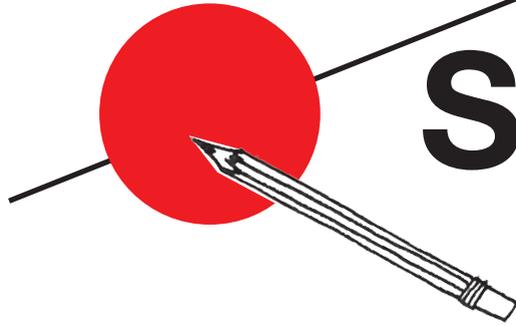


# **Designing a Future Economy**

**Developing design skills for  
productivity and innovation**



# Executive



# Summary

## **It is time to pay attention to the value of design.**

The pace of development in the digital, biological and technological worlds is changing and disrupting the way we work and live. From 3D printed buildings, to self-driving taxis, to vertical farming, every part of the UK economy will be affected by this 'fourth industrial revolution'. Tomorrow's innovative companies and organisations rely on people who can marry subject expertise with skills and knowledge from outside their individual specialisms, and who approach projects with creativity. In short, the companies leading this industrial revolution need design skills.

Modern design is no longer confined to particular sectors or occupations. The skills, principles and practices of design are now widely used across the economy, from banking to retail. Designers, too, have always drawn on a range of different skills, tools and technologies to deliver new ideas, goods and services. This is what makes design unique, and is how it makes products, services and systems more useful, usable and desirable in advanced economies around the world.

This unique research examines the skills that differentiate design from other sectors in the UK economy. It builds on our 2015 Design Economy study, which presented the first comprehensive analysis of the value that design adds to the UK economy. The design economy refers to the value created by those employed in design roles across a variety of industries – from design-intensive sectors, such as animation or graphics, to those working in sectors not always directly associated with design, such as automotive or aerospace companies.

This is an unprecedented study which combines UK and US data to investigate the relationship between design skills and economic outcomes, focusing explicitly on productivity and innovation. It finds that where design skills are used, they contribute significantly to the wealth of the nation, greater productivity and more innovation. But it also provides a stark warning about the potential impact of underinvesting in these skills, and the need to better prepare for the economic, technological and political changes ahead.

# Key findings:

The findings of the research are structured into three sections: the skills used by designers; the value of design skills to the UK economy, and skills acquisition and development.



DESIGN ☆ DESIGN ☆ DESIGN ☆ ⇨

DESIGN  
SKILLS DRIVE  
PRODUCTIVITY  
AND INNOVATION



## The skills used for design

Our research explored the skills designers say are most important to their jobs. It highlights how designers call upon a mix of technical skills, creative activities and cognitive abilities and that these skills are more widely used than previously thought. Key findings include:

### **Design delivers 21st century skills:**

Designers augment their technical skills through their knowledge of the design process and their creative thinking. Those employed in the design economy use a wide range of skills in their work – from the ability to visualise future possibilities or understand user need, to technical skills using digital technologies or physical materials. This combination of technical skills, cognitive abilities and interpersonal competencies will become more and more essential in the future.

### **Design skills are used across the economy, not just in design firms:**

When looking for other occupations using these same intensive design skills, we found 17 additional occupations outside the design economy adding significant value. These range across many occupations and sectors, from construction to electronics.

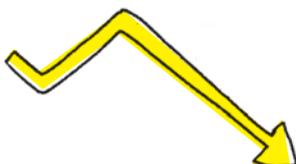
### **Design skills are highly connected to innovation:**

There is a strong relationship between the skills required for design and for innovation. Just over one in four of the occupations identified as reporting substantial use of design (high design skills intensity), also have high innovation skills intensity.

