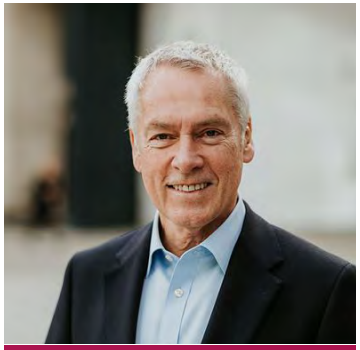
techUK
FOR WHAT COMES NEXT

Local Digital Capital Index 2022

Contents

Introduction

techUK's Local Digital Capital Index for 2022 demonstrates the local impact of the UK's tech ecosystem which this year was valued at $1 trillion – just the third country ever to do so.



Julian David, CEO of techUK

This year's index highlights that that impact is still distributed unevenly. Last year's index was able to demonstrate the difference between regions, this year we have added another layer to help understand these differences within regions.

This uneven distribution is not surprising, but neither is it welcome. There are stark differences between the impact that technology has on localities across the UK. That can't be allowed to continue. Failure to do so risks holding back the UK's future economic growth. And without focus and delivery, the gaps that exist risk becoming wider.

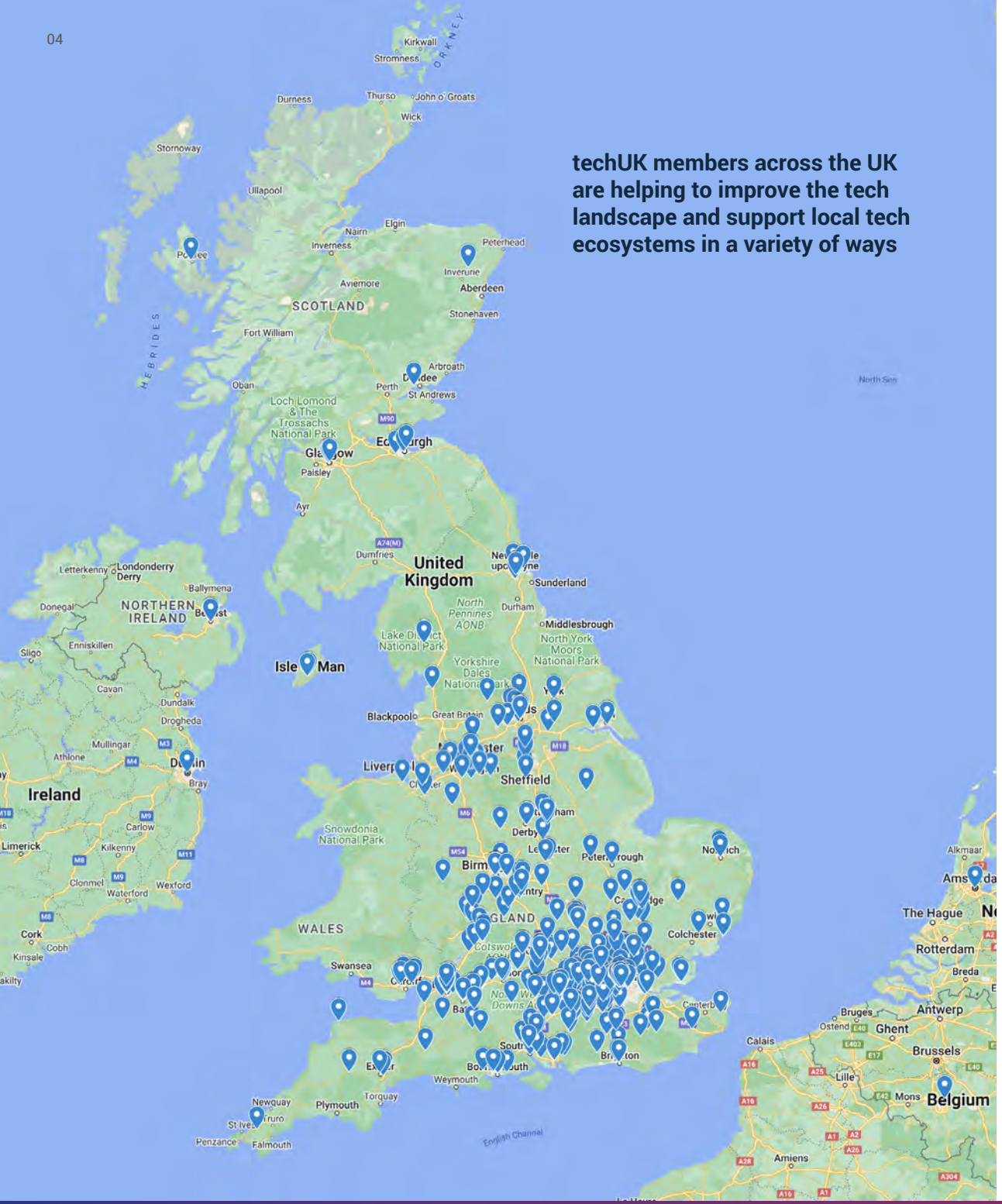
The Local Digital Capital Index is a tool to aid change and encourage action. In 2021 I said the Index is not about playing one region off against another, and that remains the case as we look for the whole UK to perform better. With greater granularity the Index should be a more capable tool to help both central and local decision makers to build on strengths and address weaknesses in local areas.

