Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
M-SQUARED LASERS LIMITED	Developing The World's First Label-Free Imaging Light Sheet Microscope	£357,852	£214,711
University of Southampton		£136,802	£136,802

Project description - provided by applicants

Current techniques in microscopy for drug discovery, agrochemical development, IVF, and fundamental biological research rely on using complex dyes or fluorescent labels that can significantly disrupt the behaviour of the samples being investigated. This renders any conclusions unreliable and contributes significantly to large failure rates. Label-free imaging techniques are gaining popularity, but many are unable to provide the sufficient detail in 3D images and are typically too slow to benefit these applications.

Drug discovery alone is enormously ineffective, one of the reasons being the inability to see whether drug compounds end up near their targets in cells. More than 90% of new drugs being tested fail to get to market and this costs the pharmaceutical industry more than $2bn per drug. With disease diagnosis on the up, this clearly needs to be addressed.

Agrochemical development is not much better. Fewer than 1 in 140,000 chemicals tested is successful, and this costs up to $300m, taking more than 10 years. We have a global ever-expanding population so food security has never been more vital.

IVF is a growing industry with fertility issues effecting an estimated 1 in 8 couples. Its success relies on accurately assessing how viable the sperm and eggs are, without using fluorescent labels which disrupt their functionality. IVF is only 26% efficient, causing distress to many families, and costs the NHS £400m p.a.

There is a clear and unmet need, therefore, for better imaging techniques that do not use labels for visualisation, are informative, bringing benefit to these sectors and the UK economy.

This project aims to address this by developing new technology that can provide label-free imaging in 3D. The project brings together complementary capabilities of two forms of imaging: coherent Raman imaging, and light sheet microscopy.

Coherent Raman imaging is a powerful tool to generate accurate and useful information, without the use of dyes or fluorescent labels. However, it currently is very slow and does not generate 3D volumetric images of live samples, which is highly desirable to minimise any perturbation or damage. Light sheet microscopy can address this, by using a 'sheet' of light that can image at depth in samples, allowing us to generate highly accurate 3D images.

We will develop the world's first label-free chemical imaging light sheet microscope using coherent Raman imaging, for the benefit of not only big industries, but healthcare services and society as a whole.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
PAPERCUP TECHNOLOGIES LIMITED	Voice adaptive speech translation for video content	£368,034	£257,624

Project description - provided by applicants

There are hundreds of millions of TV shows, movies, and digital videos across VoD, TV catch-up services and the web. However, we estimate that 99% of all that video content is shackled to a single language. Papercup provides a unique solution to automatically generate new vocal content in other languages, while maintaining the qualities of the original speaker's voice in a new language. Papercup aims to be the de-facto solution for translating video content, and to unshackle the hundreds of millions of videos that exist in the world today so that all of the world's content can be available in any language.

A key differentiator for content creators is their personality and the way in which they articulate themselves. If creators were to use a generic voice from, e.g., Google or Microsoft to create content in other languages, they would be unable to differentiate themselves effectively. In other words, there are 15 million videos uploaded to the major distributions channels every day; if all of these creators used the same voices, they would essentially all sound the same.

Over the past few years, video platforms have grown at an accelerated rate (there are over 200 video on-demand platforms in the US alone). Using Papercup's technology, creators of videos, whether a YouTube clip or Hollywood film, will be able to automatically reproduce their content in any language, while retaining the actors' or speakers' voice characteristics across any platform. By contrast, tech giants, which typically have their own video platforms (e.g., Amazon Video, Google's YouTube), cannot offer creators the same value proposition of being platform-agnostic.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ORBIT DISCOVERY LTD	Innovative platform to screen CAR-T/TCR cancer immunotherapy drugs for off-target binding	£319,684	£223,779

Project description - provided by applicants

Orbit Discovery Ltd was established in November 2015 as a spin-out from Oxford University. The founding IP relates to a peptide display platform and its use for the identification of novel peptides and for the identification of T-cell epitopes in high throughput screens. We provide services identifying and characterising advanced therapeutics for a range of chronic diseases.

Target Markets

Companies making modified TCRs as drug products for Cancer Immunotherapy have a current pressing need to identify off-target binding of their products to ensure safety; there have been several reported patient deaths in clinical trials due to cardiac or gastric inflammation as a direct result of treatment with modified TCRs.

Project Description

This project aims to investigate and validate a broad screening solution that would enable these companies to more comprehensively and reliably screen their products earlier in development. This would reduce the risk of medical side-effects or fatalities during clinical trials and would speed up the development and deployment of more effective cancer treatments.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CAMBRIDGE GAN DEVICES LIMITED	G-Sound: GaN Chips for Class-D Audio Amplifiers	£77,550	£54,285

Project description - provided by applicants

The aim of this project "G-Sound" is to identify the commercial and technical challenges and opportunities for exploiting a disrupting Gallium Nitride (GaN) technology in the market of audio amplifiers.

GaN is widely regarded as the most promising semiconductor for power devices since silicon (Si) and the devices based on it offer significantly better on-state resistance and breakdown performance as well as fast switching and smaller size, all of which are needed to develop compact, efficient audio amplifiers with state-of-the-art music quality.

Class-D audio amplifiers are becoming increasingly popular, for several reasons: (i) significantly higher efficiency (ii) higher power density and (iii) higher reliability due to lower losses and heat generated. While present in low-cost and low-to-medium performance products, their adoption in more audiophile designs, high performance and professional devices has been much slower. The reason is the compromised music quality because of the limitations imposed by the Si-transistors used today. The switching behaviour of Si-transistors is poor in terms of noise and distortions, as well as creating transient losses. In this project, G-Sound, the SME "Cambridge GaN Devices (CGD)" will investigate GaN-transistor modules for audio-applications, eliminating most of the drawbacks of current class-D audio amplifiers. Such improvements in device and system performance lead to reduced distortions and noise at increased switching frequencies while maintaining very high efficiencies. The result could be a technology breakthrough and widespread adaptation of the class-D audio amplifiers.

The way people use and "consume" music and media has dramatically changed over the last couple of years. The music market has mostly moved from physical media such as CDs to digital files available on internet and cloud and streaming services. Moreover, the number of speakers has increased exponentially: today speakers are present in every room of our homes, in portable and smart devices, in mobile phones, tablets, smart watches, to name a few. All these applications are striving for better sound quality, lower power consumption and smaller size. Streaming service providers such as Spotify or Amazon are starting to market high-resolution music and sound streaming requiring new high-quality audio systems. These trends have a tremendous impact on the addressable market for GaN-based technology. Given the disruptive advantages of its technology, in terms of cleanness of switching and reduction of parasitics due to multi-chip integration, CGD is in a unique position to capitalise on this opportunity and become a major player in delivering solutions for audio industry.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SIMPRINTS TECHNOLOGY LIMITED	Development of a touchless biometric identification system powered by Artificial Intelligence to solve identification challenges in developing countries	£498,728	£349,110

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 ability to identify individuals accurately and reliably is a fundamental condition for providing essential services such as health, finance, and government services. In developing nations, the lack of reliable identification methods is a major factor that hinders the delivery of such services. According to the World Bank (2017) over 1.1 billion people worldwide (1 in 7 people globally) lack formal identification. More than a third of these people are children, and the problem is particularly prevalent with groups forcibly displaced by unrest and disasters.

Simprints is a tech company from the University of Cambridge that pioneers innovative solutions to this problem by building and deploying biometric identification systems in the harshest environments in the world. During the past few years, Simprints developed an affordable, secure, rugged identification system based on fingerprint scanning that has been commercialised across 10 countries. Using an open source matcher and ISO templates, Simprints has successfully optimised hardware and software to be over 228% more accurate than five industry-leading systems. Working with impact organisations like BRAC, Mercy Corps, the Children's Investment Fund Foundation, and the Afghanistan Ministry of Education, Simprints' ability to successfully deal with worn and damaged fingerprints has enabled these organisations to reach in total \>55,000 beneficiaries who are currently "falling through the cracks" of service delivery. R&D strategy has placed Simprints among the best positioned organisations in the world to provide ID services in challenging environments.

Strong, resilient and affordable methods of identification are especially needed in developing countries with poor or non-existent infrastructure for data management. In addition, hardware dependency has been identified as a major barrier which could potentially hinder, interrupt or slow down the identification programmes in countries lacking resources, leading to invisibility gaps and problems in the delivery of key services such as health, finance or governmental services. Now the challenge for Simprints is to further facilitate the implementation and use of identification services at scale in developing countries, with a targeted emphasis on emerging markets, to provide an alternative ID system removing the need for hardware biometric scanners.

Building on the deep technological and field experience of Simprints, this project proposes to research, develop, and validate a world-first prototype providing unprecedented levels of resilience, reliability, privacy and interoperability compared to current imaging-based biometric systems.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BERDROOT DEVELOPMENTS LIMITED	MesslyID - Using blockchain for safe, fast verification of healthcare workers' ID	£492,108	£324,791

Project description - provided by applicants

MesslyID will be a distributed ledger (DL) that enables fast, secure, and highly automated presentation of a healthcare worker's credentials, including employment status, work history, prior education, and training. This solution will remove a significant pain-point from NHS administration, decreasing the NHS's operating costs and increasing the quality of patient care. This project is significantly ahead of all other approaches, using cutting-edge distributed ledger technology. This innovation will sit alongside Messly Locum, our temporary staffing solution.

No DL credential repository is currently in use within the UK, although early steps have been taken internationally by companies including Sovrin and Shocard. Current solutions within the NHS involve lengthy and unsafe reviews of paper and copy documents and lookups to static databases, and storage of information in spreadsheets or CRM systems. This application of DL technology would represent a significant step change in the SOA within the UK and internationally. We intend to initially drive this innovation within the UK, before considering international expansion.

Direct economic benefits for NHS trusts are generated by reducing their spend on the agency provision of healthcare workers. Secondary benefits come from (1) access to a wider pool of healthcare workers by reducing the time from application to work by over 80%, (2) improved patient care as a downstream impact, (3) the drastic (90%+) reduction of identity fraud and (4) a reduction of staff time spent on manual onboarding processes, which we calculate to be over 70%.

In MesslyID, workers will make claims regarding their work history or status (e.g. criminal record, education record, GMC status) which are verified by the relevant body (e.g. DBS, university, GMC). Verified claims are added to the DL, where they cannot be adjusted except by the original verifier. Trusts will access this record through Messly to check workers' credentials. This is high speed, high trust and low cost.

