

Contents

Introduction

02	Introduction

- 03 Foreword
- 04 Our approach
- 05 Budget 2016/17
- 06 Key actions
- How we are helping business this year
- 12 Programmes
- **12** Emerging and Enabling Technologies
- 15 Health and Life Sciences
- **18** Infrastructure Systems
- 21 Manufacturing and Materials
- 24 Open programme
- 25 Co-operation
- 26 How we operate

Innovate UK is the UK's innovation agency. We are a transformative agent for change in the UK economy, now and in the future.

We know that true innovation disrupts. It creates new things – products, processes, services and industries – we don't even know about yet. It's our vision at Innovate UK to help the UK economy grow head and shoulders above other nations by driving disruptive innovation – inspiring and supporting pioneering UK businesses to create the industries of the future.

We have a strong business focus and a track record of driving growth by working with companies to de-risk, enable and support innovation – putting them in a stronger position to attract investment and facilitating access to investors, collaborators, customers and export markets.

As we start a new Spending Review period, we will publish a new strategy that describes how we will work towards our goals during the years 2016 to 2020.

Meanwhile, this Delivery Plan covers the first year of this new phase – the financial year 2016/17.

It outlines how we will continue to find, support and grow innovative businesses while beginning some major shifts in the way we work to drive innovation, such as:

- a new sector grouping approach to our programmes
- simplifying our support for innovation
- new activities to deliver on our strategic
 5-point plan

Foreword

"Whether you have a small or large business or are involved in any way in innovation, this plan will explain how we are working this year to accelerate its pace – and ultimately increase UK productivity and growth."



As we enter a new
Spending Review
period, the government
has announced its
intention to publish a
National Innovation
Plan. Our work, as the
UK's innovation agency,
represents an integral
part of that.

We will publish our new strategy for 2016 to 2020 alongside the National Innovation Plan. This new strategy will represent a refocusing of our sights on what we believe are the most important things we can do to maximise the benefit of innovation for the UK economy – looking not just to the next 4 years but to the next decade.

Meanwhile, as we begin the first financial year of the period, I am pleased to present this Delivery Plan – outlining our actions in the financial year 2016/17 towards achieving those long-term aims.

It is an exciting time. We have an expert and committed team, extremely strong partnerships and collaborations across research, industry and government and a proven track record.

In fact, the impact since 2007 has been dramatic. We have invested around £1.8bn in innovation, which has been more than matched by the private sector – returning between £11.5bn and £13.1bn to the economy. We have supported innovation in 7,600 organisations, creating around 55,000 new jobs; more

than 7 for each company we have worked with. There is potential to do much more – and to become even more effective, we are making some significant changes.

Our new sector focus and our 5-point plan will help us, working with all our partners, create still more value in future years.

We are simplifying our offering – not just fitting our approach better to industry sector groups, but also making our funding programmes clearer and easier to navigate. We are introducing a simpler sequence of 2 broad competitions in each sector per year, plus 2 'open' competitions for applications from any sector. We will also run more innovation programmes and competitions in partnership with other government bodies and organisations.

We are strengthening the way we connect businesses with knowledge, partners and opportunities and increasing our regional presence to form a joined-up innovation support network for business. We are planning the future introduction of new innovation finance products, alongside grants, to broaden the ways in which we can help businesses. And we are re-shaping our organisation to deliver in this new context.

Whether you have a small or large business or are involved in any way in innovation, this plan will explain how we are working this year to accelerate its pace – and ultimately increase UK productivity and growth. We look forward to continuing to work with you on this mission.

Dr Ruth McKernan CBE Chief Executive

Our approach

Building on our momentum.

Our focus for the last 5 years has been on driving innovation across the UK. This we have done by investing in high-potential innovation projects as part of the strategies we developed in a number of priority areas, as well as connecting businesses with each other and with research and by establishing the Catapult centres. This has enabled us to make excellent progress and build momentum right across the UK economy.

Now our focus will be to build on that momentum to accelerate sector growth. To do that, in terms of innovation funding, we need to expand our focus on projects and opportunities to concentrate on the growth of the investment-worthy businesses that those opportunities create and on how those exciting new companies can accelerate the value chains of entire sectors.

We have therefore restructured the organisation into much clearer sector groups, which are easier for the industry, investors and the government (local, devolved and central) to understand and work with. These are:

- Emerging and Enabling Technologies
- Health and Life Sciences
- Infrastructure Systems
- Manufacturing and Materials

Underpinning the activity of the sector groups, we have set out our 5-point plan that will ensure we focus on driving productivity growth. We will:

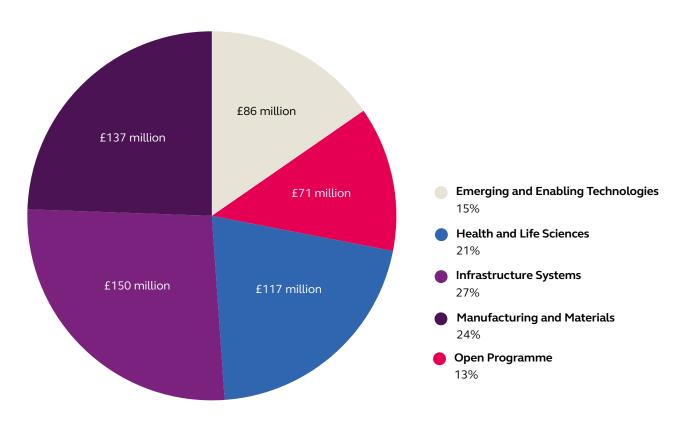
- turn scientific excellence into economic impact and deliver results through innovation, in collaboration with the research community and government
- accelerate UK economic growth by nurturing high-growth potential SMEs in key market sectors, helping them to become high-growth mid-sized companies with strong productivity and export success
- build on innovation excellence throughout the UK, investing locally in areas of strength
- develop Catapult centres within a national innovation network to provide access to cutting-edge technologies, encourage inward investment and enable technical advances in existing businesses
- evolve our funding models, ensuring businesses we work with get the right kind of funding at the right time and helping public money go further and work harder.

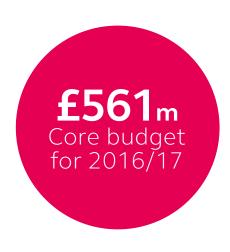
The Government has said that it intends to implement the recommendations of Sir Paul Nurse's review of the research councils by creating Research UK, a new body incorporating the seven research councils, and that it would look to integrate Innovate UK into this new body. This year we will work in increasingly close partnership with the research councils, building on the firm foundations laid in previous years.

Budget 2016/17

Our core budget for the financial year 2016/17 (April to March) is £561m (excluding administration costs). This chart shows the approximate planned breakdown of expenditure across our programmes. For further detail, see the following pages.

Financial Year 2016/17 Spend





Key Actions

This is a high-level summary of key actions for the year – for more details, see following pages.