The reach of digital technology is increasingly touching every element of our lives. From our interactions at home to our working life, from our shopping to our energy usage, from our savings to our spending; there is a necessity to get this right. This means technology and innovation being imperative to levelling up, creating jobs and improving productivity. There is a duty from national, devolved and local government to work with businesses to support our economy.

To close these digital divides, we need to get more right, more quickly. We need digital infrastructure to support and provide the scaffolding that will allow digital skills to flourish. We need digital adoption to happen as standard rather than as an enabler for some businesses who choose to take the plunge. We need digital skills to continue their growth but improving the trajectory at which this happens. And we need a culture of investment and innovation to grow that supports all our nations and regions potential.

That is how we deliver growth and prosperity to all of the UK.

We at techUK will be playing our part in doing so – through our increased presence across the UK, and by continuing to develop the Index so that it is insightful, practical and actionable. Join us to help deliver the future we need.



HS HENHAM STRATEGY

Thanks must be extended to Henham Strategy for their time, work and commitment in helping develop the Local Digital Capital Index for 2022.

Further thanks must also be provided to Professor Kerensa Jennings, Director of Data Platforms at BT, for chairing the Local Digital Capital working group.

Our appreciation goes to all members of the working group who have played an important role in assessing and quality assuring the Index. They have pushed us to continually make the Index better, more robust and introduce new thinking. A process that will continue in 2023 and beyond.

Summary

techUK launched the Local Digital Capital (LDC) Index in 2021 having spoken to over 260 public sector, civic, academic and business leaders as part of the Building the Future We Need campaign.

The Index is aimed at supporting local tech ecosystems across the UK and encouraging investment, collaboration and further activity in those areas. That's not because the tech sector as it stands isn't contributing to the economy. It is. It's because we know that for the tech sector in the UK to achieve its true potential, and for the UK economy to achieve its true potential, it will require a strong, skilled, connected and well-distributed tech sector.

At the moment this isn't the case. The sector is too skewed towards London, leading to an imbalance that isn't good for the UK economy, for communities and businesses.

In 2022 the Index has sought to be more granular in examining the regions of the UK. This has meant probing down to NUTS2* level and has produced interesting results. We have called these more granular areas 'sub-regions' and they have shown interesting results.

Nearly all the data used in 2022 has been updated and the metrics altered (Please see the methodology report on our website). This decision was made to ensure the longevity of the Index as some data previously used would no longer be collected following the UK's exit from the EU so that on future data will change to ITL[1] measures. This means an exact comparison with 2021 isn't advisable.

* https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat

1 ITL, International Territorial Levels, this link (see below) shows the list of regions as used in LDC Index 2022 https://geoportal.statistics.gov.uk/documents/22b160acfb644b1f853dedfa63bab498/about

The region's leading the Index scoring, and those who have recorded lower levels of Local Digital Capital, are listed below:

Regions with notable Local Digital Capital scores	Regions with lower Local Digital Capital scores
Inner London – West	Highlands and Islands
Berkshire, Buckinghamshire and Oxfordshire	Lincolnshire
Inner London - East	Cornwall and Scilly Isles
Outer London – West and North West	Cumbria
Gloucestershire, Wiltshire, and Bath/Bristol	Southern Scotland

It is clear from our findings that there is both a north – south divide, as well as an urban-rural divide. Some of the UK's city regions – Bath/ Bristol, the West Midlands and Eastern Scotland – have shown strong results. This is a marker of the potential for growing, enhancing and embedding the UK's digital tech sector growth.

It is also worth noting that London, so often seen through a single lens, also shouldn't be seen as a single unit – which also impacts the levelling up needs of the capital. Inner West London's skills score is in the bottom third, and Outer East and North East London have some of the lowest scores nationally for finance and investment, trade and research and development.

The challenge going forward for the Government and the sector is ensuring that no area of the UK is without the capacity and capability to allow businesses, citizens, public services, third sector parties and others to be included in the advancement of digital technology and the benefits that it brings. The LDC Index and subsequent recommendations show this is possible, and by engaging and unleashing the talent, energy and innovation of the sector we can move from the prospect of being possible to one where it is probable.

Digital Infrastructure

In our continued efforts to improve the Index we added new measures to go beyond the data we captured on internet speeds (superfast, ultrafast and gigabit) to include the percentage of properties with access to 4G data.

Digital Infrastructure scores better in and around the UK's urban areas: West Central Scotland which includes Glasgow (6th) West Midlands which includes Birmingham, Wolverhampton and Coventry (7th), Greater Manchester (8th), Merseyside which includes Liverpool (9th), Northumberland and Tyne and Wear which includes Newcastle, Sunderland and Gateshead (10th), West Yorkshire which includes Leeds, Bradford and Huddersfield (11th) and Eastern Scotland which includes Edinburgh (12th).

However, there are some interesting observations to note from the seven highest and seven lowest scoring sub-regions.

The West Midlands shows the highest Ultrafast and Gigabit broadband coverage in the UK, beating London. A testament to the work, innovation and priority this has been given in the region. If mobile coverage reached London levels, then its position could move higher still. It's worth noting that in terms of 5G the UK Government has suggested the West Midlands is leading the way and there is the 5G testbed in the Black Country. It would be useful if more national data on 5G was available that could be used in future iterations of the Index. In addition, this shows investment outside London has an affect and should be encouraged.