# HOW WE IDENTIFIED DESIGN SKILLS

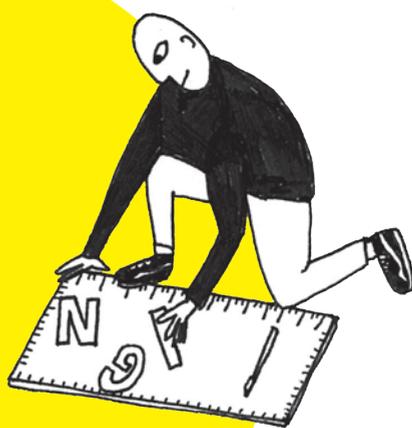
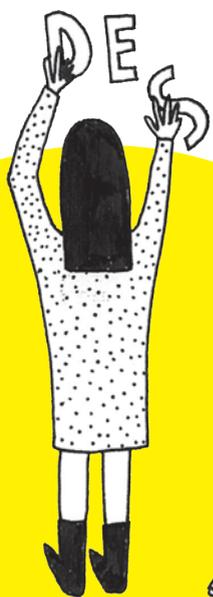
## STEP 1

WE IDENTIFIED THE 23 OCCUPATIONS THAT MAKE UP THE UK DESIGN ECONOMY, DEFINED USING BEST FIT STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES.



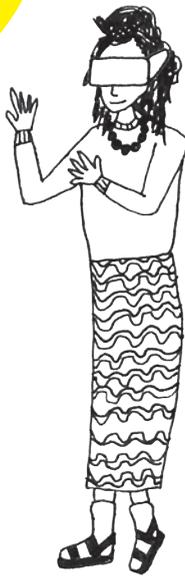
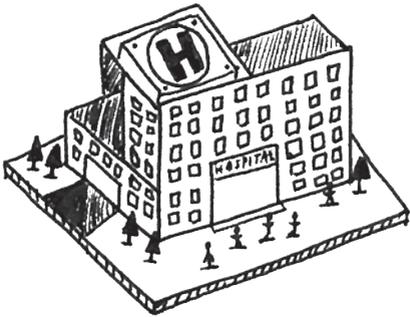
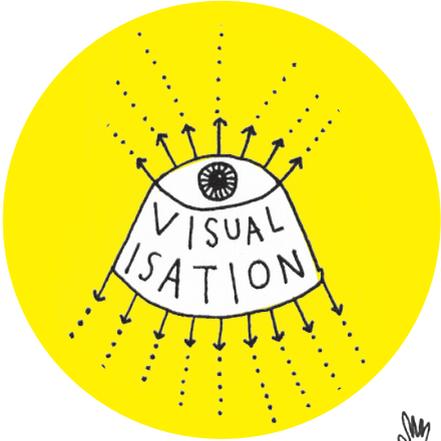
## STEP 2

WE THEN MAPPED THESE TO SIMILAR U.S. SOC CODES. USING THE U.S. DEPARTMENT OF LABOR'S O\*NET DATABASE, WE LOOKED ACROSS ALL UK DESIGN OCCUPATIONS TO FIND WHICH SKILLS WORKERS DEEMED MOST IMPORTANT TO THEIR WORK.



### STEP 3

THIS PROCESS IDENTIFIED 13 SKILLS AS BEING OF ABOVE AVERAGE IMPORTANCE ACROSS ALL 23 DESIGN OCCUPATIONS.



### STEP 4

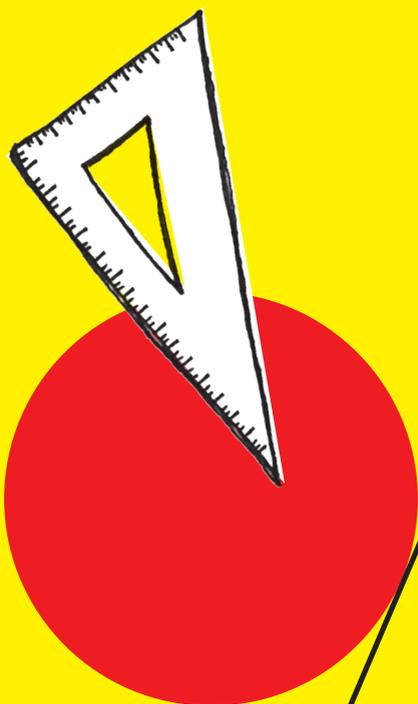
USING THIS LIST, WE IDENTIFIED 17 ADDITIONAL OCCUPATIONS WHICH ALL SAY KNOWLEDGE OF DESIGN IS IMPORTANT TO THEIR WORK (AS WELL AS AT LEAST TWO OF THE OTHER SKILLS ON THE LIST) WE REFER TO THESE AS 'DESIGN-SKILLED OCCUPATIONS' AND THE SECTORS THEY OPERATE IN AS BEING 'DESIGN-ACTIVE'



### STEP 5

THE STUDY PROGRESSED TO ANALYSE UK GOVERNMENT DATASETS, AND CALCULATE THE ECONOMIC VALUE WORKERS USING THESE SKILLS CONTRIBUTE.





