgraduate courses at UK universities every year. This number is growing and the Government has committed to double the number of overseas students entering higher education in the UK over the coming decade, providing a valuable boost to the UK economy.

However, the number of students choosing the wrong higher education options is alarming. Drop out rates are up to 20% in some universities and many more students will continue to study courses which they regret taking. With graduate debt (for English, Welsh and Northern Irish students) reaching £50,000, university choices are often and expensive gamble .

UNI4U's market research shows that students are overwhelmed by confusing and conflicting information when deciding on university and are frustrated with the lack of personalised and impartial tools available to help them make effective decisions.

UNI4U's solution is a personalised and impartial web-based tool which will match students with suitable courses at universities in which they are more likely to thrive. This will reduce the likelihood of dropout and promote long term career success. The tool will also act to reduce 'unconscious-bias' which often leads to students making ineffective choices on higher education based on their (or their parents' or teachers') preconceptions on where they would 'best fit'. The project will also investigate how 'Artificial Intelligence' might be implemented into the tool in the future to further improve its accuracy and efficiency.

This project will enable UNI4U to scale up their existing but proven low-technology product so that it can be delivered at a lower cost to a larger number of students (both in the UK and the rapidly growing global student market).

The project will also be a key step in building UNI4U's in house technical capability, enabling the Milton-Keynes based startup company to identify future graduate-level skills gaps.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
XYZ REALITY LIMITED	HoloSite - AR in Construction	£499,844	£349,891

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Did you know that up to **20% of construction costs** are wasted due to **inefficiencies** arising from the conversion between the architect's **3D model** and the builder's **2D drawings**? HoloSite is a project that has one goal: to allow public and private sector developers to build more, in a shorter space of time, at a lower cost. XYZ Reality, one of **TechWorld's top 3 Construction Tech start-ups**, is using Augmented Reality (AR) to enable all construction stakeholders including builders, to work from the same 3D model, without the need for 2D drawings. This innovative 3D workflow is considered globally by experts to be the holy grail of construction and significantly reduces both construction costs and lead times. HoloSite enables clients to perform **real time validation**, **reducing** out of tolerance **errors** by **up to 95%**.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BETA BUGS LIMITED	HiPer-Fly: Developing high performance breeds of Black Soldier Fly for the insects-as-feed sector	£338,530	£236,971
MARKS AND SPENCER GROUP P.L.C.		£11,470	£0
University of Edinburgh		£150,000	£150,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
This project will develop a black-soldier-fly breeding programme that will supply continuously improving high-performance genetics to insect-as-feed producers in different environments. Livestock and aquaculture protein demand is increasing due to human population growth, yet current production depends on volatile and unsustainable soy and fishmeal imports. An alternative source of protein for livestock and aquaculture feed are insects, which are rapidly growing in importance globally. Today there are 55+ black-soldier-fly producers in the UK, Europe, the Americas and Asia. Market calculations predict 300 production facilities worldwide by 2025, with a capacity of 10,000 tonnes of insect protein/yr and £2.1B/yr revenue. Black-soldier-fly producers need high-performance genetics because production facilities are capital intensive. However, black-soldier-fly producers do not have breeding resources and expertise to develop high-performance genetics, while there are no suppliers of such genetics (breeding programs). The objectives of the project are to develop black-soldier-fly breeding resources and tools, an optimised black-soldier-fly breeding programme and assess market landscape for delivery of high-performance black-soldier-fly genetics to producers. The project will achieve the above actions by combining the expertise of BetaBugs, The Roslin Institute, and M&S. This will deliver a black-soldier-fly breeding programme, which will double black-soldier-fly protein production by 2025\. This increased production will have further economic and environmental benefits to the wider agribusiness sector through sustainable local production of protein and new jobs. These benefits will in turn increase the efficiency and resilience of production feed and food and with that address the challenge of cleanly feeding a growing population.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CADSCAN LIMITED	A feasibility study for a custom foot orthotic kiosk	£80,748	£56,524

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
We aim to establish the feasibility of a disruptive, novel, low-cost, fully automated and compact 3D imaging and printer kiosk. It will be available in high-street retailers (e.g. pharmacists) to scan customer's feet, automatically design and then print custom orthotic insoles on demand, within 1-2 hours. No current solution manufactures custom orthoses on the high-street at a price-point approaching non-custom insoles produced by market leaders Superfeet and Scholl (Bayer Healthcare). Most custom-made insoles cost £200-£400pp. We can achieve this competitive advantage because the kiosk will not require a trained operator to finish and package the project (up to 60%+ of cost) and because the kiosk itself is built on previous work to automatically design and produce personalised high quality, comfortable, clinically-validated, pressure-reducing orthotics, using low-cost 3D printed materials, at a price-point comparable to off-the-shelf orthoses.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DELTEX MEDICAL LIMITED	TrueVue an innovative monitoring system to improve patient outcomes, reduce mortality and reduce healthcare costs	£499,934	£349,954

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Deltex Medical has been awarded an Innovate UK Smart Award to develop TrueVue - a disruptive technology for the diagnosis and management of the haemodynamics of surgical and critical care patients. It is designed for all patients from new-born to adult, anaesthetised or awake, across all hospital settings. Medicine today faces increasingly complex cases as the population ages. Protecting patients from haemodynamic errors through improved monitoring would save thousands of lives, improve outcomes and reduce costs. Diagnostic haemodynamic equipment needs to display the interaction of blood flow and pressure if it is to be truly effective. Haemodynamic instability and low blood pressure are frequent, with consequences such as myocardial infarctions, stroke and kidney injury. Complications have serious clinical and financial consequences; unplanned intensive care admissions; longer hospital stay; increased readmissions; increased 30-day mortality; and shorter patient lifespan after discharge. Monitors dependent on blood pressure measurement alone are failing to meet this need for all patients across all hospital settings. The novel TrueVue Velocity Pressure Loops system is the first monitor to display both aortic blood flow and aortic blood pressure simultaneously throughout the heartbeat. TrueVue will be a significant contribution to patient safety for surgical and critical care patients. TrueVue will operate by use of Doppler ultrasound and other non-invasive methods to measure blood flow velocity and combine this with standard measures of arterial blood pressure. The system can currently be used in all major surgical procedures and intensive care units; and with developments in non-invasive methods already foreseen by Deltex, could be applied across all surgical and after care procedures. The UK is a global clinical leader in haemodynamics and Enhanced Recovery Programmes. TrueVue is based on sound haemodynamic practices and is both a significant patient safety advance and a global business opportunity for the UK. TrueVue will address a market need in the UK alone of nearly 600,000 surgical patients, 90,000 intensive care admissions and a global market of nearly 40million in major/high-risk surgery and ICU. With expansion into all categories of surgery through non-invasive methods the technology has a potential market of 278million procedures annually. Deltex Medical expects to increase its market share, and revenues 5-fold to £35m in the first 6 years of sales.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
GROW SOFTWARE LIMITED	DIADEM: Defect Identification ADditivE Manufacturing	£311,780	£218,246
University of Birmingham		£120,141	£120,141