Key Action	Detail
Sector focus	We will align our innovation support programmes into four key sector groups, plus an 'open' approach
Funding competitions	We will: Run two broad competitions per year in each sector group (see below) Run two 'open' funding competitions per year for applications from any sector (see below)
Connecting	We will: Use our innovation network teams to help businesses innovate and grow Deliver core connecting services to link businesses with academics, government new partners and funding opportunities Work closely with other parts of the innovation ecosystem to create 'no wrong door' for support
Delivery partnerships	We will deliver a range of other innovation programmes in partnership with government departments and other public sector organisations
EU and International programmes	We will: • Increase business participation in the Horizon 2020 programme • Increase opportunities for UK business through relationships with other countries, including through the Newton Fund • Run 2 entrepreneur missions overseas
Emerging and Enabling Technologies	 We will: Run two broad Emerging and Enabling Technologies competitions during the year Run a funding competition in Quantum Technologies Continue to invest in the Digital and Satellite Applications Catapults Establish the Compound Semiconductors Catapult Continue to invest in Innovation and Knowledge Centres Run an entrepreneur mission on the theme of space Provide funding support for the Open Data Institute, Tech City and Tech North Deliver space programmes in partnership with the European Space Agency
Health and Life Sciences	 We will: Run two broad Health and Life Sciences competitions during the year Run competitions aligned to the development of new technologies for manufacturing cell therapy products Continue to fund the Cell and Gene Therapy Catapult Aim to complete the Cell and Gene Therapy Catapult Manufacturing Centre in Stevenage Complete the establishment of the Precision Medicine and Medicines Discovery Catapults Open the new Precision Medicine Catapult headquarters in Cambridge Continue funding the agri-tech centres as part of industrial strategy

Key Action	Detail
Infrastructure Systems	 We will: Run two broad Infrastructure Systems competitions during the year Establish the Energy Systems Catapult facility in Birmingham Continue to invest in the Future Cities, Transport Systems and Offshore Renewable Energy Catapults Conduct a Future Cities entrepreneur mission to India, aligned with the Newton Fund Run a Cities Integrated by Design competition Deliver the Energy Research Accelerator Continue the OLEV Integrated Delivery Programme 13 (IDP13)
Manufacturing and Materials	 We will: Run two broad Manufacturing and Materials competitions during the year Continue investing in the High Value Manufacturing Catapult, including the new National Formulation Centre and Graphene Centre Run an Additive Manufacturing competition Run a Manufacturing Readiness competition focusing on later-stage innovation Run a Connected and Autonomous Vehicles (C-CAV) 2016 competition Continue our delivery partnership with the Advanced Propulsion Centre and Aerospace Technology Institute
Open programme	We will: Run two 'open' funding competitions per year for applications from any sector Run open knowledge transfer competitions through the year Run an open 'growth and scale' competition in Q3
Co-operation	 We will: Work in increasingly close partnership with the research councils Further strengthen innovation partnerships with bodies such as UKTI, the British Standards Institution and the Intellectual Property Office Build on relationships throughout the UK to connect national and local innovation strategies
How we operate	 We will: Target savings of £2m through our business improvement and change programme Roll out new, easier to use end-to-end online systems for competition applications Use communications effectively to build visibility, power our sector groups, enable our networks and facilitate organisational performance Fully integrate a new customer relationship management platform and telephony system Implement a new system of measurement and metrics to evaluate our impact

How we are helping business this year

We are changing the way we operate to create a more conducive environment in which innnovative businesses can grow.

Funding

We recognise ambitious businesses want to know how we can help them grow – and they want to know as quickly and efficiently as possible.

The answer is straightforward: Innovate UK **funds** and **connects** business-led innovation.

To achieve this, we are simplifying our offering and making it easier for customers to engage with us – in line with the recommendations from the Dowling¹ and Nurse² Reviews – to fundamentally change the innovation landscape in the UK.

Our programme will be based on four sector groups, plus an 'open' approach:

• Emerging and Enabling Technologies: identifying and investing in technologies and capabilities that will lead to the new products, processes and services of tomorrow – all with the potential to create billion-pound industries and disrupt existing markets

Health and Life Sciences:

focusing on agriculture and food and healthcare. The sector is underpinned by technologies developed in bioscience and medical research and enabled by expertise in engineering and physical sciences

• Infrastructure Systems:

covering major global market opportunities optimising transport and energy systems and integrating them with other systems such as health and digital in an urban context

 Manufacturing and Materials: our programme focuses on advancing manufacturing readiness so R&D and technology developments can be delivered at scale across a range of sectors to increase productivity and grow to capture the value in the UK

• Open:

funding competitions and programmes open to all innovative businesses, regardless of the technology or sector in which they are working. This enables businesses to address high-growth opportunities when their concept or idea might not fit one of the Innovate UK sectors or is at the interface of multiple themes with differing scopes

The investment decision criteria remain the same:

- What are the global opportunities?
- What are the unique strengths that the UK brings to those opportunities?
- Is the timing right?
- Why is public sector investment required?

Businesses of all sizes, and SMEs in particular, will have a single point of entry for all aspects of the support available to their sector group. This will give them access to the entire Innovate UK network, enabling them to address crossdisciplinary opportunities.

Each of our 4 sector groups will provide a single, integrated offering of all the current Innovate UK activities and the services we deliver for other public sector funding bodies or EU/international activities, including:

- Catapults and innovation centres
- competitive funding for grants, contracts and, in future, new innovation finance products
- connectivity to all other resources available to that sector through our innovation networks

^{1.} www.gov.uk/government/publications/business-university-research-collaborations-dowling-review-final-report and the state of the st

^{2.} www.gov.uk/government/collections/nurse-review-of-research-councils

This year, our approach will evolve to provide, in each sector group, a single innovation funding stream through which businesses will compete for grants, contracts or, in future, other innovation finance products. This will result in a structure in which competitions are much broader in scope than previously, consistently focused on groups of interrelated sectors and run twice a year for each sector group. The open competitions, not tied to any sector or technology, will also run twice per year.

Our approach recognises the need to evolve our funding models and is built on 2 types of investment:

 Opportunity-centred: focused on finding and proving new opportunities with the goal of creating high-growth, investmentworthy businesses in the UK - recognising it is not possible to predict which are the potential high-growth businesses at the very early stages

of innovation

Business-centred: focused on growing and scaling high-potential, investment-worthy businesses in the UK, once opportunity-centred investments by us (or others) have identified such companies. At the end of this year we will also, in collaboration with BIS and other stakeholders, launch pilots for new finance products aimed at supporting our delivery plan and overall strategy

Under our new competition process, each sector group in Innovate UK will highlight areas of particular interest within a specific competition. If a business is not ready for that competition deadline, the timing of the next round will be known so they

can work towards that instead. And by maintaining an open competition strand, we also ensure every business from every sector of the economy has a route to apply for funding.

Competitions for grants or contracts we deliver for government departments or other public sector organisations will complement these. This helps simplify the innovation landscape because we are now able to provide a one-stop shop for everything we fund.