Gigabit coverage in rural areas is patchy (the Index show the % of properties with access to Gigabit broadband is 6% in Cumbria, 9% in Lincolnshire and 15% in the Highlands and Islands) combined with low mobile coverage (one-third of areas without coverage in Cumbria and just under half in the Highlands and Islands). It is unsurprising that there is a correlation showing digital adoption is so low in these areas.

Northern Ireland is a NUTS1* and a NUTS2 region. This means the area covers urban and rural communities. Further data in the future exploring even more focused geographic areas may garner improved results.

Improving digital infrastructure has the potential to open the door to new and exciting technologies and companies across the UK. If regions don't have good and improving coverage this risks people, communities and businesses being left in a position where they can't keep up with their neighbours or competitors.

The three case studies included below show some of the excellent work underway to address digital infrastructure.

INFRASTRUCTURE[2] (%)						
	SuperFast Broadband	Ultrafast	Gigabit Coverage	Mobile	Index	Ranking
Inner London - East	0.96	0.78	0.76	0.98	0.9459	1
Inner London – West	0.94	0.78	0.75	0.99	0.9459	2
Outer London – West and North West	0.97	0.76	0.75	0.96	0.9293	3
Outer London – East and North East	0.97	0.85	0.84	0.93	0.9271	4
Outer London - South	0.97	0.86	0.85	0.93	0.9249	5
West Central Scotland	0.97	0.76	0.73	0.90	0.8936	6
West Midlands	0.97	0.88	0.87	0.87	0.8933	7
North Yorkshire	0.92	0.35	0.28	0.73	0.7097	35
West Wales and the Valleys	0.93	0.34	0.27	0.73	0.7072	36
East Anglia	0.95	0.45	0.23	0.69	0.6933	37
Cornwall and Isles of Scilly	0.87	0.35	0.32	0.68	0.6697	38
Lincolnshire	0.91	0.33	0.09	0.69	0.6675	39
Cumbria	0.93	0.16	0.06	0.65	0.6265	40
Highlands and Islands	0.80	0.15	0.15	0.56	0.5457	41

* https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat

2 The table notes the % of properties with access to each measure as taken from Ofcom data

Case study

Sunderland City Council

Sunderland – the UK's leading smart city

Sunderland is sharing a lesson in becoming the UK's leading and most advanced smart city. Through a 20-year joint venture partnership, Sunderland City Council and world leader in shared communications infrastructure, BAI Communications, are developing the world's first 'Smart City and 5G Neutral Host'.

This project aims to deliver the next generation of digital infrastructure which will enable Sunderland to become a global centre of excellence. This is achieved by using data to inform better decision-making and providing solutions for a smarter future.

This unique partnership has the advantage of combining public assets with private sector engineering expertise, creating an enhanced smart city infrastructure. Therefore, showing there is real value in creating digital and data solutions that make a measurable difference to residents, businesses and visitors.

"We believe no one size fits all when it comes to addressing the needs of a digital city of the future. We're building a 'network of networks' to facilitate a range of technologies that will serve the broadest possible set of social and economic needs across Sunderland – improving the lives and prospects of residents across our communities, whilst increasing the competitiveness of our businesses and the attractiveness of our city to potential inward investors."

Liz St Louis, Director of Smart Cities at Sunderland City Council

Case study

Sunderland City Council

bai communications

A few of the initiatives developed through this public-private partnership are listed below:

- Building public and private networks across the city
  - Ultrafast Wi-Fi (public or private)
  - 5G technology (small cells, private networks)
  - LoRaWAN (City-wide low range wide area network)
- Developing advanced digital and data solutions examples include:
  - IoT services (sensors, industrial products and gateways)
  - Carbon neutral solutions
  - Buildings management
  - Sensor networks
  - Wi-Fi messaging platform linked to a city-wide network for public information messages
  - CCTV solutions
  - Data management and analytics

To learn more about this partnership and find out how you can get involved, please contact the Smart City Programme team at smartcity@sunderland.gov.uk

Case study

WeLink

Speeding ahead in UK's outage capital

Natalie Duffield, WeLink CEO

"This pioneering fixed wireless approach is overcoming the disruption and delay of traditional fibre-to-the-premises," says WeLink CEO Natalie Duffield.

As a senior test analyst at Baillie Giford, one of Scotland's best-known investment managers, Kashif Mahmood is expert at creating great online experiences for customers. But he has struggled with poor broadband at home with big-name internet service providers unwilling or unable to provide fibre to his flat in Edinburgh city centre. Kashif said: "The quality was abysmal. The maximum download speed was 8mpbs and upload was 2mbps but most of the time I struggled to even get 5mbps. I would often freeze on Zoom calls with my team."

Edinburgh - lagging behind other UK cities

Kashif's experience sadly is not unique in Edinburgh: latest Ofcom data from the Connected Nations Spring Update shows 6,263 premises are unable to get 30mbps broadband. This makes it difficult for thousands of people to work or study from home, access basic online services such as healthcare, manage their money online, entertain themselves or keep in touch with friends and relatives.

A survey by price comparison website Uswitch in 2021 named Edinburgh as the UK's "outage capital", with its residents suffering the longest time without broadband per person, losing nine million hours of broadband in just 12 months. The estate agency Knight Frank, this year warned the city was lagging behind other major UK cities in digital connectivity as measured by fibre availability, capacity and performance, mobile network capabilities and closeness to data centre services.