Our project outputs will include an operational framework allowing for the use of distributed ledger technology within the NHS formed through our POC studies, the construction of the network of supporters at all levels of the NHS required to implement this solution, and a deep understanding of a fully customer-validated technical architecture. The validation of this framework would prove that the development of a commercialized form of MesslyID is possible and provide the roadmap to that commercialisation.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
STATMETRIX LIMITED	Automated football action event detection	£252,731	£176,912
Loughborough University		£106,358	£106,358

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Project description - provided by applicants
The automated football action event detection technology will help to improve access, at all tiers of football, to data needed for player performance analysis and talent identification. Advances in computer vision, motion detection and cloud computing will enable this technology to bring greater access to performance data for football clubs, football academies and national football governing bodies. This will be achieved by overcoming the existing challenges include the reliance on the labour-intensive process of obtaining football data due to manual logging of match actions; accuracy, consistency and comparability in the data due to human judgements, and the inability to accurately detect the body pose of players from a single camera angle.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SHIELDPAY LTD	Shieldpay: A digital escrow, removing the risk of commerce	£497,536	£348,275

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Project description - provided by applicants
Shieldpay is an innovation led, UK-based fintech solutions provider. This project sees the development of an innovative and disruptive financial technology solution that re-thinks the real estate transaction process, saving resources, speeding up the process and providing much greater fraud prevention.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RBD HOLDINGS LIMITED	Developing state-of-the-art software to reduce carbon dioxide emissions in the aviation sector	£190,483	£85,717

Project description - provided by applicants

Airlines are responsible for a significant amount of carbon emissions globally. Airlines also spend vast amounts of money on fuel -- it is one of their largest operating expenses.

Signol, our software as a service, harnesses cutting-edge behavioural science to tackle both these challenges. Building upon our team's unique behavioural research in aviation (Gosnell et al., 2018), we combine big data analytics and behavioural science to provide airline captains with refined performance feedback that motivates them to make fuel-efficient decisions when possible. What's more, Signol's cutting-edge behavioural science approach can make captains happier. Signol has the potential to improve firm profits, reduce pollution, and increase job satisfaction. In this project, we will test and refine the Signol platform with a major UK airline to begin scaling the project. We aim to position the UK as a leader in cloud-based analytics for professional staff and put it at the forefront of reducing carbon emissions in the aviation sector.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DATA LANGUAGE (UK) LTD	Luminery - Media Metadata Market - Phase 2 Experimental Development	£498,803	£224,461

Project description - provided by applicants
Luminery is an innovative platform that harnesses crowdsourcing of media metadata to drive better revenue for publishers, and to create a new, fair and flexible crowd-working revenue stream for subject matter experts. Importantly, the crowd workers own the metadata they create - it is a data asset in this new marketplace. This metadata can be used by publishers a) to drive contextual commerce, b) to create brand moments, and c) to drive discovery and user experiences that lead to higher ecommerce conversion rates. During this proposed "Phase 2" project, we plan to explore these three, and other commercial opportunities, presented by the metadata. Unlike pure AI & machine learning -driven native commerce, Luminery harnesses experts' knowledge, via crowd-sourced tagging, to enable product discovery and better user experiences. There are opportunities to harness AI and machine learning to support this, and these will complement and enhance the human curation capability rather than replace it. The "Phase 1" market test, co-funded by Innovate UK and Data Language Ltd, is live and gathering data. This first market test uses MVP Luminery toolkits for crowd workers and video publishers, connected by the prototype feedback loop. This "Phase 2" will enable us to launch two additional market tests, to iterate based on the market test data, to explore the allocation of tagging work to crowd workers, to experiment on the feedback loop & quality assurance models, and to explore other user experiences that make up the commercial opportunities. Crucially, the experimental development will explore the key variables via a series of tests and iterative improvements, in real market settings, to optimise the core model and move the platform to commercial readiness.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SIGNAL BIOMETRICS LTD	Improving the study & diagnosis of Traumatic Brain Injuries - Development of the first biometric, helmet-fitted, eye-tracking camera array for real-time biometric tracking and concussion diagnosis	£198,160	£138,712

Project description - provided by applicants

VISION: We are an innovative biometric and physiological sensor company that develops leading biometric monitoring systems for high-risk & high-pressure industries. Following on from the success of our first biometric solution (fireproof glove sensor), which was adopted by the FIA and F1 this year, we now wish to develop the first biometric, helmet-fitted, eye-tracking camera array for real-time biometric tracking and concussion diagnosis.

NEED: There are an over 10 million incidents of concussion each year; 4.5 million annually sports-related, with an estimated 37% going unreported and undiagnosed (American Academy of Pediatrics) resulting in traumatic brain injury (TBI) and Second Impact Syndrome (SIS) and contributing to long-term cognitive diseases.

Concussion is a clinical diagnosis and can be highly subjective, based upon qualitative testing and open to interpretation. Leading edge imaging tools like CT and MRI are not diagnostic for concussion but are required to show structural brain injury. Moreover, these diagnostics can only be established within a stable environment like a clinic or hospital, with the problem being that most concussed athletes do not get diagnosed and/or get treated with delays.

OBJECTIVES: Building upon concussion diagnosis research through eye tracking currently underway at Addenbrooks Hospital, University of Cambridge, we intend to develop the first, biometric, non-invasive camera array retrofitted to helmets for tracking of eye movement in order to aid concussion diagnosis and studies in real-time. The same camera array will additionally be able to simultaneously monitor the heart rate (HR) of its wearers, and blood-oxygen (SpO2) levels in future.

FOCUS: The project focuses on the development of the innovative camera array, computer vision algorithms and platform needed to identify signs of concussion and heart-rate in users and ensuring these can be integrated onto suitable H&S apparatus for our target markets -- helmet-based sports, military and heavy manufacturing. The technology is supported by the FIA, leading helmet manufacturers Bell Racing Helmets and Schuberth, and prototype testing will be completed with leading F1 teams.

OUTCOME: A £25m opportunity (Y5) in a £8.7bn global market, the technology represents a step-change innovation in the diagnosis of head injuries such -- enabling for the first time, the onsite, real-time concussion diagnosis, enabling the quicker, more accurate implementation of effective treatments - significantly reducing the risk of long-term TBI, SIS and other cognitive-diseases.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BLUEDOTAUG LTD	Developing a way to see sound	£262,870	£184,009

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Project description - provided by applicants

Pollution affects us all in some way. Whether it's concern for the whole planet, or direct issues with where we live, or work, or play. It can be air pollution, noise pollution, plastic pollution to name a few.

The big issue is that the data that describes all this is complex & hard to understand, it is often represented in 2D maps and tables that require an expert to explain, accompanied by terms like "Parts per million", "A weighted Db"... we hear them but don't understand them!

But... what if you could see noise pollution or other types in a way that makes sense and is simple to understand?

Data Specialist Sean Burton has partnered with Sustainability Strategist Sandra Norval to create Bluedotaug. We are building a software platform that allows experts to visualise their models in 3D, animated and shared immersive experiences. Bridging the gap between the technical experts their stakeholders, and the general public.

Imagine moving in a shared VR environment collaborating with others to clearly identify where there is a problem, where perhaps there isn't a problem, indeed whether there will be a problem if left unchecked. Then having the ability to discuss and debate collectively to solve or mitigate the problem!

We already have contacts and traction in the rail and construction industries, as well as the backing of acoustics experts that can see how this would be a game changer for communication of noise pollution and have proved the concept, we are now researching the technical detail to enhance what we already know and create a platform that will change our relationship with noise.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ACURABLE LIMITED	Diagnosing Sleep Apnoea At Home with a Novel Wearable Technology	£499,829	£349,880

Project description - provided by applicants

Acurable produces the first truly wearable medical device able to accurately diagnose sleep apnoea in a non-invasive way. Acurable's patented technology is a major engineering innovation and the product of 10 years research at Imperial College London.

Our solution uses a non-invasive wearable sensor (AcuPebble) to monitor acoustic signals of the patient and then applies sophisticated signal treatment algorithms to extract from them the main parameters required for the diagnosis of sleep apnoea. Results from a preliminary clinical study at yield excellent results on the efficacy of a former, suboptimal, version of the device detecting respiratory apnoea events in a clinical setting. The results were published by BMJ Open in 2014\.

This project application covers the technical work required to further enhance the capabilities of the technology within the context of sleep apnea diagnosis. The project is composed of four main work streams: (1) conduct a clinical study to generate the clinical evidence required to demonstrate our technology efficacy on automatic detection of certain physiological biomarkers which are significant for the diagnosis of the condition; (2) build the clinical evidence dossier required for CE marking; (3) Carry out more research into the usability aspects of the system; (4) Develop the first version of a data platform/user interface, which allows the use of AcuPebble, not just for automatic diagnosis of sleep apnoea, but also a signal collection research tools that can be used by data and clinical scientists to carry out research in a wide range of respiratory and cardiac conditions.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
DOVETAIL DIGITAL LIMITED	Decisions.Health	£344,290	£241,003
SURGICAL CONSENT LTD		£154,962	£108,473

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Project description - provided by applicants

Over 10 million operations were performed in the NHS in 2015/16 which was 40% more than in 2005/6 (http://www.nhsconfed.org/resources/key-statistics-on-the-nhs). Currently, consent for surgery is typically performed using a handwritten consent form completed adhoc, often on the day of surgery. This system is prone to errors of omission and illegibility whilst not being compatible with the NHS vision to go paperless by 2020\. Our smart consenting platform digitises this process whilst harnessing artificial intelligence and distributed ledger technology to enable informed, shared decision-making and creation of immutable, auditable records of both the decisions made and consent given. Our vision is to ensure that every decision a patient makes about their surgical care is the right one for them.

Decisions.Health is a collaboration between Surgical Consent, a clinician-led team with close working ties to Imperial College and Imperial College Healthcare NHS Trust, who will provide research and an NHS pilot site for the developed technology; and innovative healthcare software development company and blockchain specialists, Dovetail Digital. Led by surgeons, and co-created with patients, this project aims to translate the research evidence of transformative individual and system benefits of shared decision-making into practice. It will also explore the integration of patient-reported outcome and experience measurement to drive personalised, preference-sensitive, shared decision-making.

Immutable digital records of all interactions along the patient journey will be created, with key decisions recorded on a distributed ledger. Informed explicit consent will always be available helping to overcome privacy challenges associated with managing, sharing and utilising data as a record of the decision. The developed technology will deliver a worldleading, equitable, intelligent, data-driven, clinical decision-making support platform to democratise high quality shared healthcare decisions. The proposed Artificial Intelligence output, maturing over the project duration, will increase efficiency by reducing dependence on human-to-human interaction at multiple touchpoints along the patient journey, allowing consultant surgeons to provide input at the points of most value.

