

Technology Strategy Board
Driving Innovation

Creative Industries
Strategy

2013-2016

EXECUTIVE SUMMARY



The creative industries make up one of the UK's leading industrial sectors, responsible for 1.4 million jobs and 5.3% of the country's gross value-added (GVA). The UK has a share of around 5% of the global export market for creative goods¹. It is a broad and diverse sector which ranges from advertising and crafts to performing arts and video games. As well as their direct economic value, these industries play an important role in catalysing innovation across the wider economy, through the products and services they provide, but also as means of originating and spreading new ideas, knowledge and ways of working.

Since the publication of our 2009 creative industries strategy, the major trends have been the continued digitisation of the sector, audience fragmentation, convergence and disintermediation – all of which have led to a landscape of increased connectivity, complexity and growth. Our consultation and analysis has suggested that there are significant opportunities for businesses able to capitalise on these trends.

The Technology Strategy Board has a critical role to play in helping the sector realise its potential. We are investing in research and development and support for creative businesses, particularly start-ups and small and medium-sized enterprises

(SMEs), encouraging them to experiment, take risks and establish new markets.

We recognise that innovation in the creative industries is driven by an intricate relationship between content and technology; the collaboration between artist and scientist. We will further develop our already good relationships with partners, such as cultural institutions and other organisations in the sector, to explore how we can best work together through our various remits (in innovation support, fostering the arts and content creation, advancing skills development etc) to further enhance the innovation climate in the UK.

‘Creative industries are responsible for 1.4 million UK jobs.’



Opportunities

The sector has continued on the trajectory forecast in our 2009 *Creative industries strategy*² and many of the challenges and opportunities identified then remain valid. The major trends of continued digitisation throughout the sector, fragmentation of audiences, changing user behaviours, convergence and 'disintermediation' – or cutting out the middleman – have all contributed to the emergence of a digital landscape of increased complexity³.

These trends are disrupting established value chains while at the same time providing considerable potential for growth. Analysts Booz & Company argue that growth in the creative industries will be significantly driven by digital technologies and estimate this will be worth an additional £5bn to the UK economy⁴.

We would expect to invest in excess of £30m in support of the creative industries strategy implementation. Details about specific activities, support and investment are available in our annual Delivery Plan, published on www.innovateuk.org

We have identified three themes that we see as offering the main challenges and opportunities for the creative industries where we can provide support:

‘We would expect to invest in excess of £30m in support of the creative industries strategy.’

Convergence

With the continued emergence of new platforms, products and services, technical and service interoperability will be increasingly important for businesses. They can then ensure that their services and content work across different devices and environments to suit the demands and expectations of consumers.

Transaction

New platforms, disintermediation, and fragmentation of markets all present challenges in building relationships with users and capturing value, but we believe that there are sizeable opportunities, including digital currency, and easy 'friction-free' licensing and commerce.

Data

The proliferation of data provides two broad opportunities. The first is to enable easier access to creative products, with metadata and open-data standards crucial in finding, retrieving and using content. The second is in the analysis, interpretation and presentation of data to make it accessible and useable for businesses and consumers.



Cross-cutting themes

Alongside these, there are four cross-cutting themes that we believe recognise the unique opportunities that the creative industries have in working together and with other sectors:

- knowledge sharing
- cross-sector innovation
- design
- sustainability.

These will inform where and how we support the creative industries. We will focus our activities where we believe UK businesses stand to gain most success and where our funding will make the most difference. In making investment choices we will consider criteria around market opportunity, technological capability and the difference that the Technology Strategy Board can make with limited resources.

OUR STRATEGY

Convergence

In convergence we will:

- help businesses develop new technologies, products and services in response to the challenges and opportunities arising from convergence: authoring, producing and distributing media across multiple platforms and devices, addressing issues of interoperability, and designing for changing consumer behaviours
- work with government departments, research councils, cultural organisations and other partners to ensure maximum impact.

Transaction

In transaction we will:

- support the development of platforms and technologies, or encourage collaborations, that facilitate transaction throughout the value chain, from the valuation and licensing of digital assets to the creation, distribution, purchase and consumption of creative content.

Data

In data we will:

- support the development of improved data and metadata tools and technologies to enhance the value of creative products and services.