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The widespread adoption of Additive Manufacturing (AM) particularly Selective Laser Melting (SLM) has the potential to disrupt the conventional manufacturing supply chain employed by automotive, aerospace and industrial product manufacturers. There are many parameters that impact on AM cost, time, and quality of build and furthermore for aerospace, considerable time and cost is expended on QA (particularly X-ray and computer tomography (CT) scanning and testing of parts after each build) because some defects are difficult to detect with conventional non-destructive testing (NDT) techniques due to part complexity. State-of-the-art AM machines with sophisticated melt-pool monitoring systems promise improved quality control but require exceptional computing power to process the terabytes of recorded sensor data. Our approach is different and propose to collect high-resolution images of the powder layer surface taken before & after recoating, perform quality testing of the build parts using X-ray computed tomography (xCT), label different types of defects on the layer-based xCT images and then use them to train machine learning (ML) model to automatically identify these defects from images of the powder layer surface. This means that the development of defects can be identified in real-time from the captured powder layer images and the developer of the part can be alerted as the build progresses. This implies that developed parts will be more reliable and the development of defects during serial production identified thereby limiting the production of rejected parts.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
OXFORD FLOW LIMITED	Power Harvesting for SMART Water Valves	£387,637	£271,346

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
With burst pipes and road closures a part of every day life, it is difficult to ignore the growing problem of a leaking water infrastructure in the UK. One of the underlying problems is a lack of understanding of what is happening within the water network; the volume of flowing water and condition of the pipes are largely unmonitored. Two of the reasons for not measuring the network extensively are the lack of mains electrical power available for water utility providers to measure pressures and flows in the network, and the environmental and economic cost of battery replacement as an alternative. A power harvesting device that generates power from the flowing water would allow measurement and remote control of the water network, in turn reducing leakage. Oxford Flow are developing a reliable and cost-effective method of harvesting power from flowing water and using that power to supply measurement and control equipment around the valves that maintain the function of the water network. This will both increase the understanding of how the water network is functioning and allow the water suppliers greater control over their networks. In the long run, this will reduce leakage rates and the energy required to pressurise the network, allowing water providers to pass the cost savings onto their customers.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
KUDOS INNOVATIONS LIMITED	Communications and impact management for research projects and programmes	£472,972	£212,837

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Research knowledge has traditionally been communicated as results published in peer-reviewed journals. Although journals are now available online, and open access versions are available for many articles, the primary format of scholarly communication - which has remained much the same since the 17th century - is not fit for purpose in an era where research funders increasingly seek to broaden the reach and impact of the work they fund. More cutting-edge approaches to communication present a huge opportunity to broaden awareness, engagement and outcomes of research. Funders around the world recognise this, and are strongly encouraging (and in some cases mandating) that researchers achieve and demonstrate broader impact for their work. This requires (a) a more strategic approach to communication, (b) activities designed to reach audiences beyond academia and (c) communication from earlier stages in the research cycle to increase engagement of, feedback from, and co-design with relevant stakeholders. However, despite a growing level of funding allocated to research communication, there is a gap between what researchers are expected to do (to reach and engage broader audiences), and their skills and capacity to do it. Kudos is building tools to address that gap. We will provide a platform to enable researchers to plan, action, manage and evaluate their communications - helping accelerate and broaden the positive impact of their research in the world. We also aim to help universities, funders and publishers understand and support these activities, so the entire research community can work together to share knowledge effectively to improve global health, wealth and happiness. This project will enable us to develop and launch a prototype "communications and impact management toolset" for research groups, which can be used to help teams work together collaboratively to accelerate and increase the impact potential of their work. These tools will enable researchers to: a) showcase their projects and programmes throughout the lifetime of the project, in language that is easy for a broad audience to understand; b) use a simple communications planning "wizard" to identify target audiences and goals, put together an action list, and allocate tasks to group members for implementation; c) access a range of metrics for projects and publications, all together in one place; d) create reports and output data for funders and universities to evidence reach and engagement; and e) learn which activities are most effective so they can constantly improve their potential for impact.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
AXITAN LIMITED	Antibiotic replacement for poultry	£336,947	£235,863

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Poultry meat currently enjoys several comparative advantages over other meats, e.g. affordability, convenience, absence of religious guidelines restricting consumption, healthy image, limited GHG emissions, lower production costs, short rearing time and lower required investments. Rapid population growth, increased urbanisation and rising per capita income in emerging markets mean that we are going to need at least 70% more food by 2050 than what is available today. This challenge is significant, especially given that natural resource constraints, such as arable land and fresh water, will restrict the resources available to meet this increased demand. The FAO estimates that economic losses to poultry diseases are currently 10 to 20 percent of the gross value of production in developed poultry industries, and are likely to be higher in developing countries. This equates to a significant amount of resources wasted. Thus, in order to meet future demand for animal protein, such waste at the hands of disease must be reduced. This is especially pertinent given that the wide spread use of antibiotics, which has drastically increased the productivity of the poultry industry over the last 30 years, is coming to an end. This is mainly due to increasing antibiotic resistance, regulation and consumer pressure. This project aims significantly enhance the efficacy of a novel microalgae-based antimicrobial that will kill economically destructive species of bacteria found in poultry, thus enabling the sustainable replacement of certain antibiotics within the poultry industry.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Barocal Ltd	Feasibility of using barocaloric cooling for energy efficiency gains and zero greenhouse warming impact in commercial food and drink refrigeration	£82,500	£57,750
University of Cambridge		£16,000	£16,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Refrigeration and air conditioning systems account for 17% of global energy usage. This project aims to assess the feasibility of developing an innovative barocaloric cooling system which is more efficient than alternative low Greenhouse Warming Potential (GWP) hydrocarbon refrigeration, leading to significant reductions in operating costs and indirect emissions of greenhouse gases. Barocaloric cooling occurs when a solid absorbs heat under the application of pressure. The project will facilitate the development of a prototype cooling system using organic barocaloric materials, and allow for an assessment of the feasibility of developing the technology with zero Greenhouse Warming Potential (GWP), while matching or exceeding the efficiency of hydrocarbon low GWP refrigeration cycles. The prime focus of the project will be in the use of barocaloric cooling for light commercial refrigeration applications such as bottle cooling and food display units. However the project also has potential applicability to wider refrigeration applications such as food freezers, ice makers, industrial cooling, pharmaceutical refrigeration, air conditioning and scientific coolers. The project is being conducted as a partnership between the University of Cambridge (inventor of organic barocaloric materials), and Barocal Ltd (developer and manufacturer of barocaloric cooling systems).It will be informed of end user requirements by involvement of subcontractor Precision Refrigeration (a manufacturer of commercial refrigeration systems).

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
OGENBLIK LTD	Proof of concept for a novel IoT system that offers a cost-effective and productivity enhancing learning support system for children with special education needs	£161,659	£113,161

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

This proof of concept feasibility project, underpinned by participatory design, will research, design and user-test OliTool for special needs children in primary school.

Incorporating stakeholder feedback from the outset, OliTool will be an innovative adaptive learning IoT system comprising a sensory tangible user interface and a companion app for children with SEN challenges, particularly ASD, ADHD and/or anxiety. It aims to meet the need for a cost-effective SEN support tool with features that help:

* Children learn to regulate sensory needs, and understand and communicate behaviours and emotions in real-time to adult supervisors;
* Supervising adults gather valuable data for assessments and evaluations.

Ogenblik Ltd are the developers of OliTool, a next generation interactive tangible user interface connected to a personalised app. The current prototype was trialled successfully on adults with anxiety at Exeter University in a six-week trial. OliTool draws on behaviour change practices and cognitive behavioural therapy to help identify troublesome behaviour patterns and triggers and support behaviour change. The Exeter trial demonstrated proof of concept and offered important insights into user needs and preferences and barriers to adoption. Additional feedback from psychologists, health professionals (including leading clinicians at Tavistock and Portman NHS Foundation Trust), educators and parents suggested that developing OliTool for children presented a strong business opportunity. The concept of OliTool for children was further tested on a cohort of Year 4 children to positive results at a West London primary school. The vital next step for Ogenblik, and the focus of this application, is to redesign OliTool for SEN children with a particular focus on attention and hyperactivity disorders, autism and anxiety.