Innovate UK has long played a pioneering role in connecting businesses with 'lead customers' for their new ventures - for example in the public sector through the Small Business Research Initiative (SBRI) programme - and this will continue. In healthcare, for example, this year we will continue to help public sector bodies find ways to use SBRI to address their challenges, targeted at unmet patient and clinical needs or other broader public health areas.

We have also helped businesses in the digital and creative industries find lead customers in the private sector, and this year, in our sector groups, we will explore wider opportunities to understand companies' open innovation challenges and help other businesses meet them.

We also plan to further develop our regional strategy by working with the Local Enterprise Partnerships and with partners in Scotland, Wales and Northern Ireland to identify opportunities for investment related to each of our sector groups and according to regional strengths.



Connecting

Innovation Networks and Simplification Innovate UK's connecting activity helps businesses grow by providing direct guidance and assistance and by helping them navigate the full range of support opportunities that exist.

All members of the Innovate UK 'family' are actively engaged in connecting, but a core responsibility lies with our 2 Innovation Networks: the Knowledge Transfer Network (KTN) and Enterprise Europe Network (EEN).

In this year, we will:

- deliver our core connecting services, which include:
- -linking businesses with academics, government, funding and business opportunities
- providing support to exploit ideas and capabilities
- bringing companies together with people they wouldn't usually meet, including new partners for commercial, technology and R&D collaborations

- helping SMEs find new markets for their products and new ways of sourcing, selling or licensing technology, including access to international missions and brokerage events
- helping SMEs be 'investment ready' and understand how to access funding and finance
- providing one-to-one, tailored, specialist support to improve innovation management and bring products and processes to market more rapidly
- helping SMEs understand how to protect intellectual property
- providing businesses with hands-on support,
 coaching and training to increase their capability
 to innovate and grow internationally
- implement our 'no wrong door' approach for business. This means we will ensure our innovation network teams work closely together and with other parts of the innovation ecosystem. This will mean businesses are taken swiftly and efficiently to the right support for them, at the right time, whether it comes from part of the Innovate UK family or beyond



EU programmes

In the financial year 2016/17, we will be working to increase business participation in the Horizon 2020 programme. This gives UK businesses the opportunity to access funding and develop relationships with enterprises and organisations in the EU and beyond.

To that end, the Enterprise Europe Network (EEN), the Knowledge Transfer Network (KTN) and our National Contact Point experts will continue working together to offer more effective support for UK business. This will include advising businesses of the opportunities that exist in specific areas of the Horizon 2020 programme, such as the SME Instrument and thematic areas, as well as helping businesses to strengthen their applications. We will also continue to provide support through programmes such as Eurostars.

In the coming financial year, we will be enhancing the role of our Catapult network in helping UK business, particularly SMEs, access Horizon 2020 opportunities.

We will build on our national activity and ensure there is greater alignment with relevant EU initiatives and work closely with companies best placed to engage in European programmes – including helping 1,000 SMEs a year through the EEN.

International

Our international efforts in the financial year 2016/17 will be centred on increasing the opportunities for UK business through the relationships we build with other countries.

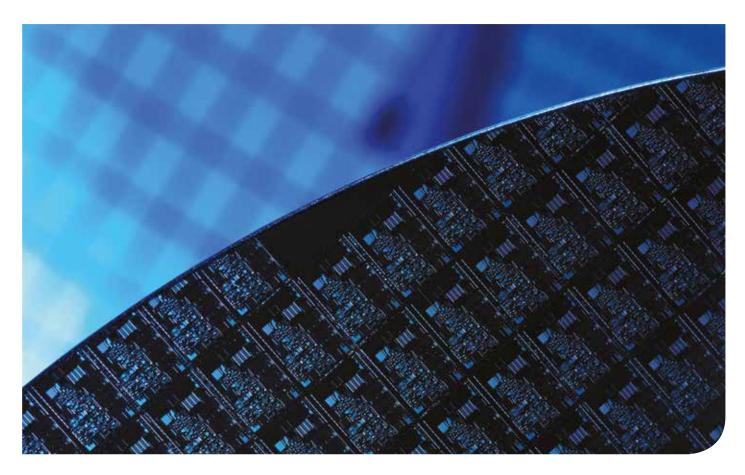
A key programme will be the Newton Fund which, through its funding of international collaborations in the fields of science and innovation, encourages UK business participation in finding solutions in 16 developing countries, particularly around societal challenges. We hope to see Innovate UK's role in the programme grow further.

We recognise entrepreneur missions are a valuable element of the help we provide to high growth potential SMEs, so we will be working with our colleagues at UKTI to run 2 further overseas trade missions in 2016/17, focusing on space and future cities.

Programmes

Emerging and Enabling Technologies

Our Emerging and Enabling Technologies programme seeks to identify, and invest in, technologies and capabilities that will lead to the new products, processes and services of tomorrow – those with the potential to create billion-pound industries and disrupt existing markets.



Emerging Technologies finds and proves early stage technologies, often from the research base; Enabling Technologies supports underpinning technologies that have the potential to disrupt a broad swathe of products and services across many sectors.

Challenges

The UK is strong in fundamental research across many different disciplines, but has in the past struggled to fully commercialise the opportunities created. The most promising emerging technologies and industries need to be guided through the innovation process to market success. Key enabling technologies or capabilities that have the potential for big impacts in many different industrial sectors can be slow to spread through target industries. They need support to realise that potential and to be tailored in order to excel in the most important markets and sectors.

Plans and priority activities

Our Emerging and Enabling Technologies sector group identifies and accelerates technologies and capabilities that lead to new products, processes and services in major new industries:

- Emerging Technologies and Industries invests in 2 distinct areas. In 'exploratory programmes' we help companies take their first steps in adopting a new and disruptive technology, evaluating it in their particular market areas and exploring the potential for really significant commercial impact. Examples are biofilms and energy harvesting. In 'acceleration programmes' we provide increased levels of financial and wider innovation support in areas such as synthetic biology
- Enabling Technologies brings together technology and end users to enhance productivity and efficiency gains across multiple areas of the UK economy. We provide opportunities for

innovative and disruptive companies to develop and deploy impactful cross-cutting technologies in multiple applications, including finding routes to market through the well-established large systems integrators and manufacturers

In 2016/17, the Emerging Technologies and Industries programme will provide accelerated support to companies developing non-animal technologies, quantum technologies and synthetic biology. It will also continue to provide exploratory support in graphene, biofilms, energy harvesting and new imaging technologies and will seek to identify and invest in other new pipeline areas.

Enabling Technologies will concentrate investment on innovative application and service-led solutions in the areas of cyber security, data, satellite earth observation, electronics, sensors and photonics, the internet of things and robotics and autonomous systems.

We will also look to stimulate the use of excellent design and user experience across all of our areas and continue to play our part in helping grow the creative economy.