Cross-cutting themes

In knowledge sharing we will:

- continue to support knowledge sharing through the knowledge transfer network for the creative industries community, **_connect**, the Connected Digital Economy Catapult, special interest groups and collaborations with partner organisations
- continue to contribute to the work of the Creative Industries Council.

In cross-sector innovation we will:

- encourage and support innovation between the creative industries and other sectors of the UK economy, such as health, energy and cities, through programmes in design and sustainability.

In design we will:

- bring together the technology innovation and design communities to leverage the power of design earlier in the R&D process and enhance the commercial success of new products and services.

In sustainability we will:

- work to promote our Horizons tool and stimulate creative applications of technology for sustainability in order to enhance UK competitiveness.

WHY ARE WE SUPPORTING CREATIVE INDUSTRIES?

The UK's creative industries have an established international reputation for driving innovation in product, services, content and experience as well as making a major contribution to the UK economy.

Nearly 1.5 million jobs

The sector is a vital part of the UK economy. Nesta estimates that the creative industries employ around one in 20 of the UK workforce, arguing 'labour productivity is on average higher in the creative industries than in the rest of the economy'. If we include the creative economy (both the creative industries and those with creative occupations working in businesses outside the sector) the value is substantially higher, with a 2.5 million strong workforce¹¹.

A world-class sector

The creative industries are recognised globally as one of the UK's leading sectors. Many creative industries' sub-sectors are world leaders, and having one of the leading creative economies provides UK companies with a higher and more positive profile than many of their competitors. This makes the UK a more attractive place to live, work, visit and in which to invest¹².

Growth despite economic uncertainty

The prospects for the creative industries are good and they are considered to be one of the sectors that can help to push the UK into a sustained economic recovery – PwC has forecast a compound annual growth rate of 4.2% for the UK's media and entertainment sector to 2016, higher than Germany or France¹³. This will build on impressive performance over the last decade, with creative jobs growing by 9% between 2004 and 2010, compared with 1.6% for all jobs¹⁴. Exports have also flourished; the value of UK TV exports increased by 127% between 2006 and 2009 – putting us second only to the US in terms of international sales¹⁵.

A sector that remains under-capitalised

Despite the strengths of the sector, creative businesses have often struggled to secure private investment, and access to finance is identified as a core barrier to growth for many businesses and entrepreneurs¹⁶. There is a range of reasons for this, including issues around the high risk valuation of intellectual property and content assets and perceived lower than desirable levels of business and management skills. The sector is often characterised (and caricatured) as being

dominated by start-ups, micro enterprises and 'lifestyle businesses' that put too much emphasis on creative rather than commercial objectives. As Eric Schmidt put it in his 2011 MacTaggart lecture: 'The UK does a great job at backing small firms and cottage industries. But there's little point getting a thousand seeds to sprout if they're then left to wither or get transplanted overseas. UK businesses need championing to help them grow into global powerhouses...'¹⁷

The Technology Strategy Board has an important role to play in assisting young and small businesses in becoming 'investment ready', helping to unlock more substantial private investment in the sector.

Despite its achievements, much more can be done to ensure that the sector continues to grow and contribute to the UK's long-term prosperity. This ambition is shared both by industry and government, with Chancellor George Osborne announcing in his 2011 Budget speech that he wanted the 'UK's creative industries to be a world-beating sector'.

Economic importance at a glance

- the creative industries contribute 5.3% of UK GVA, and employ 1.4m
- the UK's entertainment and media market is the fifth largest in the world⁵
- the UK exports more than £100m in design services each year⁶
- the UK film industry contributed over £4.5bn to UK GDP in 2009⁷
- the UK is one of only three countries (along with the US and Sweden) to be a net exporter of music⁸
- the UK has the largest publishing industry in Europe, exporting more books than any other country in the world⁹
- the UK advertising industry is worth £16bn a year. Over two-thirds of global advertising agencies have their European headquarters in London¹⁰



WHAT ARE THE CHALLENGES AND OPPORTUNITIES?

Major trends changing the creative industries include the continued digitisation of the sector, audience fragmentation, convergence and disintermediation – all of which have contributed to the emergence of a digital landscape of increased connectivity, complexity and growth¹⁸. However, digital technologies themselves are not what make the market. Rather, it is compelling content that attracts consumers and audiences, and which gives creative businesses the opportunity to transact over digital platforms, using data to maximise value.