Case study

WeLink

Without the need to dig up streets

In response to these challenges, WeLink Communications UK launched Britain's first major wireless gigabit broadband service in Edinburgh, bringing lightning-fast internet speeds to the Old and New Towns without the need to dig up streets in the World Heritage Site.

WeLink is pioneering a fixed-wireless mmWave broadband approach that is much quicker and less expensive to deploy than traditional fibre-to-the-premises broadband. It extends the reach of fibre into an area using the latest advances in wireless mesh technologies and network routing to deliver gigabit speeds for homes and businesses while avoiding the inevitable delay and disruption of laying fibre-optic cables underground.

WeLink are proud to be investing in Edinburgh and are committed to the city. They understand the local landscape and the massive market opportunity for supplying the kind of lightning-fast connectivity that households and businesses can depend on in this day and age, starting in the city centre and expanding across the wider city. In Kashif's words, "it's been a complete game changer."

"WeLink has honestly been revolutionary, especially with having to work from home. I've not had a single frozen Zoom call and the symmetrical download and upload speeds have blown my wildest expectations. If we hadn't discovered WeLink, we would still be at the mercy of the traditional broadband companies. But I'm extremely grateful that WeLink's cutting-edge technology has finally arrived in Edinburgh."

Kashif Mahmood,
Senior Test Analyst at
Baillie Giford (early adopter)

Case study

Broadway Partners

Gigabit Voucher: Bridging the Digital Divide

Fatmir Hyseni, Senior Growth Marketer at Broadway Partners

Having access to the internet should be a fundamental human right, much like having access to running water and electricity. Everyone, regardless of who they are or where they live, has a fundamental right to internet access.

With the events of COVID 19, it is clear that access to the internet is no longer a luxury but rather a need. Providing a digital bridge is crucial in today's society. However, millions of people are deprived of basic access to the internet because of digital inequality, especially those living in remote areas.

The good news, however, is that "Project Gigabit," a £5 billion gigabit broadband rollout funded by the UK government, is here to help. This is the kind of forward thinking we need to end the internet divide and connect those living in remote areas.

Introducing the Gigabit Broadband Voucher Scheme

In March of 2018, the UK government established a voucher program called Gigabit Broadband Voucher with the intention of expanding gigabit-capable connectivity across the country, especially in rural areas. The government has committed £210 million so far to help folks in rural areas who are experiencing difficulties due to sluggish broadband speeds.

How it works

Gigabit voucher-eligible businesses can access the program through a participating provider. To obtain a gigabit connection, those interested must locate a certified provider and sign up with them. Every UK citizen, no matter how remote their location, will soon have access to gigabit-speed broadband thanks to this government initiative. The government plans to spend £5 billion to make sure that no community is left behind, especially those in remote, hard-to-build-for areas where high-speed Internet access is not currently available.

What makes a gigabit connection so special?

Full-fibre connections are required for the fastest and most dependable broadband that can deliver gigabit speeds. Given that one gigabit equals 1,000 megabits, the gigabit connection offers a tremendous boost in network speeds.

Case study

Broadway Partners

How to qualify for the voucher program in rural areas

The gigabit vouchers are a cooperative effort that can be used to offset the expense of installing new connections in rural areas where residents and businesses meet the requirements listed below:

- Current broadband speeds are below 100 Mbps.
- There is little chance of a commercial gigabit-capable network being built there anytime soon.
- A government-funded contract to upgrade the network has not been established as of yet, nor is one in the works.

When two or more homeowners or qualified companies band together to fund an installation, they do so by pooling their vouchers to cover the total cost of the job (a single connection will not be eligible for the program). Also, projects will have to pass BDUK's commercial and value for money reviews.

Corporate Eligibility

To get a gigabit voucher, a business must self-certify that it is a small or medium-sized enterprise (SME), as defined by sections 465 to 467 of the Companies Act 2006, which can be summed up as follows:

- Must have no more than £36 million in annual sales with no more than 249 employees.
- A balance sheet total of less than £18 million per year.

In addition to the voucher payment, the business must have received less than 325,000 SDRs in government grants in the last three fiscal years, which must include the current year.

The Special Drawing Rights sum has replaced the de minimis grant limit of €200,000 since the UK's exit from the European Union. Small and medium-sized businesses (SMEs) are eligible for vouchers in the same way that for-profit businesses are.

In Conclusion

The good news is that the gigabit voucher scheme is available throughout the United Kingdom. Having access to the internet is essential for any company operating in the modern world. And thanks to the Gigabit broadband voucher scheme, businesses can now take advantage of a wide variety of new online services and communication channels, including vastly increased communication speeds.

Digital Skills

Digital Skills is an area of deep concern for many individuals and businesses.

Without the necessary digital skills people can be excluded from accessing jobs and services, for instance, if people don't have the confidence to use the internet how can they access price comparison sites to reduce their bills.

Businesses, large and small, need talented people to take up roles and help take the sector forward. In August 2022 Computer Weekly report that around 750 new software developer jobs were advertised each day. An inadequate supply chain of talented and skilled people risks putting off investment and companies growing in the UK.

We need a digitally skilled workforce across the UK. People with digital skills shouldn't need to move to London to get the job they want in the tech sector. As our Index notes, digital skills in London are strong but this strength isn't

replicated across the UK. Improving the digital skills of people and communities opens to the door to better paid jobs and improved career prospects. There's a mixed picture across our city regions. Supporting digital skills in places like Merseyside and Tees Valley will help to encourage people to not only access digital services but consider careers in the tech sector. Rural areas, like Lincolnshire and Cumbria, with improved digital skills alongside improved digital infrastructure can look to adopt, adapt, and renew services and support for communities.

