Brain Gain

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How to Attract, Retain and Reconnect Digital Talent

WPI STRATEGY

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About this report

WPI Strategy would like to thank Vodafone for its support of this report. We would also like to thank the people who gave their time to inform its content and recommendations. The report is a follow-up to *'Digital Super Towns: Unlocking the UK's digital potential'*, which analysed the various digital attributes of England's Combined Authorities.

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About Vodafone

Founded and based in Berkshire, Vodafone provides services including voice, messaging, data and fixed communications. Around 18 million people in the UK choose us for mobile and broadband services. Since 2014 we have invested more than £2 billion in our network and services, and we expect to invest another £2 billion over the next few years. We employ 12,000 people in the UK, and operate over 450 retail stores across the country. In partnership with CityFibre, Vodafone is bringing full fibre broadband to approximately 12 cities in the UK, reaching one million homes and businesses.

We are part of Vodafone Group, one of the world's largest telecommunications companies, with mobile operations in 26 countries and fixed broadband operations in 19 markets. And as the mobile world leader in Internet of Things technology – with 60 million IoT connections and an international network and services platform – we connect machinery, vehicles, and other business assets, helping to drive the Fourth Industrial Revolution across the UK.

Foreword

By Nick Jeffery, CEO, Vodafone UK

"Across the UK, technology is being used to solve economic and societal challenges. Digital innovation offers opportunities to create better jobs, education, healthcare and public services. We have to create the conditions for people to prosper and for regions to flourish.

Our mission at Vodafone UK is to deploy technological innovation to unlock human potential right across the country; to lead the Fourth Industrial Revolution. From drivers being guided to available parking spaces, to buildings that intelligently manage their own energy consumption, from smart street lighting to bins that report when they need emptying.

As a British business, we are playing our part. We recently announced a major deal with CityFibre to provide gigabit-capable full fibre broadband to approximately 12 cities, reaching one million homes across the UK by 2021. In addition, our multi-billion pound investment is bringing 4G to 98% of the population.

But we want to do more. A pro-investment regulatory system would be a major step in the right direction. Beyond that, we want to kick start a dialogue with politicians, businesses and local stakeholders right across the UK to understand how policy at a national and local level could be the catalyst for digital infrastructure investment.

This report highlights some of the ground-breaking work taking place in Greater Manchester, the West Midlands and the Tees Valley. We need to build on those foundations to ensure the technologies of the future can deliver real, tangible benefits to citizens. To do this we have to focus on boosting digital talent, building digital infrastructure and using data to drive positive behaviour change.

Over the past decade there has been an exodus of highly qualified workers from towns and cities across the country to London. We must turn this 'brain drain' into a 'brain gain'. We can't simply train an army of coders – important though they are – we need an entire workforce. This requires a pipeline of talent, starting in schools and continuing through to colleges and universities.

It also requires jobs for people in the areas they have grown up or studied in, and the creation of places that entice young workers to put down roots.

This report suggests various ideas to help policymakers create pull factors which make places more attractive for digital entrepreneurs to locate to the area, which enable digital companies to flourish and which encourage those on a career break to reconnect with the labour market.

The UK is ideally placed to be a world leading tech and digital centre. We hope that this research and the ideas contained within it can help unleash our regions' digital potential. Doing so will create more productive and prosperous places where people to want to live and work.

Summary

The Fourth Industrial Revolution is more than just technological development;[i] it's a series of exciting opportunities that can – and will – transform the way the UK works. If we seize and make the most of the UK's potential, we can all exploit and benefit from the productivity-enhancing opportunities presented by Fourth Industrial Revolution technology. As this report shows, there is great digital ambition all around the country. Regional initiatives need to be supported to ensure that all of the UK can achieve its full digital potential.

Digital policy has come a long way - both locally and nationally - but more needs to be done to support these initiatives if innovations in robotics, autonomous vehicles, and the Internet of Things are to deliver on the promise of better education, healthcare, public services, and jobs. In order to see these promises realised, the UK must become an early adopter and champion of these technologies – and in doing so, lay the foundations for further innovation.

The three areas that require particular focus are: developing digital talent, collecting more and better data; and upgrading digital infrastructure. Growing the stock of digital talent is undoubtedly the most important of the three – there is no point in collecting more data to analyse or building more digital infrastructure if the workforce cannot use it. With this in mind, the following recommendations will help the UK's towns and cities realise the full potential of the Fourth Industrial Revolution.