Our consultation with businesses has suggested that there are significant opportunities for businesses able to capitalise on these trends. Analysts Booz & Co argue that significant growth in the creative industries is driven by digital technologies and estimate this will be worth an additional £5bn to the UK economy¹⁹. Based on this consultation and our own analysis, we see four main areas of particular relevance to the creative industries.

Convergence – a defining trend

The migration of content across different media networks and platforms offers creative businesses opportunities to extend services, interact more with audiences, target new demographics and develop completely new service and experience formats.

Streaming audio and video now dominate net traffic, constituting around half of all data on tablets and smartphones. Advances in compression, the spread of wi-fi, mobile connectivity, and the proliferation of devices have created commercial potential but also pose threats to some existing businesses. For the music industry in particular, this has proven to be extremely disruptive, with record labels experiencing what the BPI has called ‘the perfect storm’ for music consumption²⁰.

As a result of this, cross-platform production is becoming increasingly central to content businesses. However, it is still an emerging field and many businesses, established in distinct sectors, are struggling to respond to the opportunity. This is not just a creative challenge. Even those such as newspapers, which have succeeded in producing compelling digital media content and building up large readerships, are still trying to identify sustainable business models in the context of cross-platform production.

Businesses are adapting to convergence in other ways, by providing new experiences using pervasive media (delivering mobile

content relevant to what you are doing), or hyper-local media (delivering timely, geographically-based content), adoption of which has been driven by growing penetration and use of smartphones and tablets²¹. The exploitation of intellectual property across multiple platforms is thus becoming increasingly critical to commercial success. Producers need to develop the tools and work processes that allow them to re-purpose content and assets for use in different contexts and across an ever more diverse range of devices.

Opportunities in this area include cross-platform content and special-effects production, pervasive media, and 3D printing/additive manufacturing.



Case study

Collaborative R&D: Tangentix

Sheffield-based Tangentix exploited its expertise in graphics compression through a partnership with Onteca, an independent games studio specialising in web and mobile. Their joint project to develop their technology to enable the real-time viewing of high-definition 3D graphics on a web browser received funding from our *Collaboration across digital industries* fast track competition. An opportunity to test the technology came through the University of Bradford’s archaeology department, whose large collection of ancient bones needed to be scanned, converted into high-resolution models and then delivered across the web, allowing it to be easily accessed and shared. The three partners were able to solve key technical challenges around compression algorithms and 3D geometry and the results are now being applied in the digital entertainment sector.

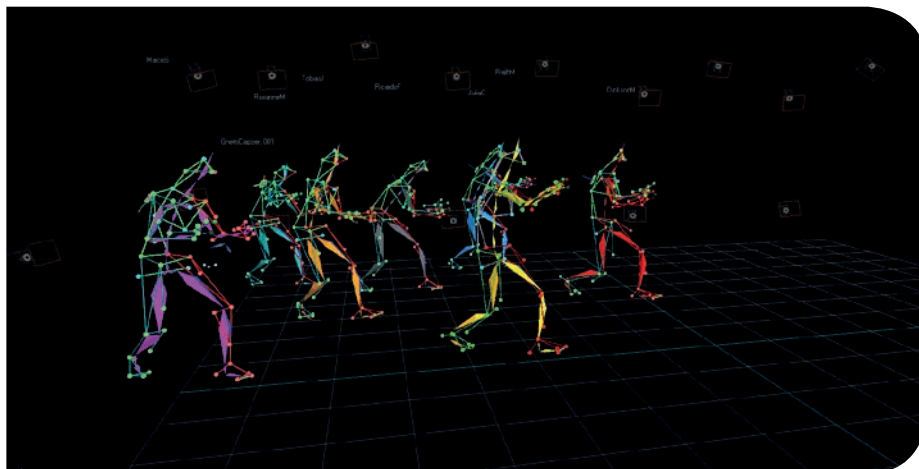
Capturing value and managing transactions

Traditional creative value chains have been fundamentally disrupted, with new opportunities for businesses either to bypass traditional retail or to find new ways of mediating it. Some new models for distributing and sharing content have blended retail and social models. Businesses sometimes act as online marketplaces (or mixed marketplaces), like Amazon, Etsy or eBay, where vendors can use enabling e-commerce systems to sell direct to the consumer.

