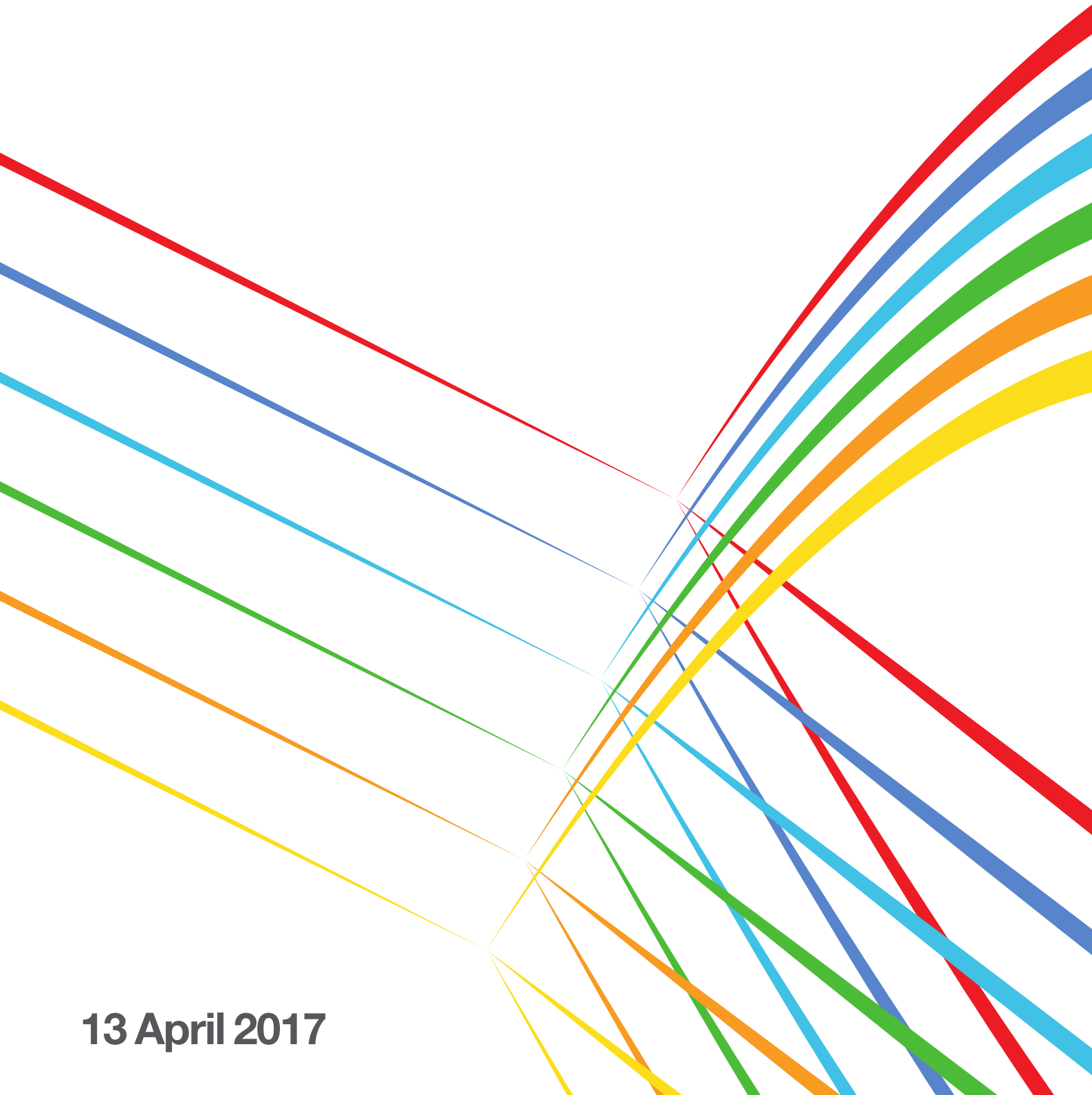
Design: Delivering a new approach to growth

Design Council's response to the government's Industrial Strategy Green Paper



13 April 2017

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The pace of change in the digital, biological and technological worlds is creating significant change and disruption for business, work and people. In addition, the challenge of closing the UK productivity gap and rebalancing growth, means it is critical that the government's industrial strategy has a clear focus on delivering inclusive and sustainable growth that equips people with the right skills and creates resilient communities able to respond to the global opportunities of the future.

Design and the Design Economy has a fundamental role in helping the country achieve this step-change. It cuts across the whole of the economy and multiple industries, contributing over £70bn in GVA. It provides the emerging skills of the future and touches every aspect of our lives – the products we buy, the services we use, the built environment around us, and the digital world in which we communicate.

The economic disruption of the fourth industrial revolution creates risks and opportunities for the UK. If these opportunities are to be grasped and translated into products and services that transform the economy, and deliver high-value jobs that improve living standards for all people, then the scale of change requires a new approach to delivering economic growth for the UK.

A new approach that creates disruption and unlocks problems to bring forward innovation that will deliver transformational change for all. To deliver this the country needs design.

A Design for Growth Blueprint: delivering a new approach to growth

Our Design for Growth Blueprint will drive and deliver resilient, inclusive and sustainable growth. It will integrate design into five principles that we believe should underpin the industrial strategy, these are:

- People
- Ideas
- Place
- Skills
- Sectors

The Design for Growth Blueprint will do this by:

1. Providing practical evidence and insight on design and the vital role it can play to bring about change to key local partners and institutions (central to delivering growth) across: education; the public sector, local enterprise partnerships (LEPs) and business.

2. Setting out how to use design to cut across sector and policy silos to integrate a place-based response which will create the conditions for sustainable, resilient and inclusive growth.

This will support places across the country to bring forward innovation and drive productivity at scale and pace that result in opportunity and prosperity for all.

Our offer to government is to pilot the Design for Growth Blueprint in a targeted locality.

We will work with government and key stakeholders to establish a Design for Growth Network that engages business, SMEs and entrepreneurs to use design to stimulate innovation and facilitate locally-led growth.

Design Council will evaluate the impact and share best practice of what works at national scale to government and national bodies.

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Executive Summary

Design Council is an enterprising charity which improves people's lives through the use of design. We celebrate, advocate and actively pursue purposeful design for public benefit.

This is design which focuses on fulfilling people's needs, design of great imagination and quality, and design that benefits people long term.

As an independent organisation, with more than 70 years' experience of using design to transform lives, we are ideally placed to advise the government on how design can spark greater economic growth for England, Scotland, Wales and Northern Ireland.

Our extensive research and international network of experts provide valuable insight into the contribution design can make to improve productivity and rebalance growth.

Our response draws on our experience of working with a wide range of public, private and third sector organisations across the country. By pursuing purposeful design for public benefit, and across all places, we can play a powerful role in helping the government achieve its objectives: to deliver economic growth that leads to thriving communities, growing businesses and a better quality of life for all places across the UK.

Principles to guide the strategy

The ten pillars of the industrial strategy provide a solid framework. However, we think government should focus on five core principles.

These principles should define investment choices, direct the considerable power and influence of the government to lever change, and help unify the focus of multiple stakeholders and sectors across different places and geographies.

For each of these principles, design offers practical insights and tools that will help improve the strategy:

1. **People:** ensure the strategy is focused on creating sustainable and inclusive economic growth and a better quality of life for people. An outward-looking strategy which measures its success in terms of delivering real outcomes for people rather than an inward-looking strategy focused on systems and processes, it must set out and measure the conditions of inclusive growth that bring benefit to people.

2. **Ideas:** invest significantly to generate ideas for the knowledge economy. Establish frameworks to translate more of these ideas into commercial products and services that will also create new markets at home and internationally.

3. **Place:** root investment and policy interventions in places where people live and work. Investment must incentivise collaboration across all stakeholders who play an influential role in creating local, regional, national and international growth. Insights and learning must be shared and scaled across the country.

4. **Skills:** equip people with the right skills and competences for their whole career. This must extend across formal and non-formal learning, and have a cross-departmental

focus. It needs to go further than STEM skills. This will help places to be resilient in the face of rapid technological and economic disruption and create a fairer society that supports opportunities for everyone.

5. **Sectors:** link sectors to people, place and skills. Use public investment to incentivise cross-sector collaboration to create world-leading sectors and long-term growth.

These principles should be clearly integrated and embedded across all parts of the industrial strategy: across the 10 pillars, the Industrial Strategy Challenge Fund and future sector deals. This will generate new ideas and insights on how to use existing assets to stimulate change to deliver inclusive growth. Integrating these principles will clarify the potential impact of the industrial strategy not only for people and places, but also for existing supply chains and multiple stakeholders.

The role of design

The UK has world-renowned design capabilities which are already boosting the economy, driving productivity and helping to deliver inclusive and sustainable growth for communities.

Our own work has seen design play a critical role in helping new entrepreneurs define their product and brand to secure investment and create jobs for people. We have seen design turn around flatlining businesses, which are now thriving and exporting globally. We have seen design unlock barriers between public, private and third sectors, and inspire public servants to deliver better services focused on people's real needs. We have seen design create products that protect people from illness.

Design is firstly about meeting the needs of people.

Design acts as a bridge across different sectors, disciplines and cultures. It cuts across the whole of the economy and multiple industries from the products we buy, the services we use, the built environment around us, and the digital world in which we communicate.

Design identifies shared challenges and common connections across multiple stakeholders by challenging their thinking and views.

It acts as a problem-solving tool. Design applies critical thinking to reach the real root of a problem and clearly define it from the perspective of people.

It facilitates close collaboration across multiple stakeholders and accelerates the creation of alliances to overcome common challenges. It shapes ideas and helps to make sense of achievable and practical options, setting out concrete steps to make ideas real.

Design generates unique insights and tangible knowledge that can be missed if stakeholders do not know how to work together or do not understand each other's cultures or aims. New insights can then lead to an improved strategy or more efficient ways of working that deliver outcomes that have a better impact on people, places and investment.

Design keeps different organisations and institutions intensely focused on creating joint solutions to shared challenges, defining and redefining possible solutions, minimising and sharing risks, and generating imaginative but effective ways of creating economic or social value.

Design unlocks solutions to problems. Design is an integral part of innovation that can stimulate new products and services that transform lives.

Design in the industrial strategy

Design and the design industry is driving improvement across the economy and across our society – from digital service transformation in manufacturers such as Apple and financial sector companies such as Barclays Bank, through to product manufacturing in Dyson and Jaguar Land Rover. In places and cities that have used well-designed infrastructure to transform places to grow the economy, design is creating real benefit for communities. Design has driven improvement in how vital public services are delivered, ensuring that services truly meet the needs of people from housing supply to health and wellbeing, vital to delivering growth.

We welcome the government's commitment to a sector deal for the creative industries, of which design is a key part. In fact, design is the fastest growing part of the creative industries.[1] The design sector is already making a significant contribution to economic growth and productivity, generating £72bn in GVA in 2015. Design workers are 41% more productive than the average UK worker and the UK has the largest design workforce in Europe, crucial to global competitiveness. Our own design support programmes delivered to more than 5,000 SMEs demonstrated that for every £1 businesses spent on design there was a £20 return in turnover and £4 net operating profit.[2]

British design is a global brand which we should capitalise on as the UK forges a new relationship with the world outside the EU. Championing and promoting British design to ensure we showcase our world-leading talent boosts exports and trade and drives growth. The UK design sector contributed £34bn in GVA via global exports in 2013 and comprised 7.3% of all UK exports. For every £1 companies invest in design to support export growth, they can expect a return of £5 in exports. Despite this impact, there is significant scope to scale UK design across key sectors to generate growth in international markets.

There is more design can do to meet future economic challenges in order to deliver growth for people and places, generate ideas, stimulate sectors and deliver the right skills.

Design in the economy of the future

Design has a valuable strategic contribution to make in national and local policy to stimulate growth that will help places successfully navigate changes associated with the Fourth Industrial Revolution in digital, fintech, technological and biological development.

For example, design is critical to exploiting big data and to create new products or services or in learning how to best apply 3D printing in manufacturing and healthcare.