The product will help eliminate the high administrative costs associated with the current paper-based system (e.g. £500k-£1m per hospital trust for paper storage alone); and mitigate costs related to medical negligence claims resulting from poor clinical decisions and consent issues (estimated £46m in 2016/17 for consent-related settlements only). The potential for savings associated with an effective, supported shared decision-making tool are even greater, estimated by the Kings Fund to be up to £10bn p.a. as a result of up to 20% of operations

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TRUE AI LTD	TRACSME: Text Recommendation Automation in Customer Service for SME	£392,278	£176,525

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Project description - provided by applicants
True AI is developing TRACSME - an Artificial Intelligence - based customer service agent productivity solution for SMEs. TRACSME significantly improves operational efficiency and enhances the overall level of customer experience and consequently, consumer satisfaction. It works by recommending responses and next actions for agents, ensuring quality and relevance of the answer provided to the consumer. As current leading AI requires vast quantities of past training data, AI systems tend to be effective only for large organisations. In contrast, TRACSME uses transfer learning - a breakthrough AI training method. The method mitigates the data barrier and enables SMEs, comprising 99% of UK businesses, to enjoy the benefits of AI productivity tools.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BREEDR LIMITED	Smart Contract & Productivity Platform for Livestock	£338,544	£236,981
DUNBIA (NORTHERN IRELAND)		£57,535	£28,768
Imperial College London		£101,747	£101,747

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Project description - provided by applicants
This project sees the development of innovative Smart Contracts for the meat and livestock sector using distributed ledger technology (DLT) or blockchain to capture the complicated flows of data and transactions between multiple parties. Smart Contract based Productivity for Global Livestock will have a material impact on the productivity and traceability of the industry. By reducing contracting time, increasing data security and improving transparency, farmers, processors, retailers and consumers will benefit from greater access to new markets, produce and pricing, while further enhancing the UK position as a leader in the agricultural technology industry.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
BLOCKCHAIN VENTURES LTD	Evershare	£486,674	£340,672

Project description - provided by applicants

The music industry is a complex system of organisations, firms and individuals. It has undergone dramatic changes in the 21st century, with digitisation providing both new business models and opportunities for rapid growth of individual artist's popularity. This is a large and fast-growing industry in the UK, with \>6% growth in 2016, and a total economic contribution exceeding £4.4bn.

Much of the complexity lies within the interrelation between an artist, their compositions or recordings, music distributors (e.g. Spotify, iTunes and traditional record labels) and collection agencies (e.g. PRS for Music).

Artists are faced with two key challenges within the current system. Firstly, they lack understanding of the collection agency system, including how the assertion of copyright links to association with income. Secondly, the significant lag in payment of royalties to artists (often \>12 months). This is particularly challenging for emerging artists.

To respond to these challenges, we propose Evershare. Evershare allows artists to quickly raise money through fan investment and to optimally manage collection of PRS dues through clear copyright management, all underpinned by nascent blockchain technology.

Building on our Blockitdown.com copywriting service, we will create a platform that combines blockchain technologies with a modern digital framework to deliver a new, disruptive market offering for music creators and fans worldwide. Specifically it will:

1) Create a unique fundraising platform which auctions shares of the future income generated by individual recordings.

2) Provide a new mechanism for artists to ensure total collection of their owed income from collection agencies and full assertion of their intellectual property,

3) Utilise blockchain technology to allow detailed micro-transaction processing and automated, enduring, smart contracts on a large scale.

4) Create a new market of tradeable digital certificates/posters asserting part-ownership of a band's work.

Our prototype platform has two uniquely innovative elements, each independently novel:

1) The unique investment platform, which links crowd sponsorship to certificated part-ownership of artistic works - allowing fans to make money from sponsorship.

2) The creation of a secondary trading platform. The share certificates themselves, cryptographically protected, are a tradeable resource with both fiscal and 'memorabilia' value.

The importance of allowing fledgling performers timely access to their earnings cannot be overstated. The music industry is hamstrung by the entry barriers for new talent and digitalisation highlights the mismatch between opportunities for quickly distributing music and artist's ability and the time required to earn revenue from it. Evershare provides a solution.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
PARAGRAF LIMITED	Replacing Indium Tin Oxide (ITO) with next-generation graphene in electronic devices	£349,684	£244,779
Queen Mary University of London		£149,841	£149,841

Project description - provided by applicants

This is a disruptive project to replace Indium Tin Oxide (ITO) by next-generation graphene in a range of electronic and light emitting devices. ITO is the most common transparent conductive material used today because of its high electrical conductivity, high optical transparency and ease of deposition. Because of this remarkable combination of properties, ITO is currently used in a large number of applications, e. g. solar cells, displays, LEDs, OLEDs, touch panels, smart watches, etc. More than 90% of the display market uses ITO. However, ITO is expensive and costs 1700 Euro/kg. In addition, Indium is on the EU Critical Materials List, and is stated to have an "irreplaceable role in industry and society." There is therefore an urgent need to replace ITO. The global market for ITO is $2.6 billion per year and rising. Replacing ITO is therefore a huge market opportunity.

Paragraf, a recent spin-out company from Prof. Humphreys' group, has developed a new way to grow large-area graphene (up to 8-inch diameter so far) using a modified CVD method. We call this "next-generation graphene". In the normal CVD process the graphene is grown on copper. The copper-contaminated graphene then has to be removed from the copper and transferred onto the desired substrate. Because of these problems it has not been used as an ITO replacement. Our next-generation graphene can be grown directly on substrates such as silicon and it is free from metallic contamination. Replacing ITO by our graphene will be transformational.

The following UK companies are keen to support this project by donating materials upon which Paragraf will deposit graphene. IQE will supply test structures of GaAs electronic devices. Plessey will supply GaN/InGaN LEDs. Verditek will supply silicon solar cells. In addition, QMUL will grow OLEDs on Paragraf graphene. Forge Europa will perform accelerated reliability tests on our devices, donating their time.

We will use cutting-edge science to optimise Paragraf graphene for each application. Optimising graphene involves varying the number of layers, the doping, the growth temperature, etc. This will be challenging. Not only will we measure the conductivity and transparency of our next-generation graphene, we will also study the nature of the chemical bonding of our graphene grown directly on silicon, sapphire, etc., which is currently unknown. So this project goes from basic science through to real applications. We aim to make Graphene useful for manufacturing electronic devices for the first time in the world.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ATG UV TECHNOLOGY LIMITED	UV-SEA - UV water treatment system for sub-SEA factories	£377,356	£226,414

Project description - provided by applicants

The subsea factory concept, being developed by the oil and gas sector's need to develop new cost effective ways of extracting oil and gas reserves. Hence their decision to invest heavily in the development of subsea equipment for enhanced oil recovery.However as many of the subsea factories will be located in deeper waters (up to 3km) and harsher environments it is imperative that equipment can function remotely with little or no maintenance requirements so as to minimise operation and maintenance costs. For example, water-injection systems require filtration using expensive membranes with limited lifetimes (require changing after 6-12 mths at a significant cost per site) and disinfection using biocides which require storage, pumping and injection into the system. Therefore there is a real demand for technological solutions which can help to minimise lifecycle cost (capex and opex) and maintain production up-time. UV-SEA focusses on developing a solution to increase the lifetime of filtration membranes to meet the well site operators requirements and in so doing will significantly reduce capex/opex and maintenance. This will be achieved through the development of a highly disruptive water treatment technology for subsea injection. This has the potential to fundamentally change the industry, massively reducing cost and increasing safety and allowing access to current resources that are currently unviable due to technical reasons such as reservoir depth.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
EDDYSENSE LTD.	HiF-PD: Development of advanced performance eddy current testing technology based on high frequency phase discrimination.	£218,736	£153,115

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

Non destructive testing is used extensively across a number of industries, where there is a need to detect anomalies and defects in engineered components, without destroying them. The most demanding applications are in equipment used in industries such as oil and gas, aerospace, and power generation, where components are safety-critical, of particularly high value and subject to extreme operating conditions. Non destructive testing, during manufacturing and service can identify, for example, cracks caused by manufacturing or material issues, delamination of surface coatings, porosity, and cracks caused by fatigue due to cyclic and thermal loads.

To address a multitude of different application requirements, there are many different techniques used in non-destructive testing; these include ultrasound, magnetic-particle, liquid dye penetrant, visual, eddy current, and X-rays.

Techniques based on magnetic disturbances induced in conductive materials by eddy currents (as discovered by Faraday in the 19th Century, and employed in non destructive testing commercially since the 1950s) are useful in a number of applications, including the detection of surface and near sub-surface defects in metal parts. However, the technology's capabilities have not kept pace with the advances in the components it is employed to evaluate. Manual liquid dye penetrant techniques have been in use since the late 19th century in similar applications. The process has high 'resolution' in skilled hands, and remains the mainstay of non destructive testing for surface defects in some of the most advanced engineered components. However, the technique has a number of disadvantages, including the subjective nature of interpretation of results, high operating costs, toxic consumables, lengthy testing times, and the need to thoroughly prepare the surface prior to testing.

Using innovative electronics and analysis techniques, Eddysense is developing the next generation of capability in eddy current testing. Our technology will allow for detection of smaller defects, in a wider range of materials, than is currently possible with the state of the art. Where manufacturers and maintenance providers are currently reliant on the aged liquid dye penetrant technique, our technology will provide a much cleaner, safer and more reliable solution to the challenges of those involved in some of our most advanced engineering.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
ADWIATHMAAK U.K. HOLDINGS LIMITED	Production of high-quality pharmaceutical and medical chitin and chitosan from squid pens	£318,956	£223,269
Imperial College London		£136,615	£136,615

Funders Panel Date: 25/09/2018

Project description - provided by applicants

Chitosan is a natural polymer which once processed, yields a scientifically and commercially significant biopolymer with a broad range of applications including fertilisers, packaging and a number of healthcare products depending on its quality and purity. In the medical field, chitosan has received great interest for the development of next generation pharmaceutical and biomedical applications due to its antitumour, immunoenhancing, antimicrobial and hypocholesterolemic properties and demand for chitosan is high (global market forecast to reach approximately £3.3bn by 2027 of which high quality pharmaceutical and biomedical chitosan will represent approximately 53%).

Currently, commercially available chitosan is primarily manufactured from alpha-chitin sourced from the exoskeleton of crab and shrimp (an abundant by-product of the fishing industry). In addition to the high cost (up to £1500/kg), the low quality and irreproducibility of this chitosan makes it suboptimal for most medical applications and represents a key barrier to the progress of significant research in this field, as product inconsistency directly contributes to variable research results in pharmaceuticals and medical devices.

Responding to rising global demand in the pharmaceutical and biomedical sectors for high quality, chitosan and addressing product quality and consistency concerns, this project seeks to develop an advanced process to produce medical-grade chitosan from the highest quality beta-chitin (superior for biomedical purposes due to the alignment of polymer chains, offering the greatest opportunity for the derivation of pharmaceutical grade chitosans) sourced from a currently underutilised marine waste (squid pens) of the food processing industry. The project lead, Tigmak Natural Polymers, has secured a sustainable raw material supply from accredited wild fisheries through a network of squid pen processors in Europe. In collaboration with leading biomaterial scientists at Imperial College London (ICL), Tigmak will develop advanced protocols to extract beta-chitin from the raw material to formulate chitosan of varying molecular weights for biomedical applications to be tested at lab-scale. Outcomes from this work will enable Tigmak to accelerate towards further development, scale-up and commercial production in the UK at the end of the project, taking advantage of a significant business opportunity and addressing the needs of a fast-growing global chitosan market.

The availability of higher quality, reproducible and more affordable medical-grade chitosan will stimulate further growth and innovation into the use of chitosan for advanced biomedical applications to address unmet healthcare challenges, whilst diverting a waste product from landfill and reducing economic loss in the food processing industry.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
CAMVERTEC LIMITED	Feasibility assessment of a novel ultra-efficient flywheel technology, CamFly, for energy storage applications	£98,503	£68,952

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 has been a growing interest in Flywheel Energy Storage Systems (FESS) for various applications. The renewable sources can benefit from FESS to match the supply to demand on a power grid and hence reducing the reliance on gas/oil turbine peak power generation. Furthermore, large industrial uninterruptible power supplies (UPS) can benefit from FESS technologies instead of batteries in order to eliminate the need for containment and disposal of hazardous materials such as lead, toxic gases and electrolytes. However, the main barriers to the growth of FESS market are their relatively high capital and O&M costs.