1. Attract, retain and reconnect digital talent by encouraging digital entrepreneurs to locate to or remain in an area, supporting digital companies as they upscale, and helping those on a career break to return to the labour market. National and local policymakers can do this by:
   i. **Conducting an audit of unused or underutilised public sector buildings to identify spaces that can be converted into low-cost offices for digital start-ups, and ensuring that these spaces can benefit from the latest digital infrastructure.**
   ii. **Exploring how investors and high-growth businesses can build the relationships that are a precursor to funding.**
   iii. **Providing support to businesses to adopt new digital technology, such as the Internet of Things.**
   iv. **Getting local authorities and combined authorities running information campaigns about returning to work after career breaks.**
   v. **Allowing Apprenticeship Levy funds to be used for training – particularly to develop or refresh digital skills – that supports people to return to the labour market following a career break.**
   vi. **Creating a local network of digital mentors who host regular drop-ins at co-working spaces.**
   vii. **Creating regional 'IoT councils' to support the adoption of new technology.**
2. Harness the power of data by improving its collection and opportunities for its analysis. National and local policymakers can do this by:
   i. **Introducing a series of open competitions to spur innovation in the use of data.**
   ii. **Exploring how data can be used to understand the digital talent of different localities.**
   iii. **Trialling how to improve the collection of data on digital skills within a particular locality.**

3. **Build digital infrastructure more quickly** by updating policy and regulatory frameworks that have previously hindered rather than promoted investment in digital infrastructure. National and local policymakers can do this by:

   i. **Delivering a strategy for full-fibre and 5G:** This should include using local government assets to create fibre 'metro rings' from which fibre can be taken to homes and premises, and expanding local 5G test beds.

   ii. **Trialling ways to allow greater access to existing infrastructure to build more digital infrastructure.** One way of doing this would be to conduct an audit of how easy it is to access public sector sites and street furniture. Another way would be to reduce the bureaucracy attached to noticing, permits, traffic management and lane rental charges for new fibre build.

   iii. **Allowing towns and cities to experiment with ways of removing the need for full planning permission for mobile infrastructure.** City regions could test how to move towards all mobile infrastructure being categorised as Permitted Development (whilst maintaining Prior Approval in more sensitive areas). In addition, simplification of property law and access rights to enable the use of wayleaves under permitted development rights could be introduced.

   iv. **Opening up markets to more competition.** An important part of this would be ensuring that BT opens its ducts and poles to competitors and provides full access to its dark fibre.

Introduction – unlocking digital productivity with people, data and infrastructure

Digital innovation is transforming our lives. Whether it's the app that warns you of traffic delays, or a school's lunchtime coding class, new technology is offering us more exciting opportunities than ever before. The UK is perfectly poised to seize the opportunities that The Fourth Industrial Revolution offers[ii] – opportunities to become more productive and efficient; to transform how we live, work, and play. The Fourth Industrial Revolution is the digital transformation of our economy and society that is being driven by technologies like artificial intelligence, robotics, autonomous vehicles and the Internet of Things. These technologies will connect the physical, digital and biological worlds and have massive potential to transform the delivery of education, healthcare, public services and jobs. This report sets out the digital policy that is needed now to make sure that this potential is not left unfulfilled in the future.

The report was informed by case study interviews with politicians, policy experts, representative bodies and local institutions in the Tees Valley, West Midlands and Greater Manchester combined authorities. The purpose of the interviews was to learn about how different parts of the country had responded to the digital needs of their area, and to understand more about the digital challenges that remain unresolved. The interviewees described digital agendas of significant ambition, but also highlighted three areas of digital policy that require more focus if the opportunities arising from the Fourth Industrial Revolution are to be realised:

1. **The need to develop the stock of digital talent**. People are the cornerstone of a successful digital economy, and growing the stock of digital talent is fundamental to the adoption and use of new technologies. 'Brain gain' policies are needed to attract, retain and reconnect digital talent to local labour markets (see box, below).

2. **The need to collect quality data and make it accessible**. Good data can aid the design of policy and can unlock innovation, allowing policymakers to respond to facts and not opinions. Without data, the full range of possibilities of emerging digital technologies will not be realised.

3. **The need to upgrade digital infrastructure**. National and local government needs to be empowered and encouraged to support the roll out of gigabit capable infrastructure. The UK needs to be more ambitious if it is to take advantage of the technology that can revolutionise how households, offices, classrooms and hospitals work.