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[1] Official statistics, DCMS January 2014 https://www.gov.uk/government/statistics/creative-industries-economic-estimates-january-2014

[2] Design delivers for business 2013 https://www.designcouncil.org.uk/resources/report/design-delivers-business

Design will play a vital role in using advances in digital technology, for example, using and integrating data analytics and digital modelling to support development of products, services and places. The rise of well-designed digital products and services create exciting new opportunities for design to create disruption and complement other sectors to grow the digital economy.

Design can also span technologies and sectors to fuse the digital and physical, and will play a crucial role in the design of UK smart cities and towns that are equipped to cope with population increases. This knowhow can also be exported to cities and places around the world. But the role of design is not only to exploit value in the intersection between technology and the physical. It will also play an important role in facilitating citizen engagement, ensuring that places, products and services reflect and meet people's needs.

Industrial strategy challenges

If new opportunities for growth are to be grasped and translated into jobs or products and services that improve lives, the industrial strategy needs to ensure that investment from areas such as the Industrial Challenge Strategy Fund is targeted more broadly than is currently proposed.

All sectors – not just science and technology – depend on an element of R&D to generate ideas that can lead to growth. Design has an important role in driving growth across the creative industries, but also wider industry. For example, the largest user of design in the UK is the information and communication sector, with designers accounting for 22% of the workforce and 24% of its wage bill.

British design will play a critical role in translating ideas into market-leading and market-making opportunities.

However, design is underused by UK businesses and often used as a 'last finish' rather than as a first priority. There is significant scope to increase its use which will stimulate further productivity gains and economic growth. The industrial strategy therefore needs to focus on helping create the frameworks and incentives that will enable design to help scale up ideas in commercial products and services, at home and globally.

Design Council driving design for growth

As an independent broker, Design Council is able to build on the success of the design sector and creative industries, working to help the public, private and third sectors to use design to create further economic opportunity and design services that transform lives.

We have worked across multiple organisations, institutions and stakeholders including national and local government, SMEs, manufacturers, corporates, universities, further and higher education, academia, the wider public sector and the third sector.

Design can play an important role in helping to ensure that various sectors, organisations, institutions and multiple stakeholders are focused on growth and delivering services that meet people's needs.

There is also significant scope for the design sector to improve its record on gender diversity which is still not reflective of the country's population. This is essential to utilise all the talent

available to the UK and to stimulate a wide range of new ideas for the long term as well as improve equality.

The industrial strategy can draw on design to help create the right conditions for inclusive, resilient and sustainable growth. We believe these conditions include:

a) Ensuring more ideas make the leap from laboratory to market by investing heavily in R&D and design, exploiting research and enabling better commercialisation of development.
b) Civic and business leaders setting out a clear vision and strategic plan for growth in their area that is collaborative across multiple sectors and communities.
c) Well-designed, integrated and high-quality infrastructure that brings wealth and opportunity to the whole country, not just metropolitan cities. Infrastructure must be focused on people's needs and lead to sustainable growth that attracts and retains business and skills.
d) Alignment of infrastructure to other major policies, for example, unlocking housing growth as set out in the government's housing white paper.
e) Transforming our public services by putting people and places at the centre of service design to deliver more effective and efficient services.
f) People and business in different geographies should be equipped with design skills, such as critical thinking and complex problem-solving. This will help stimulate greater innovation and help people and places cope with future economic disruption as well as take advantage of new opportunities.
g) Local policy interventions must be driven by local institutions, and at the right scale through elected mayors and local enterprise partnerships with clear goals, accountability and missions.
h) Design needs to be hardwired into business of all sizes and institutions at all levels. It should be owned and championed by boards and management to enhance competitiveness and help create a nation of entrepreneurs and innovators.

The success of any industrial policy, however, depends on how policymakers can bring together national and locally administered policies to improve the economy and the country, and implement policy to deliver change.

Design is also being used more by governments at a national level across the world. Design policy, practice and associated expertise have helped position economies and countries on the international stage. There are many examples – from Estonia to Chile – of nations who are successfully mainstreaming this approach within their national economic and industrial policies.

This is an approach UK government can also adopt to help deliver growth and a better quality of life.

Our experience tells us it is critical that the economy and society become more innovative and productive to maintain growth and improve the quality of life for different localities. As we exit the EU and enter a global market, building on existing strengths such as design and developing new strengths will be vital.

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Pillar 1: Investing in science, research and innovation

1.1 Design has a vital role to play in accelerating ideas from laboratory to market. The process of design captures insights on need and translates these into commercially viable ideas, both now and in the future.

1.2 The pace of technological change in the digital, biological and physical sphere means there will be new economic opportunities to grow new markets – both in the UK and globally – improve productivity and spread growth across the whole country.

1.3 The UK ranks third in the world for having the greatest number of citations and scientific published papers,[3] and eighth in the world for corporate R&D.[4] When design thinking[5] is applied to our excellent science base, this creates growth by connecting ideas to people and potential markets. However, for too many years too few scientific ideas have been transformed into products or services for local communities and the places in which they live and work.[6] The industrial strategy offers an excellent opportunity for the government to incentivise our science base to use design in order to maximise commercial impact and increase benefit to the public.

Q5. What should be the priority areas for science, research and innovation investment?

Q6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?

We have answered questions 5 and 6 together.

1.4 The principles set out by the government in the Industrial Challenge Strategy Fund (Challenge Fund) set a strong science base for the UK and establish a good foundation to develop both existing and as yet unknown ideas and sectors that may emerge in the future. However, by itself this is not enough. Our approach would be to prioritise innovation investment in three different areas.

1.5 Firstly, in world-leading sectors where the UK has a competitive edge to maintain and grow its authority, for example, the automotive and aerospace sectors.

1.6 Secondly, in sectors where there is real potential for scaling up in markets and in different localities, such as construction and healthcare.

1.7 Thirdly, in emerging sectors that are expected to be significant growth areas in the immediate and long term, such as ongoing technological developments in financial

[3] For more information, see: http://www.scimagojr.com/countryrank.php
[4] 'UK ranks eighth globally for corporate R&D spending, investing £16.5bn last year' PWC, 25 October 2016 http://www.strategyand.pwc.com/uk/home/press_contacts/displays/2016-global-innovation1000-study-uk
[5] 'Design thinking' refers to the way design stimulates new thinking, encouraging organisations to better understand their users, use this insight to shape their goods or services, and deliver a better customer experience as a result. In the context of R&D, this can provide structure and focus to the innovation journey by helping find practical applications for research insights and mapping the route from idea to market proposition. For more evidence on how this works in practice, see: http://www.designcouncil.org.uk/sites/default/files/asset/document/innovation-by-design.pdf
[6] HM Government (2017) *Building our Industrial Strategy* https://www.gov.uk/government/consultations/building-our-industrial-strategy

services, reshoring manufacturing and smart construction, which are estimated to be collectively be worth £300bn by 2020.[7]

1.8 Fundamentally, in order for UK research and development to impact globally, grow new markets, and maintain a world-leading edge, the government must invest in design.

1.9 From our extensive research we know that design has a vital role to play in maintaining, scaling and enabling the UK's competitive edge. Integral to the innovation process from the start, design can push the boundaries of research by developing ideas that connect to people and places, nationally and globally. It works to identify new markets, providing solutions to problems that are rooted in real-world needs.[8] This can result in transformational products and services that not only improve commercial value, but also ultimately resolve unmet need, changing lives. Take, for instance, the Apple iPad, which has brought together lots of existing (and publicly funded) technologies – cellular technology, the internet, Siri (artificial intelligence and voice recognition) – and provided consumers with a new, well-designed choice going beyond the bounds of what customers previously knew (the mobile phone and the laptop). In doing so, it also created a new market for tablet computers, with 208m sold globally in 2015/16, outstripping sales of desktops (113m) and laptops (163m).[9]

1.10 Design creates value across the economy. Our research[10] shows that the largest user of design in the UK is the information and communication sector, with designers accounting for 22% of the sector's workforce and 24% of its wage bill. Manufacturing sectors tend to employ between 5-10% of their workforce in design roles. Crucially, when industry invests in design it provides significant value to innovation and productivity, and our experimental research suggests that it can contribute to as much as a 469% uplift in productivity in sectors such as high value-added manufacturing. [11]

1.11 However, despite the compelling case for design, it is underused by UK businesses particularly at strategic management level.[12] We welcome initiatives such as the Innovate UK Design Foundation programme, which provides funding incentives for entrepreneurs to partner with designers primarily at the concept to commercialisation stages of innovation. However, there is a golden opportunity to leverage the impact of design even

[7] 'Fintech, reshoring and infrastructure: Britain has £300bn of potential' City Am, 10 November 2014 http://www.cityam.com/1415593255/fintech-reshoring-and-infrastructure-britain-has-300bn-potential

[8] Design Council (2015) *Innovation by Design: How design enables science and technology research to achieve greater impact* http://www.designcouncil.org.uk/sites/default/files/asset/document/innovation-by-design.pdf

[9] https://www.statista.com/statistics/272595/global-shipments-forecast-for-tablets-laptops-and-desktop-pcs/

[10] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

[11] As part of our Design Economy research, we explored the difference in productivity between 'design-active firms' and their peers. Design-active firms are those that invest in and use design strategically, but don't necessarily have a large proportion of designers in their workforce. For further information, see: Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

[12] European Commission (2016) *Innobarometer* http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer_en

earlier and throughout the innovation process across all nine technology readiness levels[13], from 'blue sky' research through to concept and ultimately commercialisation.

1.12 We therefore recommend an action plan for the use of design across the innovation agenda within the UK, setting a Design for Growth Blueprint for connecting design to innovation and growth, and outlining how to build greater design capacity across the national innovation system and businesses to deliver ideas that result in transformation and wider economic growth.

1.13 Design has a role to play in engaging SMEs and communities in local economic development. The Glasgow Future City dashboard is a good example of this, combining service design and digital tools to customise the data the city produces into useful applications and digestible formats for citizens. In this sense design can translate science and research into valuable assets for business, people and places, encouraging its uptake.

1.14 All businesses should be supported to innovate at some scale by the Challenge Fund investment, whether to maintain competitiveness or to disrupt the marketplace. In addition, institutions that are driving the UK research and science base should consider how innovation (whether scaled robotics and automation or pioneering healthcare products) will impact people across the UK. To do this they need design.

1.15 At the earlier end of the spectrum of scientific research and R&D, Design Council has worked with more than 30 universities (including most of the Russell Group) and supported over 100 research projects to use design strategically to translate scientific ideas with the potential to deliver real life impact. This work has helped scientists and researchers understand how the design process can help de-risk ideas, communicate the benefits and potential outcomes from their work and increase their potential to achieve their ambitions and turn ideas into products and services for market.[14]

1.16 In addition, investment in the Challenge Fund will further maximise impact if the government roots the investment in diverse and targeted places across the country to support the drive to rebalance the economy. This will spark and incentivise innovation, and scale up the impact of R&D across the whole country. Currently hot spots for innovation are clustered in specific places in the UK, such as the golden triangle of advanced research between Oxford, Cambridge and London, the South Yorkshire metals industry and the emerging hi-tech cluster across Bristol, Bath and Swindon. However, adopting an approach that extends this impact – by sharing insight from existing clusters and investing in a wider pool of sectors and locations – would result in the transformative scale the industrial strategy sets out to achieve. For example, scientific research that has great growth potential is taking place across the country in enterprise zones, such as in Newcastle where they have recently opened Science Central, a state-of-the-art science park in the centre of the city, bringing together a range of different sciences to maximise opportunities for collaboration and new innovation.

1.17 A Challenge Growth Fund pilot would link investment in challenges to places, connecting to local businesses, local area plans and skills to maximise impact from such investment across the country.

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[13] European Commission (2016) *Horizon 2020: Work programme 2016-2017.* Appendix G: Technology readiness levels http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf

[14] Design Council (2015) *Innovation by Design: How design enables science and technology research to achieve greater impact* http://www.designcouncil.org.uk/sites/default/files/asset/document/innovation-by-design.pdf

1.18 We also advocate that the government includes provision for design when investing in Challenge Fund areas. Supporting organisations to use design through the Challenge Fund will better support the commercialisation of R&D and act as a stimulus to economic growth, as well as supporting areas of the country most in need of economic regeneration.