Current provision for SEN children is largely based on direct interventions by SEN specialists, teachers and other experts employing primarily analogue SEN resources. Robotics, virtual reality and gamification approaches, such as Milo, Floreotech and MyCognition, are being explored, but few digital resources provide an engaging haptically enabled physical interface.

Experience with EdTech and eHealth has shown that engaging technology can engender cost efficiencies. For example, research has shown that internet CBT is just as effective as in-person CBT while reducing provision costs by up to 40%. Text-based CBT has also been demonstrated as efficient and cost-effective. OliTool, a non-screen based discrete tangible user interface and personalisable app, leveraging evidence-based SEN support techniques, offers a novel cost-effective tool for assessment, intervention and evaluation for SEN children. Crucially, it provides educators innovative methods to improve SEN provision.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EPIVALENCE LTD	Super durable paint-repellent coating for long life anti-graffiti protection (PRISTINE)	£208,095	£145,666
London South Bank University		£147,769	£147,769
TEAL & MACKRILL LIMITED		£143,940	£86,364

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Graffiti costs over £1bn/year to the UK economy, ~£5.3bn/year EU-wide, £9.16bn/year in the US (Valspar, 2015), and £1.48bn/year in Australia (Keep Australia Beautiful, 2019) and graffiti-based vandalism is on the rise, with British Transport Police recording the highest attacks in Q1, 2018 (389 attacks) since 2010\. Graffiti tends to appear on rolling stock, stations, tunnels, bridges, trackside walls and commercial/residential buildings. Graffiti on trains, railways and buildings is a major cost financially to both industry and public bodies who are required to remove all occurrences from their property. It also has a huge impact socially, ranging from negatively affecting the perception of areas to increased incidents of graffiti taggers trespassing onto rail lines that have ultimately led to deaths. Current anti-graffiti coatings are either sacrificial or permanent. 1. Sacrificial coatings, while cheap, incur large long-term labour costs for periodic removal and re-application to ensure peak performance. 2. Permanent coatings also incur long term cleaning costs, and many require specific removal solutions that are often made of aggressive chemicals resulting in both environmental and health concerns. Whilst many anti-graffiti coatings are available, manufacturers and providers are looking to greener alternatives and there is still a significant issue with graffiti and its growing global costs in terms of removal to be solved. Therefore, there exists an opportunity and need to improve on current anti-graffiti coatings. The PRISTINE project is looking into the advancement of permanent anti-graffiti coatings, by developing a durable paint repellent coating, which competes with commercially available coatings in terms of environmental resistance but has improved paint-repellency and easy clean characteristics using greener materials. Such a coating would provide a true anti-graffiti surface. This will have far-reaching impact across a wide range of sectors, including transport, construction and automotive. Successful achievement of a more efficient coating that reduces cleaning requirements could reduce rail passenger delays caused by removal teams, eliminate the increasing costs to governments to remove graffiti (London spends £100 million per year alone on graffiti cleaning), reduce the requirement of harsh cleaning chemicals, safeguarding the environment and health of graffiti cleaners, and reduce trespassing onto the rail lines by graffiti artists as their canvases would be less attractive, which in turn would prevent fatal incidents from occurring. PRISTINE technology is based on incorporating novel greener functional additives into existing coating resins making them highly repellent to spray paint, whilst providing a durable coating.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ANGOKA LIMITED	Secure Connected and Autonomous Vehicles (S-CAV)	£358,951	£251,266
University of Warwick		£134,173	£134,173

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Connected and Autonomous Vehicles (CAVs) promise to deliver huge social and economic benefits. They are seen as vital to providing an important means by which to reduce road traffic accidents and fatalities and cut congestion, thereby increasing national productivity and reducing environmental impacts. It is for this reason that CAVs are play a key role in national strategies around the world. In the UK, the government and industry are funding collaborative research and development projects worth hundreds of millions of pounds. However, while there is substantial potential, the risk of compromise of this critical national infrastructure looms large. A variety of attacks on CAVs have already been developed and successfully implemented by researchers both on production vehicles in operation and systems in laboratory settings. The controller area network (CAN) bus that features in almost all vehicles in operation, as well as connected and autonomous vehicles in development, is recognised as a key weakness that is compromised in a number of cyber attacks on vehicles. In this project, we will deliver a secure communication protocol that affords protection along the CAN bus, thereby significantly lowering the risk of a successful cyber-attack. In a recent proof-of-principle project, Angoka has built a hardware-based security protocol that protects against spoofing of in-vehicle communications along the CAN bus. The SMART project will provide us with a unique opportunity to work in collaboration with arguably the UK's leading university in cyber security for vehicular systems. This will allow us to scale up the PoC system to a realistic industrial scenario, and extend the technology to allow vehicles to make intelligent decisions in synergy with other traffic participants and factors. This will be a critical step in creating a future-proof, industry-standard hardware solution for cyber security of connected and autonomous vehicles.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BREATHE MUSIC LIMITED	Development of Next-Generation Music Recognition Algorithm for Content Monitoring	£349,997	£244,998
Queen Mary University of London		£148,038	£148,038

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants

Vision

Copyright law requires that the music industry should track every public performance of every song and recording in the world to collect and accurately distribute royalties. However, accurate tracking only occurs in a minority of scenarios.

This digital transformational project will develop a novel Music Recognition Technology (MRT) solution by evoking new, cutting-edge AI technologies; a next-generation MRT algorithm to enable identification of music being played or performed in a live venue, or unofficial online covers (e.g. on _YouTube_). This will in turn allow songwriters & music owners to gain the royalties due to them.

Key objectives

To develop a solution using 'narrow' AI technologies to recognise alternative versions of a song irrespective of the style in which it is being played. Current solutions are good at recognising original recordings of music by the artist and also registered recorded cover versions. For example, a recording of "Hey Jude" could be identified using _Shazam_-like solutions as long as a "music-fingerprint" of that recording has been registered. However, these existing technologies cannot in most instances identify live music undertaken by musicians & performers in the thousands of live music venues such as pubs, clubs and cafes across the land. The objective is to ensure that live venues and music performers have an easy, non-intrusive automated solution to identify the royalties due to the music owners. As a result of music in venues not getting recognised, collection societies only estimate who is owed what; the smaller music creators especially are the ones who never get the royalties they are entitled to.

Main areas of focus

On the development of an innovative MRT solution to address the areas where current music recognition algorithms are unable to address, i.e. to identify the rights-holders 'content' within the song. The motivation of this project is to develop an MVP solution and define how this could be best taken to market.

How it is innovative?