## The value of design skills to the UK economy

Design skills are more widely used than previously thought. We have generated a new estimate of the value of design to the UK economy which recognises this wider impact. Our research shows:

### **Design skills are highly valuable:**

Workers with design skills contribute £209bn to the UK economy (GVA).

### **Design skills drive higher productivity:**

Our research found that people who use design skills are 47% more productive than the average UK worker, delivering almost £10 extra per hour in GVA.

### **Design skills are not confined just to design sectors:**

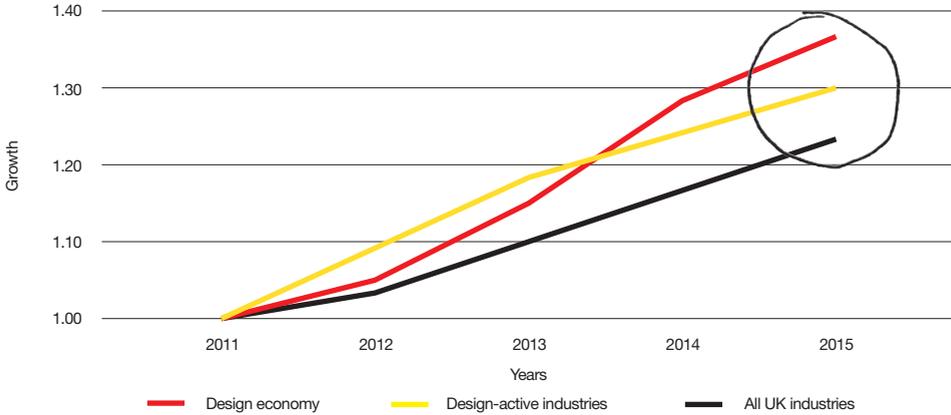
At least 2.5m people use design skills in their day-to-day work. This is equivalent to one in 12 workers (8%) and our research has found that demand for workers with these skills has grown at twice the rate of UK employment over the same period (14% vs. 7% since 2012). As such there is room for further growth and development of these skills.

### **Design skills are central to innovation:**

Our analysis found 43% of workers using design skills were more likely to be in jobs requiring and generating innovation, carrying out activities using their creative thinking and problem-solving skills to develop new ideas for and answers to work-related problems, compared with an average for the wider UK workforce of just 6%.

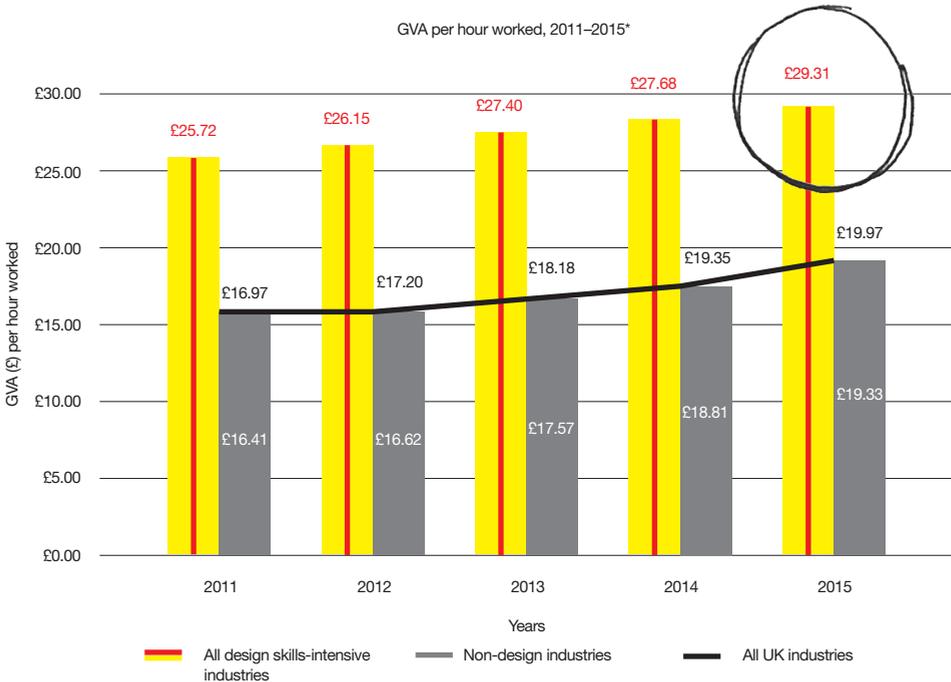
# Design skills contribute £209bn to the UK. Their value is growing at a faster rate than the wider economy.