1.19 This will maximise opportunities for the UK given likely future technological disruptions, such as automation. For example, investment could be targeted at the lowest wage sectors in the UK, and at areas experiencing multiple deprivation. The two are often interlinked, and sectors include retail, accommodation (ie, hotels), food and administrative services. These sectors employ a third of all workers and produce 23 per cent of the UK's GVA, but on average they are 29 per cent less productive than the UK average.[15] Where investment can be linked to forms of innovation, design can play a major role in raising productivity, and supporting and accelerating ideas to market.

1.20 In addition, to get the best value from the Challenge Fund, investments should also be targeted at identifying the conditions that will lead to growth and create collaboration. Our approach would be to incentivise and stress the need for very close collaboration between multiple organisations that can influence local economies, such as universities, local enterprise partnerships, metro mayors, industry, the public sector and national trade bodies.

1.21 Because design challenges thinking, it can help to define and make sense of the connections across different areas of the Challenge Fund. This will help to harness the potential of the fund and galvanise sectors to create new products and services that transform life for people and places.

Key recommendations

1. To create a clearer link between investment in the Challenge Fund and growth in places we recommend creating a Challenge Fund Growth Pilot:

(a) Sufficient investment in the Challenge Fund should be diverted to remaining Regional Growth Fund programmes to enable a pilot that links investment in challenge area and sectors to a place. The purpose would be to identify the conditions that have the most impact in stimulating growth. Led by local enterprise partnerships it should exemplify close collaboration between key local and national stakeholders and if successful, the pilot should then be scaled up and replicated in other geographies.

(b) Design Council: Design for Growth Blueprint will reinforce the value of design to challenge fund areas. It will set out to sectors and institutions in receipt of challenge fund investment for research and development how to use design to develop products and services for markets. Fund recipients should be able to demonstrate how design has been used.

2. Include design as eligible for a tax credit as part of the government's review of the tax environment for R&D. This will provide greater incentive to businesses to use design at the earlier stages of innovation and enable design to make a greater contribution to economic growth for people and in places, stimulate new ideas, improve skills and support sectors.

[15] IPPR (2016) *Boosting Britain's Low-Wage Sectors: A strategy for productivity, innovation and growth* http://www.ippr.org/publications/boosting-britains-low-wage-sectors-a-strategy-for-productivity-innovation-and-growth

Owlstone: Using design to get from the laboratory to the market

Owlstone is a successful British nanotechnology company which has used design in its earliest stages of formation as a spinout from Cambridge University, to become a high-growth start-up and leader in its field. The Owlstone detector is a revolutionary coin-sized device that can be programmed to detect a wide range of chemical agents that may be present in extremely small quantities. This ranges from detecting contaminants and warfare agents in the atmosphere, to smelling for the presence of diseases such as diabetes and lung cancer on a person's breath, meaning the device has numerous applications in a range of markets.

Design Council first supported the founding team back in 2004 while the company was still in its infancy, working at Cambridge University. We designed a toolkit and package of support and coaching to help Owlstone overcome a number of challenges such as explaining their largely invisible technology to investors, and then put in place design processes and systems to better communicate the value of their technology as well as build simple, low-cost prototypes to help test new applications for the technology in different markets.

The modelling and visualisation work we conducted with Owlstone helped them to go on and raise the capital they needed, which included $15 million in investment as well as a $4m contract with the US Department of Defence. Since then, Owlstone has expanded into new markets, and in January 2017 raised a further £9.3m to commercially launch their breath biomarker R&D services, including the opening of a new high volume clinical facility, and to fund ongoing clinical trials in lung and colon cancer screening.

The role of design in delivering leading-edge health healthcare and medicine

It is estimated that 5,000 people die in the UK each year from antibiotic resistant infection.[16] It is also estimated that antimicrobial resistance will contribute to 10 million deaths every year worldwide by 2050.[17] The UK government has identified antimicrobial resistance as a key area to address through its Challenge Fund under the 'leading-edge healthcare and medicine' strand. It sets out an ambition to "utilise new technologies and treatments to reduce antimicrobial resistance by 50% by 2025/30".

Design can play a key role in improving infection prevention through the design of tangible products and also services and processes. Design Council has previous experience of bringing designers and manufacturers together with clinical specialists, patients and frontline

[16] Antibiotic Research UK (2016) *Fighting Antibiotic Resistance Today and Tomorrow* http://www.antibioticresearch.org.uk/wp-content/uploads/2017/03/Antibiotic-Research-2016-Final-22.02.17.pdf?b45f15

[17] HM Government (2014) *Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations* https://amr-review.org/sites/default/files/AMR%20Review%20Paper%20-%20Tackling%20a%20crisis%20for%20the%20health%20and%20wealth%20of%20nations_1.pdf

staff to help combat infections by making hospital furniture and equipment easier and quicker to clean.[18]

Our 'Design Bugs Out' programme, which ran between 2008 and 2011, resulted in the development of a range of products that challenged the historic features of hospital furniture and showed how design can enhance effective cleaning and help to tackle healthcare associated infections.[19] An independent evaluation of the programme reported "patients will have a reduced chance of contracting a healthcare associated infection (HCAI) whilst at hospital and receive greater care from staff that do not need to spend as much time cleaning ward equipment."[20]

The same evaluation also independently forecast that such infection prevention contributed to economic growth too, supporting an additional £11.3m in turnover for participating manufacturers and designers. This is equivalent to a return on investment of £104 for every £1 of funding received.[21]

Q7. What else can the UK do to create an environment that supports the commercialisation of ideas?

Q8. How can we best support the next generation of research leaders and entrepreneurs?

Q9. How can we best support research and innovation strengths in local areas?

We have answered questions 7, 8 and 9 together.

1.22 Design enables innovation.[22] Evidence repeatedly shows that firms that invest in R&D, marketing and design are more likely to create change that leads to economic benefit.[23] Organisations that commit to using design are much more likely to make other innovation investments as a result.[24] Integrating design into the culture of an organisation helps to stimulate greater collaboration and problem-solving skills that are key to translating ideas into transformative products and services.

1.23 The absence of innovation drivers at scale is one of the reasons the UK has such a low conversion rate of ideas to market.[25] Design Council has coached approximately 30% of the UK's technology transfer offices and 5-10% of technology transfer practitioners.[26] Our first-hand experience means we know that if resources were to be

[18] Department of Health (2011) *Design Bugs Out – Product evaluation report* http://webarchive.nationalarchives.gov.uk/20160808011051/https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215293/dh_131199.pdf
[19] *ibid*
[20] Ekosgen (2010) 'Impact evaluation of Design Bugs Out', unpublished
[21] Ekosgen (2010) 'Impact evaluation of Design Bugs Out', unpublished
[22] Swann P and Birke D (2005) 'How do creativity and design enhance business performance? A framework for interpreting the evidence' *Creativity, Design and Business Performance* Department of Trade and Industry
[23] Tether B S (2006) *Design in Innovation: Coming out from the shadow of R&D* Department of Trade and Industry; Filipetti A (2010) 'The role of design in firms' innovation activity: A micro level analysis' ed. *DIME working paper* no. 92
[24] Swann P and Birke D (2005) 'How do creativity and design enhance business performance? A framework for interpreting the evidence' *Creativity, Design and Business Performance* Department of Trade and Industry
[25] HM Government (2017) *Building our Industrial Strategy* https://www.gov.uk/government/consultations/building-our-industrial-strategy
[26] Design Council (2015) *Innovation by Design: How design enables science and technology*

better targeted towards supporting expertise such as design, it would greatly improve the chances of organisations such as universities growing and creating wealth for emerging sectors and businesses from their ideas.

1.24 However, entrepreneurs often find the journey from idea to commercialisation stalls after a concept has been developed, tested and initially seen as commercially viable. Obstacles can include failures to attract collaborative partners, investors or customers to fund further development. Often the reason for this lies in the failure to develop and communicate a benefit-driven proposition, based on evidence of market need.

1.25 As stated in our answer to questions 5 and 6, a core value of design is that it focuses on the needs of people and enables entrepreneurs to identify where ideas need development in order to meet market need and attract investors. This design-led approach can develop benefit-driven ideas and innovation, reducing the risk of market failure by applying rigour and a focus on customer need.

1.26 Another key requirement in supporting British entrepreneurs to get ideas to market is improved access to innovation and funding support. For example, ensuring that information about investment and funding opportunities is easily accessible, and that vital expertise, such as design, is available and signposted locally.

1.27 Accessing the right support for different stages of growth is also crucial. For design, we know it is important to match entrepreneurs to the right kind of design expertise, improving the likelihood of their ideas and products reaching the market. Our research shows that the greater the use of design by businesses, the greater the potential return.[27] Through the industrial strategy the government can help to scale up the availability of design support and raise awareness of the benefits of design across the country. This requires strategic action at both a national level and the right alliances between different stakeholders at a local level. Our proposed Design for Growth Blueprint will make a significant difference, signposting businesses or entrepreneurs to the right type of design support.

1.28 In our experience, scientists, researchers and entrepreneurs are too frequently unaware of the value of design to their work. We have recently delivered design education pilots across science, engineering and business schools to raise awareness of the value of design. Emerging insights demonstrate the significant value these pilots bring to students, particularly from applying design methods to real-world challenges, supporting the next generation of innovators, entrepreneurs and product and service designers. However, more needs to be done to scale up design support for business and students if the UK is to reap the full economic and growth benefit of applying design to the commercialisation process.

1.29 Over the long term, the government should also strive to create an environment where understanding how to commercialise ideas by drawing on design expertise is as normal as considering whether to use legal or financial expertise. International leaders in research such as Stanford's Design School and Massachusetts Institute of Technology in the US are already including design in their offering to students and offering design thinking to business and organisations globally.

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research to achieve greater impact
http://www.designcouncil.org.uk/sites/default/files/asset/document/innovation-by-design.pdf

[27] Design Council (2012) *Designing Demand*
http://www.designcouncil.org.uk/sites/default/files/asset/document/Designing%20Demand_Executive_Sumary_Final.pdf

1.30 The Harvard Business Review recently noted that more business leaders and leading companies are also integrating design into their operations and management.[28] There is growing international awareness of the need for design leadership among decision-makers in the boardroom. Apple was among the first businesses to show that having a design leader in the boardroom can revolutionise their offer to people and the market, and that design is of equal strategic importance to marketing or finance. Crucially design can drive a shift in culture that enables not only large-scale commercial businesses but also SMEs, social innovators and entrepreneurs to move their focus from systems and bureaucracy to disruptive products and services that transform lives. It provides an opportunity to fundamentally respond to global-scale challenges with clarity and purpose.

1.31 When design is integral to an organisation's strategy and business development, it contributes directly to innovation performance and helps to accelerate and de-risk ideas.[29] For maximum impact, design must be involved from the very start of the innovation process, not at the tail end of it. Board engagement and belief in design is the best way to ensure this. This will help organisations maintain a clear focus on adapting to new opportunities to grow. There is potential for design support to be scaled through the Northern Powerhouse and Midlands Engine, providing increased impact and the ability to test and evaluate how design sparks innovation and improved commercialisation at scale.

1.32 In order to expand the strengths of a local area, insights on how to achieve effective commercialisation need to be shared across different localities, regions and institutions in an accessible way. This should incorporate online dissemination, as well as being embedded into the culture of institutions that play a key role in research and innovation, such as local authorities, universities and local enterprise partnerships. For example, collaborative forums such as SETsquared should be replicated by neighbouring universities and insights made available across different geographies.[30] In addition, it is important to recognise the growing investment in R&D by creative and digital industries including design. As highlighted in the consultation response from the Creative Industries Council, the UK Innovation Survey shows creative industries are as likely to conduct R&D as manufacturing businesses, yet the UK Challenge Fund excludes wider sectors sitting outside the traditional R&D landscape (manufacturing, robotics, life sciences etc). It is therefore vital that UK innovation investment (through R&D) reflects the current and emerging business landscape and incorporates key industries, such as design.

1.33 Finally, it is important that corporates work with SMEs in local areas and across their supply chains to help them recognise the value that design has for their business. Leading corporates are beginning to recognise that not only does design spark innovation, it can also drive productivity across their supply chain.[31] Where corporates can share insights with SMEs this would help to spread knowledge and embed innovation culture in the local areas in which these smaller businesses operate.