More than a decade first-class research on Flywheel energy storage systems at Cambridge University and more recently at Camvertec Ltd has developed a low-cost and reliable flywheel energy storage technology, CamFly, with attractive performance and promising exploitation prospects. The key aspects of CamFly innovation are its bearing-free and pump-free operation, as well as the low-cost Motor/Generator (MGen) Drive and its associated fractional-size power converter.

The FESS market growth will be further strengthen by efficiency and environmental legislation due to be implemented in 2020, which will require energy storage manufacturers to seek improvements in energy efficiency and more eco-friendly technologies. Low-efficient technologies such as Capacitors and Pumped storage, as well as environmentally damaging technologies such as chemical batteries, will be required to be replaced. CamFly technology is ideally placed to take advantage of this market realignment.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
RISE FINANCIAL TECHNOLOGIES LTD	Digital Asset Custody	£281,790	£197,253

Project description - provided by applicants
London is the most international financial centre globally; to retain that status it must remain on the cutting edge of financial innovation. Digital assets are one such area that require the attention of innovative financial technology firms based in the UK such as RISE Financial Technologies (RISE). In order for financial services firms in the UK to remain competitive in a post Brexit world they must deploy new servicing capabilities for the fast growing world of digital assets. Blockchain has demonstrable disruptive power. It has already created a new asset class without conventional issuers or underwriters and inverted all forms of intermediation. Blockchains will become increasingly critical to doing business globally; the digital assets created on blockchains require new innovative servicing capabilities for the investors and holders of those assets. RISE, with more than 100 years of collective experience in the custody and technology sector, is dedicated to building on this innovative new technology to deliver an equally game-changing series of effects to the servicing of these new financial instruments. These new services will meet the needs of investors and will fully integrate into financial services firms' legacy environments allowing them to offer services for all asset types including digital assets. In layman's terms, this means which digital assets they can support, how those assets are deposited or withdrawn from accounts, how those assets are serviced and monitored and the rules for risk management, compliance and legal considerations. If you choose to do so, holding digital assets should be as easy as opening an account with your banking partner today and should be compatible with your back office practices as when investing in equity or fixed income instruments.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
VISION ENGINEERING LIMITED	High-Power Stereo (HPS) system; a novel, optical arrangement aimed at achieving stereo (3D) microscope imaging at industry-leading magnification levels	£414,301	£248,581

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
Stereo microscopes products are able provide users with a magnified three-dimensional visualisation of a sample being analysed. However, the degree of magnification is up to 10 times lower than conventional mono compound microscopes, rendering them less useful for many applications, such as life science applications whereby users must interact with biological components on the cellular level. Due to the underlying physics and the mechanical constraints of conventional stereo microscope arrangements, it is not possible to appreciably improve beyond current state-of-the-art magnification levels without significantly impacting image clarity and resolution. Vision Engineering Ltd (VE), a global leading-edge manufacturer of stereo microscopes and non-contact measuring systems proposes to develop a new technology, called High-Power Stereo, which will achieve high-resolution stereo imaging at comparable magnitudes to state-of-the-art compound mono microscopes (up to 1000x), a so-far unsurmountable challenge with huge commercial potential.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
MATERIALIZE.X LIMITED	Development of a sustainable adhesive for Medium Density Fibre board manufacturing	£99,612	£69,728

Project description - provided by applicants

Wood that was not traditionally fit for construction can be enhanced by disassembling it in various manners and reassembling it then with adhesives, creating a class of materials known as "engineered wood". Engineered wood is one of the building materials that is most commonly used in the modern world for floors, wall panels and furniture because it's cheap and strong. It includes things such as particle boards, plywood, Oriented Strand Board (OSB) and Medium Density Fibreboard (MDF).

Many of the adhesives used in their manufacturing usually employ a chemical called Formaldehyde, which allows for very strong bonds. However there are several serious issues with it. The first is that it poses a danger to human health, as it is a known irritant and was recently classified as a potential cause of cancer. It is released during the life of an engineered wood panel, and it contaminates the indoor environments most people live and work in. This is an enormous issue: the Royal College of Physicians estimates that poor indoor air quality is costing us £20 billion every year. Another problem is that the presence of this chemical in the wood makes is harder to recycle or use as fuel at the end of its life cycle.

Governments and consumers around the world have been pushing for alternatives, especially made from sustainable biological materials. But many of them have proven to be difficult to implement, because of poor mechanical characteristics or lack of raw materials necessary to manufacture them. As a result, industries are suffering huge losses in the amount and quality of the boards produced in their factories. This is putting companies and jobs at risk everywhere, especially with UK companies, which are facing stiff competition: already the UK imports 10 times more engineered wood than it exports.

Materialize.X aims at creating a sustainable, bio-based adhesive solution as an alternative to existing formaldehyde adhesives, for the purpose of MDF production, which is one of the most commonly produced types of engineered wood in the UK. The company will start from an existing product tailored for Particle boards. This adhesive will be made from a non-food biological stock that can be rapidly scaled and is completely renewable.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
URBAN PROPTECH LIMITED	The Urban Collective: Democratising Rental 'Search and Finalise' Services Through AI	£490,280	£343,196

Project description - provided by applicants
The Urban Collective is an early stage UK SME seeking to redefine the property rental search process, taking a currently tenant driven process and providing a transparent and efficient end-to-end solution that significantly reduces the time requirements of busy tenants. The Urban Collective was founded following the founders' frustrating experience with rental searches, with a goal to democratise the rental service through an AI-driven search that combines cost-effective nature of online searches and effectiveness of human support.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
CHIARO TECHNOLOGY LIMITED	Chiaro - empowering products for women	£494,740	£346,318

Project description - provided by applicants

Chiaro is a pioneering UK technology company, specialising in devices targeted towards women's health. Its lead product, Elvie Trainer, is an award winning pelvic floor exerciser and tracker.

The proposed project will accelerate the development of Chiaro's third innovative product, a new connected device designed to have a substantive impact on women's lives.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
ATWELL INTERNATIONAL LIMITED	Over-speed and Uncontrolled Movement Detector with Emergency Brake Release & Remote Reset (SafeLift)	£291,489	£204,042
COOMBER ELECTRONIC EQUIPMENT LIMITED		£108,969	£76,278

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
SafeLift will be the first of its kind to react, deploy and stop the lift in freefall from a landing within a maximum of 700mm ensuring it will be the safest available. It will use multiple sensor control and integrated safety gear to stop the car. It will record and remotely report all events especially if a malfunction is detected, thus delivering real-time safety capabilities and data to key stakeholders. Two UK SME companies, Atwell International Limited and Coomber Electronic Equipment Limited have collaborated to produce this UK designed and manufactured fully certified safety system for the UK, Europe and RoW lift industry. This development will create benefits for the UK including increased revenue, job creation, including apprenticeships and graduate posts, along with supporting the government's efforts towards environment change.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
FLOCK LIMITED	Flock: A global, real-time drone insurance platform providing risk-assessed and customisable policies in an autonomous world	£496,342	£223,354

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

As drones are new and fast-growing market, insurers lack the historical data that would allow them actuarially quantify the possible losses, and therefore they are forced to guess the claims they will incur. This has a negative impact on the final users- the price is over inflated and simply based on market dynamics. In order for drones to fly safely, with minimal disruption and invasion of privacy, a technology is necessary that can identify, quantify and minimise risks and feedback this data to the user.

Flock solves this by meaningfully quantifying risk, and pricing per-flight policies accordingly. The riskier the flight, the more expensive it is, saving money for the safest users. This creates an incentive for safety, that brings wider benefits in the form of increased safety**.** ?Flock's? ??app? ?provides? ?drone operators? with ?a? ?map? ?of? ?their? ?local? ?environment;? ?drone? ?operators? ?can? ?use? ?the? ?app? ?to? ?identify the? ?potential? ?risks? ?around? ?them,? ?receive? ?real-time? ?weather? ?and? ?air traffic updates,? ?to better? ?understand? ?their? ?airspace? ?and? ?the? ?risks? ?their? ?drone? flight? ?poses to itself, the public (third parties) and property/infrastructure

By using data from constantly updating global APIs (satellite/weather/GPS/regulatory) and databases to accurately model the risk of each specific journey, Flock's real-time, high-fidelity risk mapping solution aggregates relevant environmental data at the point of take-off, combining this with drone specs and pilot information in order to accurately quantify the risk of any given drone flight. The result is the world's most advanced drone insurance platform, capable of distributing fully customised insurance policies to pilots in a matter of seconds, and for a small fraction of the cost of traditional annual policies. Pilots flying with Flock avoid prohibitively large up-front insurance costs, instead incurring costs only when they fly and easily transferring these costs to their customers if required.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
WIRTH RESEARCH LIMITED	Wirth Air Door	£378,594	£265,016

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 Project aims to solve the problems caused by temperature differences between a building and its external environment -- a problem exacerbated by wind -- to a level far in excess of the existing market-leading solution, the Air Curtain, which themselves consume vast amounts of energy. The device being developed, which will form part of the infrastructure of a building's entrance, will allow retailers and other commercial buildings to maintain their preferred 'open door' policy, without the associated energy loss and all of its associated issues. This policy, despite Air Curtains being widely deployed, is estimated to cost UK retailers over £1billion per year. The Project will yield a full-sized, fully functioning and tested prototype of the device.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
SKIPPING ROCKS LAB LIMITED	Development of the automated Ooho! Machine - reducing single use plastic packaging for <100ml liquids, condiments and cosmetics through seaweed alginate membrane	£451,030	£315,721
LUCOZADE RIBENA SUNTORY LIMITED		£30,883	£15,442
VITA MOJO INTERNATIONAL LTD		£17,959	£12,571

Project description - provided by applicants

NEED: The UK throws away 35m plastic bottles and containers each year, only 32% of which is recycled. As developers of the Ooho - a unique, patented, natural membrane packaging derived and manufactured from seaweed extracts, our aim is to reduce and replace the use of plastic in single use packaging for liquids, sauces and gel sachets by the development, manufacture and roll-out of the technology.

APPROACH: Having perfected the strength, structure and shelf-life of our liquid membrane technology, we now need to develop the hardware machinery so that suppliers can produce and fill the membranes on site -- replacing current single-use plastic packaging for liquids (water, alcoholic shots), condiments (sauces, salad dressings), gels (energy gels) and cosmetics (shampoo, conditioner) <100mL.

SIGNIFICANCE: Our alginate material cheaper than plastic as input material however presently all Oohos are manufactured and filled semi-manually at our London HQ (100 per day), meaning that despite commercial interest, we are unable to meet demand or produce them on a cost-competitive manner. As part of our long-term growth strategy, our goal is to develop an automated machine (similar to a barista coffee machine) to produce Oohos at scale (3,000 per day) on a client site - either restaurant, takeaway, vending machine or in store - serving single-use liquids.