Design skills GVA by subsector, 2011–2015 (£m) (indexed change)



# Industries using design skills are more productive by £10 per hour, compared to the UK average.

GVA per hour worked, 2011–2015\*



## Skills acquisition and development

This study also investigated how designers and design firms acquire, develop and maintain the important design skills which add value to the UK economy. Our research suggests that design firms are more likely to need candidates who are educated to degree level or above, but complain that candidates can lack the required skills and competencies. Key findings include:

### Design skills gaps amongst the existing workforce:

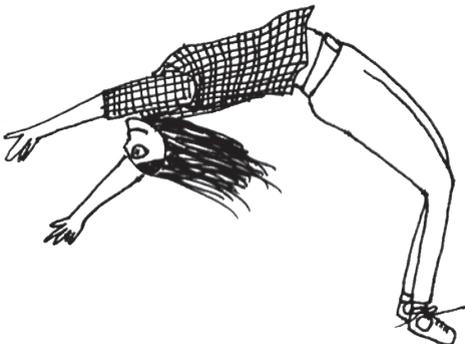
One in eight design employers report they have staff who are not fully proficient in their current jobs. An estimated 59,000 people working in design skills-intensive industries have skills gaps.

### Existing design skills gaps cost the UK billions:

We estimate that skills shortages and gaps amongst those already working in design-skilled occupations costs the UK economy £5.9bn per year. For design industries, skills gaps can be caused by the development of new products and services, the introduction of new working practices and the introduction of new technology.

### The use of design skills requires higher level of qualifications:

When it comes to recruitment, the design economy demands high skills levels. Workers with design skills are more likely to require a degree, post-grad qualification or professional qualification to enter the industry.



INDUSTRIES USING DESIGN  
SKILLS ARE ALMOST  
**£10** PER HOUR  
MORE  
PRODUCTIVE  
THAN THE UK AVERAGE

### The pipeline of future designers is narrowing:

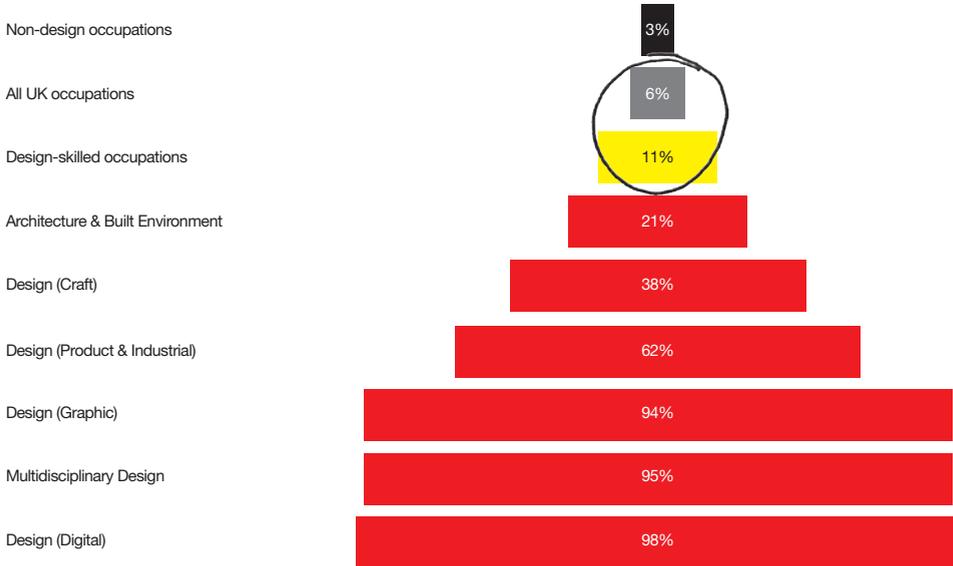
In 2017, just under 166,000 GCSE students took Design and Technology subjects, a 61% decrease from the year 2000. This has also been accompanied by a decrease in the number of teachers and teaching hours dedicated to the subject at secondary level. Likewise, between 2011/12 and 2015/16, the number of people leaving higher education with undergraduate or postgraduate qualifications in creative arts and design subjects fell by 7%. These subjects are pathways for the current crop of designers that are contributing so valuably to the economy, so this trend is cause for concern.