[28] Harvard Business Review (2015) *Design Thinking Comes of Age* https://hbr.org/2015/09/design-thinking-comes-of-age

[29] Lancaster University (2017) *Design Value: The role of design in innovation* http://imagination.lancs.ac.uk/news/Design_Value

[30] SETsquared is an enterprise collaboration between five leading research-intensive universities: Bath, Bristol, Exeter, Southampton and Surrey.

[31] Examples range from EDF Energy's Blue Lab in Brighton to Telefonica's Wayra programme in London, providing incubation and acceleration for tech start-ups, including those tackling a range of social issues.

1.34 As suggested in our answer to questions 5-6, a Challenge Fund Growth Pilot should allocate specific funding towards improving commercialisation, establishing support for supply chain innovation alongside leading commercial investment.

Key recommendations

1. In order for UK science and technological innovation to impact growth, universities benefiting from challenge funding should utilise significantly more expertise from multiple disciplines such as design, enabling the products and services developed to enter new markets.

   Challenge Fund Areas should recognise the commercial advantages of supporting research that uses design, opening up access to funding for wider innovative sectors and businesses, and encouraging collaboration between a range of industrial sectors and traditionally funded science and technology.

2. To support the government piloting the Intellectual Property Office (IPO) in key UK cities we recommend design is included as part of this pilot to help build local capability and collaboration to commercialise intellectual property. This will help the IPO to maximise the economic opportunities that may come from this pilot and from future work in other geographies. We propose that pilot sites are located in established and emerging creative clusters across the country.

Nottingham University Technology Transfer Office: Getting research and ideas to market

The University of Nottingham is an exemplar of how universities can get their research and ideas to market. The university has 21 trading companies licensing up to 15 new technologies per year. It also has a unique Technology Demonstrators in the country, providing a facility for showcasing the university's inventions directly to potential investors. One of the biggest successes to date is Monica, a spin-out company that developed a novel technology for monitoring expectant mothers, which was acquired by GE Healthcare for an undisclosed fee in March 2017.

Dr George Rice, Manager of the Technology Demonstrator at the university is a keen advocate of the value of design in commercialising academic research, delivering training which includes an emphasis on the value of prototyping and visualisation. This approach is particularly useful given the early stage nature of the propositions presented to the Technology Transfer Office, and also in helping researchers better communicate their research to potential investors. Design Council worked with the technology transfer office in 2010 to provide design advice to assist the commercialisation of ideas developed at the university. This included working with a number of researchers to help them get their ideas to market, which resulted in the university securing an additional £375,000 of investment for a range of healthtech projects, including SurePulse Medical Ltd, focused on medical life sign monitoring.

Pillar 2: Developing skills

2.1 Design skills are fundamental to innovation, productivity and long-term economic growth. Our Design Economy research shows design is a significant part of the economy producing £72bn in GVA, and that workers with a design element to their role (in occupations from architects to software designers) are 41% more productive than the average UK worker.[32] Design provides businesses and workers with the complex problem-solving, critical and creative thinking abilities that will be essential to delivering a more prosperous country for everyone. Boosting STEM and digital skills alone will not suffice. A modern industrial strategy should consider the broad range of skills and knowledge, such as critical thinking and complex problem-solving (as demonstrated by design) required by people and businesses to drive innovation, improved productivity and build dynamic sectors and places able to respond to the Fourth Industrial Revolution.[33]

2.2 In order for the UK to remain a global economic powerhouse, the country must invest in developing the talent, skills and knowledge of people in the places where they live and work throughout their careers. This requires a national strategy for the whole population, boosting investment in adult skills in particular to ensure the economy maintains pace with both local need as well as with our key global competitors. While the UK may have a high proportion of adult learners in formal education, there is room for improvement with regards to non-formal education and training, particularly in areas that design cuts across such as the arts and humanities, science, computing, engineering, manufacturing and construction.[34] It is therefore vital that as part of proposals in the green paper to audit sector-specific skills gaps and differences in skills levels between different areas, the government and businesses reflect on the economic value that would result from embedding design across a range of occupations and providing access routes to training, learning and development for the adult population throughout their working lives.

Q11. Do you agree with the different elements of the vision for the new technical education system set out here? Are there further lessons from other countries' systems?

Q13. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?

We have answered questions 11 and 13 together.

2.3 The increased pathways for vocational and technical education outlined in the industrial strategy are welcome. Fundamentally, however, the ambition for high value growth and jobs requires a cross-departmental skills strategy if the UK is to be resilient to future economic trends and disruption. With rapid technological development and the emergence of new products, services and ways of working, businesses and their workforces must become more creative and invest in innovative

[32] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

[33] The Fourth Industrial Revolution refers to the current trend of automation and data exchange, technological breakthroughs in areas such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing and nanotechnology among others.

[34] Eurostat (2015) *Adult Learning Statistics – Characteristics of education and training* http://ec.europa.eu/eurostat/statistics-explained/index.php/Adult_learning_statistics_-_characteristics_of_education_and_training#cite_note-1

approaches such as design in order to respond agilely to change, and lead markets domestically and internationally.

2.4 Internationally other countries are using design to prepare for this economic shift through a range of innovative policies, whether this is introducing citizens to design thinking from an early age, as is now happening in Denmark, or taking the tech-led approach of Estonia which, as a country of 1.3m people, provides a useful example of a way forward for UK cities and regions (see the case study on page 16).

2.5 A government strategy should address existing skills gaps while also developing the skills the UK will need in future to maintain and boost its global position. In addition to changes to formal education, this will also require a new approach to non-formal education and lifelong learning.

2.6 A Skills for Growth strategy should consider how national, regional and local government can work with businesses to align skills investment and provision to the current and future economic priorities set out in the industrial strategy and through local area plans. This includes addressing existing skills gaps and shortages, as outlined in recent research published by the Department for Business, Innovation and Skills on skills mismatches in the UK economy.[35] Design Council's analysis of this dataset suggests that over 7,000 posts across design sectors are likely to face a skills shortfall. This skills gap will have a significant impact on the economy. These posts are also most likely to fall within high value areas of the economy such as architecture, product and industrial design, which our Design Economy research found has productivity levels almost twice the national average. As such, a shortfall in such skills bases will impact economic growth and the drive to be a more competitive and productive economy.[36]

2.7 It is therefore essential to address these skills gaps now, particularly in high value areas of the economy, otherwise we will limit the country's growth and ability to scale sectors which contribute so significantly to the country's economic health.

2.8 In addition to addressing gaps which already exist, it is important the UK prepares for the skills that will be required in the future. The World Economic Forum (WEF) estimates that by 2020 over a third of skills considered important in the middle of this decade will have changed as result of the Fourth Industrial Revolution and advances in technology. This means that many skills we view as being important today will be rendered less important as a result of jobs disappearing, while new skills or currently underutilised skills will become more important as new jobs emerge alongside new or more pervasive technologies.

2.9 The analysis by WEF draws on the U.S. Department of Labor's O*NET database. Design Council's emerging analysis of this source (to be published in summer 2017) highlights that many of the skills associated with design occupations are also those highlighted by WEF as likely to be the most in demand by 2020. It is therefore essential that the government place a greater emphasis on design skills within the UK education system and consider ways to incorporate design across the wider curriculum, providing access to core design skills for the broader population.

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[35] Department for Business, Energy and Industrial Strategy (2016) *Skills Mismatches in the Economy* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/522980/BIS-16-260-research-skills-mismatches-in-the-economy-May-2016.pdf

[36] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

Top 10 skills required by 2020 (WEF) [37]

- Complex problem-solving
- Critical thinking
- Thinking creatively
- People management
- Coordinating with others
- Emotional intelligence
- Judgement and decision making
- Service orientation
- Negotiation
- Cognitive flexibility

2.10 To meet the skills challenge in the green paper, a fundamental shift in the way we approach lifelong learning is required alongside changes to technical education. Given the rate of technological progress, it no longer makes sense that the majority of people complete all of their education in the first quarter of their lives. Access to skills development is currently still too concentrated in formal academic qualifications during adulthood with limited development opportunities for skill development and training outside professional disciplines. There are many examples from around the world of both formal and non-formal education and training providers recognising the value of design skills for the future economy, whether this is the inclusion of design thinking in MBA programmes at ESSEC and Stanford, or our Design Academy and Design in the Public Sector programmes, which provide non-formal training to design students at leading UK universities and to public sector staff to develop the skills and knowledge they need to tackle real-world design challenges.

2.11 For the industrial strategy to deliver on its vision, we believe it is essential to do more to encourage lifelong learning and improve the development of skills such as design. This could have both short-term economic benefits in addressing skills gaps, as well as long-term benefits by readying the country for future economic developments. Given the systemic nature of the challenges facing advanced economies such as the UK, a strategic approach is required. While national government has a leading role, this means involving local areas and stakeholders in developing a skills strategy for the country as this is where these challenges and opportunities will play out.

Key recommendations

1. Design Council offers support to the government in exploring how design can be integrated into UK education and skills. As one of the most productive and cross-cutting economic activities in the UK, design has a critical role to play in providing skills for growth. Given the emerging demand for design skills across the economy we recommend that design is incorporated into key areas of the pre and post 16 curriculum, and that central government works with education providers and sectors, design and professional institutes, business and the public sector to consider the role design skills can play in addressing emerging skills gaps across sectors and the country.

[37] World Economic Forum (2016) *The 10 Skills You Need to Thrive in the Fourth Industrial Revolution* https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/

2. To ensure the UK remains competitive a Skills for Growth strategy (including a Design for Skills strategy), should be produced. The strategy should recognise the rapidly changing nature of key skills needed for sustainable and resilient economic growth, such as design. Identifying the skills required for the future, it should set out targeted areas for investment, mapping out business need and curriculum gaps to improve access, provision and the talent pipeline across the country. Building on the Skills for Growth strategy, local areas should produce a roadmap to 2030 for sustainable and future skills.

3. Given the emerging demand for design skills in the future UK economy, local enterprise partnerships, devolved and combined authorities, further education and higher education institutions should assume combined responsibility for undertaking further education area reviews, skills mapping and provision of, and access to, courses in priority development areas (such as design and construction).

4. A 'career health check' should be made available to the working adult population between the ages of 40 and 50, addressing challenges in lifelong learning. Working with business and local institutions (such as libraries), central government should provide greater access to career support, through digital easily accessible formats providing information on: local skills gaps, emerging industries and training opportunities for key disruptive skills (such as design and digital skills). This will enable planning for a longer working life, and enable people to respond to the changing nature of work.

The construction industry: The importance of design in improving skills and meeting housing needs

The construction industry is one area of the economy exposed to future skills gaps and shortages with an ageing workforce[38] and high use of migrant labour.[39] New technologies, such as Building Information Modelling (BIM)[40] and entrants to the industry further underline the need for skills development within construction.

Developments such as these are already forcing radical changes to the construction industry. BIM offers the potential to reduce the risk of errors and supports coordination as building design develops and moves into the construction phase. The UK is also witnessing developments in modular construction, off-site fabrication and smart homes with the use of biometric access and remote controls. This means that everyone involved within the built environment – from the architect to the labourer – has to develop new skills and knowledge.

Given the government's ambition to build 250,000 new homes a year, there is an opportunity

[38] The Chartered Institute of Building (2015) *The Impact of the Ageing Population on the Construction Industry* https://www.ciob.org/sites/default/files/CIOB%20research%20-%20The%20Impact%20of%20the%20Ageing%20Population%20on%20the%20Construction%20Industry_0.pdf

[39] 'Single market exit: UK construction "could lose 175,000 EU workers"' *The Guardian* 15 March 2017 https://www.theguardian.com/business/2017/mar/15/single-market-exit-brexit-uk-construction-sector-lose-175000-eu-workers

[40] BIM describes the process of designing a building collaboratively using a unified digital platform rather than separate sets of drawings.

to upskill the construction workforce and embrace the opportunity of these new design solutions and technologies to meet future housing need. Harnessing design and technology to meet housing demand will underpin future growth in the UK, foster inward investment and build opportunities to boost exports in architecture and design.

Estonia: Harnessing design thinking and digital innovation to drive economic growth

Estonia is increasingly recognised as one of Europe's leading hubs for start-ups, particularly in technology. Innovation is part of the national culture, with the Estonian government also pioneering e-Residency: a transnational digital identity available to anyone in the world interested in an online business that is not dependent on location.