Without further action in these areas, the UK will be held back. For national policymakers, this means not being able to deliver everything envisaged in the Industrial Strategy. For local policymakers, this will undermine their ability to to tackle some of their biggest challenges, such as ageing populations putting pressure on social care services and environmental risks like air pollution.[iii]

The content of this report builds on previous research by WPI Strategy and Vodafone, which argued that policymakers could boost productivity by fulfilling the digital potential across the UK.[iv] It concluded that local communities should be given the powers to create Digital Enterprise Zones, which can implement digital policy tailored to the specific digital needs of local areas. The ideas in this report should be considered as a menu of options for what a Digital Enterprise Zone could implement.

The rest of the report is structured as follows:

- Three case studies that set out the digital needs and ambitions of the Tees Valley Combined Authority, West Midlands Combined Authority and Greater Manchester Combined Authority.
- A list of recommendations for how national and local policymakers can prepare for the Fourth Industrial Revolution, and in doing so, lay the foundation for increased productivity and technological development.

What is the Brain Gain Challenge?

The case studies for this report all reveal that universities have an integral role in creating a pipeline of talent to grow their digital economies. What is clear, however, is that different parts of the country have different levels of success at retaining their graduates. To illustrate this:

- 32% of graduates who came from London, but went to university elsewhere in the country, returned to London to work after finishing their course. By way of contrast, only 15% of graduates who came from the North East and went to university outside of the region went back to work in the North East region after finishing their course.
- 25% of graduates who study in the East of England region who are employed six months later, are employed in London. This equates to a total of 3,700 people, who could otherwise be supporting the East of England economy.

Of course, if a region is to increase the retention of graduates who study there (or reduce the loss of graduates going elsewhere), then it will be at the expense of another region. Nevertheless, competition amongst places to retain or attract graduates should improve the overall stock of talent in the UK.

The digital needs and ambitions of combined authorities

The combined authority case study interviews described digital policy approaches that have breadth and depth, but that – like the combined authority mayoralties themselves – are still in their early stages.

West Midlands Combined Authority – supporting the "golden thread" of digital

The tech businesses in Birmingham's Digbeth district, the smart city initiatives in Coventry and the Digital Campus at the University of Wolverhampton are representative of an already thriving digital scene in the West Midlands. The Combined Authority is committed to building on this activity. Andy Street, the Mayor of the West Midlands, has referred to the digital 'golden thread' that runs through every industry in the modern economy, and has implemented a suite of policies to support it.[v] These policies include:

- The Combined Authority's second devolution deal named Coventry and Warwickshire as a pilot location for vouchers to provide full-fibre gigabit connections to SMEs. The deal also outlined the possibility of turning unused public sector offices into co-working spaces for tech entrepreneurs.[vi]
- A Digital Board has been created to join-up the various digital initiatives from across the Combined Authority. The Digital Board is focused upon skills, infrastructure and business support. Its strategy includes creating a Digital Skills Institute, seeking 5G pilot schemes and simplifying how start-ups can get access to capital.[vii]
- A competition has been launched for tech start-ups to come up with new ideas to make the West Midlands a better place to live and work. Under the branding 'Urban Challenge', four separate challenges have been set related to topics of health and wellbeing, housing, youth unemployment and digital connectivity. The prize package is worth over £20,000 plus a guaranteed three-month pilot with the Combined Authority.[viii]

To help deliver these initiatives – and to develop new ones – the West Midlands is in the process of hiring a Chief Digital Officer. The new CDO will also have to think about how to take advantage of three key opportunities to enhance digital outcomes in the West Midlands:

i. **Building better digital infrastructure**. For employees who work in urban centres, but who live outside of them, poor connectivity can constrain their productivity – there is less opportunity to work from home, and the ability to work on a commuter journey is restricted. But to be able to build better infrastructure requires access to land and buildings – something that it is hampered by a lack of information about who owns the specific pieces of land and specific buildings.

ii. **Integrating different business communities**. Growing clusters of tech firms – Birmingham has the highest start-up rate of any UK city outside of London – can sometimes be invisible to more established and traditional businesses. Tech firms have a preference for certain types of office space, want to hire unique types of talent and network in different ways. This creates a "cultural chasm" between the tech community and other parts of the business community.

iii. **Creating the right skills base**. Developing digital skills needs to better match the varied needs of the labour market. One part of the answer is the new Institute of Coding, which the West Midlands universities are heavily involved in. Another part of the answer is the provision of new types of learning such as that provided by School of Code, which runs 16-week "Bootcamps" to teach coding skills to students with a variety of backgrounds. The most recent Bootcamp's 'Graduate Developer of the Year' had previously been a stay at home mum for seven years.[ix] More broadly, improving transport infrastructure will widen the pool of digital talent available to the West Midlands economy.