Breathe Music's music recognition engine utilises AI to develop a step-change, disruptive MRT as an identification model to replace existing 'recording' monitoring systems like _Shazam_ - capable of monitoring and identifying the 'recording' but also the 'content' within the recording. This innovation overcomes the restrictions of only being able to identify and match only previously "seen" recorded versions.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
AISTETIC LIMITED	Tailored AI	£332,394	£149,577
University of Oxford		£118,854	£118,854

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Aistetic is a unique business proposition bringing together the leading experts in Deep Learning based Artificial Intelligence & Computer Vision research, combined with a huge £265bn market opportunity to disrupt the traditional e-commerce model for buying and selling of Men's tailored fashion. Duncan McKay has significant experience developing and bringing innovation to market having launched a new juice brand delivering £18m in retail sales in the first 12 months of launch, led the Quaker business in the UK (£150m retail sales business) and has been Head of eCommerce for the Pepsi Lipton European Business Unit. Professor Phil Torr has a world leading track record in computer vision research and taking technology to market (Oxsight, Five AI, 2D3, and Sony's Wonderbook development for PS3). We are in the early stages of developing our innovation and with this grant funding we intend to leverage deep learning driven AI and image based 3D reconstruction, and draw upon the latest scientific advances in statistical human shape analysis to take accurate measurements of your body easily and quickly using just your mobile phone under diverse conditions. We will first sell made to measure shirts online through our new app before expanding our offering into other tailored Men's garmets, including jackets and trousers. This novel software technology for the mobile phone addresses a number of problems with current solutions: (1) Measurement and inaccuracy. (2) Too many inputs (data, physical accessories) -- individuals are required to strip down to very tight clothing, provide a lot of body data, or wear a yoga suit. Grant funding will provide the means to develop a first working prototype of the Aistetic app featuring the core deep learning AI innovations. The collaboration will enable meaningful and tangible commercial output to research work undertaken by the University of Oxford.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
FUSEAWARE LIMITED	Integrated wearable devices for mobile workforces	£266,041	£186,229

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
fuseAware provides real-time data on mobile workforces to: * Improve productivity * Improve worker safety * Improve worker wellbeing The benefits include: * Significant improvements to profitability * Greater worker engagement and positive culture * Enhanced staff retention rate * Brand reputation advancement

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
WHITEBULLET SOLUTIONS LIMITED	Digital Advertising Regulatory Compliance Solution for Mobile Apps	£480,130	£216,058

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Our project seeks to develop technology using AI to track digital advertising in mobile apps that infringe intellectual property. Digital advertising funds most free services on the mobile web. Unfortunately, that means advertising is also being placed on and funding apps that infringe the intellectual property of others (e.g. illegal sports streaming, pirate music, movie, TV apps). Often this happens inadvertently as branded ads are targeted to users and may be misplaced on an infringing app even if the brand did not want to be there or pay that app for ad space. The ad industry therefore is looking for solutions to know when brands are placed on infringing apps. Our technology already uses AI to identify infringing websites and apps, and also tracks the ads on high risk websites. Developing a full AI-driven solution to track ads at scale in the challenging in-app environment will allow brands to maintain up-to-date compliance programmes, stop funding infringing services and use data to avoid ad misplacement going forward. No consumer privacy issues will be violated in the development or execution of this technology.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
TOUCHNETIX LIMITED	Reducing Driver Distraction and Improving Safety with 'Pre-Touch' in Future Automotive HMI Systems	£368,399	£257,879

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
This project will develop pre-touch sensing for capacitive touchscreens to the point where it is useful for automotive and industrial applications to help improve their safe use and to open up new and innovative ways to interact with a touchscreen. Using a capacitive touchscreen in a vehicle can be challenging while the vehicle is in motion as accurate finger positioning is difficult, leading to driver distraction. Zooming the display before the user touches or predictively popping up secondary menus can significantly help usability if the sensing distance is far enough away. Some vehicles already have rudimentary versions of the technology enabled using IR sensor arrays but this is expensive, hard to implement and limits industrial design options. The potential to use the electric fields from a capacitive touchscreen to detect an approaching hand or finger has been known for several years but due to performance limitations (the need to measure changes in capacitance on the order of atto-farads) the technology has never been successfully deployed. Based on a new measurement IC which uses novel technology concepts, TouchNetix will research the system aspects of pre-touch by exploring the complex interactions between IC, sensor, display and other system hardware to extend and maximise the distance at which a finger can be detected in front of the screen. A complete demonstration system will be developed which it is hoped will routinely detect an approaching hand from 10-20cm away and which gives accurate finger positions 5-10cm away from the touchscreen. Automotive, industrial and medical markets will benefit from the technology, allowing safer and novel HMI systems and applications to be developed.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RIMO CAPITAL LTD	A Next-generation Compatibility & Compliance Testing Software [ACTIV2.0]	£499,646	£224,841

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Software failure is a costly issue which can dramatically affect day-to-day business operations - amplified by the recent NotPetya and Wannacry cyberhacks. The latter, a 2016 hack on NHS systems resulted in total clear-up costs of ~£92m - paid for by the UK Government. In response to this, RIMO3, a cutting-edge software company is developing its latest product line called 'ACTIV2.0' - a next (2nd) generation product which aims at combating future cyberhacks. This innovative software aims at building upon the commercial success of the original version (ACTIV1.0) by integrating key improvements and new features based on feedback from users, which include some of the UK's leading large organisations. ACTIV2.0 will enhance the underpinning proprietary technology by performing auto-remediation of incompatible software through usage of robotic process automation, artificial intelligence (AI) and machine learning (ML) capabilities. The key benefits of integrating these innovative features will include: 1. **Significant savings** - auto-remediation will automatically fix 95% of issues, meaning users can focus on remediation of actual compatibility or compliance issues, rather than spending resources -- this will save 50% of cost and 90% of time/effort when compared to manual testing. 2. **Reduced vulnerability** - due to reduced exposure to out-dated or out of support software. 3. **Security** - The ability to execute complete tests in an unattended manner, even for relatively minor patch releases, or security fixes and not just major upgrades. This will reduce exposure to security risks from old software. The recent NotPetya and WannaCry cyberattacks are key examples. The WannaCry hack caused more than 19,000 appointments to be cancelled, costing the NHS £20m in 7 days, and £72m in the subsequent clean-up and upgrades to its IT systems. 4. **Confidence** in the health of the application estate as retesting is a push of a button away. Also, through the removal of human errors. 5. **Improved system resilience and securit**y, since upgrades (particularly security-related ones) can be deployed faster and more confidently. 6. **Compliance** - also known as 'conformance testing'. ACTIV2.0 will allow users to meet with the standards normally used by the IT industry and defined by the large organisations e.g. International Institute of Electrical and Electronics Engineers (IEEE) or World Wide Web Consortium (W3C). 7. **Open architecture** - ACTIV2.0 can very easily integrate with third parties and additional features or "Plug ins".