FOCUS: Working with partner Lucozade Ribena Suntory (energy drinks & gels) and Vita Mojo (sauces & salad dressings), the project focuses on overcoming the technical difficulties associated with designing and developing a unique, automated, customer machine to manufacture and fill 3000 Oohos per day, without compromising structural integrity or consistence, in high volumes with a variety of liquids (energy drinks, gels, sauces and salad dressings).

OUTCOME: Our alginate packaging is naturally sourced, biodegradable, robust (thanks to the previous IUK project) and is even edible. The only issue holding back its adoption is its manufacture, which we hope to address with this project, are we already have a number of high-profile early adopter lined up in our key markets.

In line with UK GOVs 'Plastic Pact' 2025 commitment, by developing manufacturing at scale capability, seaweed membrane will be cost-competitive with that of single-use plastic packaging, enabling retailers to replace plastic for single-use liquid items under 100ml. This in turn will save considerable CO_2 in waste, reduced transport costs, plastic production and enable us to take advantage of global interest in the technology, spearheading the use of natural, plastic alternatives.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
AMBIENTAL TECHNICAL SOLUTIONS LIMITED	Auto-Calibration of Global Flood Forecasting Systems using Artificial Intelligence	£170,580	£119,406

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

Floods are the most common natural disaster and the leading cause of natural disaster fatalities worldwide. There were 539,811 deaths (range: 510,941 to 568,680), 361,974 injuries and 2,821,895,005 people affected by floods between 1980 and 2009 (Source: PLOS). Globally, economic losses due to flooding increased from roughly US$7 billion per year in the 1980s to US$24 billion per year in 2001-11 (adjusted for inflation).

Flood forecasting is one of the most challenging and difficult problems in hydrology. It is also one of the most important problems in hydrology due to its critical contribution in reducing economic and human damages. In many regions of the world, flood forecasting is one of the few feasible options to manage floods. Reliability of forecasts has increased in recent years due to the integration of meteorological and hydrological modelling capabilities, improvements in data collection through satellite observations, and advancements in knowledge and algorithms for analysis and communication of uncertainties. However, scalability of flood forecasting technologies is still limited by the time and resources it takes to calibrate (or tune) parameters in hydrological models such that the forecasts are accurate.

This project aims to address this question of scalability by utilising the recent advancements in AI and Machine Learning along with the wealth of data now available to automate the process of calibration.

We will use the probabilistic programming approach which enables data, expert human knowledge and machine learning to work together to provide optimal, rigorous and reproducible automatic calibrations.

Achieving an automatic Machine Learning calibration of hydrological models would remove the current bottleneck, enabling faster and more accurate flood forecasts. This will permit more flood forecasts over wider areas, all of which leads to less economic damage and a reduction in the risk and negative impact that flooding can bring to peoples' lives.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
GURU SYSTEMS LIMITED	Guru Verify: real-time, cloud-based, machine-learning commissioning tools to radically improve performance of heat networks	£363,802	£254,661
FAIR HEAT LIMITED		£40,345	£28,242
London & Quadrant Housing Trust		£8,162	£8,162

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

Heat networks connect heat sources (such as combined heat and power plants, geothermal or industrial waste heat) with homes and businesses through a network of insulated pipes carrying hot water. They are a well-established technology in Europe and, while they only provide 2% of the overall UK heat demand, it is estimated that this could rise to 43% by 2050.1

Achieving this growth is an essential part of decarbonising the UK's building stock, which is a key target in the 2017 Clean Growth Strategy and a legal requirement under the Climate Change Act.

Almost half the final energy consumed in the UK is used as heat. It is estimated that heat networks can reduce carbon emissions by up to 42% for domestic dwellings, and provide an overall reduction of 5.7 MtCO2 from all buildings by 2030\.

Alongside carbon savings, heat networks also help combat fuel poverty, with customers paying on average £100 p.a. less than those using individual gas boilers; contribute to the UK's energy security by reducing the need to import gas; and, provide an important source of local job creation, among other benefits.

However, even where networks are well-designed, they are rarely commissioned properly, resulting in high heat loss, increased fuel use, increased costs for both the network operator and final consumer, and extremely poor customer experience.

Current commissioning practices are poor as doing it properly is expensive and time consuming, and as contractors are not incentivised to invest the required resources it is not undertaken uniformly across new networks - ESCOs might manually sample 10% of dwellings before adoption, allowing un-commissioned networks into operation.

The Guru Verify project is designed to improve the commissioning process by providing a data-driven commissioning tool that allows contractors and network operators to quickly and cheaply verify performance in real-time on 100% of end customers on a network.

The project builds on Guru System's previous work with SBRI, their existing real-time data analysis, and Fairheat's extensive experience delivering commissioning services on site, to develop a commissioning methodology, site tools and cloud-based software to make 100% verification simple and cheap for low-skilled technicians.

Our real-world results on the SBRI project showed that proper commissioning alone can reduce heat losses on networks by nearly 70%. When combined with proper design, improved commissioning is projected to result in £200m in savings over 10 years.

1. https://www.gov.uk/government/news/7m-boost-to-heat-industry-innovation

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
TOUCH FANTASTIC LIMITED	Enhancing learning and reducing teacher workload through intelligent resource classification and file management	£331,746	£232,222

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 vision for this project is to revolutionise resource-sharing in schools to save precious time for teachers, spread best practice and empower learners. It aims to assess the feasibility of integrating a new feature into the Sparkjar platform: Sparkjar Smart Resources (SSR) - an innovative leap forward for school learning environments which will facilitate an even bigger reduction in the planning and administrative workload for teachers and enable more students to quickly access higher quality resources.

This project will use the current Sparkjar app as a test-bed for assessing feasibility of SSR to:

* Remove time wasted by students in lesson and homework time waiting for resources to download to device.
* Enable teachers to say goodbye to navigating complex folder structures and laboriously tagging or labeling resources and reduce the time that teachers spend finding/sharing resources by 50%.
* Remove teacher time wasted through unnecessarily recreating resources.
* Create a step change in the culture of sharing, adapting and updating resources.

This project tackles a long neglected area of day-to-day teacher tasks with a modern toolset. We will be using the latest machine learning tools available for native iOS development and applying fuzzy fingerprinting technology in a new area - flipping its purpose from preventing copying to encouraging sharing. A smart combination of on-device and cloud-based software and clever data processing will make SSR a slick and growth-boosting addition to the Sparkjar app.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
PERPETUAL RESEARCH CONSULTANCY LTD.	Magnetic Induction Heating for Pest Control – Technology Demonstrator	£145,850	£102,095
AUTOHEAT INDUCTION LIMITED		£142,850	£99,995
WRL CONSULTANCY LIMITED		£142,850	£99,995

Project description - provided by applicants

There is an acute need for an affordable, sustainable solution to the escalating problems of pest control in horticulture and agriculture, and magnetic induction heating can provide a resolution. Invertebrates are small-sized poor electrical conductors, but because they are hundreds of times more electrically conductive than plants, induction heating rates are proportionately higher, allowing invertebrate pests to be efficiently killed while leaving host plants unharmed. With no toxins, the big gains will be its specificity; induction heating is safe outside its narrowly-focused treatment-zone so we would anticipate that there will be little regulation on its use, making the technology appropriate for unmanned vehicles.

Our team has proven the concept of magnetic induction heating for pest control using our own high-powered megahertz-frequency induction heating technology. However, the work has only been conducted at bench-scale, and the frequencies and mobility required for commercialising this application extends well beyond what is currently considered normal for traditional induction heaters.

This 18-month study will test the feasibility of scaling-up the power electronics and build a high-frequency magnetic field generator technology demonstrator for the horticultural sector to target vine weevil and other pests for ornamental growers. The project partnership is formed from three micro-SMEs. It will be pushing hard at the boundaries of magnetics technology and generate valuable world-wide intellectual property.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
THE PJH PARTNERSHIP LIMITED	The preservation of modern materials in significant contemporary art works through surface stabilisation	£57,204	£40,043

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 aim of this feasibility project is to develop an ultra-thin coating technique to cover complex multi component plastic forms of cultural significance which aids in the preservation of the materials. The coating will be formed on the surface of the item by the consecutive delivery of acrylate monomers via a supercritical carbon dioxide (scCO2) solvent. On mixing, the quick polymerisation will rapidly develop a sealed transparent protective coating, analogous to a varnish on the surface. Many contemporary artworks are made up of or contain plastic formulations that are subject to degradation due to to hydrolysis and exposure to harmful UV rays. Here the aim will be to seal such items from air and/or water and light whilst allowing them to remain on display. Coating using acrylate plastics will be the focus of the study as they are known to rapidly form strong and clear 'varnishes' that are also chemically very stable once formed. Any existing conservation varnishes are considered to be too thick and thus very invasive if applied to these complex mixed plastic formulations. This scCO2 technique will deliver micron thickness polymer coating to stabilise the materials without affecting their material or visual integrity, which is essential for applications in art conservation.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
RENDER NATION LIMITED	RenderNation OneQ	£63,910	£44,737

Project description - provided by applicants
OneQ is a project that sets out to develop a turnkey solution for hybrid rendering. The OneQ product will be an on-premises appliance predominantly aimed at micro-to-small CGI/VFX and animation studios. It will provide local and remote artists access to a unified and scalable render queue management tool, that can simultaneously harness in-house render compute and cloud based IaaS render compute (public and private). In addition OneQ will also provide a simple but flexible user interface to manage: software licensing, storage, disaster recovery, remote user access and secure network configuration.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
LIGHTPOINT MEDICAL LTD	Transforming prostate cancer surgery with laparoscopic electron detection	£82,226	£57,558

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

Prostate cancer is the most common cancer among men with 12,000 men in the UK succumbing to the disease every year. Surgery remains the primary treatment option for prostate cancer but is very often unsuccessful, largely due to incomplete removal of cancerous tissue during an operation. In particular cancerous cells around the primary tumour and lymph node metastases can be frequently missed during surgery.

Surgeons often fail to remove all of the cancer because there is no way to detect cancer during surgery. They are completely dependent on their naked eye and sense of touch to identify all of the cancerous tissue. With the move towards minimally-invasive surgery now surgeons have even lost their ability to use their sense of touch. Numerous technologies have attempted to address the pressing medical need to find cancer during the surgery but none have proven sufficiently accurate and cost-effective.

Lightpoint Medical is developing a laparoscopic probe called EnLight to detect prostate cancer intraoperatively. The device detects gamma and electron signal from an imaging agent administered to the patient prior to surgery which concentrates in cancerous cells. The gamma signal is of sufficient depth to be able to guide surgeons to cancerous spread within the lymphatic system. The electron signal has a small penetrative depth and therefore can guide surgeons to any remaining cancerous tissues surrounding the primary tumour site.