### Recruitment of design skills is challenging:

The expectation for higher levels of qualifications combined with a narrowing pipeline of students means recruitment is increasingly challenging for firms in the design economy. Design firms have a slightly higher level of vacancies compared to the wider UK economy. Furthermore, these vacancies are slightly more likely to be classified as 'hard to fill' compared with the average for UK firms. Where hard to fill vacancies exist amongst the firms in our sample, they are more likely to be driven by a lack of skill, experience or qualifications in the applicant base – particularly in the craft, clothing and product/industrial design sectors.

# Jobs using design skills are more innovative.

Proportion of employment in innovation-intensive jobs by design occupation, 2016\*



\*Estimates for Advertising and Graphic Design sectors are not available.

DESIGN SKILLS ARE WORTH

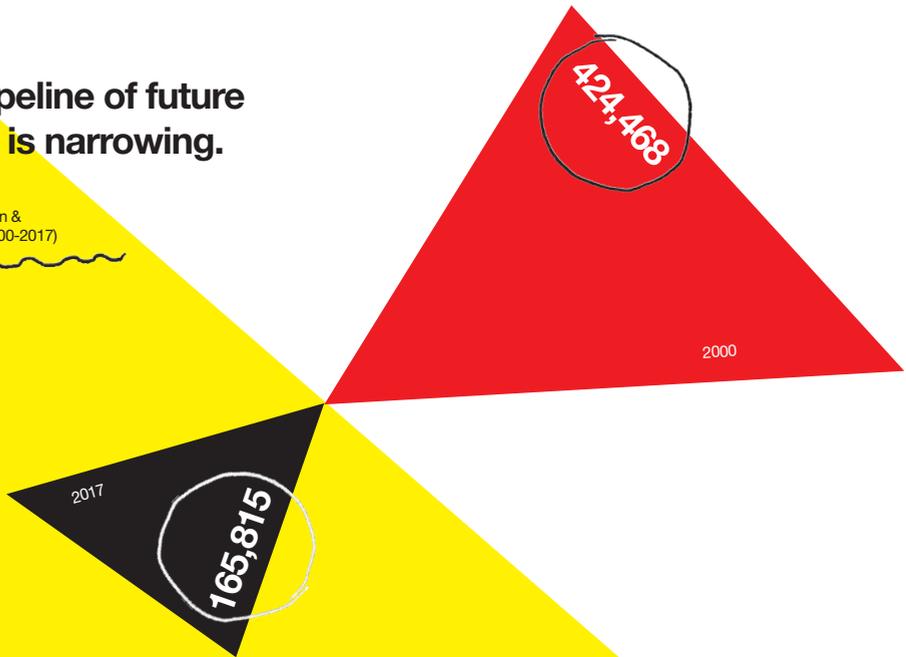
→ £209bn ←

TO THE UK, AND THEIR VALUE IS GROWING AT A **FASTER** RATE THAN THE WIDER UK ECONOMY



## But the pipeline of future designers is narrowing.

Numbers studying Design & Technology at GCSE (2000-2017)