Innovate UK

Results of Competition: Innovate UK Smart Grants: February 2019

Competition Code: 1902_SMART_GRANTS_FEB

Total available funding is £30,000,000

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
LUX ASSURE LIMITED	Digitalisation of LUX Assure's Chemical Monitoring Products	£334,210	£233,947

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The oil industry is filled with data and cutting-edge science. It is a true integration of engineering, chemistry, geology and project management. With the recent growth in the availability of new monitoring tools the amount of data available is immense but challenging to use effectively. This is particularly true of chemical monitoring, and commercially significant as these chemicals are used in great quantities to keep oil and gas flowing. LUX Assure provides chemical monitoring tools that have been used by dozens of clients across the globe to prevent blockages forming or leaks developing. We see first-hand the enormous amount of data many operators are collecting and how challenging this can be to collect, record and particularly use to inform decision-making. Trends can be missed, thresholds breached and information ignored because of the volume of disorganised, and uninterrogated data and increasingly heavy workloads. We plan on being the first company to build a fully integrated data processing and visualisation system for oilfield chemicals, to help improve their management. Also, to be the first to integrate chemical data with physical data to provide a holistic view of oilfield infrastructure and operations. This would give our clients the power to utilise all of their data, to make better decisions, faster. The benefits will include: cost savings, through more effective use of chemicals; environmental benefits as the chemicals in use can be hazardous to the environment; improved production; and more confidence in the integrity of infrastructure i.e. less leaks.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
TANGI0 LTD	TG1	£337,906	£236,534

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Growing needs of incorporating digital technologies in-car and autonomous driving pose challenges to manufacturers. It is increasingly difficult to build control interfaces that are both simple, intuitive and therefore safe to use, while maintaining acceptable costs and manufacturability. Conventional interface manufacturing relies on a large number of the sensors embedded inside. They are rigid, flat, uninspiring to use and complicated to produce. This project is based on a platform tactile sensing technology using only one uniform material that can be applied in automotive, consumer electronics and other markets. The project will provide a completely disruptive method of manufacturing 3 dimensional intuitive control interfaces with integrated dynamic illumination features.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
NWAVE TECHNOLOGIES LTD	Next generation low power vehicle presence sensor with unmatched 99.99% detection accuracy as a key element of future mobility infrastructure	£270,005	£189,004

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Nwave's mission is to make the world a better place to live by eradicating the anxiety and frustration of inefficient parking. Nwave is a global leader in smart parking, and the only UK innovator succeeding in the industry. The company's unique smart parking system, consisting of best-in-class ground-based wireless vehicle detection sensors connected through a revolutionary wireless LPWAN system to parking space analytics and payment technologies, gathers sensor data and organises it in a meaningful way for both parking asset managers and drivers. This real-time space occupancy data allows operators to manage their assets effectively and drivers to easily find an open parking space and pay via mobile. In this project, Nwave aims to build on its successful smart parking system by introducing new sensor technology that promises significantly improved vehicle detection accuracy. The new system will be the first in the world to reliably deliver one-click and hands-free payment, and the only one capable of accurately detecting electric vehicles, high clearance vehicles and vehicle parked in challenging locations. The resulting product will deliver more in terms of accuracy and functionality, attractive to parking asset managers, smart parking app providers and new unexplored smart parking and smart city markets.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PLUVO LIMITED	Pluvo: Air-Filtration through Outdoor Advertising (PAFOA)	£248,394	£173,876

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Air pollution has become a global health hazard, with the WHO classifying it as the largest single environmental health risk, having caused 3.7m deaths in 2014 (WHO, 2014). It contributes to 40,000 premature deaths across the UK and 9,000 premature deaths in London per annum (GLA, 2017), with the average Londoner's life being reduced by 17 months. The London Environmental Strategy 2018 indicates that 20% of primary schools in London are located in areas that breach legal air quality limits. London falls short of WHO regulations for particulate pollution and has failed to meet legal limits for nitrous oxides (to be achieved in 2010 but will be delayed until 2025/30). Overall, factors associated with increased population, transport-use and modernisation of the economy have drastically depleted air quality, whereby remediation measures are difficult to implement due to limitations in effectiveness and the 'tragedy of the commons', whereby there is no single problem owner. In response, Pluvo has developed a cutting-edge air filtration solution, paired with unique business model that overcomes the 'tragedy of the commons' in addressing air quality. This project will allow Pluvo to implement commercial trials, validating the performance of the unit and facilitating completion of technology/commercial development.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PLAY CONSULTING LIMITED	Totem: harnessing intelligent technology to engage employees and improve workplace culture	£426,306	£298,414

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Play Consulting is a leading UK-based development house, specialising in aligning unique gamification approaches with cutting-edge platform development. This project sees the development of a world-first approach to employee engagement through the development of Totem, a unique workplace culture platform aimed at addressing the UK and global productivity gaps through the application of advanced machine learning and gamification techniques. The development of Totem will drive productivity in organisations, truly empowering staff and adding value across sectors.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
LEARNERSHAPE LTD	LearnerShape Reskilling Platform	£403,788	£282,652

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The LearnerShape platform will use data science and machine learning to recommend individualised educational pathways towards future target jobs. The platform will compare current employee skills (point A) with those for one or more target jobs (point(s) B), and recommend education options to get from point A to point(s) B.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
VITABEAM LIMITED	Vitabeam VQe	£462,343	£323,640

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
In the UK and Europe there's an increasing demand for fresh fruit and vegetables particularly salad crops such as tomatoes, cucumbers, peppers and lettuces, an increasing proportion (7.2%) of which are grown in Europe under greenhouse conditions. The drivers for protected growing are increased yields, controlled conditions, extended cropping and pesticide, water and fertilizer management. Furthermore, for cold climate countries e.g. UK, production can take place closer to the point of consumption and reduce reliance on imports. To localise production some protected cropping is being conducted underground with artificial lighting or vertically to minimise the growing footprint. The high plant densities, warm temperatures and high humidity in glasshouses mean that many growers depend on pesticides and fungicides to maintain plant health. Artificial lighting is required to stimulate annual growth and LED's offer energy savings; However, the benefits of LED's are now optimised. Glasshouse growers face continued economic challenges in competition with imported field grown crops from Spain and Italy. The industry requires a breakthrough to remain competitive and the unexpected discovery by Vitabeam of its unique light wavelength energy combination termed "VQe", whereby, LED grow lights for plants not only enhance plant growth and fruit development by up to 30% but also, simultaneously eliminates pathogenic bacteria and fungi. This project seeks to quantify the benefit of VQe under a series of controlled growing trials for salad crops grown under glass.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
WAVE VENTURE LTD.	Design Software for Flexible Structures in Waves (FlexWEC)	£97,906	£68,534

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The FlexWEC project aims to develop a game changing enabling technology that allows general purpose analysis of flexible membranes in ocean-going structures. More than ever before the future is offshore. Offshore renewable energy, offshore aquaculture production, offshore bulk transport and offshore clean-up will form an important part of the future economy and flexible structures are key in all of these segments. Our solution is a single general purpose analysis software for many customers while the state of the art solution for this market is bespoke software development for each customer. The benefits of general purpose software are well known in other sectors, these include reduced cost for each customer, accelerations in customer workflow, higher levels of functionality (deeper analysis), greater portability of inputs/outputs/operator skills, reduced cost of training, greater reliability. We will focus on an initial niche in wave energy converters utilising flexible membranes for power absorption from the ocean. The FlexWEC software combines finite element analysis, specialised and efficient computational fluid dynamics for internal and external flows, membrane dynamics and power absorption. The result is analysis software that can model a flexible membrane structure * located at any point in the water column, * fixed to a rigid structure or moored * with a flexible membrane that can be inelastic, elastic or hyperelastic, * with an open or closed (air-filled, water filled, or combined air and water) internal fluid domain, * with optional power absorption by turbines placed in the internal flow or from dielectric elastic generators that form part of the membrane structure. The FlexWEC project builds on past academic research and will focus on the inclusion of more non-linear dynamic analysis capabilities, as well as increased fatigue and ageing analysis to the software. The FlexWEC software will be integrated with the Wave Venture combined engineering and financial software. As a result of this integration, the Wave Venture software will be capable of analysing the entire range of promising types of wave energy converter technologies.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
LOVESHARK LTD	Mochi: a camera games platform using augmented reality and machine learning	£406,220	£182,799