Catapult/centre activity

In the Emerging and Enabling Technologies sector group, there are already Catapults in Digital and Satellite Applications. In 2016, the government announced a new Compound Semiconductor Applications Catapult to be established in Wales. Setting this up will be a strategic goal for 2016/17. For the Digital Catapult, as part of delivering the Internet of Things (IOT) UK programme, a focus this year will be connecting the UK's experts, businesses and researchers to solve the challenges facing IOT developments and capitalise on the associated opportunities. The Satellite Applications Catapult will launch its first satellite to enable businesses to run in-orbit service demonstrations.

We will also continue to invest in the Innovation and Knowledge Centres in cyber security (CSIT) and synthetic biology (SynbiCITE) to advance innovation in this sector group.

CASE STUDY

Going for growth

With help from Innovate UK, Ingenza has grown from a 10-person company in 2009 to employing 42 people and has increased revenue tenfold to more than £4m a year.

Formed in 2003 as a spin-out of Edinburgh University, Ingenza is now a leading developer and provider of innovative synthetic biology and industrial biotechnology services, helping translate innovation into more efficient manufacturing processes.

Having received funding in the shape of several grants since 2005 and benefited from Innovate UK's connecting expertise, Ingenza has developed enabling technologies to more rapidly and predictably adapt and engineer biological systems for industrial-scale production.

"Innovate UK's ability to forge links between business and the research community is the envy of western Europe," said managing director of Ingenza Ian Fotheringham. "With their support, we have been able to develop our unique systems to commercial maturity and grown significantly as a result. Our systems are now being applied in synthetic biology partnerships with companies such as GlaxoSmithKline." •



European and international activity We will run the last in a series of 3 space missions, continuing to develop emerging new space businesses in line with our commitment to the Space Innovation and Growth Strategy.

Key delivery partners

Innovate UK manages a European Space Agency (ESA) programme on behalf of, and in partnership with, the UK Space Agency (UKSA). Topics managed include satellite navigation, telecommunications and applications. Responsibilities include both oversight of the programme and advice to UKSA. This includes individual review and approval of all projects in the Telecommunications and Applications areas.

We will continue to work closely with the science base generally, and the research councils specifically, to jointly identify and support the translation of early stage technologies through our Emerging and Enabling Technologies programme.

We will take the lead in our continuing collaborations with the Ministry of Defence, Home Office, UKSA, DCMS, GO-Science and the administrations in Scotland, Wales and Northern Ireland, identifying opportunities to work together in supporting the development of technologies in industry and addressing specific needs within the government through their SBRI (Small Business Research Initiative) programmes.

Activity summary, 2016/17

Investment	Timing	Budget
Emerging and Enabling Technologies competitions	Round 1 – October 2016 Round 2 – March 2017	<£15m <£15m
Space Entrepreneurs Mission	Q3	N/A
Quantum Technologies competition	April 2016	<£9m
Digital Catapult core funding	Q1 to Q4	<£11m
Satellite Applications Catapult core funding	Q1 to Q4	<£10m
Compound Semiconductor Applications Catapult core funding	Q1 to Q4	<£5m
Centre for Secure Information Technologies (CSIT) Innovation and Knowledge Centre	Q1 to Q4	<£500k + co-funding
SynbiCITE Innovation and Knowledge Centre	Q1 to Q4	<£500k + co-funding
Open Data Institute	Q1 to Q4	Delivery partnership
Tech City UK and Tech North	Q1 to Q4	Delivery partnership
European Space Agency funding	Q1 to Q4	Delivery partnership

Health and Life Sciences

Innovate UK's Health and Life Sciences sector group has a focus on agriculture and food and healthcare, underpinned by technologies developed in bioscience and medical research and enabled by expertise in engineering and physical sciences.



The bio-economy encompasses a number of industrial sectors, including agriculture and food, healthcare, energy and chemicals and materials.

In fact, many see the 21st century as 'the age of biology'-the real opportunities will be in bringing biology, engineering and design skills to bear on some of our greatest societal challenges.

New developments in how we understand and control or intervene in biological systems will open up significant opportunities for businesses to develop market-leading solutions.

Challenges

A growing global population, ageing demographic, increased wealth and burden of diseases are accelerating the demand for food and improved healthcare. This demand can only be addressed through companies investing in bringing innovative products to market. Investment in UK healthcare firms has been increasing over the last year influenced in part by Innovate UK's activities.

Plans and priority activities

Our aim during 2016/17 is to identify and support companies so they are ready for investment. The existing health and care portfolio represents £200m of public investment and agri-food £160m. We plan to develop our portfolios by assessing the companies ready for investor follow-on funding. Our activities this year will focus on helping firms prove their market readiness so we can help them grow and scale by introducing them to investors and other opportunities such as Horizon 2020 funding.

There are 4 agri-tech centres and 3 Catapults in this sector. By aligning their strategies and understanding the types of companies clustered around them, we will tailor our future programmes to their evolving needs and develop successful investment-worthy businesses.

Priority activities

• Precision medicine:

capturing value in the UK in therapeutic, diagnostics, algorithm and data companies and demonstrators with the NHS

Advanced therapies (cell, gene and other therapies):

capturing value from therapeutics development and manufacturing

Preclinical technologies:

addressing pharmaceutical preclinical productivity challenges, including capturing more value for UK contract research organisations by validation of potential technologies

Improving agriculture productivity:

through, for example, new breeding technologies, improved control of pests, weeds and pathogens and the increased uptake of robotics/autonomous systems, satellites, sensors and photonics

Enhanced food quality:

developing high-value, healthy, nutritious foods of known provenance by supporting the reduction of salt, sugar and fat; increasing fibre and bio-fortification and developing new proteins

Biosciences:

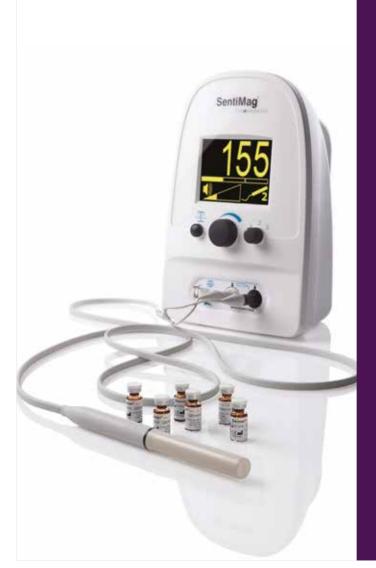
exploiting the outputs of bioscience and biomedical research will underpin many new products and services across the bio-economy. Gene editing, synthetic biology and analytical technologies will create the bedrock on which many new health and agri-food products will be developed

Catapult/centre activity

Catapults:

A priority for 2016/17 will be completing the establishment of the Precision Medicine and the Medicines Discovery Catapults. The Precision Medicine Catapult will open its new headquarters in Cambridge and the Cell and Gene Therapy Catapult will aim to complete a new Cell Therapy Manufacturing Centre in Stevenage.