Artists and publishers can use these systems to adopt direct-to-consumer strategies and capture new digital audiences. Innovative business models

focusing on curation, subscription, and often high-quality content have helped some creative businesses to develop new income streams; for instance, earnings from digital subscriptions for *The Financial Times* have now overtaken advertising revenue²². We have seen the growth of subscription services like Deezer and Spotify, which has over six million 'premium' subscribers, all paying a monthly fee to access unlimited content²³. The music industry now has more than 70 licensed online platforms.

Content producers have never before had access to distribution channels that can reach global audiences so quickly, or had the potential to understand their consumer base so thoroughly. Consumers have never before had such easy access to such a vast array of



Case study

Collaborative R&D: Zoo Digital

Zoo Digital, a UK software company specialising in the creative and media industries, recognised the urgent need among film and video producers for a secure system that tracked media files across the production process, but as a small business it needed help with resources and skills before it could undertake intensive research and development. It put together a consortium of academic and production industry partners for our *Metadata: increasing the value of digital content* competition. The project – PARTEC, persistent and robust tracking of entertainment content – resulted in a tested prototype now ready to bring to market.

'The funding has allowed us to turn our idea into a reality in a relatively short time, build a prototype and now turn it into a product that will enhance our portfolio and generate additional revenue.' Stuart Green, chief executive, Zoo Digital

content in all forms. But many established content businesses are still struggling to capture sufficient value in markets where customers and audiences are so fragmented and which are dominated by new (mainly US-based) entrants.

For all parties in the content ecosystem – content creators, content owners, distributors, licensees, retailers and consumers – there remain many areas in which the process of transaction is difficult, opaque and sometimes even impossible. The barriers to an ecosystem of smooth, effortless transactions between parties include poor data, a lack of interoperability,

poor user experience in existing transaction spaces, and a copyright and intellectual property regulatory environment that has struggled to keep up with the pace of technological change.

WHAT ARE THE CHALLENGES AND OPPORTUNITIES? continued

New approaches to data

Across the economy, data has become recognised as crucial to business success. With increased connectivity has come an increase in available data, and more opportunities to manage and capture value from it. When this data is embedded in instant or near real-time decision making, it becomes even more powerful, with commentators forecasting a shift towards embedding data in decision-making and strategic processes²⁴.

Use of metadata, the importance of which was identified in our 2009 strategy, has mushroomed, with metadata solutions enabling new ways of driving content discovery, licensing, consumption and new, as yet undetermined, business models. Metadata is no longer a niche interest – it is now mainstream. Analytics and metrics have become contested areas, with issues

around data ownership, value and validity, and access to data skills, presenting new commercial and innovation challenges.

For all the opportunities presented by data, some parts of the creative industries still lag behind others²⁵. The recognition of its value is growing in other sectors, with McKinsey estimating that a retailer using big data could increase its operating margin by more than 60%. Data is similarly transformative for the creative industries, where it can help to understand audiences, pilot products, and increase the efficiency of production processes²⁶. However, as argued by Nesta, relatively few creative businesses have been willing or able to take full advantage of this despite some excellent innovations in the sector.

Cross-cutting themes

Knowledge sharing and cross-sector innovation

The creative industries are increasingly recognised for the wider value they bring to the UK economy as a whole. Whether in the connections between film and tourism, designer fashion and retail or architecture and construction, the creative industries have strong commercial networks and links across the economy. Such links can be found at the very forefront of technological innovation – for instance, the novel application of 3D gaming engines in medicine and engineering.

The creative industries act as an innovation catalyst in four main ways:

Helping businesses innovate

Expertise in design, craft and audio-visual production helps other industries to innovate by providing tools, processes, new ways of thinking or skills that can lead to new products and processes²⁷.

Embedding innovation in other sectors

Those in creative occupations are often embedded in businesses in other sectors, particularly design-intensive industries such as healthcare or automobile manufacturing, either working in-house or as freelancers. Individuals in creative occupations have been found to be a robust driver of tangible innovation when they work in other sectors²⁸.