The technology potentially offers rapid and high diagnostic performance during surgery, promising a complete transformation of patient outcomes. Laboratory proof-of-concept for the laparoscopic probe has been achieved. This project is a short work programme to further optimise the electron detector to ensure full compatibility with clinical needs before proceeding to clinical testing. The aim of the project is to develop a data processing algorithm to increase the electron signal. The outcome of the project will be a pre-clinically validated device ready for first-in-man testing.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
ABINGDON HEALTH LTD	Dual Capability Time-resolved Fluorescence and Colourimetric Based Lateral Flow Reader for High Sensitivity Diagnostics Applications	£248,220	£173,754

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

Lateral flow assays (LFA) are diagnostics tests where a liquid sample is applied to a small nitrocellulose membrane pre-patterned with reagents for detection of particular proteins, cells, chemical molecules or microorganisms. The existing market is worth circa $5.5bn per annum (Source: MarketsandMarkets 2017 Lateral Flow Assay Market Report) with LFAs used for numerous applications including human diagnostics (e.g. infectious disease, drugs of abuse), animal health, agricultural, food monitoring and environmental testing. Most of the existing tests, such as pregnancy tests, are based on the presence or absence of coloured lines generating a positive or a negative test result.

For many applications this qualitative result is sufficient and in fact the application of LFAs is largely limited to qualitative or semi-quantitative tests. However, there are many other uses when determining how much of the analyte is present is required. For example: in human health, testing of cardiac markers; in animal health, the use of antibiotics in animals; in agriculture, mycotoxins in food. There is a significant requirement for laboratory-standard quantitative LFA results in a point of contact (POC) environment and in particular a LFA reader system that allows quantification with very high sensitivity.

Our vision is to develop and launch a highly flexible, cost-effective, leading-edge lateral flow reader platform that delivers laboratory standard test results in a POC environment. Time resolved fluorescence detection (TRFL) technology has the potential to revolutionise diagnostic testing across a range of areas including the clinical, animal health, environmental and agri-tech testing markets through enabling a paradigm shift to higher sensitivity LFAs. Our objective is to test the feasibility of a novel lateral flow test reader which can read both colourimetric and fluorescence, specifically TRFL, based tests in a single desktop instrument that is suitable for use in a variety of settings including GP surgeries, veterinary clinics and farms. Our technique will use long-life Europium based fluorophores to highlight the analyte. Using the long decay time property of this label, we will design a novel system which isolates our signal of interest from the background noise by separating them in time by a time-gated technique. To our knowledge there are no LFA readers supporting simultaneous dual-signal-detection technology commercially available or in development. This innovation provides cost-effectiveness by enabling quantification of analytes previously unmeasurable on a compact, desktop system as well as allowing one reader to be used to measure different LFA types.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ARECOR LIMITED	Development of a superfast acting prandial insulin	£498,394	£348,876

Project description - provided by applicants

There is a recognised unmet medical need to develop insulin products with a significantly faster onset of action compared with the current state-of-the-art prandial insulin products (Novolog, Humalog, Fiasp). Prandial insulin is used by diabetics to control blood glucose rises after meals. To ensure effective blood glucose management and the best patient outcomes it is essential that, once injected, insulin begins to act as rapidly as possible. In a healthy individual insulin is released very quickly in response to a rise in blood sugar reaching half maximal concentration in 16- 18 min which is approximately twice as quickly as state-of-the-art injectable rapid acting insulins. There is evidence to demonstrate that for Type 1 and Type 2 diabetics, an even faster acting insulin (Superfast) will lead to better control of blood glucose rises after meals and greater treatment flexibility. Superfast insulin is also a key component required for the development of efficient closed-loop pump systems that would enable automatic glucose control, continuous glucose measurement and smart algorithms to control how much superfast insulin to deliver via an integrated insulin pump. The primary output from this project will be a safe and stable Superfast acting insulin that closely mimics physiological release of insulin, ultimately reducing complications and improving patient outcomes. The effectiveness and safety of the developed technology will be evaluated in model systems to ensure the desired profile is met and generating a tangible asset for partnering with key Pharma companies under a well validated licensing model. Further value is added via the development and implementation of drug product manufacturing. Superfast acting insulin represents a considerable scientific innovation over the current state-of-the-art and a significant commercial opportunity to develop a superior therapeutic product for the management of diabetes. Almost 80% of diabetes treatment costs are spent on disease complications. With an ~14bn p.a. direct cost of diabetes to the NHS there is an excellent opportunity to benefit the U.K. in terms of both socio-economic factors and scientific innovation.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SKYROOM LONDON LIMITED	HEART (Housing Essential key urban workers with Affordable Rooftop Technology)	£234,597	£164,218
URBAN INTELLIGENCE LTD		£100,445	£70,312

Project description - provided by applicants

Business Need -- Urban homes are unaffordable to key urban workers, whilst there is significant low-cost urban land in the form of existing buildings' flat rooftops. UK Government is encouraging upward extensions as "Permitted Development", there is a lack of upward extension uptake.

Market opportunity -- London urban rooftop homes worth £51.2bn in 2018, predicted 3.6% CAGR to £63.3bn by 2024\. Global worth £3.9tr in 2018, 3.2% CAGR to £4.7tr by 2024\.

Project vision and innovation -- HEART will lead to affordable and accessible key urban worker housing in urban centres.

Focus area and Key objectives -- HEART would enable Industrial Research collaboration to experiment with surveying technologies and new data-driven applications.

Project - This risky project is carefully and robustly planned, considering market needs, to overcome innovation and market barriers.

Team - This project will enable Skyroom and Urban Intelligence to collaborate bringing together 10 highly-skilled and innovative R&D staff, including and lead by Arthur Kay, Skyroom's founder and CEO. The team has the necessary skills and experience to run and complete the project successfully and on time.

Sustainable Productivity and export - Following project completion, HEART will be rapidly commercialised (both UK and globally exported). HEART will create sustainable productivity and export opportunities for the project partners.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CORROSION RADAR LIMITED	Digital Twin for Predictive Corrosion Management towards Smarter Infrastructures	£200,936	£140,655
SONOMATIC LIMITED		£69,933	£48,953

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
CorrosionRADAR Ltd (CR) and Sonomatic Ltd proposes a digital twin technology for predictive corrosion management of structures. Monitoring and predicting the corrosion and, specially, Corrosion Under Insulation (CUI), which can potentially cause catastrophic failures and/or major downtime for many sectors, are the main focus of the project consortium. CR technology strives to be a global leader in remote sensing technologies and advanced analytics systems for smart infrastructures. Most of the current practices of corrosion detection use a reactive approach, manual non-destructive techniques and risk management based on very limited data. CorrosionRADAR has developed a suite of IIOT (Industrial Internet of Things) enabled sensors which could detect and locate both moisture and corrosion under insulation. This proposal aims to extend sensor capability to include temperature measurement. A predictive digital twin of the structure will be created for CUI management. Prediction model, with machine learning capability, will be through a combination of knowledge base of field CUI data, analytical and data base from extensive laboratory testing. Digital twin allows the asset manager to visualise the state of structure and carry out what if analysis for future corrosion trajectory. Success of this project will pave the way for data driven predictive maintenance, reducing maintenance cost without compromising on the safety of people, assets and environment. This will also lead to reducing downtime and can equally be applied to many sectors such as oil & gas, renewables, food processing units, chemical and thermal power plants and nuclear.

Innovate UK

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Total available funding is £20,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
IPROOV LIMITED	DELAMBDA: DEfence against Lighting Attacks on Mobile face Biometrics using local Device pre-Analysis	£243,913	£170,739
MEDIA RESEARCH PARTNERS LIMITED		£116,776	£81,743

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

Project DELAMBDA aims to develop innovative technology to extend the capabilities of online face verification systems. Building on iProov's world-leading, patented technology it introduces new variables and new analysis techniques to the task of detecting replica and replay attacks on individuals, using pioneering ways of using open standard technology that have not previously been used in a broad application context. The outcome will be greater security for citizens accessing online services, without compromising usability.

Innovate UK

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Total available funding is £20,000,000

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EMTEQ LIMITED	ALERT- Adaptive Learning Eyeware & Remote Tracking version 2.0	£244,629	£171,240

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

Fatigue causes reduced mental or physical performance. It can be caused by sleep loss, extended wakefulness, 'body clock' mismatch (jetlag) or workload. It can lead to errors, sometimes with grave consequences. Workers operating in safety-critical environments, such as pilots, air traffic controllers, and surgeons, have strictly enforced rules governing working hours. Surgeons, for example, should not work longer than 48 hours per week. However, there are examples where legislation to avoid fatigue does not exist. Private motorists and light vehicle drivers represent a far greater number of the total UK population and fatigue for these people too can have serious consequences. Analysis suggests that driver fatigue contributes to ~20% of road traffic collisions (RTCs) that result in death or people being killed or seriously injured (KSI). Some 50-70% of those affected are aged 15-35 years old and require expensive long-term care. Through disabling injuries, fatigue could cost the UK economy up to £1.4Bn per year.

Current methods of measuring fatigue are either highly subjective, self-reports by drivers themselves, or they use technology to measure bodily changes. This includes cameras that track drivers' blinking, facial expressions and head position. However, these methods are inaccurate in poor light and do not allow the use of sunglasses, limiting wider adoption.

This project offers an alternative to these limited ways of measuring fatigue. ALERT is a fatigue monitoring glasses incorporated into one of the oldest examples of wearable technology, a pair of glasses. The frame will be compatible with corrective lenses and sunglasses. ALERT will measure additional indices of fatigue, including blink parameters as well as heart rate, facial muscle activity, head posture and temperature. ALERT will enable the first individualised, objective assessment of fatigue. This will allow us to attract partners for a second project to commercialise ALERT. These partners could be insurance firms or large fleet operators, who increasingly realise that they have a legal duty of care to protect staff and the public from fatigued drivers.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
THERMAL COMPACTION GROUP LTD	Development and commercialisation of a solution for recycling and valorising contaminated hospital plastic waste	£426,194	£298,336

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
As the generation of single use plastic wastes increases within the healthcare sector, its handling and treatment is steadily becoming a serious economic and environmental issue. This continual increase in waste is forcing the government, healthcare providers and the related facilities management companies to actively explore ways to effectively utilize the generated hospital plastic waste. Currently, this waste is either incinerated or landfilled- costing up to £1000/ton to the hospitals, depending upon the level of contamination. With more than 500,000tons of plastic waste to deal with each year, NHS is actively looking to reduce the volume of plastic used and find a circular solution to prevent the landfill and/or incineration of this plastic and hence enable cost savings. We, Thermal Compaction Group (TCG), through this project aim to develop a point-of-origin thermal compaction machine 'Sterimlet-2' which will recycle all hospital plastic waste by converting them into 20kg briquettes for reuse. The Machine will initially be processing blue-wrap and disposable curtains waste but it is believed that the technology can be adapted for many other disposable plastics. Sterimelt-2 will not only divert large amounts of plastic waste away from landfill and/or incineration, but it will also reduce the carbon footprint and costs created by transporting this very lightweight and space hungry material, supporting the NHS sustainability goals.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
IBEX AUTOMATION LTD	IBEX3: robust development and commercial trial of robot weed sprayer	£140,775	£98,542
R & D Applied Biology		£16,400	£11,480
SIMON GURNEY & CO LIMITED		£18,762	£13,133