The key to better understanding these opportunities – and to better exploiting them – is greater access to and transparency of data. For example, data could help to understand how and where Openreach operates, which could potentially create more competition and better digital performance. In another example, data could be used to support the matching of supply and demand for digital skills in the labour market. There are clearly barriers to realising these examples, such as a lack of standardisation of data sets, but the prize for achieving this is a big one – data provides the opportunity for policymakers to deal with facts and not opinions.

Tees Valley Combined Authority – strengthening the digital ecosystem

The Tees Valley area has a well-developed digital ecosystem. Its digital infrastructure is of a good standard, there is a stock of successful digital businesses and there are established institutions that support the digital economy. Since his election as Mayor of the Tees Valley in May 2017, Ben Houchen has outlined an ambition to strengthen this ecosystem further.

Upgrades to the Tees Valley digital infrastructure is a particular focus – the Mayor wants a fast roll-out of 5G and full-fibre connectivity by 2021. This will be helped by the recruitment of a Chief Digital Officer, the streamlining of planning processes and the creation of a register of publicly available land.

Improving the Tees Valley digital infrastructure will support the growth of the Tees Valley digital economy. The focal point of this economy is the Boho Zone – an area in Middlesbrough that is home to a number of tech businesses. The Boho Zone is finding the need to grow as the digital economy grows, and the Combined Authority is supporting it to do so.[x] More space is required to meet the demand from start-ups and young businesses for affordable premises. Lease-to-buy models are being considered to help established digital businesses to put down permanent roots.

Support for the Tees Valley digital economy also comes from DigitalCity – a public-private partnership that is led by Teeside University. Its activity includes helping digital start-ups, encouraging business growth through digital adoption, preparing businesses for Industry 4.0 and growing digital skills.[xi] DigitalCity demonstrates how academia and the real economy can work together to achieve positive outcomes. A prime example of this is Animmersion – a 3D animation and data visualisation company set-up by two graduates of Teeside University in 2006.[xii] DigitalCity offered the infrastructure, support and mentoring that was needed to start Animmersion.[xiii]

The Combined Authority's relationship with central government has also been important to the area's digital – and wider economic – prospects. One example is the Tees Valley Devolution Agreement. It allowed for the creation of the South Tees Development Corporation (STDC), which has a key principle to prioritise advanced manufacturing and new technologies. Another example is the 12 Enterprise Zones within the boundaries of the Combined Authority.

Despite the digital attributes that the Tees Valley undoubtedly has, there are two prominent barriers that prevent its digital base from growing at an even faster rate:

i. **Perception problems**. The misleading narrative that the Tees Valley's economy is defined by post-industrial decline has a knock-on effect for the availability of venture capital. Indeed, Michael Heseltine's report looking at how to develop the Tees Valley economy concluded that:[xiv]

"It is clear that the economic picture in the Tees Valley is altogether more positive than perceptions drawn from the media. The industrial base is more diverse than generally reported and there is a higher level of opportunities both for individuals and for businesses from across industry sectors."

ii. **Retention and development of digital talent**. The digital businesses of the Boho Zone need highly-skilled people, but there is a feeling that too much talent leaves the area after they have finished university. But there is more to the story than simply new graduates leaving to start their careers in another place. There is also a cultural barrier to developing digital capability in the established business community, with some owners reluctant to adopt digital and change how they have always done things.

Digital technology is seen as a huge opportunity for the Tees Valley – digital businesses can be created with just an internet connection and a laptop, meaning that a new economic base can be nurtured to provide local jobs. Reducing or removing the above barriers will help to make this a reality by making the digital ecosystem even stronger.

Greater Manchester Combined Authority – connecting people, businesses and communities

Greater Manchester has strong digital credentials. It has 7,500 digital and creative businesses, which employ 54,000 people. In 2016 almost 1,600 tech start-ups formed in Manchester, and there are 15,000 creative, digital and IT students at the region's four universities.[xv] Behind these headline statistics are the institutions and the ideas to support the Combined Authority's aim to make Manchester the UK's pre-eminent digital city. For example:

- **Manchester Digital** was created in 2001, and is now one of the largest representative bodies in the North of England. It helps businesses to find workspace, access funding, recruit and relocate to the North West. It also raises awareness about new opportunities in digital technology, such as Artificial Intelligence and Voice Activation.
- **Tameside Council** has adopted an innovative 'Thin Layer Model' to quickly deploy full-fibre infrastructure.[xvi] The model is built around a co-operative of the local authority, hospital, NHS Trust and housing bodies. Together, these organisations contribute assets – such as ducting – that they either own or have built, and identify opportunities to build infrastructure at low costs (such as installing fibre in spare ducting alongside a new tramway). In short, the model uses publicly held assets and public sector demand to facilitate a rapid roll-out of full fibre infrastructure.
- **The universities** have bespoke digital initiatives. Manchester Metropolitan University has launched Digital Innovation MMU, which has high-end 3D printing facilities and TV and film studios. It is attached to a business incubator, which offers advice and mentoring on subjects such as sales and marketing, and hotdesking space can be rented for as little as £50 per month.

The focus of Greater Manchester's digital future is the Digital Strategy; it is the product of discussions with as many stakeholders as possible, and included over 40 people on the steering group. The Strategy has ten 'core indicators' that describe the kind of digital city that Manchester wants to be, with one key element of Manchester's digital future being the development of its skills base. This does not just mean training an army of coders – important though they are – but training an entire workforce to have critical thinking and problem-solving capabilities. This requires a pipeline of talent, starting in schools and continuing through colleges and universities. It also requires getting people to move into the area; there is even a campaign – RelocateMCR – that encourages people to do so. Perhaps the best indication of the issues in acquiring skills was the observation that businesses on the outskirts of Manchester are moving in to get access to talent, but even this talent pool is limited by poor transport infrastructure that hinders commuting possibilities

Recommendations to prepare the UK for the Fourth Industrial Revolution

A common perspective across combined authorities was the need to keep pushing the digital agenda because digital success gives rise to further digital success. In this context, all interviewees referenced the importance of Fourth Industrial Revolution technologies to their area. The 3D-printing labs in Manchester, the support for businesses automating in Teeside and the smart city initiatives of the West Midlands are all examples. All are testament to the UK's capabilities and potential in the digital sphere – and all could form the building blocks of a high-tech, high-skill future.

But the interviews also highlighted three areas that are in need of further attention if the full potential of emerging digital technologies is to be realised. These three areas are: growing the stock of digital talent, collecting more high-quality data and speeding up the building of digital infrastructure. This chapter makes recommendations for how national and local policymakers can put the building blocks in place to help the UK's towns and cities prepare for the Fourth Industrial Revolution.

Attracting, retaining and reconnecting digital talent

A strategy for a town or city to grow its stock of digital talent should be based upon making it attractive for digital entrepreneurs to locate in the area, retaining digital companies as they grow and giving opportunities to the digitally-skilled on a career break to reconnect to the labour market. The recommendations are:

- **Attract digital entrepreneurs with low-cost workspace and access to advice.** The case study interviews provided examples of how new digital businesses – often linked to a university – could only flourish because of the collaborative environment and support offered in low-cost co-working spaces or buildings designed to foster start-up activity. Towns and cities hoping to attract digital entrepreneurs should therefore consider:

    i. ***Conducting an audit of unused or underutilised public sector buildings*** to find spaces that can be converted into low-cost offices for digital start-ups. These spaces should have access to the latest digital infrastructure.

    ii. ***Creating a network of local digital mentors who host regular drop-ins at co-working spaces***. These mentors should also form a link to local universities to support students who have ideas for digital business after they graduate.

- **Retain digital talent by supporting businesses to scale-up.** The case study interviews referenced several factors – including a lack of growth capital and inadequate permanent office space – that deterred growing digital businesses from putting down permanent routes. Towns and cities should therefore consider the following:

  i. ***Trying new ways to encourage investors and high growth digital businesses to build relationships***. There have been several attempts to direct investment funding towards high-growth businesses outside of the South East region.[xvii] A better approach would be to explore how investors and high growth potential businesses can be introduced and develop long-term relationships that may subsequently result in funding. This is an approach adopted by the UK Business Angels Association, which has set-up hubs in places like Leeds, Bristol and Belfast so that investors and entrepreneurs can become more visible to each other.[xviii] Towns and cities could build on this model.

  ii. ***Providing support to businesses to adopt digital technology***. For example, businesses are using the IoT to cut costs, reduce risk, increase revenue and become more efficient. Evidence gathered by Vodafone suggests big returns on investment for IoT adopters, with revenue increases averaging 19% and cost reductions averaging 16%.[xix] It has previously been recommended that the Department for Trade could trial a voucher scheme for SMEs to procure services to improve their digital marketing in selected foreign markets. In addition to this, the voucher scheme could be used to trial how Fourth Industrial Revolution technologies can be used to improve export performance.

  iii. ***Create regional 'IoT councils' to support the adoption of new technology***. This would essentially expand the type of work that is being done by the Digital Catapult centres, which supports the adoption of advanced digital technologies. There are currently digital catapults in Brighton, Northern Ireland, the North East and the Tees Valley and Yorkshire. Regional councils would also enable local government to take ownership of new technologies including smart street-lighting.