We will ensure there is co-ordination between the Cell and Gene Therapy, Precision Medicine and



CASE STUDY

Swifter, simpler, safer cancer treatment

Sentimag, developed by Cambridge-based spinout Endomagnetics with collaborative R&D funding from Innovate UK, is a nanoscale magnetic tracer system capable of determining the spread of cancer without the need for radioactive tracers.

Since first sales in 2012, more than 200 units have been supplied to hospitals and clinics across Europe, the Middle East and Asia. Along with its companion tracer Sienna+, Sentimag has now been used to treat around 10,000 breast cancer patients.

After the company participated in an Innovate UK entrepreneur mission to the USA, the system gained investigational approval from the US Food and Drug Administration and is now undergoing clinical trials at 6 US sites.

The underlying technology is now being used to develop probes for melanoma, thyroid, cervical and other cancers.

Since 2012, Endomagnetics has gained additional investment and maintained triple-digit annual growth and, at Innovate UK's SME Innovation Awards in 2015, the company was the winner in the category of 'innovation leading to productivity improvement'.

Medicines Discovery Catapults, along with the National Biologics Manufacturing Centre, to form a set of complementary facilities businesses can choose to work with depending on their specific needs.

AgriTech centres:

Our plan is to work with the 4 new agri-tech centres that cover precision agriculture; agri-big data; crop health and protection and livestock excellence. There are already a few hundred agri-food companies clustered around this family of centres. We will work with these industry groups to identify opportunities, connect players together, identify funding particularly EU Horizon 2020 funding - signpost investors, support the rollout of technology on farms and help unlock overseas markets.

European and international activity We will continue to help UK businesses win funding in the Horizon 2020 SC1 challenge area and increase our attention on business engagement

with areas such as the Innovative Medicines Initiative. We plan to highlight Horizon 2020 opportunities to UK firms - we will particularly focus on companies we have already supported, using Horizon 2020 funding as follow-on assistance to help companies grow further and develop links across Europe.

We are also working with UKTI to identify the overseas markets most accessible to UK firms and will work with the government's Science and Innovation Network to help make contacts in other countries. Many of the countries involved in the Newton programme have a strong need for innovative agriculture, food and healthcare products. We plan to expand our engagement with the Newton programme in partner countries, focusing on identifying needs in key geographies and ensuring companies have adequate time and opportunity to build collaborations with potential partners and customers.

Activity summary, 2016/17

Investment	Timing	Budget
Health and Life Sciences competitions		
 One-year awards to early stage 'find' projects. Enabling companies to explore new opportunities for scalable solutions Two to 3-year awards to 'prove' projects. Building on initial findings, these projects will create early demonstrators or prepare products for 'first in man' healthcare studies 	Round 1 – September 2016 Round 2 – February 2017	<£15m <£15m
Cell Therapy Manufacturing – Development of new technologies for manufacturing or embedding products to be manufactured in the Cell Therapy Manufacturing Centre: • Continuation of the building in Stevenage • Aligned competitions	Q1 to Q4 September 2016	<£23m <£17m
Cell and Gene Therapy Catapult core funding	Q1 to Q4	<£13.5m
Precision Medicine Catapult core funding	Q1 to Q4	<£10m
Medicines Discovery Catapult core funding	Q1 to Q4	<£7m
Agri-tech centres: continuation of Industrial Strategy funding	Q1 to Q4	<£20m

Infrastructure Systems

Infrastructure systems underpin almost every aspect of modern society, from energy and transport to health and the digital economy.



Whether powering our lives at home or work, providing efficient mobility to people and goods, enabling access to good education and healthcare, keeping us warm and comfortable or connecting us to the world, infrastructure is key for our future.

The Infrastructure Systems sector group covers the major global market opportunities in optimising transport and energy systems and integrating these with other systems such as health and digital in an urban context.

Challenges

- Growing and ageing population, urbanisation and the need to de-carbonise economies are dictating new approaches to essential energy, transport and urban system service provision.
- There is a need for physical assets built now to be capable
 of handling data, communications, sensors and currently
 unknown technologies that can be configured to societies'
 changing needs.
- Maximising the capacity and efficiency of transport through intelligent mobility represents a challenge and an opportunity.

- Ageing infrastructure in developed countries needs upgrading to be more responsive to societal demands and resilient to a changing climate.
- New solutions are needed for the inter-related system challenges that will be faced by future cities.
- Socio-technical systems are inherently complex and interact with each other; new technology, business models and people's behaviours in taking up new services all need to be integrated with existing infrastructure, regulation and policy drivers.

Plans and priority activities

• Energy:

Programmes will target the development of solutions that can help deliver affordable, sustainable and secure energy for the UK and in overseas markets.

- Energy Systems:

We will support the development of key enabling technologies that can provide flexibility and resilience to the future energy system of electricity, heat and combustible gases.

- Energy Supply:

We will support development of key supply technologies in nuclear systems and offshore renewable energy. Growing and ageing population, urbanisation and the need to de-carbonise economies are dictating new approaches to essential infrastructure.

Transport Systems:

We will support the UK in leading the intelligent mobility sector, using enabling technologies to leverage a smarter, greener and more efficient transport system for the movement of people and goods around the world.

• Smart and Resilient Infrastructure:

We will support the development of new smart and resilient technologies for infrastructure projects.

Urban Living:

We will support new future city solutions that improve and integrate multiple urban systems.

Catapult/centre activity

A priority during the year is to establish the new Energy Systems Catapult in its facility in Birmingham.

We will work with the Transport Systems Catapult to identify key areas where we can partner to support the delivery of the connected transport systems of the future.

The Offshore Renewable Energy Catapult will bring on stream its newly acquired 7MW turbine at Levenmouth as a dedicated open access research facility and the Future Cities Catapult will focus its expertise on helping high growth potential UK businesses tap into the opportunities brought by devolution and increasingly autonomous cities.

CASE STUDY

Cold comfort

A power business supported by Innovate UK is taking its technology to market after attracting £16 million from investors.

Dearman has developed 'clean cool' technology that is currently being applied to zero-emission transport refrigeration units, but can also be developed for use in back-up power systems for buildings and for more fuel-efficient engines.

The £16 million investment from Park Vale Capital will enable Dearman to establish initial manufacturing activity in the UK, to deploy its technology internationally and to continue to invest in research and development and demonstration.

Dearman was set up three years ago to develop technologies to harness the engine invented by Peter Dearman and has grown to employ 60 people at two sites in Croydon and London.