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
This project will create a camera games platform using augmented reality and machine learning technology. The product will be a mobile app which houses a collection of mobile games which put you - the player - at the centre of the game, not a 3D model or an avatar, you! And playing games creates short videos which are perfect for sharing with friends or on social media.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CALIPSA LIMITED	Deep Learning powered CCTV Monitoring	£326,003	£228,202

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Companies such as G4S and Securitas started supplying human guarding services over 100 years ago to protect high-value sites from burglars. Gradually, human guards have been succeeded by CCTV cameras watched by human operators working in remote monitoring stations. With the widespread adoption of CCTV, particularly in the UK, these operators have been tasked with monitoring ever more video feeds, making it almost impossible for them to spot every potential crime. Calipsa engineers cutting-edge technology to solve this problem. The company's systems harness deep neural networks to analyse motion-triggered alarms, separating out false alarms from real suspicious events so that operators can review footage in real time and respond accordingly. These systems are highly successful at reducing the number of alarms that an operator has to view, helping them focus on the events that truly matter. This project will push the technology even further, automatically annotating objects in feeds so that operators don't have to spend time deducing what caused the alarm in often obscured footage or complex scenes, and bringing together feeds from multiple cameras capturing an event so that operators can follow the action easily. These innovations will deliver more in terms of function, accuracy and scale while working within the bounds of the current CCTV infrastructure.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
JAAK MUSIC LTD	The KORD Protocol: Decentralised content infrastructure	£435,916	£305,141

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
JAAK is proposing the acceleration of research into the commercial and technical feasibility of using decentralised ledger technology (DLT) to unlock innovation in the Creative Industries, currently constrained by aging digital supply chains. Utilising DLT, our KORD protocol will allow stakeholders in the Music, AV and other content industries, to better understand, secure and commercialise their digital copyright. Shared, distributed infrastructure will enable parties to automate reaching agreements, licensing, and transferring value between them. This will empower commerce that has never before been possible, connecting creators with audiences in brand new ways; developing new, emerging content markets.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PHARMATICS LIMITED	mAIcare: AI for Self-Management of Chronic Illness	£499,759	£349,831

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Long-term conditions account for 70% of total medical spending in the UK, and up to 90% in the US. The costs are set to rise as the population is ageing rapidly. Unless there is a change in how long-term conditions are managed, healthcare will become less accessible and more expensive. A solution to this may be self-management, where patients or their carers recognise symptoms and learn how to act on them promptly. We will develop an innovative approach that uses intelligent algorithms to help patients to self-manage better. Initially, we will focus on Chronic Obstructive Pulmonary Disease (COPD) - a progressive lung disease and the third leading cause of death worldwide. In many countries, COPD has already surpassed chronic heart disease as the main cause of hospital admissions. About 30% of patients discharged after a hospital admission for COPD die within 180 days, and about 50% die within two years. COPD kills more people than the second deadliest cancer, and it kills as many UK women as the deadliest cancer. And while death rates from other major causes are declining, COPD is on the rise. Warning signs and self-management plans that work for one person with COPD may not work for others, and it is now widely recognized that self-management of COPD needs to be an ongoing process individualised to each patient in order to be successful. Unfortunately, primary care providers are often overworked and have insufficient time and resources to provide tailored continual support, which reduces self-management programmes to one-off one-size-fits-all "things" given to patients. Our project will develop artificial intelligence (AI) that will adapt to patients and help them to self-manage better. Patients will be able to receive algorithmic feedback on their self-management techniques 24/7, without having to go to hospital or wait for appointments. Healthcare professionals will be able to make adjustments to self-management plans if they receive warnings from algorithms. A part of the project will help COPD patients to cope with anxiety. Our approach will put citizens in control of the illness, and encourage them to engage in evidence-based risk avoidance strategies approved by clinicians. This may both improve patient outcomes and make healthcare more sustainable. If our approach is successful, it can be extended to many other long-term diseases.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
P.E.S. TECHNOLOGIES LIMITED	DEVELOPING PROTOTYPE VOC SENSOR-BASED PRODUCTS FOR DETERMINING SOIL HEALTH ON-FARM	£589,937	£412,956
H.L. HUTCHINSON LIMITED		£167,868	£83,934
National Inst of Agricultural Botany		£240,424	£240,424
SMALL ROBOT COMPANY LIMITED		£282,338	£197,637
University of Essex		£62,916	£62,916
University of Greenwich		£50,679	£50,679

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Feeding 9.8 billion people in 2050 in a climate change context will depend on our skills to keep soils alive. Food production is directly correlated with soil health. To manage and improve soil health, farmers need reliable information about the chemical, physical and biological properties of their soils. There are methods available to assay soil nutrients and determine the physical properties of soils. Only respiration-based methods are currently available to farmers to measure the microbial contributions to soil health, but these give no information on the microbiota present and are affected by other sources of CO2 in the soil. Next-generation sequencing has potential as a biological indicator of soil health, but the costs are high, the tests take hours to conduct, and the data obtained requires experts in order to interpret it. Our solution is to tap into the wealth of information contained in the volatile organic compounds (VOCs) released by soil biota. These have been demonstrated to be excellent indicators of soil biota activity, but their detection and analysis currently requires laboratory-based instrumentation and skilled personnel. In preliminary work we developed a sensor that can detect soil VOCs and demonstrated that its responses can be correlated with soil health. In this project we will determine the responses of such sensors to a wide range of different soils and cropping systems. These will be correlated with conventional soil health indicators and next-generation sequencing data. Machine learning will be used to process the data obtained to provide a cloud-based database that can be accessed directly by sensors in the field. Use of robots to deploy the sensors with associated GPS data will be investigated to provide farmers with comprehensive and fine-scale data of soil health on their farms so that they can assess the impact of farming practices on soil health and adapt these to increase soil health and productivity. Testing every square meter of land data would be unfeasibly expensive with current testing methods (£60/sample) as the average UK farm size is 930,000 sq. m.. The project will be led by P.E.S. Technologies, a start-up company that developed a plastic electronic sensor for soil VOCs, in collaboration with Hutchinsons, UK agronomy specialists, and the Small Robot Company. Academic partners will be NIAB-EMR, the leading UK horticultural research organisation, the Natural Resources Institute with long experience in VOC profiling, and the University of Essex with expertise in machine learning.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RAM 3D LIMITED	VULCAN	£350,004	£245,003
TARAZ METROLOGY LTD		£286,510	£200,557
University of Sheffield		£267,650	£267,650

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Additive Manufacturing (AM) offers unrivalled flexibility in terms of part geometry, material composition and production volumes. It will revolutionise the high value manufacturing sector and in particular the aerospace and medical implant industry, enabling complex, lightweight, high performance parts to be produced with less material waste and more economically. Unfortunately, despite the clear potential, until recently AM has been largely restricted to the production of prototypes, and components for test rigs. In the VULCAN project a comprehensive programme of experimental, theoretical and development work will be conducted to address some of the critical challenges which must be overcome for widespread adoption of AM for the manufacture of production parts within the civil aerospace and medical implant sectors.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
KENNEDYS LAW LLP	AI Claims Handler	£701,182	£350,591
AXA INSURANCE UK PLC		£418,805	£209,402
CHRYSALIS ANALYTICS LIMITED		£401,509	£281,056
The University of Manchester		£254,900	£254,900