Pioneering ways of working

The creative industries have adopted models of business practice that are shared across the economy such as hot-desking and collaborative team working, which originated in advertising agencies. Creative businesses compete through an emphasis on the new and original, which requires organisational structures, and specific attitudes and skills, including skills at interpretation, a willingness to try new things and tolerance of ambiguity²⁹.

Case study

Feasibility funding: Ostmodern

Ostmodern is a young business providing products and strategies for the entertainment and media sectors, with a particular focus on video-on-demand content management, interface design and cross-platform delivery. Ostmodern received feasibility funding that helped it to shift from exclusively undertaking services for clients to developing HatchTV, its own content platform. HatchTV enables broadcasters and other media producers to creatively collaborate. With a content library and bespoke website builder, it allows disparate teams to work together on editorial content from programme conception to broadcast.

‘The funding from the Technology Strategy Board has helped us develop a product out of the context of our normal client servicing, something that was impossible to achieve during business as usual.’ Thomas Williams, user experience director, Ostmodern



Creative content drives technological development

There is a close relationship between content production and technological innovation. This is a result of consumers demanding new ways of interacting with content³⁰, but also comes directly from creative professionals. From the Lumiere brothers through to Charlie Chaplin, David Lean and Ridley Scott, film makers have driven technological development, challenging inventors, scientists and engineers to meet their creative vision. Similarly, advances in sound engineering and music technology were led by the creative experiments of such talents as the BBC Radiophonic Workshop, George Martin, Trevor Horn and Brian Eno.

The UK's creative industries remain world leaders in innovation today, including the application of performance capture and augmented reality tools in production, the development of social, second screen and connected TV, merging the physical and digital worlds in wearable technologies and the emerging internet of things.

Design

Design is a particularly important instance of how the creative industries can catalyse wider innovation. Design is more than just one sub-sector within the creative industries. Rather it is a process, or set of creative skills and knowledge, which can be applied to all sectors, adding value to almost any business or organisation. Success or failure of a new product or

service, how attractive it is to consumers and how well it meets the demands of users, will depend on the quality of its design as well as how well the underlying technology works.

The Design Council tracked publicly quoted firms that emphasised the use of design between 1994 and 2004 and compared them to those firms who used design less. The design-intensive businesses outperformed their peers by 200%³¹. The *Innovation and Research*

Strategy for Growth published by the Department for Business, Innovation and Skills (BIS) found that the average return on investment for every £1 invested in design by business is over £25³².

While the value of design to business growth generally is recognised, greater appreciation is required of the particular role of design in innovation.

Case study

IC tomorrow: BioBeats

BioBeats has expertise in music, computer science and medicine, and develops technology powered by physiological data for applications in healthcare. It managed to visualise and sonify brainwaves using a custom-built headset and an iPhone, and progressed to capturing a person's heartbeat using an iPhone alone in order to create experiential music. By collecting cardiovascular data in this way, they realised that they were able to gain insights into a range of health conditions. A successful submission to our IC tomorrow programme has allowed them to work with University College London and BUPA to begin development of a mobile and cloud-based service that offers both stress management solutions to patients and clinical information to mental health care providers.

'The opportunity to work with a leading academic medical centre and insurer at this early stage of our development allows us to focus confidently on healthcare and to demonstrate to our investors and ourselves that the road to clinical validation and reimbursement might not be as long and dark as it seems.' Dr Kristin Shine, chief medical officer, BioBeats

OUR CREATIVE INDUSTRIES STRATEGY

As outlined in our corporate strategy, *Concept to Commercialisation: A Strategy for Business Innovation*³³, our goal is to accelerate economic growth by stimulating and supporting business-led innovation.

With limited resources, we need to prioritise the greatest opportunities for technology to improve the production, distribution and consumption of creative content, products and services, and thereby strengthen the profitability and competitiveness of the UK's creative sector.

Making choices

Where we see opportunities we apply four criteria to determine whether to support and invest:

- is there a large (global) market opportunity?
- does the UK have the capability?
- is the idea 'ready' – is the timing right?
- can the Technology Strategy Board make a difference?

We also view all of our activity through the lens of sustainability, having worked with Forum for the Future to develop a sustainability framework to inform our work. This has also led to the development of the Horizons tool which companies can use to develop sustainable plans to future-proof their businesses.