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 InnovateUK IBEX2 prototype system has been used to successfully demonstrate all the required components of a commercial system including autonomous navigation around hill farms, machine vision detection of weeds, long range radio communications and video streaming, legal and business case, and an initial human operator interface. But as a feasibility study prototype, it was not designed to an industrial level of integration or robustness. The prototype system is literally held together with baler band and gaffer tape, as well as their metaphorical research software engineering equivalents. As stage 2 industrial research, IBEX3 is a pure development project which revisits each of the system components to robustify their designs for real-world use and trial them in commercial settings for the first time, including use on new farms owned by our user group members. It also adds software and communications upgrades to operate bulk spraying on bracken-infested moorland, which was identified as a key new business area during the IBEX2 business case development. This is currently a major in-demand task due to EU helicopter spraying regulations, and we add two world commerical bracken management experts and their moorland owning client bases to our team to develop this business case and sales opportunities.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ZAPGO LTD	HESS - Hybrid Energy Storage Systems	£255,031	£178,522
HYPERMOTIVE LIMITED		£101,283	£70,898
University of Oxford		£143,228	£143,228

Project description - provided by applicants
ZapGo has developed a new class of energy storage device as an innovative solution to the slow charging problems encountered by all current lead-acid or lithium powered appliances, devices and vehicles. ZapGo's new cell technology, dubbed Carbon-Ion (C-Ion), exploits the properties of novel carbon nano-materials and electrolytes to underpin industry-leading performance, including ultra-fast charging and a vastly increased life span when compared to lithium batteries. ZapGo, in partnership with world-leading Oxford University and Hypermotive, is seeking to launch a novel Hybrid Energy Storage System (HESS) based on their patented technology and expertise in the consortium.

Innovate UK

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Total available funding is £20,000,000

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
DEMURIS LIMITED	Development of novel ansamycin antibiotics for the treatment of multi-drug resistant Mycobacterium tuberculosis	£488,800	£342,160

Project description - provided by applicants

Mycobacterium tuberculosis (M.tb) is the causative agent of tuberculosis (TB). The World Health Organisation (WHO) estimates that someone dies from TB every 20 seconds, which is around 1.7 million people per year. There is a growing emergence of M.tb strains which are resistant to first and second line antibiotic treatments. The bacterium can hide in the body remaining dormant for long periods of time, and treatments can last up to one year. New antibiotics that are effective against drug resistant strains are urgently needed. Demuris, in collaboration with Newcastle University, has identified novel antibiotics that are similar to the first-line treatment for TB but, crucially, are active against multi-drug resistant strains. This project will allow us to make a series of closely related compounds, and test these for the range of properties needed for development as an anti-TB drug.

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
GROWUP URBAN FARMS LTD.	Driving operational innovation in Controlled Environment Production (CEP) of leafy salads to enable industrial-scale UK-based production	£69,638	£48,747
GROWSTACK LTD		£0	£0
RAYNOR FOODS LIMITED		£10,614	£6,368
STC RESEARCH FOUNDATION		£21,756	£21,756

Project description - provided by applicants
The project brings together some of the UK's leading experts in Controlled Environment Salad Production, LED lighting research, horticultural engineering and food processing to develop innovative management protocols that will allow for the industrial scale application of the Controlled Environment Production (CEP) technology. The project will utilise the cutting-edge Crop Health and Protection (CHAP) CEP research facility, funded by Innovate UK to investigate opportunities for optimising materials use, minimising energy use and increasing productivity of baby leaf salad production.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
SCI-TRON LIMITED	Development and commercialisation of resist technologies for nanofabrication	£348,310	£243,817
The University of Manchester		£149,276	£149,276

Project description - provided by applicants

For the last 40 years, the semiconductor industry has been producing increasingly powerful, power efficient, and affordable electronic devices mainly due to innovative developments in lithography (semiconductor patterning) equipment and materials. Improvements in photolithography (PL) and electron beam lithography (EBL) equipments have delivered progressively higher resolution images with every generation. As part of the lithography process, 'resists' are used as materials that physically record exposure patterns on a silicon wafer as imaged from a mask. To realize the improvements in photolithography equipments, resist performance must keep pace.

Sci-Tron Ltd are developing resists which can be tailored to meet the challenges presented by all forms of lithography. This Innovate UK proposal is to build our capacity to supply the PL and EBL markets. The testing we have performed suggests we have products that can produce a major competitive advantage to many UK companies which use lithography. Developing the best business model for this diverse market-place will be a key target of this project. Currently we can produce resists in laboratory conditions at a gram scale.

During this project, we will develop a flexible manufacturing process which aims to produce a catalogue of resists to satisfy a large number of potential end-users that will have diverse needs, diverse scale and who may use either EBL or PL as a writing tool. For some resists we will need to scale-up and maintain low cost; for other bespoke resists small scale will be sufficient, but with the capacity to produce on demand and with a high profit on small amounts of material. In partnership with the University of Manchester (UoM), this 18 months industrial research project will help us developing manufacturing capability which provides flexibility to switch between different resists while maintaining the required quality control.

Key project activities include;

1) design and build a flexible manufacturing facility capable of a 20kg per annum throughput of resist, and capable of switching between different resist formulations to meet specific end-user requirements,

2) complete application specific testing with key partners to develop resist materials to TRL6, and

3) develop a complete business plan detailing the resources, distribution and supply chain required, and the value proposition, team composition and expected financial outcomes for Sci-Tron.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
CAMBRIDGE RESPIRATORY INNOVATIONS LIMITED	Transforming Diagnosis of Cardio-Respiratory Conditions using Tidal Breathing CO2 Waveforms (TRANSFORM)	£481,519	£337,063

Project description - provided by applicants

Cambridge Respiratory Innovations Limited (CRiL), of Swavesey, Cambridgeshire, has been awarded a grant by Innovate UK to develop a "market-ready" prototype of an innovative new diagnostic device for chronic respiratory conditions. The programme will take eighteen months to complete and addresses a major unmet need for better respiratory diagnosis.

Currently a clinician needs to use a range of medical devices, from peak-flow meters through spirometers and pulse oximeters to scans and x-rays, to diagnose a respiratory condition. The most commonly used devices to diagnose asthma, COPD and other chronic respiratory diseases are spirometers and peak-flow meters. Both devices are difficult for patients to use, rely on forced expiratory manoeuvres, are technique dependent and measure a respiratory proxy. Adults in respiratory distress and children cannot use these devices. Due to inadequacies with these devices, diagnosis of respiratory conditions can take far too long.

CRiL has developed an innovative epitaxially-grown III-V LED-based CO_2 sensor which is faster, more accurate and more consistent than any existing incandescent or florescent CO_2 sensor. It is not affected by condensation in the breath and is a fraction of the cost. We have developed it specifically to measure the CO_2 waveform shape in normal tidal breathing to use in low-cost personal respiratory monitors. Tidal breathing CO_2 (TBCO2) waveform shape analysis is an established but under-used biomarker for respiratory conditions. Whilst medical devices that measure exhaled CO_2 (called capnometers) are commonplace in the operating theatre, devices that measure tidal breathing CO_2 are not used in any form of respiratory disease diagnosis at the moment. CRiL has developed an unrivalled world-class database of over 25,000 TBCO2 respiratory records covering a wide range of respiratory conditions.

This industrial research project will complete the development of a "market-ready" prototype diagnostic device using CRiL's N-Tidal platform hardware to capture the TBCO2 waveform shape in the surgery, doctors office or clinic, using the parameters in the waveform shape to diagnose specific respiratory conditions. The company will be using its unique database of consistent TBCO2 respiratory records as the source data for state-of-the-art machine learning to generate a diagnostic algorithm to discriminate between the main cardio-respiratory conditions. CRiL will involve respiratory patients and experienced NHS respiratory specialists throughout the development of the technology.

Once regulatory clinical studies have been completed, this project will provide the medical profession with a new respiratory diagnostic tool and patients with faster, less stressful respiratory diagnosis.

Innovate UK

Results of Competition: Open Round 1 2018/19

Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

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
ZUVASYNTHA LIMITED	Development and optimisation of a novel bioprocess for manufacture of R-1,3-butanediol	£333,410	£233,387
TDELTAS LIMITED		£15,000	£10,500
University of Kent		£148,000	£148,000

Project description - provided by applicants

The future sustainable production of chemicals and fuels from non-petrochemical resources and the concomitant reduction of greenhouse gas emissions are two of the greatest challenges facing society. Frequently, research to address these needs has focused on the fermentation of sugar, targeting the production of key high volume, but relatively low value commodity products. Competitive production of such chemicals from sugar has proven difficult.

1,3-Butanediol, which exists in two chiral forms (enantiomers), "R" and "S", is a molecule of considerable commercial potential which, when coupled with ZuvaSyntha's proprietary technology, has unique economic bridging characteristics. The current market of ~ 30,000 metric tonnes/annum (MTA) consists largely of a (racemic) blend of R and S. A significant business opportunity exists in the high-value and expanding nutraceutical market for the R form. ZuvaSyntha's novel pathway produces the R form in the high chiral purity required for this market. ZuvaSyntha's vision is to develop and commercialise this cutting- edge technology initially to serve this specialized and growing nutraceutical market using sugar as a feedstock.

Pioneering the technology in this high- value speciality market will position ZuvaSyntha both to prove the technology and to attract the investment required to transfer the technology to an organism capable of producing the same product from low cost single carbon (C1) feedstocks such as those derived from waste biomass, industrial liquids or gases and methanol. Economic studies have shown that large scale production of 1,3 BDO from C1 feedstocks can substantially expand the market by competitively displacing alternative petrochemical feedstocks to produce high volume, low cost chemicals. Hence, R-1,3-BDO represents a bridge, starting with specialty applications in nutraceuticals, to a potential large scale sustainable and economic source for current commodity chemicals. This project will put the UK in forefront of the development of a new technology, first for nutraceutical market growth, and ultimately for a sustainable source of commodity chemicals from C1 streams.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CASCADE WATER PRODUCTS LIMITED	Cost effective, easy to use, fit and maintain domestic greywater reuse system	£288,286	£201,800

Project description - provided by applicants

Globally, water is an increasingly scarce resource. Increased demand, combined with poor and leaking infrastructure has increased pressure on existing water supply. The situation is expected to get worse, with water consumption by the public, industry and agriculture is anticipated to rise by ~16 % over the next 10 years.

In the absence of further actions to those already planned by water companies to balance supply and demand, under a high population and high climate change scenario, UK water supply deficits are projected to become more widespread by the 2050s \[Source: ASC's Climate Change Risk Assesment Report, 2017\].

In particular:

* The north west of England and the Yorkshire and Humber region are projected to be highly susceptible to supply-demand deficits, as well as London and the south-east. However, deficits are projected in other parts of the UK as well, including areas of south Wales and the central belt of Scotland.
* At a national scale, England, Scotland and Wales are projected to be in deficit by 800 million to 3 billion litres per day by 2050 (5--16% of total demand) and by 1.4 billion to 5 billion litres per day by 2080 (8-29% of the total demand).