This forward-looking approach to innovation means the Estonian workforce is increasingly equipped with the skills needed for the future. In 2012 Estonia established its first design policy. The National Action Plan for Design focused on upskilling and increasing the use of design in both the private and public sectors, with an emphasis on design as a source of competitive advantage.

State activities supporting design are targeted at:

- improvement of quality, competitiveness and demand for Estonian products and services on the world market
- development of new skills to support design entrepreneurship
- growing the reliability and quality of the support systems in the design field
- improvement of the welfare of citizens through more user-friendly and personalised products and services.

The combination of design thinking with digital skills has had a transformative impact on the country. The e-Estonia platform has applied design principles to bring together more than 500 online services to citizens, providing an estimated saving of 2% of GDP for the government by going paperless. By developing a National Action Plan for Design and embracing design thinking in policy and practice, Estonia has upskilled its population and set the conditions to attract inward investment. As such, Estonia provides a useful example for British cities and regions for realising the potential of design thinking and technological advancement to drive economic growth and improve their reputations internationally in order to attract investment.

Pillar 3: Upgrading infrastructure

3.1 Design plays a vital role in creating places that are successful, sustainable, and create economic value. It does this by looking at the needs and aspirations of a place and linking this with the infrastructure required to underpin it – both the 'hard' infrastructure as outlined in the government's National Infrastructure Delivery Plan as well as the services and public spaces that create quality of place.

3.2 Investment and timely delivery of infrastructure unlocks economic growth, by providing the fundamentals needed (such as housing, transport links, commercial sites, culture and services) for places to grow and be successful, helping to attract new investment and boosting productivity.[41] Well-designed infrastructure also supports places that work better for those that live and work there, helping to tackle major challenges the UK faces today, including health, energy, transport and climate change issues. By considering an area's digital infrastructure needs too, and the opportunities presented by open data at city level alongside SMART technology, we can also help future-proof places and provide new ways of responding to challenges. As evidenced in examples from Future City Glasgow to the London Data Store, design already plays a key role in several areas across the country in organising digital infrastructure to maximise possible insights from it, although more needs to be done to help all towns and cities across the UK realise these benefits.

Q16. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?

3.3 Through our Place programme, Design Council has worked successfully with places across the country helping them to use design to address local priorities and need, including local infrastructure requirements. This work has drawn on the skills and expertise of our national network of 500 expert design advisers drawn from the public and private sectors. Housing growth and economic development is often affected as a result of poor coordination on infrastructure prioritising and planning, and delays in investment decisions.

3.4 Elected mayors and combined authorities provide a new framework for improved infrastructure prioritisation and delivery. However, it is important that outside these areas, there are the right arrangements (best reflecting local priorities and circumstances) to provide for improved infrastructure delivery. Local enterprise partnerships have an important role to play in planning and delivering infrastructure priorities across their area, as set out in their strategic economic plans. In areas with an elected mayor or combined authority, local enterprise partnerships have an important role to ensure alignment between their strategic economic plans and the priorities and new strategic plans of the elected mayor/combined authority.

3.5 Government initiatives such as the Northern Powerhouse and Midlands Engine recognise the benefit of cooperation and joint working, particularly on infrastructure provision on a greater geographic scale. This allows areas to take advantage of transformational infrastructure schemes such as HS2 and HS3 to support broader regional growth, ensuring that local plans and strategies can take advantage of opportunities to drive growth in other areas. For example, by ensuring that new transport hubs such as UK Central at Solihull are integrated with local infrastructure, there are opportunities to unlock land, assets and opportunities for further growth potential. Design

[41] Archibugi A, Fillipetti A and Frenz M (2017) 'Innovation, investment and economic recovery: a green paper for successful economic policies' [conference paper]

Council plays an important role in achieving this, including through the independent brokerage and support that enables local areas to realise economic value and make a success of collaboration and partnership working.

3.6 The National Infrastructure Commission is key in planning the strategic infrastructure schemes that are needed to support the growth and competitiveness of the UK. It is crucial that the recommendations of the Commission are given significant weight in the planning process (and through emerging strategic plans for elected mayors/combined authorities) to ensure timely and effective delivery of the infrastructure the economy needs.

3.7 Design Council has a long track record of working with major national infrastructure providers to ensure nationally significant infrastructure projects are well designed and provide maximum benefit and impact to local areas through our dedicated infrastructure design panel. Working on schemes such as Crossrail, Thames Tideway Tunnel and major bridge infrastructure in Suffolk and Merseyside, our expertise and insight have helped deliver well-designed infrastructure that local areas need and which supports national economic growth.

3.8 National policy should highlight or set out the need for integrated place-based infrastructure and the cross-cutting connections between digital, energy, transport and housing to support the effective administration and operation of city regions. Well-designed places purposefully integrate infrastructure into long-term national, regional and local growth strategies. Ensuring that local people can not only access housing and travel to work in a timely way, but can also maintain and improve their health and wellbeing, leads to productivity, supports resilience and creates inclusive sustainable growth, which impacts positively on the living standards of people, places and local, regional and national governments.

Key recommendations

1. Well-designed infrastructure (including housing) underpins the creation of successful places and is vital to rebalancing the economy. We recommend that better coordination of infrastructure planning and investment by government is included in the remit of the new Infrastructure Delivery Ministerial Committee, chaired by the Chief Secretary to the Treasury, as set out in the green paper.

2. We recommend that there is better coordination of infrastructure planning and investment decisions by central government departments, building on the National Infrastructure Plan. This should be incorporated into support for initiatives such as the Northern Powerhouse and the Midlands Engine, and link to the strategic plans of elected mayors/combined authorities.

A design-led approach to infrastructure

To ensure that the UK's infrastructure will continue to support economic growth and boost environmental efficiency, investment in national infrastructure is required. A design-led approach that takes geographical context into account will ensure these projects respond well to the setting, speak a confident, architectural language based on their purpose and

function and allay concerns of local communities.

The National Planning Policy Framework states that “Good design is a key aspect of sustainable development, is indivisible from good planning and should contribute positively to making places better for people.”[42] In particular, it identifies the value of design advice and support services, particularly at an early stage in the process to ensure good quality outcomes.

Our nationally recognised design guidance - a design led approach to infrastructure - sets out the key design principles for the development of well-designed infrastructure resulting from our extensive insight derived from providing design advice and review of major schemes[43]. Our expert multidisciplinary design panels have advised on national infrastructure of significance to places and regions across England, including road and rail infrastructure, major stations and interchanges, renewable energy farms and power stations and flood management and defence structures.

[42] DCLG (2012) *National Planning Policy Framework*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
[43] http://www.designcouncil.org.uk/resources/guide/design-led-approach-infrastructure

Pillar 4: Supporting businesses to start and grow

4.1 Design provides crucial support to the start and growth of businesses. Intrinsic to innovation, it works to unlock challenges through the development of ideas, encouraging businesses to engage with their customers to understand what they need and want in order to realise new possibilities in their goods and services. This leads to improved productivity, commercialisation and business growth.

4.2 Countries across the world are recognising the value of design and design thinking to support innovation to deliver business transformation, productivity and growth. However, despite the compelling case for design, it is still underused in the UK. Forty five per cent of UK businesses do not use design systematically or use it as 'a last finish'.[44]

4.3 The UK has a strong track record on business start-ups, with 383,000 business commencements in 2015.[45] However, this growth in entrepreneurship is counterbalanced by the fact that not enough British SMEs scale up their businesses compared to similarly sized businesses elsewhere in the world, and only a small minority scale up to realise their potential both in terms of growth and job creation.[46]

4.4 Design Council is committed to helping the UK achieve a step change and, as the government's adviser on design, we are working to ensure we can provide the most compelling case possible for design to support ministers in making the case to business. Over the last 10 years, our design support to over 5,000 SMEs across the country has demonstrated how design and design thinking can successfully deliver business growth, evidencing for every £1 business spent on design a £20 return in turnover and £4 net operating profit. There is a critical need for scaled-up support and investment in business design support.

Q22. What are the barriers faced by those businesses that have the potential to scale up and achieve greater growth, and how can we address these barriers?

4.5 As identified in the green paper, access to finance and leveraging capital continues to be one of the main barriers to scale-up and needs further attention.[47] Firms in the design economy are no different, as reflected in the creative industries' response to the green paper. Design Council's analysis suggests that between 2010-2014 there was a 51% increase in the number of firms starting up, adding more than 24,000 firms to the industry footprint. [48] While we believe this is a result of growing demand for design, with an average turnover of just over £33,000 per annum, there is clearly potential for scaling these ventures with improved access to finance and support

4.6 However, in addition to the capital initiatives outlined in the strategy, fundamental barriers to growth often link back to a lack of access to the right type of skills and

[44] European Commission (2016*) Innobarometer* http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer_en
[45] House of Commons (2016) *Business Statistics: Briefing paper* http://researchbriefings.files.parliament.uk/documents/SN06152/SN06152.pdf
[46] Enterprise Research Centre (2014) *Moving on From the 'Vital 6%'* http://www.enterpriseresearch.ac.uk/wp-content/uploads/2014/02/ERC-Insight-No_3.pdf
[47] The British Business Bank highlights that problems in accessing finance remain for early stage businesses in their first two to five years of trading history.
[48] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

expertise[49] that can help a business unlock growth potential and improve decision making. When addressing these barriers, design has a fundamental role to play. For example, the aerospace industry is exploring how best to incorporate new materials, new manufacturing techniques (such as 3D printing) and new tools for modelling and non-destructive testing. [50] These developments require aerospace designers and companies to acquire new, more rounded skill sets in order to incorporate technical changes whilst delivering an enhanced service to passengers, helping them to stay ahead of the competition.[51]

4.7 Over the last decade, over 5,000 businesses across the country have realised significant growth benefits from using design in their business and decision making after accessing Design Council business support. In our experience, when a business can draw on design expertise, this leads to sustained and resilient growth. Analysis of SMEs supported by Design Council suggests that 91% of graduates of our previous design support programmes were still trading five years after we supported them, compared to a national average of 41%.[52]

4.8 When used across the business and embedded in decision making by management, design enables a better understanding of customer need and opens up growth potential by identifying target markets. This is a key challenge for early stage entrepreneurs in the UK, where only 25% report that they operate in new product markets (compared to 40% in France and 37% in the US). Likewise, only 16% of early stage entrepreneurs in the UK report that more than a quarter of their customers are outside the country (compared to 22% in Germany and 21% in France).[53]

4.9 In addition, the ability of design to help respond innovatively to challenge enables businesses and entrepreneurs to make confident decisions on capital investment, skills and workforce development. This is crucial to gaining competitive advantage from new opportunities such as SMART technology, 3D printing, use of data etc.

4.10 Design also helps business to identify the actions needed to maintain a competitive edge and improve productivity. For example in 2014 Design Council supported James Heal, a family-owned manufacturer of textile testing machines based in Halifax, to introduce user-centred design process to product development alongside a company re-brand. Four years later, sales increased by 64%, with exports accounting for 95% of its turnover.

4.11 The success of design support and advocacy from organisations like Design Council, demonstrates the benefits of, and need to support increased use of, more strategic use of design. Crucially, design can clarify the ambition and vision of a business as well as help it to better understand its customers and users. In turn this informs the development of new products, services and brands, resulting in globally

[49] Department for Business, Innovation and Skills & GM Peter Swann Innovative Economics Ltd (2010) *The Economic Rationale for a National Design Policy, BIS Occasional Paper No. 2* https://www.gov.uk/government/publications/the-economic-benefits-of-a-national-design-policy
[50] Non-destructive testing refers to the analysis techniques used in science and technology industries to evaluate the properties of a material, component or system without causing damage
[51] Design Council (2015) *Leading Business by Design: Aerospace sector* http://www.designcouncil.org.uk/resources/report/leading-business-design-aerospace-sector
[52] Office for National Statistics (2016) *Business Demography, UK: 2015* https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/businessdemography/2015#business-survivals
[53] Global Entrepreneurship Monitor (2016) *United Kingdom 2015 Monitoring Report* http://www.gemconsortium.org/country-profile/121

disruptive products and services such as the iPad, and innovative new business models, such as AirBnB and Uber.