Levelling up the UK by building an economy where everyone can succeed won't happen without the revolution in skills and training needed to address our acute digital skills crisis.

This means Government at all levels - central, local, elected Mayors - working with the tech sector to target interventions where they are needed most.

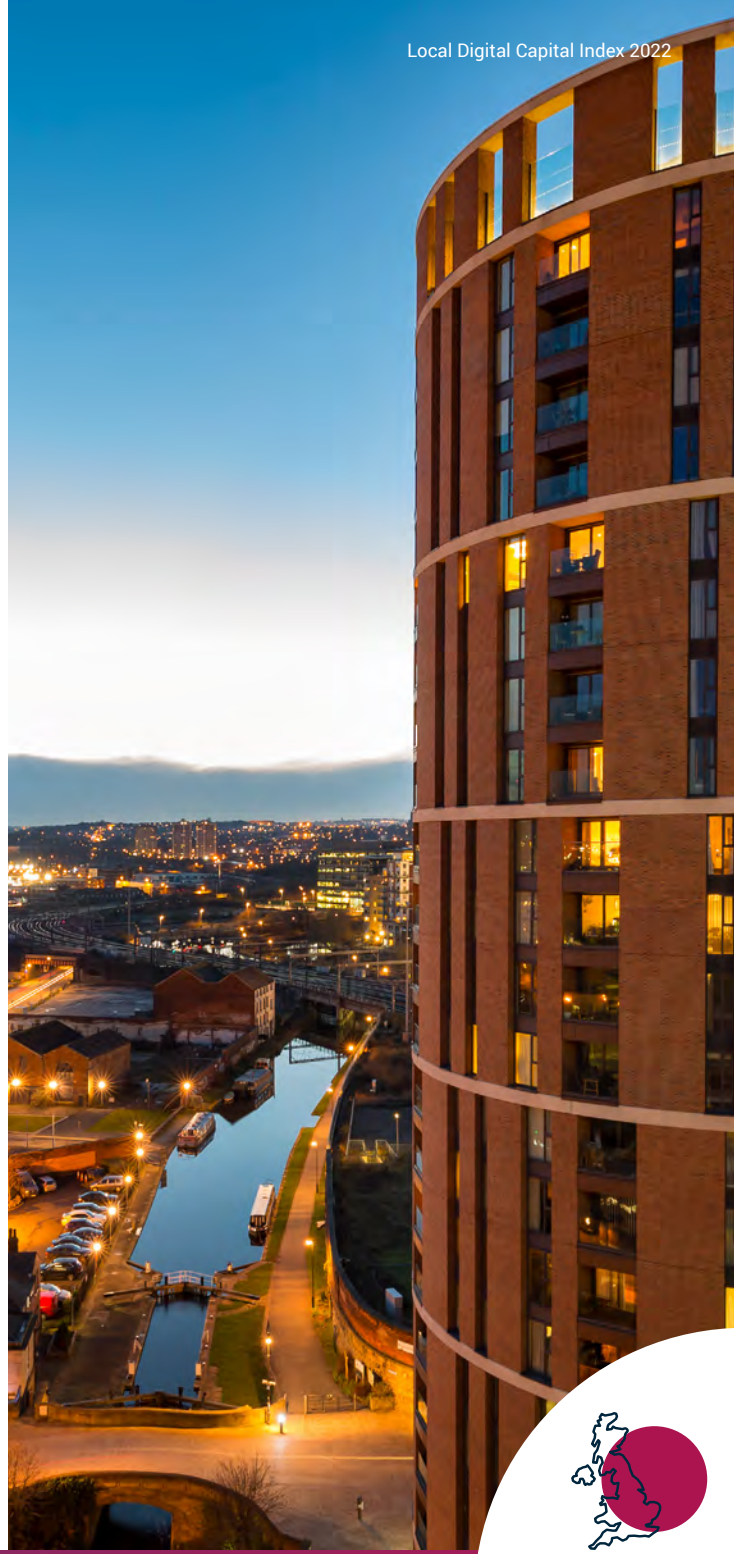
techUK members have proposed seven recommendations to achieve this in our report Fast Forward for Digital Jobs. By reforming the apprenticeship levy, creating a right to hybrid working and focusing on the building blocks of 'Local Digital Capital' we have the opportunity to fill hundreds of thousands of job vacancies across the country, getting people into digitally skilled roles that pay on average £62,500 a year (UK average salary £31,772 according to the ONS, June22)

The LDC Index indicates London's lead in digital skills with 4 out of the 5 areas of London making up the top 4 in our Index. Of the top 10, no area in the Midlands, North of England, Wales or Northern Ireland features, though Eastern Scotland (including Edinburgh) and North Eastern Scotland (including Aberdeen) do feature. Of the 'core cities', Bristol is featured and speaks to the strength of the tech sector in that region.

	SKILLS
Outer London - South	1
Outer London – East and North East	2
Outer London – West and North West	3
Inner London - East	4
Surrey, East and West Sussex	5
Eastern Scotland	6
Berkshire, Buckinghamshire and Oxfordshire	7
Gloucestershire, Wiltshire and Bath/Bristol area	8
North Eastern Scotland	9
Hampshire and Isle of Wight	10

Initiatives, such as Google Digital Garage have provided more than 800,000 people with free digital skills training. But there is more to do. There is a need for better data around skills so initiatives can be targeted locally, and interventions assessed for their success to understand if these can be scaled-up or rolled out elsewhere.