The company expects its transport refrigeration system to be in use in 100 vehicles on the road in 2017 and to be in full manufacture by 2018. •



Activity summary, 2016/17

Investment	Timing	Budget
Infrastructure Systems competitions We aim to support businesses with scalable solutions for system challenges across energy generation and supply, transport and urban living: • solutions for affordable, sustainable and secure energy delivery • solutions for intelligent mobility • integrated solutions to systemic challenges in urban areas • resilience of infrastructure and cities to environmental and societal pressure	Round 1 – July 2016 Round 2 – January 2017	<£15m <£15m
BIM Level 3 digital challenges for energy utilities and transport infrastructure contractors	Q1	<£10k
ERA-Net competitions, including Sustainable Urbanisation and Solar Systems	Q3	<£1m
Future Cities mission	Q3	<£60k joint with UKTI – aligned with Newton India
Cities Integrated by Design collaborative R&D follow-on phase from current Feasibility Studies competition	Q4	<£9m open
Offshore Renewable Energy Catapult core funding	Q1 to Q4	<£12m
Future Cities Catapult core funding	Q1 to Q4	<£10m
Energy Systems Catapult core funding	Q1 to Q4	<£10m
Transport Systems Catapult core funding	Q1 to Q4	<£11m
Energy Technologies Institute membership	Q1 to Q4	<£10m
Energy Research Accelerator delivery	Q1 to Q4	£60m delivery over 4 years to 2019 to 2020
CSIC Innovation and Knowledge Centre	Q1 to Q4	<£500k + co-funding
SPECIFIC Innovation and Knowledge Centre	Q1 to Q4	<£500k + co-funding

Manufacturing and Materials

Driving growth through sustainable increases in long-term productivity across all UK economic sectors is the aim of this programme.



Our Manufacturing and Materials sector group focuses on the development, validation and application of cross-cutting manufacturing and materials technologies and processes to drive productivity and growth.

There are opportunities to boost the growth of UK manufacturing supply chains through innovation, for example, in areas such as digital manufacturing, additive manufacturing, composites, materials integration and industrial biotechnology.

The UK hosts the High Value Manufacturing (HVM) Catapult and many world-class research groups in manufacturing and materials, giving us a competitive advantage.

With Innovate UK as a delivery partner, the government is heavily supporting automotive and aerospace research, development and technology through the Office for Low Emission Vehicles (OLEV), the Advanced Propulsion Centre (APC) and the Aerospace Technology Institute (ATI) programmes. Innovate UK is focusing on advancing manufacturing readiness so R&D and

technology developments can be delivered at scale to the market at pace so UK industry can increase productivity and grow to capture the value from technology investment.

Challenges

In general, the range of innovation activities companies are undertaking is narrowing and this may make exploitation of new technologies less likely. By broadening out to innovate in revenue streams, companies can increase resource efficiency and longer-term commercial success.

Plans and priority activities

• Digital for manufacturing and materials: We will work with the HVM and Digital Economy Catapults to ensure the provision of digital manufacturing demonstrators that showcase the benefits of smart manufacturing and invest in innovation projects that apply digital technologies in new ways to increase manufacturing productivity, systems flexibility and resource efficiency.

• Manufacturing readiness at scale:

We will work with key sectors and lead adopters, including government departments, to identify their specific but cross-cutting manufacturing demands and (co-)invest in innovation projects that address these, from concept to manufacturing readiness as appropriate.

Early stage manufacturing and materials concepts:

We will invest in innovation projects to enable companies to broaden out their innovation activities and try out new, high-impact ideas that could lead to new revenue lines or processes.

Catapult/centre activity

The High Value Manufacturing (HVM) Catapult is the longest-established. In the coming financial year, we plan to enhance funding for its important work. This year, it will be continuing its 'HVM Reach' programme, which aims to extend its work with high growth potential SMEs in supply chains and its 'HVM Plus' programme, to extend its engagement with a wider set of sectors. The Catapult will progress with its work to establish the National

Formulation Centre and the Graphene Centre and will play a key role in identifying and addressing challenges in additive manufacturing, metals, composites and digital manufacturing.

European and international activity We are bidding to host and run the biennial Manufuture event in the UK in 2017 as part of the UK's Presidency of the EU. We will also work to encourage greater UK industrial participation in Horizon 2020 calls and related programmes.

Delivery partnership programmes
The government will invest more than £600 million between now and 2021 through OLEV to support uptake and manufacturing of ultra-low emission vehicles (ULEVs) in the UK. It aims to maintain the global leadership that has seen one in 4 of all European electric vehicles built here and keep the UK on track for all new cars to be effectively zero emission by 2040. This investment will save 65 million tonnes of carbon and help deliver the long term answer on urban air quality¹.

CASE STUDY

REALCAR

A Jaguar Land Rover-led project, assisted by Innovate UK, is enabling the manufacturer to make up to 50% of the bodywork of its Jaguar XE from recycled aluminium.

The REALCAR (REcycled ALuminium CAR) project aimed to develop a new strategy to significantly increase the amount of recycled aluminium that could be used in vehicle manufacture. A range of aluminium alloys and recycled sources were assessed, resulting in the development of a new aluminium alloy – RC5754 – that is not only better for the environment, but can also be used by other transport sector producers.

Introducing the new alloy is helping reduce Jaguar's cost base and created a 'circular economy' business model that provides wider sustainability benefits.

Innovate UK contributed around 69% of the funding towards the £2m project. Six other organisations were involved – Novelis, Zyomax, Norton Aluminium, Stadco, Brunel University and Innoval Technology – ensuring there was a fully integrated value chain.



A follow-up project, REALCAR 2, has been exploring wider recycling opportunities, including recycled aluminium from post-consumer sources.

"The Jaguar XE is the first car in the world to make volume use of this new structural aluminium grade," said Adrian Tautscher from Jaguar Land Rover Materials Engineering. "Using it to build future Jaguar and Land Rover models is taking us a significant step towards our goal of 75% recycled aluminium content in our vehicle body structures by 2020."

We will work with OLEV on innovation opportunities in heavy goods vehicles, with an announcement expected later in the year.

We will support the Centre for Connected and Autonomous Vehicles (C-CAV) to take forward a comprehensive collaborative research and innovation programme to accelerate the development, deployment and demonstration of connected and autonomous vehicles technologies. This will utilise the UK's world-leading research and innovation capability to ensure productivity and export opportunities for UK-based organisations.

The government will provide £1 billion additional funding for aerospace and automotive technology innovation over 10 years in these sectors². Innovate UK will be a delivery partner for the Advanced Propulsion Centre and Aerospace Technology Institute programmes.

Activity summary, 2016/17

Investment	Timing	Budget
Additive Manufacturing competition Focus on projects that take a significant innovative step in the additive manufacturing process, hardware, software, digital connectivity of the production platform (including pre and post processing) or in the material(s) used.	May 2016	<£4.5m
Manufacturing Readiness competition • Focus on later-stage innovation that drives up production line readiness of recent technology developments.	Q2	<£2m
Manufacturing and Materials competitions • Focus on 6 to 36 month innovation projects that apply digital technologies to manufacturing and materials in new ways, determine the feasibility of novel manufacturing and materials concepts and/or sources of revenue from manufacturing or that address cross-sector manufacturing and materials demands.	Round 1 – May 2016 Round 2 – November 2016	<£13m <£15m
Connected and Autonomous Vehicles (C-CAV) 2016 Competition	Summer	£TBC
OLEV Integrated Delivery Programme 13 (IDP13)	Q3	£TBC
High Value Manufacturing CatapultCore fundingFormulation CentreGraphene	Q1 to Q4 Q1 to Q4 Q1 to Q4	<£73m <£7m <£3m

Open programme

The open programme is accessible to all businesses undertaking innovation, irrespective of the technology or sector in which they are working.