4.12 In order to maximise design expertise, businesses need a trusted independent adviser on the best type of design to use (from customer service design to UX design). Businesses that want to grow often don't know how to use design to deliver growth, as evidenced by the European Commission's Innobarometer.[54] Yet, as established in our response to Pillar 1 we know that when design or design knowledge is used at senior management and boardroom level, it leads to long-term commercial benefit and translates into actual growth in jobs and value for people. Given the scope to scale up the use of design in businesses there remains significant opportunity for design to impact on the economy by opening access and design support to SMEs.

4.13 Overall the industrial strategy provides a real opportunity for the government to help break down existing barriers to expertise that helps them to be innovative, such as design. The prize is significant. If just one per cent of current SME businesses that could scale up did grow, this could lead to thousands of additional jobs and over £30bn in GVA.[55]

4.14 Finally, access to business support and expertise should be rooted in local communities. Where there are successful local networks or programmes these should be scaled across local enterprise partnerships and growth hubs, sharing learning of what works across towns, cities, regions and the country. All areas of the country should access the support they need to play to their strengths and benefit from economic growth and resilience. Any solutions, policies or investment from national government must be easily accessible to businesses and communities. This will enable growth to be rooted in local areas that could be economically vibrant and also help these areas attain future global success. Our Design for Growth Blueprint (referenced in answers to Pillar 1 and expanded below) can play a significant role and we are keen to progress thinking on how this could develop with the government in the coming months.

Key recommendations

1. As referenced in Pillar 1 Design Council offers to develop and pilot a Design for Growth Blueprint in a targeted locality. The Blueprint will identify and unlock opportunities and the benefits of using design, setting out clearly and simply how design can support businesses to grow, respond to challenges and stimulate innovation, and how design can support system change, service design and bring key sectors and institutions together to drive economic growth in place. The Design for Growth Blueprint would include advice on how to access local design resource as well as advice on how to access the right type of design expertise. As set out in Pillar 1, throughout the pilot we will evaluate impact and share insight on best practice to, applying what works to drive economic growth through design.

[54] European Commission (2016) *Innobarometer* http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer_en

[55] Coutu S CBE (2014) *The Scale-Up Report on UK Economic Growth* http://www.scaleupreport.org/scaleup-report.pdf

2. We offer to embed design expertise across the local enterprise partnership network (linked to the Design for Growth Blueprint pilot area) via a series of workshops and masterclasses. This would empower local enterprise partnerships to apply design to improve economic growth and create social change in their area.

3. We endorse and support the Creative Industries Council recommendations that a tailored approach should be explored to open finance and bring creative communities closer together, particularly outside the South East of England, as well as providing incentives to invest in small and growing IP-based businesses around the UK. In addition the British Business Bank could act as a vehicle to promote the value of design for business growth by setting out at enquiry stage that using design will help make a commercial proposition more viable. Over time this will help more businesses attract the investment they need to grow.

Gripple: Boosting growth through design and new product development

Gripple is a Sheffield-based, Queen's Award-winning manufacturer of a wire joining and tensioning device – the Gripple – which connects wires and holds them tight. Since launching the Gripple in 1988, the employee-owned company has developed more than 100 new products and has an annual turnover of over £49m, most of which comes from exports to more than 80 countries.

In 2007, Gripple's management team looked for help from Design Council to generate further growth and ensure design and new product development were managed as effectively as possible. Design Council began by helping the team identify key projects which could add value to the business, and streamlining the new product development process.

As a result, Gripple was able to assess whether a particular product idea was viable earlier in its development, and also invested £40,000 in upgrading their Ideas and Innovation Centre to make this dedicated product design area more creative. Today, Gripple's products are coming to market faster and productivity has improved. Turnover has grown threefold from £15m in 2007 to £49m in 2016.

Pillar 5: Improving procurement

5.1 The government can use public procurement to stimulate economic growth and facilitate job creation by supporting key sectors and purchasing innovation products and services. However, the government can be more ambitious, using public procurement to stimulate, foster and grow innovation that is world leading and has a transformative impact on communities across the country. From life-changing products to people-centred services the impact and potential of social innovations through better designed public procurement is vast. The UK should learn from, and then exceed, innovation in countries such as South Korea, which has taken a design-led approach to procurement resulting in $8 billion of efficiency savings and growth opportunities in a range of social challenge areas, including social enterprise and green tech.

5.2 In addition to a better designed procurement process, in order to meet this ambition procurement thresholds and requirements should also enable access to a range of business and third sector types and scales, from start-ups to SMEs and corporates, from the community and voluntary sector to social entrepreneurs, recognising that innovation is driven across business types and sectors. Initiatives such as the Small Business Research Initiative should be scaled up to drive innovation through public procurement.

5.3 Design and design thinking should be integral to public procurement and commissioning criteria in order to foster innovation in product and service development and transformation. Through targeted investment it can stimulate long-term, high value growth and job creation in key industries and emerging sectors, fundamentally revitalising businesses and communities.

Q23. Are there further steps that the government can take to support innovation through public procurement?

Q24. What further steps can be taken to use public procurement to drive the industrial strategy in areas where the government is the main client, such as healthcare and defence? Do we have the right institutions and policies in place in these sectors to exploit government's purchasing power to drive economic growth?

We have answered questions 23 and 24 together. We will focus on using procurement to deliver innovation and transformation.

5.4 The notion of commissioning products and services that result in transformative outcomes is a relatively recent development which is still maturing. This challenge was recognised by NHS England in its current Five Year Forward Plan, which set out clear plans and commissioning mechanisms on how to speed up innovation in new treatments, products and services across the NHS.[56] A complex commissioning landscape remains, however, consisting of NHS England, clinical commissioning groups, NHS trusts, local authorities, health and wellbeing boards among others. The spending power is significant, yet outcomes and scaling of impact through commissioning are affected by disparate processes and complex stakeholder networks. Addressing these system-design challenges is essential to developing

[56] NHS England (2014) *Five Year Forward View* https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

innovation that can respond to need and change lives, with a clear role for more integrated place-based commissioning.

5.5 Design has a central role to play in responding to this challenge. As a process it cuts across area and sector boundaries, bringing stakeholders together around a shared understanding of a problem and generating products and service that best meet user needs. It has the ability to improve commissioning processes and improve standards, whilst opening access to innovation and community engagement, as evidenced by examples from Design Council's and the NHS's recent work.

5.6 Transform Ageing, a pioneering programme taking a design-led approach to improving people's experience of ageing, is a prime example of this. Funded by the Big Lottery Fund, and delivered by Design Council in partnership with the South West Academic Health Science Network, UnLtd and the Centre for Ageing Better, an objective of the programme is to provide health and social care leaders with clear intelligence on how to foster closer relationships with people in later life and their carers so that they can use this insight to more effectively commission services which best address older people's needs.

5.7 Building innovation requirements into commissioning frameworks across the public sector is essential in order to successfully deliver this industrial strategy, delivering purposeful outcomes that have clear tangible benefits to the public, and in turn business and the economy. Inspiration can be drawn from initiatives such as the NHS Healthy New Towns programme, which seeks to bring together 10 major new housing developments to improve health outcomes, and integrate health and care services as new places are built and take shape. Design Council has been supporting the Healthy New Towns programme to provide challenge, inspiration and support as they develop their ambitious plans. Fundamentally, this means redesigning local health and care services and commissioning systems, and thinking about how places can take a cutting-edge approach to improving their community's health, wellbeing and independence.

5.8 Well-designed public procurement, as exemplified by the Healthy New Towns programme, has the potential to transform lives and cement the UK's position as a world-leading innovator in health and life science. Whilst the strategy seeks to address health challenges at the research stage, the UK has the opportunity to facilitate the commercialisation of this research at a global scale through public procurement, growing the economy whilst being a global agent of change.

Key recommendations

1. National and local commissioning frameworks should address innovation and design requirements when procuring new products and services, and be open to as many organisations that innovate as possible, including start-ups, SMEs, corporates and the third sector. By opening commissioning to a wider range of innovators the public sector can accelerate access to life-changing product and services for the benefit of the public.

2. Design Council can provide direct support and advice to national commissioning agencies across the public sector, and support commissioners to understand how design can support them in developing effective tenders that incorporate innovation and consider the appropriate selection criteria and measurements that will lead to transformative outcomes.

3. Maximise the opportunities of integrated place-based commissioning through newly devolved mayoral structures to invest in product and service innovations that respond to local, national and global challenges.

London Health Commission: Working together to improve health and social care

The London Health Commission is a non-statutory group chaired by the Mayor of London, comprising elected leaders and key London professional health leads. Its focus is to drive improvements in London's health and social care to reduce health inequalities and make London the healthiest global city.

Using the combined authority of the mayor and locally elected members, NHS leaders and clinical commissioning groups are working on a joined-up system to improve the way care is designed, planned, commissioned and delivered within the capital.

Since its inception in 2013, London boroughs have collaborated on an HIV prevention strategy and on the commissioning of sexual health services and the development of MedCity through the Academic Health Science Networks.

The Public Procurement Service of Korea: A design-led approach to procurement

The Public Procurement Service of Korea (PPS) has developed an online e-procurement system which coordinates expenditure across central and local government agencies. Using a design-led process similar to the UK's Government Digital Services, PPS has brought together the activities of over 30,000 Korean public institutions to reduce duplication and maximise efficiencies. This has generated savings of approximately $8 billion per year, with 80% of these savings accruing to the private sector and boosting the economy. Furthermore, by leveraging the combined power of government procurement, the PPS has been able to further Korean government initiatives to promote social enterprise, green technology and support for female entrepreneurship.[57]

[57] Organisation for Economic Cooperation and Development (2016) *The Korean Public Procurement Service: Innovating for effectiveness* http://www.keepeek.com/Digital-Asset-Management/oecd/governance/the-korean-public-procurement-service_9789264249431-en#page1

Pillar 6: Encouraging trade and inward investment

6.1 Britain has great global brands, with British designed products and services bought and recognised across the world. However, a global Britain needs a continued focus on trade in order to maintain its position as the destination of choice for global investment and grow British brands across the world. As such, it is important that we capitalise on our unique strengths and areas of expertise, including design.

6.2 Design creates value across the economy, both in terms of enhancing goods and services, as well as providing creative and visionary talent. The quality and innovation of British designed products and services (such as architecture, advertising and marketing) are highly valued across the globe. In 2013 the total value of UK exports where design had made a contribution was £34bn. This is equivalent to 7.3% of total UK exports that year,[58] helping to improve the wealth and living standards of communities across the country.

6.3 To support more firms to start exporting or increase their exports, we need to build on these strengths, utilising the talent already available to us to produce world-leading products and services that other countries want to buy. Exports account for over a quarter of the UK's GDP,[59] and whilst initiatives such as the GREAT campaign are already supporting firms to start exporting, with only 11% of British firms doing so there is significant room for growth and substantial opportunity for high value job creation across the country.[60]

Q25. What can the government do to improve our support for firms wanting to start exporting? What can the government do to improve support for firms in increasing their exports?

6.4 Design has had a transformative effect on this country's identity. The UK is home to an array of both innovative products and services – from Burberry to Rockstar Games, Dyson vacuums to Rolls-Royce jet engines – as well as creative and visionary talent, spanning from architecture to software. British creativity and ingenuity is a reason why the UK has more university courses in design than anywhere else in the world[61] and is home to four out of the top 15 design schools globally.[62] It is the reason why the UK also has the largest design workforce in Europe,[63] and why the UK government was one of the first in the world to recognise the power of design in business.