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Insurance claim-processing is reliant on the manual review of each and every claim, at high operational costs to insurers. As a result significant friction exists in the claims processing pathway, and it is extremely difficult to expedite claims payment. Although industry protocols (including The Claims Portal) aim to reduce this friction, insurance claims will often also need adjustment to reach a settlement and determining liability can often result in the need for litigation. This process comes to a head when considering claims registered on The Claims Portal where the insurer must assess all the nuances of a claim within 15 days else the claim falls out of the system (at high cost to the insurer, and often results in substantial (300+days) processing delays). This claims process is poorly communicated to consumers industry-wide. Resultant high operating costs and likelihood of the need for litigation drive up premium prices.We have built a unique consortium comprised legal experts (Kennedys), leading insurers (AXA UK) and data scientists (UMAN and Leap Beyond) to create a solution to automate the claims liability decision point and augment the processing workflow end-to-end. Our collaborative approach capitalises on our commercial assets to address the primary developmental barriers which have hindered the development of automation to date. With the developed tool we will reduce the overhead cost of claims processing, reduce the litigation spend for claims settlement, and reduce inadvertent settlement of fraudulent claims. Ultimately, this will lower the cost of insurance premiums for the consumer. This project will additionally enable better customer experience through increased transparency and explainability of the claim process, and expedited claim settlement.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
J.C. BAMFORD EXCAVATORS LIMITED	EDGETECT2 - Improved edge protection technology	£255,235	£127,618
LASER EXPERTISE LIMITED		£117,588	£82,312
TWI LIMITED		£398,357	£398,357
ULO OPTICS LIMITED		£228,855	£160,198
ULTRASONIC CLEANING SYSTEMS LIMITED		£270,841	£189,589
VALSPAR POWDER COATINGS LIMITED		£60,202	£30,101

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
The EDGETECT2 project will take findings from a previously funded feasibility study and develop new technical solutions to the pervasive problem of edge corrosion of fabricated steel products. Applying coatings over sharp edges typically results in the film pulling away during drying/curing due to surface tension effects. This leads to inadequate corrosion protection and rusting of the underlying substrate. Problems can be compounded if the coated surface still contains oxides from the hot rolled feedstock material, with corrosion rapidly penetrating under coating layers. Despite this effect being a well-known problem in the coatings industry, most commonly used laser cutting processes are optimised for cutting speed and result in highly sharp edges. No in-line technique exists to produce an edge geometry suitable for final coating and often manual edge-dressing processes are simply too costly in a production environment. Additionally, most steel fabrications are still shot blasted prior to coating to remove oxide scales. This process is line-of-sight and cannot adequately clean complex or thin-walled fabrications. This project will develop novel approaches to both edge and surface preparation with the ability to provide a step change in the prevention of edge corrosion.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ASSET HANDLING LIMITED	Artificially Intelligent Monitoring System for Airport Baggage Handling Assets (AIMS)	£507,317	£304,390
BABCOCK AIRPORTS LIMITED		£231,166	£115,583
University of Huddersfield		£264,709	£264,709

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Mishandled bags create misery for passengers, are expensive for the airline industry (estimated at £1.76b p.a. in 2017), and damaging to reputations. An estimated 1.6 per 1000 bags are mishandled at Heathrow due to faults with the baggage handling equipment. 140k passengers per day and compensation of ~£100 per bag equates to airlines losing £22,400 a day. In response, Heathrow has set an objective of "Every passenger, every bag, every time" and baggage systems down-time of less than 1/2 hour. Unfortunately, most of the common failures, typically of a motor gearbox unit (MGU) or conveyor, take more than an hour to repair. The only option is to carry out maintenance during the nightly shut-down. This is not usually possible either, because there is no advance warning of equipment faults before they are serious enough to require un-planned shutdowns. Sophisticated condition monitoring systems exist, but they are only used for high capital value, critical assets because they are too expensive to deploy on a large scale (~30,000 MGUs at Heathrow). One of the best systems is vibration monitoring, because it provides a wealth of information on damage to critical machine parts such as gears, bearings and electric motors as well as faults such as misalignment, imbalance, and cracks. High quality accelerometers required for predictive vibration monitoring cost ~£500, which is untenable for widespread deployment at an airport. Unfortunately, low cost accelerometers do not perform well enough to detect early stage damage. Motor current signature analysis (MCSA) could be an effective, low cost alternative. Currently, it also suffers from poor diagnosis capability due to limitations of present signal processing algorithms for motor current data. AIMS will overcome this challenge by developing: a) Novel signal processing to extract high fidelity diagnostic features for early stage damage and faults to gears, conveyors, bearings, motors and shafts from motor current data using low cost current clamps. b) A novel artificial intelligence that is able to classify the health of MGUs/Conveyors. The output of this system will be used to create an easy to interpret traffic light display of baggage handling asset health and prioritised maintenance actions for the engineers. The system will have widespread application in airports and industries involving mechanical handling such as fast moving consumer goods (FMCG) and warehousing. AIMS will unlock the opportunity to generate (discounted) gross profits of £21.9m in a 5 year post project period.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
JIVA MATERIALS LTD	Efficient Manufacturing of Recyclable Composite Laminates for Electrical Goods (ReCollect)	£427,350	£299,145
NETCOMPOSITES LIMITED		£361,770	£253,239
THE INSTITUTE OF CIRCUIT TECHNOLOGY LIMITED		£15,631	£10,942

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
As "smart" devices, be they phones, televisions, fridges or cars, become ever more prevalent in everyday life, so the requirement for electronic circuit boards increases. Currently, a common material for manufacturing circuit boards is a laminate consisting of a woven fibreglass cloth impregnated with an epoxy resin. This material provides the right balance of properties - it is stiff, strong, electrically insulating, affordable and has the required resistance to external factors such as heat, humidity and fire. However, a significant drawback of existing glass-epoxy circuit board laminates is that they are very difficult to recycle at end-of-life. This is because the epoxy resin cannot be melted (it is a so-called "thermosetting" plastic). Furthermore, the separation of the glass fibres from the epoxy resin is highly problematic. At best, waste circuit boards tend to be shredded and incinerated to recover the high-value metals in the circuitry and components. However, often they will simply end up in landfill. This proposal offers an alternative way of managing end-of-life circuit boards. Rather than producing boards from difficult-to-recycle fibreglass-epoxy, this project is based upon a new circuit board material technology known as "Soluboard". Soluboard consists of a novel natural fibre reinforced plastic. At end-of-life, Soluboard can be recycled simply by immersing it in hot water. This causes the plastic to dissolve (in a similar way to the plastic wrapping used in detergent capsules for washing machines and dishwashers) so that the reinforcing natural fibres can be separated easily for reprocessing or composting, and the electronic components and circuitry can be recovered intact. To date, working concepts of electronic devices with Soluboard circuit boards have been developed, produced and tested successfully. In order to progress the invention, what is now needed is a method of manufacturing Soluboard with the performance and quality demanded by producers of electronic goods, and in the high quantities they require. This is the primary aim of this project - to demonstrate the feasibility of producing Soluboard in high volumes and to show that the resulting circuit boards can match the performance of the incumbent glass-epoxy laminates.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CRYOMATION LIMITED	Developing and Testing an Automated Cryomation Unit to Deliver a Zero Emission Alternative to Human Cremation	£1,240,983	£558,442
AIR PRODUCTS PUBLIC LIMITED COMPANY		£186,764	£46,691