Taking a new idea or concept to market can be challenging, particularly for small, young innovative businesses.

Our open programme enables businesses to address high-growth opportunities when their concept or idea might not fit one of the Innovate UK sector groups or is at the interface of multiple themes with differing scopes.

Priority activities within the sector The open programme is designed to help businesses overcome barriers to innovation and create new products, processes and services by:

- reducing financial risk and the funding gap through co-funding with businesses
- helping businesses validate their ideas to attract follow-on private investment

 enabling businesses to access knowledge and expertise.

Planned investment activity Open competitions will:

- enable businesses to find and prove an innovative idea from discovery
- establish market potential through to concept feasibility

Open competitions will also enable businesses that do not have sufficient expertise and resources to engage in open innovation through partnership working, helping them develop the necessary skills and expertise to work with the academic base, thereby enhancing capacity and capability in order to improve their competitiveness.

Activity summary, 2016/17

Investment	Timing	Budget
Open competitions	Round 1 – June 2016 Round 2 – December 2016	<£14m <£14m
Open Knowledge Transfer competition	Q1 to Q4	<£31m (includes £6.5m co-funding)
Open – Growth and Scale competition	Q3	<£2m

Co-operation



We work closely with a range of research organisations, professional bodies and government authorities to support innovation.

The government recently stated its intent to implement the recommendations of Sir Paul Nurse's review of the research councils and to integrate Innovation UK by creating Research UK, a new body incorporating the 7 councils.

In the financial year 2016/17, we will work in increasingly close partnership with the research councils, building on the firm foundations laid in previous years.

Innovate UK and Research Councils UK (RCUK) have a shared vision to "deliver UK economic growth by enabling an innovative, high-value, knowledge-based economy with high productivity".

A pilot project launched last year to trial new approaches to partnership, based around Urban Living, will continue in 2016/17. We are working with all 7 research councils to deliver a number of projects that will bring together the best in academic research and industry innovation to identify, understand and address key challenges and opportunities for urban areas.

We will also be working with the research councils to identify ways in which we can co-operate on global grand challenges to turn them into business opportunities.

Through our dedicated liaison programme, we will continue to support the Catapult network in

strengthening links with the research funders and the academic community, creating closer alignment between their areas of focus and increasing opportunities for collaboration. In particular, this year we are developing a programme of Catapulthosted events for universities in partnership with Universities UK and the successful fellowship model developed by Catapults and the research councils will continue to be rolled out (NERC, EPSRC, AHRC and ESRC).

Finally, we will work with RCUK to find ways of spotting emerging technologies with strong commercial potential at an earlier stage.

Other partnerships

In 2016 /17, we will also:

- continue working with other partners such as the British Standards Institution, to convene industry standards that can help drive innovation, and the Intellectual Property Office, to set the conditions for innovative companies to recognise, protect and exploit the IP we help them create
- further strengthen our partnership with UKTI to help innovative UK companies access export advice, stimulate inward investment by showcasing them to overseas investors and align the sector approach in both organisations to drive growth and productivity
- establish a strong presence throughout the UK, building on our existing relationships, to develop better connections between national and local innovation strategies. We will develop tailored plans in each region, working with government and local players in the innovation and business support ecosystems. These plans will set out how we will work together to drive forward innovation.

How we operate

We are re-shaping our organisation to strengthen the way we connect businesses with knowledge, partners and opportunities.

Business improvement and change

Our business improvement and change programme has already delivered great results in terms of operations efficiency. We will build on these successes in the financial year 2016/17 and continue to drive efficiency savings elsewhere across the organisation. We are targeting annualised savings of around £2 million.

The programme's focus over this financial year will be around 7 key projects:

Transformation of innovation funding services and systems:

we have completed the initial phase of migrating collaborative R&D competitions onto end-to-end online systems to ensure easier customer journeys. In 2016/17, we will be implementing this system and expanding its scope to cover the majority of our funding schemes. This is a key element of the Government's Grant Efficiency Programme

Simplifying our offer:

having completed work on simplifying our brand, we will continue to make it easier for companies to engage and work with us, understand our offer and access funding and support through collaborations and partnerships

Improving current processes:

we are continuing to improve our operational processes to support simplification, having delivered efficiencies in our Knowledge Transfer Partnership (KTP) and internal financial processes in 2015/16

New innovation finance products:

at the end of the year we will, in collaboration with BIS and other stakeholders, launch pilots for

New Finance Products, aimed at supporting our delivery plan and overall strategy. We will ensure the people, processes and systems are in place to deliver that programme smoothly and efficiently

Finance transformation programme:

a new finance system to support Innovate UK's operations will be implemented in the financial year 2016/17

Data visualisation:

we are working to make data on where our funding goes and the impact it has more visible, which in turn will help inform our strategic investment decisions

• Common technical services:

as part of this government-wide drive to deliver IT service efficiencies, we will continue to reduce costs by making our technology better aligned with staff needs to drive increased productivity, collaborative working and to deliver the 5-point plan

Communication

For an organisation such as Innovate UK, outstanding communication is an integral part of achieving its goals. Our communication strategy for 2016/17 has 4 main areas of focus:

Building visibility

Research is showing that, one year after our name change to Innovate UK, we are 3 times more visible to businesses than we were previously. And online data is showing a continuously upward trend of engagement with our online presence over the past year. We will continue our drive to raise awareness of Innovate UK even further, encouraging more businesses to start their innovation journeys, work with us and partners and contribute to UK economic growth. A specific



focus of our online communication this year is 'aspiring entrepreneurs' – our pipeline of budding innovators whose ideas we can help become reality with the right support.

Powering our sector groups

As we focus Innovate UK's capabilities through 4 sector groups, communication is essential – to build sector links across government and research, to listen to business and understand their needs, to highlight future opportunities and technology directions in each area and to promote the funding opportunities we offer businesses to help them grow. Our communications plan to achieve this will demonstrate our sector expertise across these key stakeholder audiences using techniques from social media to strategic publications and will speak to business both directly and through our networks.

Enabling our networks

This year we will be evolving our innovation networks and strengthening our own local presence as part of co-ordinated regional support for innovative businesses. To support this evolution, we will develop co-ordinated communication plans to present to business a joined-up offering of regional, national and international support through our own networks and in close collaboration with regional partners.

• Facilitating organisational performance Internal communication helps ensure our people are engaged with our goals and can focus on delivering the best outcomes possible, especially at a time of change and organisational development. Staff surveys show on average we score above the highest-performing Civil Service organisations for staff engagement and we will help to maintain this through effective communication.

Although we employ a mix of channels to deliver our communications, we are heavily digitally biased and we are reaping the rewards of much higher digital engagement with our organisation through the delivery of an audience-driven digital content strategy. We supplement our digital programme with proactive media relations and live events.