Like most professions, the development of new skills and the updating of existing competencies is crucial to the growth and productivity of the design skills-intensive industries. Our research found that there are several barriers preventing further training to address skills gaps. Key findings include:

### **The development of design skills is under-resourced:**

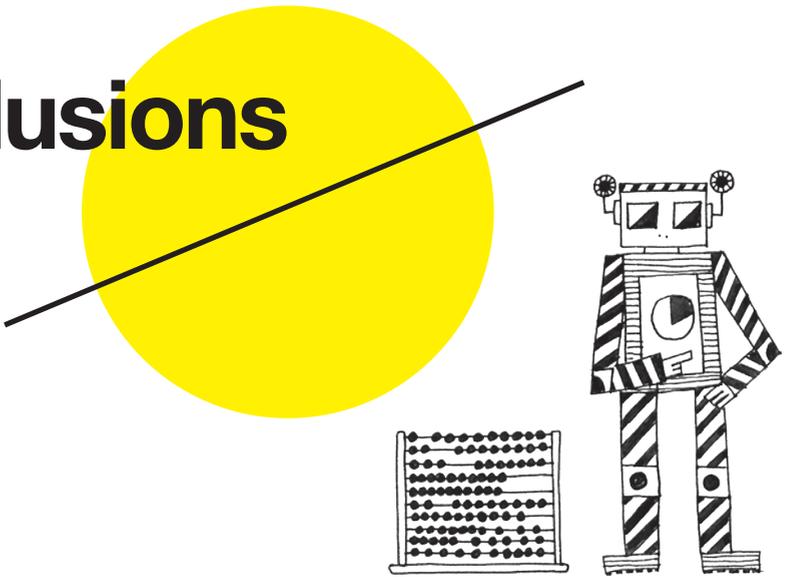
Designers require more expensive training, but receive it less often. As such designers are less likely to receive the additional training they require after leaving formal education. Training costs are also more likely to be met by the employees themselves rather than their employers, reflecting the working arrangements that are often in place between design firms and designers, many of whom will work on a freelance or short-term contract basis.

### **The development of design skills is under-prioritised:**

The most critical barriers to training identified by firms in the design economy are a lack of money available to fund training, training not being considered a priority and a lack of time for management to plan and organise training. Given there is also a narrowing pipeline of designers coming through the formal education system, further action is required from employers to avoid the UK experiencing a skills crisis in one of the most productive and valuable parts of the economy.



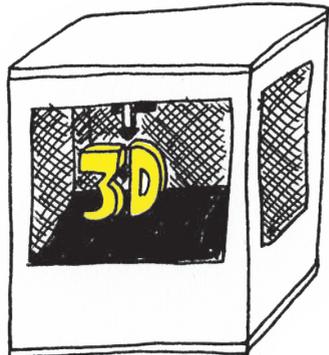
# Conclusions



For the first time, ‘Designing a Future Economy’ catalogues the skills intricately connected to design and innovation. Design skills are the fusion of creativity with technical ability and interpersonal competencies, and will be essential for any economy seeking to maximise the opportunities of technological advancements.

The fourth industrial revolution is already here. For the UK to capitalise on economic and technological change, we need bold policy solutions. Design and innovation must be at the heart of industrial, skills and economic strategies. Our research demonstrates that design skills are not a luxury within the curriculum or workplace – they are a necessity for future growth and innovation.

Yet with these opportunities come significant challenges. This research shows that the UK has skills gaps and shortages in design and a narrowing pipeline of young designers who could otherwise fill these roles. Furthermore, firms are not providing the level of additional training required after formal education. Government and industry need to work together to stop this situation becoming exacerbated as technology changes the way we work and live.



# Recommendations

**Given the current value of design skills across the economy and their future necessity, we recommend:**



## **Education providers and regulators embed design in the curriculum:**

The traditional pathways into design careers – such as GCSE Design and Technology – are being eroded. The Department for Education, schools and academies should re-introduce GCSE Design and Technology as a priority subject in post-14 education to secure these skills in the short-term.