- **Reconnect the digitally skilled to the digital economy**. There are huge economic gains to be made from helping people return to work after a career break. The Government has recognised this, having recently launched several returner programmes.[xx] Vodafone's ReConnect programme also recognises this, by targeting talented men and women on career breaks – in most cases to raise a family – who want to return to full-time or flexible work. To support the growth of returner programmes:

  i. Local authorities and combined authorities should run returner information campaigns, based upon the Government's recently launched returner guidance and toolkit.[xxi] The campaigns would promote the benefits to business of offering flexible employment terms and raising awareness among returners about flexible labour market opportunities that exist in the local area.

  ii. National policymakers should allow Apprenticeship Levy funds to be used for training – particularly to develop or refresh digital skills – that supports people to return to the labour market following a career break. In addition, the government should explore how Apprenticeship Levy funding that is raised locally can be used locally.

Helping young people develop digital skills

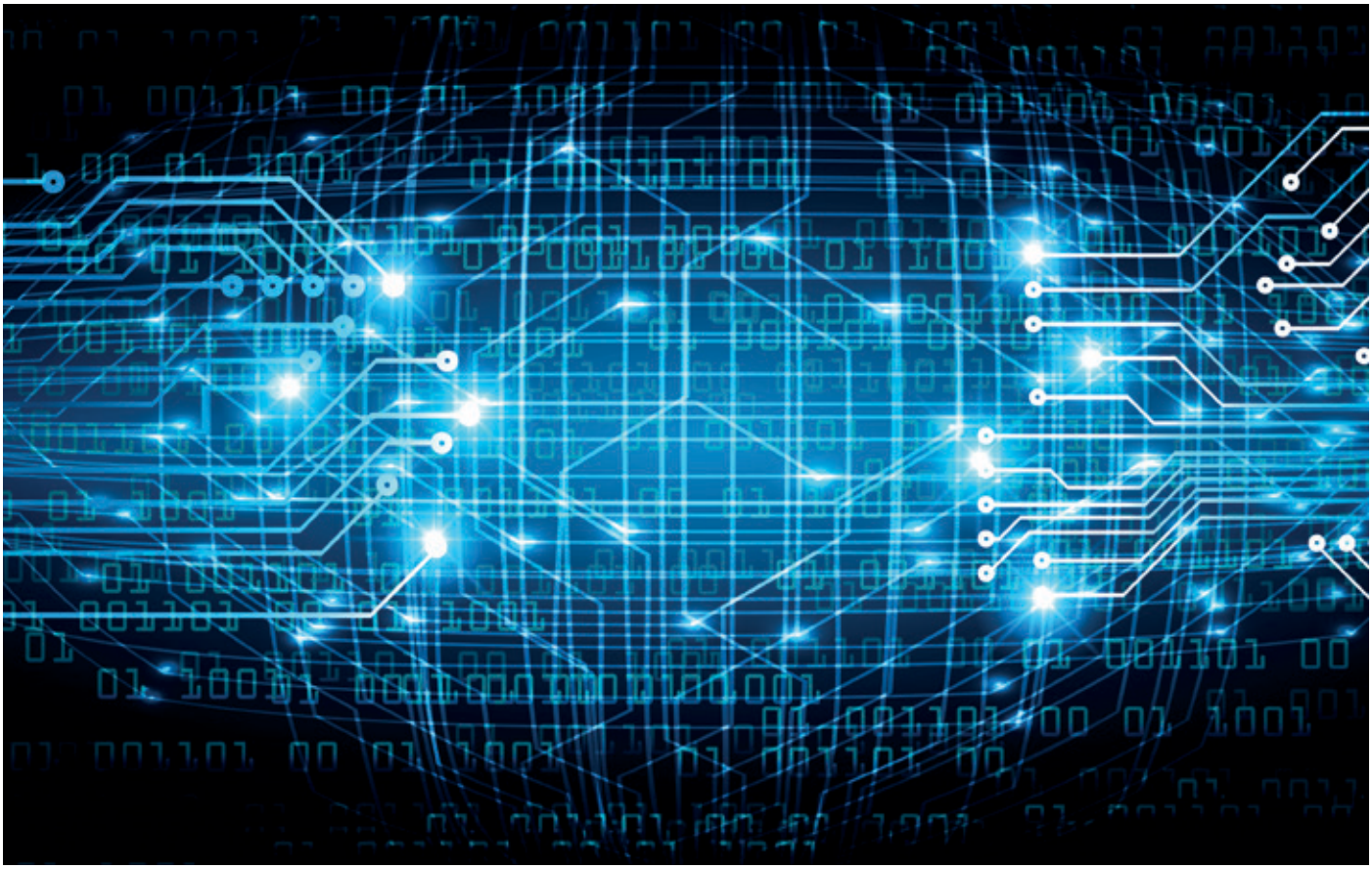
In the next two decades, 90% of UK jobs will require workers to have some level of digital know-how. But many children from low-income families still lack basic digital access at home. More than half, or 55%, of households in the lowest income group have no internet connection, whereas all households in the highest income group have an internet connection.