Customer service

Central to the support service's focus in 2016/17 will be ensuring Innovate UK becomes a more efficient organisation for customers. Having driven up customer service in the previous financial year, the main objective in the coming year will be to maintain and improve those high levels of support.

Among initiatives to achieve those goals are fully integrating the new customer relationship management (CRM) platform and telephony system to enhance customer service and improve efficiency. Systems and customer support service structures

implemented in 2015 and 2016 aim to ensure the high level of enquiry resolutions already achieved – 90% within 48 hours and 95% within 120 hours – continuously improve. This will involve forging closer links between our internal technologists and our customer support team to raise awareness levels and ensure they are able to give advice across the innovation landscape and support customers across a range of strategic networks.

Also, we will be working to ensure the knowledge and systems are in place to support the new grants system once it is implemented and, before then, to support the improved applications process.

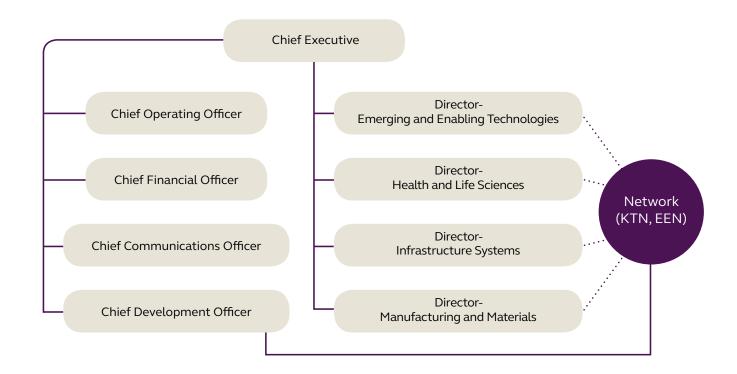
People and resource planning Innovate UK has a highly skilled and capable team of specialist and professional staff, with strong business experience. These people are essential to delivering our goals as the UK's innovation agency.

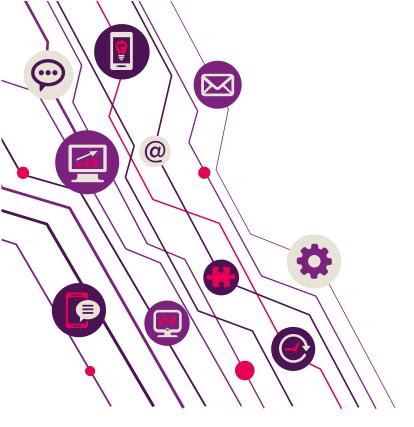
The financial year 2016/17 is a time of transition and change in the life of Innovate UK, as we adapt the organisation to reflect our strategic goals for the next 4 years and ensure we can effectively achieve them.

At the start of the year, we re-organised our executive management team to reflect our new focus on 9 key areas as shown in the organisation chart below. Work will continue during the year to refine the structures within each of these groups. We will also look at organisational aspects of planned changes in the mix of our innovation support in the coming years – for example, offering new innovation finance products, alongside grants, to suit differing needs of business. We are planning for the possibility that this may require us to change our staffing numbers overall.

As well as the right structures, we work to ensure we have the right skills, capabilities and working practices in place to ensure success. Developing our people and maintaining a strong pipeline of talent is a critical factor.

We have a number of processes in place to ensure the core values of diversity and inclusion are reflected across our organisation and in 2016/17 we will build further on these.





Impact and evaluation

Understanding the impact of what we do is crucial. A strong evidence base helps us ensure we are getting value from our use of taxpayers' money, directing our activities at the areas where we are most effective at driving economic growth, and enables improvements in programme design and implementation.

Measuring the impact of innovation support is notoriously difficult, but we have taken steps to improve our evidence base since establishing our Economics and Evidence function in 2013. In 2016/17, we will take this further, focusing on 3 major initiatives: continuing to tailor our evaluation programme to our new structure, introducing a new system of measurement and metrics and continuing to engage with the research community.

We will continue our evaluations of the impact of our strategic investments in Low Impact Buildings and Sustainable Agriculture and Food (publishing interim reports in 2016/17) and the Catapult network. We will also begin evaluating the work of the four new strategic sector groups: Emerging and Enabling Technologies, Health and Life Sciences, Infrastructure Systems and Manufacturing and Materials. In doing so, we will seek to use the highest standard of evaluation methodologies, including looking at experimental pilots for new activities where appropriate. We will publish our

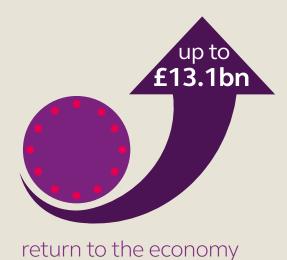
evaluation strategy and continue to publish all evaluation reports to ensure transparency and accountability are maintained.

Monitoring will improve through new, regular reporting on activities and through building new systems to monitor outputs from our investments in innovative businesses - for example intellectual property, technological progress, resulting employment and coming to market.

We will continue funding the Enterprise Research Centre in the next financial year and beyond. It has already provided world-class research information on the factors driving SME growth and innovation's role in it, which helps inform the design and implementation of our programmes.

In 2015/16, we worked with the Economic and Social Research Council to set up the Innovation Caucus, which promotes knowledge exchange between social science researchers and Innovate UK with the aim of supporting the UK innovation ecosystem. With the first phase of the Caucus ending in October 2016, we will continue to assess its effectiveness and establish the best route forward for this initiative. It has already produced valuable research on business model innovation and university-business collaboration, helping us to assess where we can most add value.

Numbers at a glance





organisations supported



of GVA for every £1 invested





> 7 jobs created for every business invested in

Impact figures have been calculated on the basis of our published evaluations of Collaborative R&D, Feasibility Studies, Smart and Knowledge Transfer Partnerships. Together, these programmes represent 90% of our direct support for business-led innovation since 2007. For the total impact figures above, we have made an assumption that the impact of the 10% of areas we haven't evaluated is equal, on average, to the evaluated areas.

Follow Innovate UK throughout the year:

Telephone: 01793 361000 **Web:** www.innovateuk.gov.uk









Innovate UK is the UK's innovation agency. Innovate UK works with people, companies and partner organisations to find and drive the science and technology innovations that will grow the UK economy - delivering productivity, new jobs and exports. Our aim at Innovate UK is to keep the UK globally competitive in the race for future prosperity.

Innovate UK is the trading name of the Technology Strategy Board, which is an executive non-departmental public body sponsored by the Department for Business, Innovation and Skills, and incorporated by Royal Charter in England and Wales with company number RC000818. Registered office: North Star House, North Star Avenue, Swindon SN2 1UE.

Telephone: 01793 361 000 **Email:** support@innovateuk.gov.uk

www.innovateuk.gov.uk

Follow us on



© Technology Strategy Board April 2016 C16/CO300