Our Index looks at digital skills through the lens of the wider skills discussion such as



people using the internet or the skill levels of the population in different areas of the UK. The need for more data is part of our desire to see the Index grow but also to help the UK have more targeted conversations, particularly about two distinct groups. Firstly , the people with incredible tech skills that are helping drive innovation, secure future research funding and produce the new technologies that will grow our economy. We don't know enough about this group and while perhaps perceived as niche, keeping these people in the UK will help power our economy. The second group, identified by FutureDotNow, are those in work who lack digital skills. This group of 11.8m people in the workplace (36% of the workforce) have been called the 'hidden middle' and this needs more attention. This group aren't deemed digitally excluded, but they also lack the skills to thrive in the workplace.

techUK isn't suggesting that interventions for one group are prioritised over another. The opposite. All need to be considered in the skills discussion as skills and training is a complicated space, always moving, and requires both local action and national attention.

The three case studies included from Manchester Metropolitan University, Next Tech Girls and The Data Shed show some of the excellent work already underway to help address the digital skills challenges in the UK.

Case study

Manchester Metropolitan University

Transforming the workforce through digital skills

Manchester Met is the leading university provider of apprenticeships in the UK*, partnering with over 540 local and national organisations and educating over 2,400 apprentices across a range of undergraduate and postgraduate qualifications.

The University offers a number of Digital Degree Apprenticeship courses and was awarded the Digital Apprenticeship Provider of the Year award at the prestigious AAC Apprenticeship Awards in 2020.

Supporting the tech infrastructure of Manchester has been a strong focus of the University. As well as partnering with a range of Manchester-based organisations to upskill their staff, Manchester Met recently opened their new School of Digital Arts (SODA). This state-of-the-art building development is home to Manchester Met's Creative Digital Design Professional Degree Apprenticeship and the Digital User Experience (UX) Professional Degree Apprenticeship.

Developed collaboratively with employers, Man Met's Creative Digital Design Professional course is suitable for existing employees or new recruits looking to bring expertise in 3D modelling, branding and mobile first design. Through this, businesses are finding that they can benefit from well-designed digital content, communication, services, and creative digital solutions. Additionally, the University's Digital User Experience Professional course allows for new or existing employees to progress their knowledge of UX substantially.

These two courses, along with the Digital and Technology Solutions Degree Apprenticeship, and Digital and Technology Solutions (Masters) Degree Apprenticeship have led to the progression of women in STEM, with 34% of Manchester Met's STEM apprentices being women. This marks a notable improvement on the national undergraduate average of 22% reported by the Office for Students (2020).

A few testimonials from people who benefited from these courses are detailed as follows:

Alissa Koupal of Pennine Events had the following to say on her experience as an employer, working with Manchester Met, on the University's Digital Marketer Degree Apprenticeship:

"It has been fantastic working with Manchester Met. Our apprentice has been fully supported and we've had regular meetings with their tutors and their mentors. We've had full updates from them. And it's just been a really smooth journey over the last few years."

* RateMyApprenticeship 2019, 2020, 2021, 2022

Case study

Manchester Metropolitan University

Kashif Taj, Apprentice Lead, IBM UK said,

"Degree Apprenticeships enable IBM to attract diverse talent, which is essential for innovation. Our degree apprentices have proven to be highly successful in terms of their career velocity and adding value to the business. Degree programmes such as Digital and Technology Solutions enables our apprentices to develop a broad set of knowledge, technical skills and behaviours which complement various entry-level roles in consulting and deeper technical roles. I have found that many of our senior leaders are passionate about apprenticeships in terms of recruiting raw talent and enabling IBM careers to be more accessible across the UK demographic."

James Healy, Digital and Technology Solutions Degree Apprenticeship at The Travel Visa Company Ltd found the Apprenticeship drastically improved his career opportunities and said:

"The chance to study for a degree that is fully-funded is an incredible opportunity. This, along with earning a good wage and gaining work-based experience at the same time was something that I could not say no to. Graduating with a degree in any specialism was something that I never thought I would ever have the ability to do. I saw it as a chance for me to develop my technical skills, secure a full-time job and earn a new qualification."

Employers interested in collaborating with Manchester Metropolitan University can contact the Degree Apprenticeships unit here.

Case study

Smashing the stereotypes in the tech industry: A case study by Next Tech Girls

The Next Tech Girls initiative, created by international tech recruitment company Empiric, aims to inspire today's girls in education to become tomorrow's women in technology. They host events, help secure work placement opportunities and give training to teenage girls to spark or nurture their passion for tech.

It's no secret that the UK tech industry is overwhelmingly male, with women making up just 26% of the tech workforce in 2022. Despite showing interest in STEM subjects around the start of secondary school, girls' interest tends to wane by their GCSE years, with a lack of visible role models as well as a wider lack of inclusion in the UK tech sector shouldering some of the blame.

Looking at computing in particular, girls only make up around 21% of GCSE class numbers. By A-level, this number drops to around 15%, and by degree level it falls to 13%. Somewhere in this academic journey girls are losing interest in tech. Next Tech Girls wants to change that.