6.5 Design is a vital ingredient for any UK business wanting to export more, whether for firms wanting to start exporting, those wanting to increase their international market share or for investors in the UK. Using design helps businesses better understand

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[58] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

[59] World Bank (2017) *Exports of Goods and Services (% of GDP)* http://data.worldbank.org/indicator/NE.EXP.GNFS.ZS

[60] Office for National Statistics (2016) *Annual Business Survey 2015* https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/bulletins/uknonfinancialbusinesseconomy/2015provisionalresults

[61] https://unistats.direct.gov.uk

[62] https://www.topuniversities.com/university-rankings/university-subject-rankings/2017/art-design

[63] University of Cambridge (2009) *International Design Scoreboard: Initial indicators of international design capabilities* http://www.designcouncil.org.uk/sites/default/files/asset/document/InternationalDesignScoreboard.pdf

user needs, and thus identify new markets overseas. It helps develop new products and services and strengthen a company's brand, providing them with a platform for effective engagement with targeted overseas customers. Throughout our 70-year history, Design Council has championed the economic contribution of design to the UK and internationally. We have supported UK firms to improve their products and services with a view to reaching the widest possible market, and in recent years we have also exported our own design advice on business support and the design of the built environment to Australia, Chile, Oman and Portugal, among others. Our recent business support programmes for UK firms have demonstrated that for every £1 companies invest in design to support their growth, they can expect a return of £5 in exports.[64]

6.6 Crucially, we know from our work supporting companies to grow and export that in order to realise a truly global Britain we need companies that are designing goods and services people want to buy and that have the skills to sell them abroad. As detailed in our response to question 22, many UK businesses require support developing the skills, knowledge and capability to take their offer to the next level and new markets. Design can play a key role, providing a disciplined and creative approach to the challenge. Using design enables businesses to better understand end user and customer needs, providing fresh insight into existing and new markets. This ensures products and services are better aligned with demand, thereby lowering the risk associated with entry to new markets.

6.7 Design also impacts on goods and service exports across many sectors of the economy. Despite this, while the design economy in the UK is big and growing, UK design lags behind several countries – including Germany and Italy – on design exports.[65] Design exports are also unevenly distributed across the country, with London and the south east accounting for the majority of exports, whilst Wales, north-east England and Northern Ireland underperform. For regions such as the north-east, which enjoys a good domestic reputation for its design talent and history, this is clearly an area for future growth.

6.8 Addressing skills gaps in design professions will be essential for growing sectors such as architecture and the built environment – one of the largest UK exporters of services – and crucial to fostering inward investment to support the development and regeneration of places across the UK.

6.9 The potential of the design economy to grow British exports is significant. With an opportunity for growth in untapped potential come some risks for the design industry following the UK's exit from the EU. There are clearly a range of issues requiring negotiation to improve exports for all businesses such as tariffs, and for designers in particular, design and intellectual property rights are of great importance. The current UK unregistered design right only offers protection for the shape and configuration of a design and lasts for three years. Current EU design unregistered rights offer protection for shape, contours, line, ornamentation, texture, materials and shape, and last for 15 years. As part of any future trade agreements, the government should ensure it is creating a supportive framework under which British firms can export,

[64] Design Council (2012) *An Evaluation of Design Demand* http://www.designcouncil.org.uk/sites/default/files/asset/document/Designing%20Demand_Executive_Sumary_Final.pdf

[65] Design Council (2015) *The Design Economy* http://www.designcouncil.org.uk/sites/default/files/asset/document/Design%20Economy%20report%20web%20Final%20-%20140217%20Yea%201.pdf

confident in the knowledge that this will protect the quality and integrity of their products and services.

6.10 Design Council champions British design and can act as the government's international adviser on design, working with both the Department for International Trade and the Department for Exiting the European Union, alongside our existing work with the Department for Business, Energy and Industrial Strategy to ensure Britain best showcases its world-leading design talent to boost exports.

Key recommendations

1. The government should capitalise on the UK's design talent and global reputation as part of proposals for a more active 'Team UK' approach to winning overseas contracts. This would ensure that design expertise is incorporated in any consortia of companies bidding for major overseas contracts to enhance the quality of the offer, as well as ensuring design presence at international trade fairs. Equally the government should promote design skills and inward investment opportunities for business and the built environment.

2. Design Council will work with the government to identify key markets for exporting the UK's design expertise, as well as how to improve the use of design amongst UK businesses across the economy. From our forthcoming research we will identify key exporting sectors where design is and can play a role. We also offer to the government the opportunity for Design Council to act as its design champions for trade in targeted places, enhancing UK international standing and appeal whilst ensuring the benefits of exporting are spread across the country.

3. As part of any future trade negotiations, the government must consider how it will promote exports whilst ensuring UK designers can operate within international markets. In particular this includes addressing the potential loss of EU unregistered design rights, and working with the design industry to ensure British design gets the best deal to support exports.

Wilkinson Eyre: British excellence in design

UK expertise in architecture and the built environment is celebrated and in demand worldwide. Design Council's research estimates that in 2015 the sector exported £6.6bn worth of goods and services, making it one of the highest value parts of both the design economy and the wider UK economy. In particular, the expertise and creativity of UK based architects is a key asset and symbol of British excellence.

Founded by British architects Chris Wilkinson and Jim Eyre, practices such as Wilkinson Eyre are a good example of this. Celebrated for their innovative work in the UK on projects such as the Gateshead Millennium Bridge and the Dyson Headquarters in Malmesbury, the practice has gained an international reputation that has led to them working on landmark projects in Canada and China, as well as on the world renowned Gardens by the Bay development in Singapore and even the Carioca Arena for the Rio 2016 Olympics. Such is the demand for their services they were chosen by Apple to design their new headquarters in Battersea, London as well, demonstrating that British excellence in design is a unique selling point for the country at home and abroad.

Exporting British design expertise

In 2015-2016, Design Council provided design advice to the government of Oman on a masterplan proposal for a new quarter of Muscat at Madinat Al-Irfan, designed by a British multi-disciplinary team led by award-winning architects Allies and Morrison. The development sets a very high standard for masterplans at city scale and exemplifies how thriving new places are driven by robust, innovative and future-led visions.

The UK has an excellent international reputation in architecture and the built environment, and Design Council's ability to convene the country's leading experts to review the design quality of this development was an attractive selling point for the Sultanate of Oman.

Pillar 8: Cultivating world-leading sectors

8.1 The design economy is part of the creative industries. However, the diverse nature of design and the number of occupations and roles within it – eg, architecture, digital, industrial design and planning, fashion, craft and graphic – also mean design is crucial to success across all the sector deals. Like other sectors, the design economy needs targeted government support to address market failures, respond to global pressures and take advantage of opportunities for innovation and growth.

8.2 Sector investment must focus on maximising future economic potential. Investment should act to disrupt activity, sparking innovation and it should give new sectors such as those forming around Smart Cities, innovative products (such as 3D printing) and service technology a helping hand, allowing them the opportunity to prove their success and flourish.

8.3 Sector deals should support the development of design skills and the wider skills needed across the economy, particularly the skills that will mean the UK is best able to take advantage of the Fourth Industrial Revolution; and support the wider aim of ensuring that sustainable growth and prosperity are shared across all parts of the UK.

8.4 Design can play a transformative role in promoting innovation between sectors. Sector collaboration can enhance competitiveness, harnessing innovation and advancing skills.

Q32. How can the government ensure that 'sector deals' promote competition and incorporate the interests of new entrants?

Q33. How can the government and industry collaborate to enable growth in new sectors of the future that emerge around new technologies and new business models?

We have answered questions 32 and 33 together.

8.5 The government proposals to invest in key sectors, including for the first time, the creative industries is welcome. Design Council is a member of the Creative Industries Council and has contributed to its work to develop a sector deal. The creative industries make a very significant contribution to the UK economy – with design being its fastest growing sector – and a positive sector deal would greatly enhance this.

8.6 In particular, it is worth highlighting how a tax credit for design would provide an incentive for businesses to adopt a design approach and result in greater value for the economy, increasing growth, competitiveness and productivity. In addition, the importance of design rights – and their value to the economy – remains critical and will require adequate protection once the UK leaves the EU.

8.7 Design operates and impacts across all sectors of the economy, from aerospace to automotive. Its value – and importance – should therefore be reflected in the government's consideration of wider sector deals, particularly in relation to trade.

8.8 Effective sector investment should not result in the government 'picking winners', particularly when it comes to places. Sector deals should positively impact those sectors lagging behind in terms of productivity (such as food and accommodation), sparking innovation through supply chains and access to resources, knowledge and best practice, and stimulating connections between sectors where possible.

8.9 Decisions on sector deals should ensure a voice for place leaders – whether this is through partnerships for initiatives such as the Northern Powerhouse and Midlands Engine, elected mayors and combined authorities, local enterprise partnerships or industry trade bodies, such as in aerospace and automotive. This will ensure that investment decisions reflect local strategies to boost areas with declining industrial economies, or help diversify the local economy and strengthen resilience where there is a predominance of one sector or employer.

8.10 Sector deals should also set clear, measurable expectations of how government investment will positively impact on places through improvements in growth, skills and wider factors such as housing.

8.11 Design can be a powerful tool for government, business and places in shaping priorities and making investment decisions to support economic growth. The proposed Design for Growth Blueprint will provide businesses with information on practical advice, steps and interventions on how to respond to challenges presented by disruptive technologies and automation, and support decision making and developing skills across the business landscape, crucially reaching SMEs.

8.12 Innovation hubs (existing or created via sector deals) have the potential to provide access to expertise, professional networks and applied knowledge to support emerging sectors – particularly those working to scale through digital, technology and creative clusters.

Key recommendations

1. Design should play an integral role in a creative sector deal. In addition, given the importance of design across key UK sectors, its role in instigating innovation, providing skills for growth and connecting business to people and new markets it should be integrated in to all sector deals.

2. Sector deals should be accompanied by clear measures for monitoring their impact in places, including: wider economic growth, productivity, attracting inward investment and expanding the local skills base.

3. The government should consider with the industry how to provide adequate protection for design rights after the UK leaves the EU.

4. Sector deals should have access to design support, including the Design Council's proposed Design for Growth Blueprint and innovation hubs.

Bringing together design expertise in transport

Design cuts across numerous sectors of the economy, with design expertise also spread throughout the UK. Transport is one such sector where design is playing a key role whilst also contributing to local economic development.

Design Council analysis of emerging and growing clusters for design firms and employment outside of London highlights that Hinckley and Bosworth in the East Midlands is the local

authority which has experienced the greatest change in its use of design in recent times, moving up from a ranking of 340th to 170th (2010-2014).

Hinckley and Bosworth has experienced substantial growth and investment in recent years, and is the fastest growing area within Leicestershire. A considerable amount of this growth is due to its embrace of technology, innovation and design, with the area home to the MIRA Technology Park.

MIRA Technology Park was awarded enterprise zone status by the government in 2011 and is the only transport sector-focused enterprise zone in the country. The technology park has been successful in attracting businesses such as Bosch, Jaguar-Land Rover and a number of well-known tyre brands such as Continental, Michelin and Pirelli, all of which use designers in their work.

The technology park continues to go from strength to strength, with plans for re-development and attracting other related R&D companies to locate in the Midlands bringing with it the creation of over 2,000 new jobs.

Pillar 9: Driving growth across the whole country

9.1 The government's ambition to rebalance the economy for the benefit of all people in the UK is fundamental to building sustainable economic growth. Cities and towns provide the framework for delivering this ambition and the success of the industrial strategy depends on well-designed environments that are inclusive, dynamic and resilient.

9.2 Places that have access to, and can attract and retain, talent whilst also having the resources to upskill local people will be more resilient. Cities and city regions that have accessible, efficient transport infrastructure, housing and a broad business base are those that succeed and help drive the UK economy.

9.3 A place-based approach must, therefore, drive activity across the 10 pillars, not only to ensure that government intervention improves living standards across the country but also install the competitive advantage that will stem from more productive, high value businesses and occupations. By connecting conditions for good growth through well designed places, the strategy can move practically from a set of defined interventions to a connected, integrated economic plan that can genuinely drive growth now and in the future.

Q34. Do you agree the principles set out above are the right ones? If not what is missing?

9.4 The principles set out in the industrial strategy provide a helpful starting point. However, in order for each of these principles to be successful in genuinely rebalancing the economy, they will need to be complemented by a vision for local growth, greater accountability and strategic investments. This means the industrial strategy must drive a whole government approach to spending decisions on economic development in different places across the country. Design plays a vital role in getting this right, facilitating effective decisions on investment by bringing together the cross-cutting view on the development of place, infrastructure, services and skills to create the conditions required for businesses to emerge and grow.

9.5 Well-designed and inclusive places are fundamental to successful industrial policy. A focus on place – whether this is village, town, city or region – will enable coordination between different interventions, reducing duplication and maximising their impact. This is the best way to address economic challenges and realise the opportunities outlined in the industrial strategy. Social, cultural and economic inequalities are too often built into places across the UK. The impact is stark, damaging growth, impacting on health, contributing to and cementing the inequality that the strategy seeks to address. Good design has the ability to transform a place, building the infrastructure, homes, culture, leisure and community services that draw inward investment, build skills, attract and retain talent, improve health and ultimately reverse economic decline.