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
At current global mortality rates over 60 million people will die this year. Cremation is the leading funeral process in the world. Cremating a 100kg body produces 180kg of CO2 as well as atmospheric pollution with heavy metals. Traditional Burial with its memorials, cemeteries and ongoing maintenance has the greatest long term impact on the environment of all funeral processes. The world population is forecast to grow to over nine billion by 2050\. Cryomation is a zero emission alternative to Cremation, developed through an award winning KTP at the University of Hertfordshire, which uses Liquid Nitrogen, freeze drying and accelerated composting to produce sterile human remains. The process has no fossil fuel burning incinerators, no harmful effluent streams and the remains can be buried in a much smaller space than other burial processes. The remains disappear to nothing, so burial land can be reused. The remains are ideal for "green" funerals and burial under trees, remains can be scattered or taken home in a pot, supporting the life of a memorial plant. Cryomation Ltd has already proven the science behind the process under the KTP and confirmed the feasibility of delivering the process commercially, as well as the consumer and industry support for Cryomation, through an Innovate UK Smart funded proof of market project. Cryomation has successfully confirmed the engineering challenges in delivering the automated cryogenic batch process can be overcome, through an Innovate UK funded Industrial Research project and will now move to a full prototype build. Successful completion of the project will see the world's first fully automated Cryomation unit.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CAMFRIDGE LIMITED	Transforming home refrigeration with efficient and flexible magnetic cooling	£1,253,448	£877,414
Imperial College London		£446,213	£446,213

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Project description - provided by applicants
Cooling is energy intensive: overall it consumes up to 14% of Britain's electricity (17% globally, according Didier Coulomb, President of the International Institute of Refrigeration - IIR) and £5.2 billion each year is spent on energy for "cold" across the UK grid and transport networks. Yet, compared to electricity production, transport and heat, "cold" has received more limited attention in the international energy debate. With the recent Kigali amendment (2016) to the Montreal Protocol, phasing out HFC refrigerant gases, and the new Paris Accords (2015) on climate change, technical innovation in refrigeration and cooling should now be a priority. In the UK the largest cooling segment is domestic refrigeration, consuming ~5% of the UK's electricity. Worldwide around 180 million new domestic refrigeration appliances are sold annually, in a global market worth $60 billion per annum. Appliance manufacturers face the twin challenges of strong competition and environmental regulation to improve energy efficiency (eco-design directives) and recyclability (WEEE directives) This project is focused on a disruptive new cooling technology, that uses recyclable permanent magnets and special metal alloys, is gas-free, operates at low pressure, is completely safe and is adaptable to different global market environments. By exploiting the major advantages of this technology, we can enable a step-change improvement in appliance energy efficiency - up to 75% reduction in power consumption compared to even the best fridge appliance on the market today, whilst completely redefining the concept of a domestic fridge in the home. For consumers it means (for the first time in over a century) a range of new cooling functions can be enabled (such as on-demand cooling and distributed cooling). Camfridge, a spin-out from the University of Cambridge, is a research performing SME, a leading developer worldwide of magnetic cooling technology, holding several patents in the field. Imperial College London is a world-class research university with all the necessary facilities and expertise in micro structural analysis and magnetic materials. This collaboration will address several roadblocks to commercialisation of this innovative new technology: * Show that magnetic cooling unlocks innovative uses for cooling in home, including cooling when and where it is needed for on-demand and distributed functionality. * Demonstrate robustness and longevity of the refrigerant materials, and deliver quality control measures to improve mass production methods. * Elevate expectations about cooling efficiency by reducing home cooling power consumption by 75% (or equivalently improving home cooling appliance efficiency by 400%).

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BERRY GARDENS GROWERS LIMITED	BerryPredictor: Improving harvest forecasts, yield predictions and crop productivity by monitoring and optimising zonal phytoclimates in covered strawberry production	£110,000	£55,000
CROPDESK TECHNOLOGIES LIMITED		£236,324	£165,427
ENVIRONMENTAL MONITORING SOLUTIONS LIMITED		£238,449	£166,914
National Inst of Agricultural Botany		£249,651	£249,651
SAGA ROBOTICS LIMITED		£200,313	£140,219
University of Lincoln		£52,083	£52,083
University of Reading		£52,565	£52,565

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WEATHERQUEST LIMITED		£79,191	£55,434

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Project description - provided by applicants
There is increasing consumer and retailer demand for high-quality UK-grown strawberries, and this will increase further post-BREXIT as retailers favour British produce. Currently, c. 30% (Defra) of strawberries consumed in the UK are imported, and so there is a great opportunity to displace these, often inferior, imports during the home-grown season and boost the UK economy. However, achieving consistently high yields and quality across variable and challenging growing seasons is difficult, and new growing innovations are needed if UK fruit production is to be optimised to meet market demand, and imports reduced. There is much variability in plant yield and berry quality over a typical covered table-top production system, but the reasons for this are not fully understood and the magnitude of the effect has not been satisfactorily quantified, and so it cannot be managed or predicted. This variability confounds growers' best efforts to forecast yields to inform marketing strategies, and inaccurate forecasts lead to under-supply or to surpluses, necessitating purchases from outside the UK or fruit destruction, both of which are very costly. We will develop new soft fruit growing strategies from an improved understanding of how to optimise individual plant performance across the growing area. We will refine recently-developed fruit harvest and ripening models by incorporating high resolution, satellite-derived weather inputs, and data feeds will be used to inform growers' polytunnel venting strategies to better control growing conditions. Variable ripening rates and yields will be captured using a new app, and algorithms will be developed and embedded in a cloud-based BerryPredictor tool that will enable growers to forecast yields with much greater accuracy and precision than currently possible, across the entire cropping area. BerryPredictor will also provide POs and UK growers with access to real-time accurate yield prediction profiles for the first time. The majority of the R&D work will be carried out at the NIAB Water Efficient Technologies (WET) Centre, an industry-funded soft fruit precision growing demonstration and KE centre, the remit of which is to showcase the latest innovations in soft fruit growing, and promote the commercialisation of project outputs from our IUK and industry-funded projects. BGG commercial growers will provide weather data to inform the models, and yield data to ground-truth BerryPredictor. Project outputs will benefit UK growers (yield, premium price, import substitution), POs (better product with enhanced reputation, reliability and improved marketability), supermarkets and consumers (flavoursome, phytonutritious UK-grown fruit) and wider society (sustainable intensification).

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Aquasium Technology Limited	Plasman 2	£477,517	£286,510
ATS APPLIED TECH SYSTEMS LTD.		£222,086	£111,043
TWI LIMITED		£299,762	£299,762

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Project description - provided by applicants
The turbo-charger market continues to grow at a CAGR of 10% as manufacturers design leaner and more fuel efficient engines. This technology will be the largest contributor to reducing CO2 emissions in vehicles (worldwide) for at least the next decade. This project will boost the productivity of production equipment for this market, an important export market for Aquasium Technologies (AQ) that will be worth \>£15m per year in 2022\. The PlasMan2 project will build on a previous feasibility study to adopt a novel electron beam (EB) welding gun technology for the production of turbo-chargers. The project will build and test a system and provide the necessary bridge to allow integration of the technology. The operational data collected will be used to quantify the benefits of adopting the technology and will be used to promote sales of the equipment against more conventional competitors, and emerging laser welding machines. We will also investigate and assess the potential for using the technology in new emerging markets of additive manufacturing (various markets), thick-section welding (for off-shore wind and nuclear energy) and vacuum melting (precious metal recycling). The technical capability of being able to rapidly pulse the electron beam and much higher consistency output are particularly suited to these markets.