## **Moving from STEM to STEAMD:**

Boosting STEM (Science, Technology, Engineering and Maths) and digital skills alone will not suffice. To ensure a resilient economy in the longer-term policymakers and education providers must consider how they will develop the complex problem-solving, critical and creative thinking abilities that are essential to innovation. Design is central to this. Along with Art, design methods, tools and approaches should be incorporated in STEM subjects to boost the skills required in the future economy.

## **Greater support and resource for lifelong learning:**

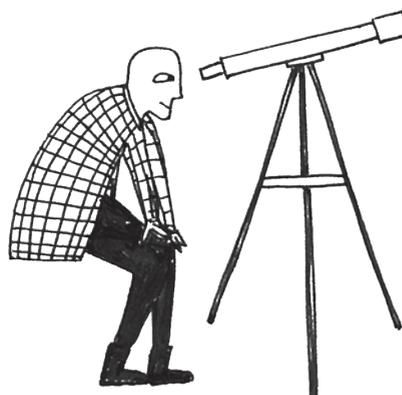
A government strategy is needed to address existing skills gaps whilst anticipating the future skills needed in the fourth industrial revolution. This requires investment in career long learning with access to resources, training and non-formal education that will equip people with higher value skills required for future work.

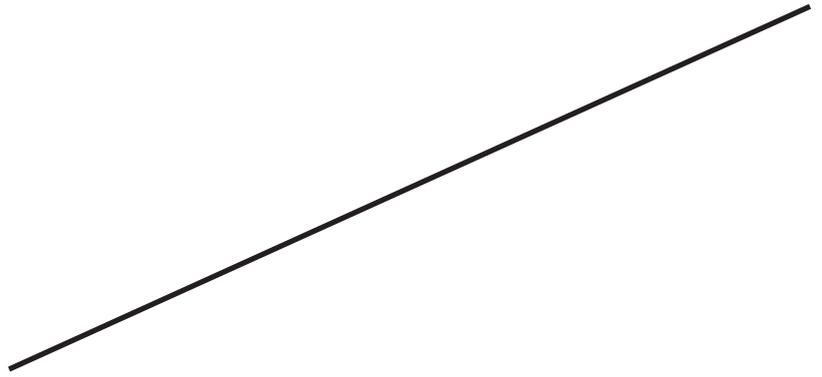
## **Recognition and inclusion of design in the implementation of the industrial strategy:**

The industrial strategy can draw on design and design skills to help create the right conditions for growth. Our research shows how designers use their skills to develop a deeper understanding of people's needs, meaning that an industrial strategy utilising these skills and principles is more likely to succeed and positively impact upon people's lives.

## **Promoting greater use of design in parts of the economy most in need of a boost:**

Government should explore with business leaders and the design industry what incentives could be used to encourage greater use of, and upskilling in, design across key areas of the economy. In particular incentives should be targeted at the sectors with the lowest levels of productivity and the highest chances of automation (such as retail and administrative services), which could benefit from an uplift in productivity while creating more meaningful, creative and higher value jobs in the process.





## **About the research**

Designing the Future Economy is an unprecedented research study drawing on an in-depth analysis of UK and US data. It utilises the US O\*Net dataset of job characteristics to investigate the skills which are distinctive for design. It also uses data from the Office for National Statistics (ONS) and other UK sources to investigate the link between skills and economic value. Based on the analysis of design skills, the study proposes a more developed definition of design and then builds the evidence base utilising this definition. This means the study adds value to the previous work and creates new insight, providing policymakers and other stakeholders with key insight regarding the role of design in promoting economic growth, productivity improvements and stimulating innovation.

This report was authored and designed by Design Council. The analysis for the skills catalogue and economic figures was undertaken by Ortus Research, following a feasibility study undertaken by RF Associates.

For further information visit:

<http://www.designcouncil.org.uk/>

## **About Design Council**

Design Council is an enterprising charity which improves people's lives using design. Our work places design at the heart of stimulating business growth, helps to transform our public services and enhances places and cities to ensure a sustainable future for everyone. We advance new design thinking, encourage debate and inform government policy. Our vision is to create a better world by design.

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