Solutions are needed to alleviate these problems and efficient use of resources is a key strategy. With an increasing drive to reduce water consumption, it is desirable to reuse water rather than ration it through low- flow showers and low- flush toilets that don't meet public expectation when water consumption can be reduced in larger quantities by recycling shower and bath water instead.

In response to this exact market need, we (Cascade Water Products Ltd) are developing an integrated 'hard' waste water recycling system 'Aqua-Gratis'. Our technology is based on collecting grey water from showers and baths in a house, treating the water with a suitable biocide and then distributing to toilet cisterns for use as required which when fitted into urban domestic and commercial new builds.

Aqua-Gratis will provide significant cost savings and deliver tangible benefits to the householders through reducing household water consumption by at least 34% resulting in lowering water costs by an average of £170/house. It will also achieve sustainable water consumption through resilient product and actively promote water and energy saving.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
URBANTIDE LIMITED	Artificial Intelligence and Machine Learning to identify missing Non Domestic Rates using satellite imagery and other data sources	£111,138	£77,797

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 project is supporting UrbanTide to increase Council's revenue generation on Non Domestic Rates via their USMART platform.

They will use Artificial Intelligence and Machine Learning to identify missing Non Domestic Rates through the analysis and integration of various open and closed data sources.

It will fund development of their core USMART platform to offer greater functionality for public sector clients allowing them to mix their own data with other available data sources to identify rates that should be getting paid and are not.

It will give their clients greater control and unlock value in their data enabling them to make their data smart.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
REECE INNOVATION CENTRE LIMITED	Trigeneration Recovery Efficient Energy Storage (TREES) – Collaborative Technical Feasibility	£198,098	£99,049
GRENVILLE ENGINEERING (STOKE-ON-TRENT) LIMITED		£151,835	£91,101
Newcastle University		£149,864	£149,864

Project description - provided by applicants
The market potential for recoverable heat in the industrial sector is estimated to be up to 40TWh per annum. Also, renewable low grade heat, such as geothermal and solar thermal sources, is of increasing interest to support the energy mix. The TREES concept to be demonstrated in this project is a highly disruptive and versatile energy system and the IP has been protected to aid future commercialisation. This is a zero carbon emission solution based on thermochemical sorption technology providing combined thermal and electrical energy storage and the delivery of heating, cooling and/or electrical power in one integrated system. It has potential to substantially reduce fossil fuel consumption and energy demand in a wide range of applications. The theoretical foundation of the TREES concept has been proven in previous research projects through modelling and laboratory experimentation. Hence the technological know-how and understanding of each system component required to deliver this project and to demonstrate the technical feasibility of the TREES system has already been acquired.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MONITOR COATINGS LIMITED	Nano-Reinforced Coatings with Improved Thermomechanical Properties-Steel Sector Application	£396,818	£198,409
Cranfield University		£112,441	£112,441
DANIELI UK HOLDING LIMITED		£155,833	£77,916
MATERIALS PROCESSING INSTITUTE		£41,642	£41,642
SENSOR COATING SYSTEMS LIMITED		£50,000	£35,000

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University of Nottingham		£99,581	£99,581

Project description - provided by applicants

Engineering components usually fail when the surface cannot adequately withstand the external forces or environment to which it is subjected. The choice of a surface material, with the appropriate thermal properties and sufficient resistance to wear, corrosion and degradation, is crucial to its functionality. Improving the functionality of an existing product is only one aim. The second is to develop a new class of reinforced coating materials with the aid of nanotechnology. This new coating system and application method can create opportunities for new products which could not otherwise exist.

The primary target market of this project is the steel sector in the UK and abroad. More than 1.6 billion tonnes of steel are produced and used every year generating a market value of £300 billion. This project targets continuous casting products representing 25% of the global market. The main function of the mould is to establish a solidified steel shell that is sufficient in strength to contain the liquid metal core upon entry into the secondary spray cooling zone. The key challenge is how to provide a coating solution that can offer superior billet properties at high casting speeds (higher productivity-dynamic supply model), for a longer time and with consistent product quality throughout the steel production campaign. The steel producer, the user of these moulds, reports that the biggest issues, in terms of productivity and cost, are the high rate of wear and high temperature oxidation of the moulds.

As an enabling technology, Surface Engineering has economic and societal impacts via reduction in capital investment, increased profitability, design changes, environmental benefits and technical innovation. The UK steel plants will benefit from the lower steel manufacturing costs and higher steel quality. The project will positively affect the steel supply chain such as recycling, energy and mining through increased productivity and will add value to downstream industries such as construction, mechanical equipment, automotive, metal products, shipbuilding and trains through steel product quality improvements and lower costs. Broader industry benefits are expected from the advancement of nanotechnology and this project, with its unique industry led views on nanotechnology use, will provide a significant contribution to a future UK Government Strategy.

The secondary target market of this project is surface engineering for aggressive environments. The value of the UK coating market is approximately £21.3 billion, and those coatings critically affect products with a value greater than £143 billion.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
RELIANCE PRECISION LIMITED	INSPIRE (Ion Neutralisation System for enhanced Powder REuse)	£594,398	£356,639
University of Huddersfield		£252,370	£252,370

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 is beginning to 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, there are many parts that would benefit from AM but the process productivity is too low. There is, therefore, an urgent need for more productive AM systems to move this technology into mainstream manufacturing. In the INSPIRE 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.

Innovate UK

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
LUXUS LIMITED	A new source of valuable recycled materials from otherwise landfilled odour contaminated plastic waste	£392,238	£235,343
MATRIX MOULDING SYSTEMS LTD		£131,694	£92,186
ONE51 ES PLASTICS (UK) LIMITED		£66,742	£33,371
University of Lincoln		£249,788	£249,788

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Project description - provided by applicants
Although much progress has been made in recycling the easier polymer streams such as at-line production waste, or through specialist closed loop systems, the challenge to recycle Post Consumer polymer waste (mainly packaging from consumer goods such as food, sauces and detergents) is still tough, particularly for polypropylene and polyethylene. These polymers strongly absorb odours from their contents, which currently needs uneconomic levels of cleaning before they can be recycled into high value products such as automotive fascias and building products. Of the UK's 260,000 tonnes of post consumer polypropylene waste, under 1% is recycled into high quality products; the rest is used in low value applications such as buried geotextiles, or is landfilled or incinerated. The Odex process concept from Luxus, a recycling compounder for automotive plastics, has been specifically created to provide a cost effective method to deodorise polymers for higher value uses. This project is intended to produce a validated prototype of the process and its ability to cope with the variability in the type and levels of odour compounds that occur in post-consumer polymer, to underpin our future objectives of scaling it up to commercial application. The future embodiment of the technology is envisaged as a turnkey or retrofit option for Luxus and other existing compounders as licensees, allowing them to provide high quality polymers from materials that would otherwise have been destined for landfill or incineration.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ROWANALYTICS LTD	ORAC AI Enabled Translational Science Platform	£376,620	£263,634
MEDICINES DISCOVERY CATAPULT LIMITED		£159,921	£159,921

Project description - provided by applicants

The ORAC project will develop a new head-up display for scientists to navigate complex information spaces and improve the efficiency and accuracy with which they access scientific knowledge. It will provide scientists with a simple and comprehensive tool to correlate, annotate and navigate the widest range of data overcoming existing barriers between data sources. This will be delivered seamlessly within their current browser via a simple plug-in that identifies concepts on any HTML/PDF page and annotates them with semantically and contextually accurate information.

The ORAC plug-in will automatically identify key scientific concepts such as 'disease', 'gene', 'chemical', 'bioassay', 'person' and link these to other resources for further study, hypothesis generation and verification. These will be derived from a wide range of data sources including definitions, attributes, supplemental datasets, and documented relationships to other types of concepts. This will enable much faster discovery and interpretation of information, and navigation between concepts whose descriptions may be held in different data sources.

ORAC will take advantage of a comprehensive semantically normalized knowledge graph of all publicly available biomedical literature, including PubMed, Arxiv, USPTO, ChEMBL, OMIM, ClinicalTrials.gov, DBPedia etc. This knowledge graph will be automatically built and maintained by extensions to RowAnalytics' highly innovative spot.my deep semantic learning engine.

RowAnalytics' spot.my deep learning engine provides major advantages over existing keyword, AI or NLP systems, as it learns the semantic meanings of text as documents are indexed, through detailed analysis of the patterns of co-occurrence of all concepts with all other concepts, and their distribution across all documents in a corpus. This makes it incredibly simple, efficient and scalable in use, and highly adaptable to a broad range of emergent new scientific terms. In the ORAC project, this will be extended to enable automated ontology construction and curation without expensive, time-consuming and inaccurate manual intervention or continually retraining of neural networks.

The ORAC system will also provide personalized knowledge channels which users can set up around any topic to summarise and/or alert them to new information relevant to their subjects of interest. These unprecedented 'deep personalization' capabilities deliver smart AI searching in a fully private and secure manner with no sharing of personal data. They enable exploration of the scientific literature by biomedical researchers and clinical practitioners, for example to contextualize advice for a specific individual based on their combination of genomic, clinical and phenotypic attributes.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
CHROMACITY LIMITED	Advanced Multiphoton Microscopy System using Novel Cost-Effective Ultrafast Sources	£393,159	£275,211
Heriot-Watt University		£258,202	£258,202
SCIENTIFICA LTD		£271,179	£162,707

Project description - provided by applicants
This 3-way partnership combines academic expertise in broadly tuneable laser technology with advanced industrial laser engineering approaches to enable the development of uniquely versatile multiphoton microscopy systems. Specifically, the project will develop innovative approaches to achieving tuneable ultrafast light sources for the life-sciences imaging market which offer superior wavelength coverage, size, ease of use and lower cost of ownership that existing technology. A novel multiphoton microscopy system able to work with multiple simultaneous laser lines and deeper into the infrared than is currently possible will be developed and tested with the new laser system to create an integrated, UK based solution for this market.

Innovate UK

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Competition Code: 1805_OPEN_R1_1819

Total available funding is £20,000,000

Participant organisation names	Project title	Proposed project costs	Proposed project grant
CELLTECH R&D LIMITED	Disruptive antibody purification process employing novel inexpensive chromatography materials	£1,046,574	£523,287
BIOTOOLOMICS LIMITED		£853,600	£597,520

Funders Panel Date: 25/09/2018

Project description - provided by applicants
While biotherapeutics offer potential treatments for some of the most debilitating diseases, the development and manufacture of these potentially life changing treatments is risky, technically challenging and expensive. This project will develop novel polymer composite materials specifically for the efficient and cost-effective manufacturing of antibody drugs. This will lead to the replacement of expensive affinity resins with inexpensive small ligand resins reducing the manufacturing cost and increasing purification efficiency. Working in partnership with BioToolomics, UCB Celltech seeks to develop an industrial-scale downstream platform process for monoclonal antibody drugs. The project will utilise modern process development methodology, combined with lifetime studies and cost of goods analysis, to fully explore the potential savings a biotherapeutic manufacturer could make by implementing the novel resins developed in the course of this project.