Next Tech Girls was established to tackle the industry's underrepresentation of women at the grassroots level. Since 2016 they have partnered with more than 40 companies and 100 educational institutions to deliver tech-focused work placements for over 350 teenage girls. By providing them with hands-on experience and insights into the opportunities available at a critical age, Next Tech Girls are shaping their futures and the future of the tech industry.

How have the girls responded

Between testimonials and feedback results, Next Tech Girls have seen an overwhelmingly positive response from the girls placed and their host companies. 92% of girls said that their placement had made them consider a career in tech and 85% said that they would like to be involved in another tech-based work experience.

Case study

Smashing the stereotypes in the tech industry: A case study by Next Tech Girls

This sentiment was echoed in comments from the girls:

"I found the experience very valuable and rewarding as it significantly improved my programming and teamwork skills, and also boosted my confidence since the feature I helped develop was added as a permanent feature to their website."

"Next Tech Girls got me into this career route and I honestly can't give up now, forever grateful."

And from the host companies:

"The students responded well to the tasks we gave them and some of their work is now being used by our teams. They found the placement beneficial and made a positive impact in a short period of time."

Some of the girls who had placements between 2016 and 2018 are now studying Computer Science degrees or working in the tech industry. They all cite their Next Tech Girls experience as helping them make the decision to pursue careers in tech.

Planning for a diverse future

The past few months have seen several exciting developments for Next Tech Girls. They have appointed a new director - Emily Hall-Strutt, former Programme Delivery Manager and Diversity and Inclusion lead for Ministry of Justice Digital - and have been working with a design agency to rebrand the initiative to better appeal to teenage girls.

They are broadening their offering to include training and workshops to reach more girls and have a wider impact and are looking for new companies to form partnerships.

Next Tech Girls will be showcasing some brilliant women in tech to make girls aware of the variety of roles and routes into the industry, as well as advertising opportunities for girls (and tech companies) to get involved with their work.

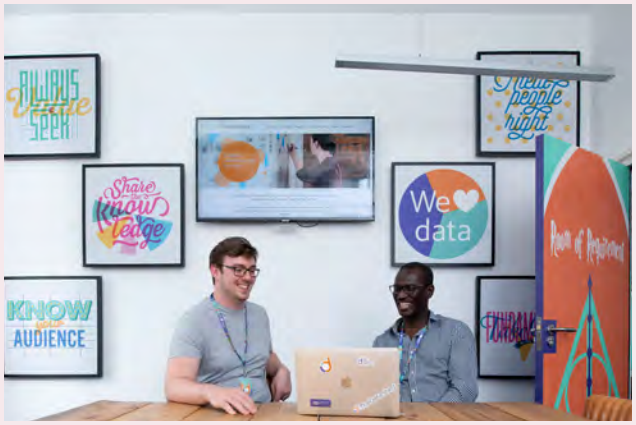
Their ambition is to reach 250,000 girls by 2030. Whilst bold, this goal allows them to really establish their vision for the future, with programme alumni feeding back to inspire the next generation. Using their international Empiric network as a base, they want to take the programme global, and inspire girls around the world to take part in creating the future of tech.

For more information, please email info@nexttechgirls.com

Case study

Data Shed

Collaborating for advanced digital skills



The Data Shed is an award-winning data Leeds-based consultancy specialising in data transformation projects, single customer views, managed support services, and more. Focused on driving value and insight, they create technical solutions with a product-agnostic approach and enable their clients to get the most out of their data and make better-informed decisions.

Deeply embedded with an ethos of cooperation and collaboration, The Data Shed's core values include "Always seek value" and "Share knowledge." This has translated into ambitious action both internally and across the region, aimed at developing digital and tech skills. The Data Shed (TDS)'s mission is to create useful data tools that help organisations harness the value and reduce the risk held in their data asset, regardless of size or technical capability.

The Data Shed's strategy for Learning and Development is designed to empower 'Shedders' to strengthen their existing skill set, align career journeys with individual aspirations and access to the training required to achieve their goals. This is delivered through a framework which fosters technical and data excellence and the development of commercial and professional skills, creating flexible team members with a broader overview of the business in addition to expert knowledge. Quarterly Engineering Days and open-mic sessions further drive career development and collaboration within the company.

Keen to encourage the next generation of digital employees, The Data Shed recruits recent graduates, as well as participants from the NorthCoders' intensive coding bootcamp, which offers an entry point into the tech industry for many who come from a non-traditional background.

Having recently launched the Shed Academy, a partnership with boot camps such as Generation - a global social enterprise that trains, supports and places people into life-changing roles that might otherwise be inaccessible to them - graduates are encouraged to apply for roles at The Data Shed. They also receive additional support to continue building digital skills in line with their career aspirations. This was created to deliver the planned recruitment of junior Data Engineering talent, supplemented by dedicated learning paths and mentoring to get them into project teams in a supported and realistic timeframe.

Case study

Data Shed

Community engagement – vital to success

Within the wider tech community, Co-Founders Anna and Ed have both developed reputations as leaders and role models. In particular, demystifying tech for non-technical people and encouraging the development of skills while promoting careers in tech to those who may not have previously considered one. This dual approach to developing digital skill sets will be vital in ensuring the growth of the sector both nationally and regionally.

An advocate for women in the digital and tech industry, CEO Anna Sutton is active in Lean In, WiLD and Leeds Beckett University's Women in Leadership program. Anna believes that technology can only create solutions that work for the whole of society if the people creating the tech are representative of that society.