9.6 There are lessons to be learnt from towns such as Lochgelly in Scotland, which has utilised architecture and design to turn around its fortunes, having previously been deemed 'the worst place to live in Britain' in 2004 having fallen on hard times following the collapse of local industry. A joint effort between Fife Council, Ore Valley Housing Association and local community groups has led to the town being transformed through the delivery of a masterplan which included the regeneration of the town centre and public realm, the construction of a new business hub and 2,500 new homes, as well as extensive public consultation and engagement with community groups. Not only has this resulted in the creation of jobs and new

businesses, but there is also a renewed sense of civic pride in the town, which recently won two Placemaking awards.

9.7 Infrastructure is also critical to rebalancing the economy and driving inclusive growth. In order for people and businesses to benefit from growth, infrastructure investments must consider how they will benefit local areas across the UK. As such, it is vital to continue investment in the south east and midlands through major schemes such as Crossrail 2 and High Speed 2. However, rebalancing can be aided through small-scale interventions that help unlock land and assets across the country. The linking of housing and infrastructure funding through the Housing and Infrastructure Growth Fund could go some way towards achieving this.

9.8 While raising skills levels nationwide sets the right level of ambition, this must link to priority sectors and inward investment priorities ensuring there is clear alignment and, therefore, impact. Please also see our response to questions 11 and 13 under Pillar 2.

9.9 Ultimately, sustainable local economic growth requires a clear vision, collaboration and partnership to realise tangible benefits to business, investors and the public. Critical to achieving this is the decentralisation of decision making and power from Whitehall and Westminster to local places and communities.

9.10 Through our place-based and leadership programmes, Design Council operates across the country, working with towns, cities and boroughs to help shape their vision to deliver sustainable, resilient, well-designed places that attract and retain inward investment and talent. The insights that Design Council provides on common barriers and challenges to delivering clear, compelling and competitive local visions can provide newly elected mayors with helpful intelligence at speed. The local enterprise partnerships also have a vital role to play locally in helping ensure that investment priorities accurately reflect business needs and sector priorities.

9.11 The design of the right institutional framework requires combined authorities and elected mayors (where appropriate) and umbrella private sector bodies to support the scaling of growth across places. There is a role for regional implementation forums, as well as learning from the devolved nations to help facilitate and bring together various existing networks and forums to provide clarity on what is needed and what is already working.

9.12 Accountability and governance that is locally driven is key to ensuring that regions are competitive, not just in a UK context, but on a global platform. This is a pivotal role for newly elected mayors, and mechanisms need to be established for the new mayors to drive the industrial strategy.

9.13 To drive growth across the whole country, the industrial strategy must be delivered via accountable institutions, united under a shared vision and factoring in how investment in one area (such as infrastructure) can also deliver outcomes in another area (such as skills).

Key recommendations

1. In order to enable rebalancing that benefits people and communities across the country, the government should use second wave devolution as a lever and incentive to create boosted powers with the purpose of injecting greater democratic accountability for people and communities.

2. Our offer to the government is to provide the support needed to scope the opportunity that integrated system design can bring to enable emerging city and sub regional governance structures to capitalise on the devolution agenda. This can fuse service redesign, digital, infrastructure and wider built environment place based priorities to maximise impact for public benefit.

3. Our Design for Growth Blueprint can support the What Works Centre for Local Economic Growth, leading on what works for design as part of its advice and support to local institutions, local enterprise partnership and other partners.

Newcastle Gateshead: Working together to boost skills, create jobs and generate investment

Newcastle Gateshead is a prime example of how key institutions in neighbouring areas can successfully collaborate to improve the fortunes of their area as well as the wider region in which they are situated. The two neighbouring local authorities collaborate on a range of initiatives including a joint Tourism Board and a public-private partnership, the Newcastle-Gateshead initiative.

The Newcastle-Gateshead initiative is composed of both local authorities plus approximately 170 private sector organisations representing a range of both national and international firms, including the likes of Accenture and Deloitte. The initiative has been particularly successful over the past 15 years in attracting inward investment on both sides of the River Tyne, and in 2016 successfully created and safeguarded almost 5,000 jobs in the area. Further to this the initiative has helped attract new employers to the area such as Convergys, a global leader in customer management services, which has created 600 jobs requiring contemporary digital and customer service skills. The Newcastle-Gateshead initiative thus provides a useful example of how local areas can work together to get the institutional framework right and raise skill levels.

Dundee, City of Design

Dundee is the UK's first UNESCO City of Design, reflecting its rich heritage of design innovations including comics such as the *Beano* and *The Dandy* and video games such as Lemmings and Grand Theft Auto. Looking forward, in 2018 the city will see the opening of a new museum – V&A Dundee – and Dundee has used these opportunities to reinvigorate and promote the use of design across both the city and Scotland more widely.

A range of institutions across the city have galvanised around the practice of design, with an annual design festival launched in 2016 and projects such as 'Design in Action', which

supported Scottish SMEs to better utilise design as a strategy for innovation.

This work is being continued and expanded alongside the launch of the museum, with the University of Dundee launching a 'Design in Business' Masters programme in September 2017, which will place design students into Scottish businesses being supported by the V&A's 'Design in Business' programme.

The UNESCO City of Design status has therefore catalysed a whole range of activity across the city. This also includes promoting the use of design in local public services, with the local authority working with service design agency Open Change to build capacity and communities of people to co-design the services they need. Beginning with a City of Design Academy for city leaders, the City Council has developed programmes together with local residents to improve attainment in schools, support people into employment and explore how to include citizens in their own healthcare.

Pillar 10: Creating the right institutions to bring together sectors and places

10.1 To drive growth across the whole country, the industrial strategy must be delivered via accountable institutions, united under a shared vision and factoring in how investment in one area (such as infrastructure) can also deliver outcomes in another area (such as skills).

10.2 Design can play a crucial strategic role when developing the most effective ways for local institutions to support sectors to collaborate and share expertise to maximise impact for business and communities at large.

10.3 The government has already taken action to decentralise decision making, devolving a range of responsibilities and powers to new institutions – elected mayors, combined authorities and local enterprise partnerships (LEPs) – to promote local economic growth.

10.4 These new responsibilities and powers will enable places to take a more joined-up approach to planning infrastructure, transport, housing and skills to better support local economic growth. Alongside this, the Northern Powerhouse and the Midlands Engine provide opportunities for further coordination between local authorities and other partners on a broader spatial scale.

10.5 LEPs in particular play a key role in setting the strategic economic plan for an area, as well as supporting the provision of infrastructure, skills and investment, supporting businesses through local growth hubs, and providing targeted area-based support to designated enterprise zones. These business-led partnerships bring valuable commercial acumen and insight into the local economy and into the needs of local businesses.

Q36. Recognising the need for local initiative and leadership, how should we best work with local areas to create and strengthen key local institutions?

Q37. What are the most important institutions which we need to upgrade or support to back growth in particular areas?

Q38. Are there institutions missing in certain areas which we could help create or strengthen to support local growth?

10.6 Design plays a critical role in building collaborative working. Design Council has extensive experience of using design at a local level to broker relationships, and build trust and shared commitment to deliver local developments and services that focus on the needs of communities and partners.

10.7 Strong local institutions working in partnership to a clear vision are pivotal to delivering economic success. If local areas are to benefit from emerging world-leading sectors and clusters, it is vital that they have the right local structures and mechanisms in place to provide support and to ensure they have a wider impact on the local economy.

10.8 Effective collaboration is necessary across a wide partnership of organisations, operating at a local, regional, sub-regional and national level, including local authorities (elected mayors/combined authorities), LEPs, local employers, universities and colleges, infrastructure providers, skills agencies, and cultural and tourism bodies. Whilst this sort of collaboration is now more common, it

is not straightforward as it involves bringing together different organisations, each with their own organisational priorities, budgets, governance and decision-making frameworks. Partnerships often struggle or fail where they are unable to build a common understanding and shared priorities.

10.9 Place leadership and effective stakeholder engagement are crucial to success. These require close cooperation, joint working and a shared vision between partners, particularly local authorities (including elected mayors/combined authorities) and LEPs. Our work responds to this complex environment and uses design processes to forge strong partnerships, an agreed vision and successful implementation of local plans.

10.10 However, although LEPs provide the mechanism for institutions to collaborate and support business, the success of LEPs across the country is mixed. For example, LEPs were established prior to the local devolution agenda and the LEP landscape does not reflect the changed political and economic frameworks within which they now exist – eg, the West Midlands Combined Authority includes three LEP areas. The National Audit Office highlighted in its 2016 report on LEPs that "LEPs are often uncertain of their role within a more devolved landscape, particularly in areas where their economic geography does not align with that of the combined authority."[66] On that basis central government should work alongside the LEP network to support LEPs in reviewing their structure, operation and geographies where appropriate. The review would provide a useful step back for government and LEPs to consider how they can operate effectively in collaboration under changing devolved landscapes to achieve the economic priorities of the industrial strategy.

The Design Council's: Design in the Public Sector programme: Helping to deliver better outcomes for people

Design Council's 'Design in the Public Sector' programme provides a design framework to help organisations find new ways of working to develop new solutions to challenges they face, helping to deliver better outcomes for people. To date, more than 50 project teams in seven regions have benefited from this innovative training programme. The approach brings together local authorities within a region alongside service delivery partners and agencies, to collaboratively explore the constraints within a given service context and, through a stronger focus on understanding people's needs, identify new opportunities to service improvement and innovation.

Design Council is currently working with the local government association and six London councils to help them to develop new ways of working on issues such as homelessness, homecare and help for looked after children.

Key recommendations

1. Design Council is an internationally recognised and leading authority on design and transformation in business, services, social innovation and place. We have considerable experience of supporting organisations in adopting design approaches.

[66] https://www.nao.org.uk/wp-content/uploads/2016/03/Local-Enterprise-Partnerships.pdf

We will offer this expertise to the national LEP network which could play an important role in promoting collaboration, learning and information sharing between LEPs.

2. The government should invite elected mayors/combined authorities to bring forward proposals for how to better align LEPs in their area (where boundaries are not co-terminus) to ensure effective support and implementation of economic growth in those areas. The government should also positively respond to proposals from LEPs in non-mayoral/combined authority areas, to re-cast their economic geography where this would better deliver increased growth in those areas.

3. Rather than creating new institutions, the government should map out current local and regional growth networks and consider how design can support better integration and collaboration, improving existing delivery and implementation frameworks.

Enterprise zones in Birmingham: Creating jobs and boosting the local economy

The Greater Birmingham and Solihull Local Enterprise Partnership played a key role in the recent expansion of enterprise zones in Birmingham, which have been extended to include the regeneration area around the Curzon HS2 station. The expansion is enabling redevelopment of the area and will provide a much needed lift, potentially creating 36,000 jobs and generating £1.4bn for the city economy.

The Northern Ireland Public Sector Innovation Lab

The Northern Ireland Public Sector Innovation Lab is part of a growing community of policy labs in the UK and around the world using innovation methods, such as design and behavioural insights, to develop public services and policies with users. At the outset, the main method adopted by the Innovation Lab for projects was design. It was established in April 2014 by the then Minister for Finance within the Public Sector Reform Division of the Department of Finance. From June 2014 to June 2016, the laboratory led 18 projects focused on a wide range of service and policy challenges. The challenges ranged from improving the use of data analytics within the government and reviewing business rates to encouraging people to pay court fines and optimising how patients manage their medication.

An evaluation of the laboratory's work to date has shown the impact this innovative approach is already having. For example, although there are multiple factors at work, the evaluation team at PDR found an investment of £60,000 in the laboratory's Medicines Optimisation project could result in cost savings of over £20m per annum. The laboratory was also highlighted within the 2016 review of governance in Northern Ireland by the Organisation for Economic Cooperation and Development (OECD). The OECD recommended that the Assembly make more use of the laboratory and support it to "develop its full potential through departmental ownership, skills development, active user and sponsor-department participation in lab sessions, and impact measurement." A successful industrial strategy should build on innovations such as this, happening all across the UK.

Experts consulted for this response:

- Derby University
- Design Council
- Gripple
- Hydro Aerospace
- IBM
- Lancaster University
- Oxford City Council
- University of Nottingham