Vodafone wants to help young people today prepare for the jobs of tomorrow. They have launched an Insight Day programme with Teach First, a charity that helps pupils from low-income communities succeed in school. This programme brings pupils from schools that partner with Teach First to Vodafone offices around the UK for a day of talks and activities. The day is designed to help pupils develop both their career skills and digital skills.

Harnessing the power of data

Data will support the adoption and use of Fourth Industrial Revolution technologies. For example, securely processed, local data is needed for smart cities to deliver better parking, lighting, waste management and transport for their residents. However, issues such as standardisation and access can restrict innovations in the use of data. The following recommendations have been written with this in mind:

- **The Government should introduce a series of competitions to spur innovation in the use of data.** Offering a competition prize to find solutions to seemingly intractable problems has a long history of success. For example, the invention of the marine chronometer in 1761 and the first flight between New York and Paris in 1927 were both linked to prize awards. Today, high-profile competitions are focused on the rising resistance to antibiotics, and low-cost space exploration. The Government could pilot the collection, standardisation and analysis of data sets in partnership with a combined authority, which would then be made publicly available with a challenge set related to its use. For example, the challenge could be using the data to create a digital service that provides new information to the public, or the challenge could be to provide an analysis of the data that provides new insight into a local economy.
- **Explore how data can be used to understand digital talent of different localities.** The Government is trying to improve data sharing between its various agencies. For example, it is looking at how to identify businesses that have the potential to scale-up, with a view to encourage them to access support.[xxii] A priority for this type of exercise should be to better understand the stock of digital talent within a particular area. Trying to understand how private sector data could be used in this exercise would also be worthwhile. For example, recent research published by TechCity used data from LinkedIn to look at the spread of tech skills in different regions of the UK.
- **Trial how to improve the collection of data on digital skills within a particular locality.** As an example of the lack of data available, currently there are no published central Government statistics on the funding and take-up of digital courses within local areas (the best that is available is apprenticeship stats by sector, such as "Information and Communications Technology"). Local decision makers should be provided with this data by conducting an audit and collection of digital skills data within a particular Digital Enterprise Zone.



Building digital infrastructure more quickly

While most case study interviewees only had minor gripes about local digital infrastructure, the need to upgrade digital infrastructure to be gigabit-capable – driven by full-fibre and 5G – was repeatedly stressed. Towns and cities see upgrades to digital infrastructure as the foundation of being able to take advantage of the possibilities brought by the Fourth Industrial Revolution technologies.

The problem is that outdated policy and regulatory frameworks have hindered rather than helped the ability to invest, build, maintain or repair digital infrastructure. The following recommendations will support the UK to become more ambitious with its digital infrastructure, and support the creation of a 'Gigabit Society':