We would expect to invest in excess of £30m in support of the creative industries strategy implementation. Details about specific activities, support and investment are available in our annual *Delivery Plan*, published on www.innovateuk.org Following considerable development in the creative industries over the last five years, we highlight four areas of strategic importance to the sector: convergence, transaction, data, and cross-cutting themes.

Convergence

In convergence we will:

- use our collaborative R&D, feasibility study and IC tomorrow programmes to support businesses addressing the challenges in enabling content, narrative and experience creation and production across different media environments
- invest in R&D to address the challenges of consumers' use of multiple devices, across different networks, and in different contexts
- work through the Knowledge Transfer Network for the Creative Industries and the Connected Digital Economy Catapult to facilitate development of new products and services which create value across creative sectors by applying capabilities from one sector to another
- invest in the development of technologies to increase different forms of interoperability between networks, applications platforms and devices.

Transaction

In transaction we will:

- use our collaborative R&D programmes to support development of platforms and technologies that facilitate transactions for content creators, content owners, distributors, licensees, retailers and consumers
- support new approaches to ascribing value in digital assets in order to develop new transaction platforms and services
- encourage innovation in user-interface design to improve the overall experience of acquiring, interacting with, licensing and trading digital content
- engage with technology companies and rights owners to collaborate on creating pre-market, future models for digital exchanges.

Data

In data we will:

- use our collaborative R&D programmes to support the development of robust data and metadata systems for enriched, more applicable information about content and its use
- support the development of tools for analysing, interpreting and presenting data that are accessible and easy-to-use
- invest, through the Catapults and other programmes, in projects that integrate and link different kinds of rich data sets to provide creative innovators with the capability to develop new ideas, products and services.

Cross-cutting themes

We have also identified four cross-cutting themes that we will address across all our programmes and activities.

In knowledge sharing we will:

- continue to support the knowledge transfer network for the creative industries, as well as **_connect** and the Catapults, in order to promote networking, collaboration and cross-disciplinary links between businesses and individual entrepreneurs in different creative industries sectors and outside the creative industries
- work through **_connect**, special interest groups, trade associations and professional bodies to bridge the cultural and commercial divisions between artists, content creators, producers, engineers, scientists and technologists
- collaborate with the Department for Business, Innovation and Skills (BIS), Department for Culture, Media and Sport (DCMS), Creative Skillset, the BFI, the Arts Council, Creative England, Nesta, the Arts and Humanities Research Council (AHRC) and the other research councils and other agencies to achieve integrated support for innovation in the creative industries
- contribute to the work of the Creative Industries Council.

In cross-sector innovation we will:

- encourage creative businesses to transfer skills, expertise and tools they have developed to other industrial and economic sectors, supported by the KTN for the Creative Industries, IC tomorrow, the design and digital healthcare special interest groups, and other programmes.

In design we will:

- continue to encourage the use of design earlier in the R&D process, including through the Design Option pilots and the Design Special Interest Group, so that firms save time and money, and have a better chance of commercial success
- build up a body of evidence and success stories in collaboration with the research councils and other bodies to demonstrate the value of the early use of design in the innovation process
- support UK business innovation by building a community of designers and technology innovators to engage with our 'design in innovation' activities.

In sustainability we will:

- work to promote our Horizons tool and stimulate creative applications of technology for sustainability in order to enhance UK competitiveness.



Delivering through partnership

Innovation in the creative industries is often driven by the impulse to create new intellectual property (storytelling, experiences, formats, and other content or services), which drives the development of new tools and technologies, which in turn creates a requirement for new skills.

The Technology Strategy Board addresses the all-important technology element of this. We will continue to seek opportunities

for partnership with bodies supporting other aspects of innovation including the research councils, the BFI, Nesta, Creative Skillset, Creative and Cultural Skills, the Arts Council, Creative England, local enterprise partnerships and others.

We will develop relationships with cultural institutions, and other organisations in the sector, to explore their role in fostering content creation, skills development and other activities subsequently relevant to innovation in the commercial sector.

REFERENCES & SOURCES

Consultation

The development of this strategy has been informed by a consultation process including round tables and one-to-one consultation with creative businesses and sector bodies from January to March 2013. An online survey was also circulated to Creative Industries Knowledge Transfer Network members to gain a wider industry view.