- **Deliver a strategy for full-fibre and 5G.** Including using local government assets to create fibre 'metro rings' from which fibre can be taken to homes and premises, and expanding local 5G test beds.
- **Trial ways to allow greater access to existing infrastructure to build more digital infrastructure.** One way of doing this would be to conduct an audit of how easy it is to access public sector sites and street furniture, something that is often talked about, but that has had only limited progress to date.
- **Map dark fibre assets for potential future use.** Mobile sites need to link back to the fixed network to deliver mobile data services, which will be especially important for future services like 5G. In addition, reduce bureaucracy attached to noticing, permits, traffic management and lane rental charges for new fibre build.
- **Use towns and cities to experiment with ways of removing the need for full planning permission for mobile infrastructure.** The case studies provided some interesting examples of how combined authorities are trying to improve planning processes. The Greater Manchester Combined Authority has produced MappingGM, which provides open access to mapping tools and data on planning metrics. Tees Valley Combined Authority is streamlining its planning processes. City regions could test how to move towards all mobile infrastructure being categorised as Permitted Development (whilst maintaining Prior Approval in more sensitive areas). Further, simplification of property law and access rights to enable the use of wayleaves under permitted development rights could be introduced, which would speed up build timelines, and reduce red tape and costs.
- **Open up markets to more competition**. Full fibre is currently only available to around 3% of UK premises. By way of contrast, Spain and Portugal have over 60% and 80% fibre penetration respectively. One reason for this disparity has been allowing BT to continue to focus on the copper network, something that will not be adequate for future needs. An important part of changing this would be apply greater force to the obligation for BT to open its ducts and poles to competitors.

References

i World Economic Forum, January 2016, "The Fourth Industrial Revolution: what it means and how to respond", https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

ii Deloitte, https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/manufacturing/ch-en-manufacturing-industry-4-0-24102014.pdf

iii SMF, June 2017, "Local public services 2040", http://www.smf.co.uk/wp-content/uploads/2017/06/2040-report-web.pdf

iv Vodafone, September 2017, '"Digital Super Towns" hold the key to UK growth", https://mediacentre.vodafone.co.uk/pressrelease/digital-super-towns/

v West Midlands Combined Authority, November 2017, 'Mayor backs digital support for West Midlands in Government announcement', https://www.wmca.org.uk/news/mayor-backs-digital-support-for-west-midlands-in-government-announcement/

vi HM Treasury and West Midlands Combined Authority, November 2017, 'A second devolution deal', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/662138/A_Second_Devolution_Deal_for_the_West_Midlands.pdf

vii West Midlands Digital Board Briefing Paper, September 2017, https://governance.wmca.org.uk/documents/s616/Appendix.pdf

viii Urban Challenge Website, https://urbanchallenge.io/

ix School of Code, November 2017, 'Stay At Home Mum To "Graduate Developer Of The Year" in 12 Weeks', https://blog.schoolofcode.co.uk/learning-code-staying-mum-d0773d620048

x Tees Valley Combined Authority, 'Mayor Announces Business Space To Unlock 830 High-Tech Jobs", https://teesvalley-ca.gov.uk/mayor-announces-business-space-unlock-830-high-tech-jobs-2/

xi Digital City website, https://thedigitalcity.com/about/

xii GazzetteLive, June 2016, 'Big growth plans for Animmersion as firm approaches tenth birthday', https://www.gazettelive.co.uk/business/big-growth-plans-animmersion-firm-11467913

xiii DigitalCity, 'Catalyst for Growth' https://www.tees.ac.uk/docs/DocRepo/Business/DigitalCity%20-%20Catalyst%20for%20Growth%20.pdf

xiv 'Tees Valley: Opportunity Unlimited', June 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/527649/Tees_Valley_Opportunity_Unlimited.pdf

xv Greater Manchester Combined Authority website, https://www.greatermanchester-ca.gov.uk/GMdigital

xvi Local Government Association, March 2017, 'Building and advanced digital infrastructure', https://www.local.gov.uk/building-advanced-digital-infrastructure

xvii NAO, December 2009, "Venture capital to support small business", https://www.nao.org.uk/wp-content/uploads/2009/12/091023es.pdf

xviii Forbes, February 2018, "Get Smart – UKBAA Targets The Regional Funding Gap", https://www.forbes.com/sites/trevorclawson/2018/02/15/get-smart-uk-business-angels-association-targets-the-regional-funding-gap/2/#6406b08a7878

xix Vodafone IoT Barometer 2017/18, http://images.response.vodafone.com/Web/VodafoneGroupPLC/%7B1d0b2db4-b194-43ed-ada3-52f3367d90ca%7D_Vodafone_IoT_Barometer_2017.18_Executive_Summary.pdf

xx BBC News, August 2017, "Government career break returner schemes launched", http://www.bbc.co.uk/news/business-41068554

xxi Gov.uk, March 2018, https://www.gov.uk/government/news/government-announces-15-million-fund-to-help-tackle-the-gender-pay-gap

xxii HM Government, November 2017, 'UK Industrial Strategy', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

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