¹UNCTAD (2010) Creative Economy Report www.unctad.org

²Technology Strategy Board (2009) Creative Industries Technology Strategy 2009-2012 www.innovateuk.org

³PwC (2012) refer to this as the 'The Digital New Normal... a wider shift to a collaborative ecosystem-based economy' www.pwc.co.uk

⁴Booz & Company for Creative England and Google (2013) The Digital Future of Creative U.K: The Economic Impact of Digitization and the Internet on the Creative Sector in the U.K. and Europe www.creativeengland.co.uk

⁵PwC (2012) Global Media Outlook www.pwc.co.uk

⁶UKTI (2013) Boost for UK creative industries [collated statistics] www.ukti.gov.uk

⁷Oxford Economics (2010) The Economic Impact of the UK Film Industry www.oxfordeconomics.com

⁸<http://www.prsformusic.com/creators/news/research/Documents/AddingUpTheUKMusicIndustry2010.pdf> pg. 5

⁹BIS (2012) UK trade performance across markets and sectors www.bis.gov.uk

¹⁰UKTI (2013) Boost for UK creative industries [collated statistics] www.ukti.gov.uk

¹¹Nesta (2013) A Manifesto for the Creative Economy www.nesta.org.uk

¹²All data BIS (2012) UK trade performance across markets and sectors www.bis.gov.uk

¹³PwC (2012) Global Media Outlook www.pwc.co.uk

¹⁴Nesta (2013) A Manifesto for the Creative Economy www.nesta.org.uk

¹⁵Communication Chambers for PACT (2011) Creative UK: The Audiovisual Sector & Economic Success www.pact.co.uk

¹⁶See for instance, European Commission (2012) Unlocking the potential of cultural and creative industries ec.europa.eu or Demos (2011) Risky Business www.demos.co.uk

¹⁷Google executive chairman Eric Schmidt, McTaggart Lecture 2011 <http://www.youtube.com/watch?v=hSzEFsf9Ao>

¹⁸PwC (2012) refer to this as the 'The Digital New Normal... a wider shift to a collaborative ecosystem-based economy'.

¹⁹Booz & Company for Creative England and Google (2013) The Digital Future of Creative U.K: The Economic Impact of Digitization and the Internet on the Creative Sector in the U.K. and Europe www.creativeengland.co.uk

²⁰BPI (2012) Digital Music Nation: The UK's digital music landscape www.bpi.co.uk

²¹Kantar Media for Nesta (2013) UK Demand for Hyperlocal Media www.nesta.org.uk

²²Media Week (2012) FT digital subs overtake print circulation (Online at: <http://www.mediaweek.co.uk/news/1143173/>)

²³Data provided by Spotify (2013). Available online at <http://press.spotify.com/uk/information/>

²⁴For instance, Gartner (2012) Top 10 Strategic Technology Trends for 2013 www.gartner.com

²⁵For instance, the McKinsey Global Institute (2011, Big data: The next frontier for innovation, competition, and productivity) argue that arts, entertainment, and recreation sector is amongst the hardest to capture the value in big data within. Nesta (2013, Counting what counts) argue: 'The current approach to the use of data in the cultural sector is out-of-date and inadequate.' (p3). www.mckinsey.com

²⁶Adapted from McKinsey Global Institute (2011) Big data: The next frontier for innovation, competition, and productivity www.mckinsey.com

²⁷Work Foundation (2011) The Contribution of Advertising to the UK Economy www.theworkfoundation.com

²⁸Neil Lee & Emma Drever (2012) The creative industries, Creative Occupations and Innovation in London, in European Planning Studies. Published online: 25 Sep 2012.

²⁹Kate Oakley for Nesta (2008) The art of innovation: How fine arts graduates contribute to innovation www.nesta.org.uk

³⁰European Commission (2012) Unlocking the potential of cultural and creative industries ec.europa.eu

³¹Design Council (2005) Design Index: The Impact of Design on Stock Market Performance www.designcouncil.org.uk

³²BIS (2011) Innovation and Research Strategy for Growth www.bis.gov.uk

³³Technology Strategy Board (2011) Concept to Commercialisation. A strategy for business innovation, 2011-2015 www.innovateuk.org

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