She regularly speaks at events, encouraging and supporting women at every stage of their career journey to step out of their comfort zone and take up new challenges. Supporting the wider Digital and Tech community, The Data Shed sponsors the Leeds Digital Festival, and Anna Sutton is a member of its Steering Group. TDS also supports Ahead Partnership and Anna is a committee member of Leeds Community Foundation.

Digital Adoption

One of the clearest indicators of a tech enabled economy is digital adoption. This means technology being embraced by companies who aren't traditional tech firms. From cyber security to CRM systems to contactless payments, there are a plethora of ways companies can adopt digital and improve their productivity.

Sage's report 'Digital Britain' (2022) revealed the use of technology by small and medium sized businesses contributes £216 billion to the UK economy.The top three sectors leading this digitalisation were healthcare, hospitality and construction. However, this isn't about adopting technology to remove people and cut jobs; quite the opposite. Digital adoption is about connecting with customers, improving business processes, and providing the tools to grow the business.

Sage's report identified interesting findings in some constituencies. In North Devon tech is most important for training staff and cutting costs. In Westmoreland and Lonsdale, over two-thirds of those asked had adopted more social media in the last 12 months to keep in touch with customers. In Hull East the biggest barrier for SMBs to adopt more tech is cash flow pressure. And in Sunderland Central 91% see tech as integral to their business growth.

As our digital infrastructure case study from Sunderland showed, new technology and smart city projects can help communities. But while Westmoreland and Lonsdale businesses are engaging in social media more, our Local Digital Capital Index shows Cumbria is still the lowest performing region in the UK for digital adoption. And this is a running theme across many rural areas including Lincolnshire, West Wales and the Valleys and East Yorkshire. And in all these areas there is a general correlation of also featuring low on the Index for digital infrastructure and digital skills.

The top performing areas for digital adoption are listed here:

ADOPTION %						
	UK Business Count[3]	Digital Employment Share[4]	Digital Occupations[5]	Investment in ICT[6]	Index	Ranking
Berkshire, Buckinghamshire and Oxfordshire	0.75	1.00	0.75	0.47	0.743	1
Inner London - East	0.84	0.81	0.72	0.44	0.667	2
North Eastern Scotland	0.17	0.19	0.82	1.00	0.642	3
Outer London - West and North West	0.95	0.60	0.76	0.47	0.627	4
Outer London - South	1.00	0.38	1.00	0.42	0.621	5
Hampshire and Isle of Wight	0.50	0.63	0.71	0.43	0.584	6
Inner London - West	0.47	0.93	0.22	0.60	0.578	7
Outer London - East and North East	0.89	0.32	1.00	0.33	0.567	8
Surrey, East and West Sussex	0.65	0.56	0.69	0.43	0.566	9
Eastern Scotland	0.32	0.53	0.80	0.39	0.561	10

Again, there are no regions from the North of England featured but two Scottish regions do score well and are featured in the top 10 – although it should be noted that two other Scottish regions feature in the bottom 10 (Southern Scotland and Highlands and Islands).

West Midlands' digital adoption place on this component (24th may be disappointing in light of their high score for digital infrastructure. And Greater Manchester's place (17th is respectable, especially as Cheshire is 14th Gloucestershire, Wiltshire, Bath/Bristol is 11th but their neighbours in Devon and Cornwall are 33rd and 37th respectively.

Government programmes such as Help to Grow: Digital are welcomed to support businesses in the digital adoption journey, as well as expanding the eligibility criteria for this type of programme. However, this alone won't solve the problem and Mayors and local leaders need to be looking, particularly in a post-pandemic world, at how they can gather better data (including being able to access the Help to Grow data) and create interventions that encourage digital adoption for SMEs who wouldn't see themselves as a 'tech business' or who could grow into new markets with digital support.

3 Number of businesses in the digital sector according to data from UK Business Count
4 The total number of jobs accounted for by the digital sector according to data sourced from the Business Register and Employment Survey
5 The total number of jobs accounted for the digital and associated occupations according to data sourced from the Annual Population Survey
6 The annual Regional Gross Fixed Capital Formation in information and communication assets across all industries

Case study

Vantage UK

A Private Cloud for the Public Sector

Established in 2010, Shared Resource Service (SRS) is a collaborative public sector organisation that provides technology services to the public sector in South Wales. In total it serves approximately 350 sites including 120 schools. Vantage UK's CWL1 data centre campus offers SRS an affordable and future-proofed private cloud hosting environment for delivering shared digital services to the South Wales Public Sector.

The key objectives behind SRS's move to Vantage last year were to:

- Transform the SRS into an organisation that delivers the best digital services to its partners
- Consolidate ageing on premise data centres to reduce costs and complexity
- Increase agility by transforming into a cloud delivery partner
- Build a standard service catalogue of commoditised services based on a single infrastructure
- Support more Public Sector organisations wishing to join the partnership
- Increase the value for money proposition
- Ensure the investment in technology is focused on delivery of the corporate priorities of the partner organisations

SRS required a more efficient, cost-effective and future proof solution for delivering the various digital services it provides to many hundreds of users across four Local Authorities. This needed to accommodate the ongoing shift towards virtualisation, necessitating the use of higher density racks with more power draw per rack.

SRS's range of shared standardised digital service offerings are now being delivered from a single highly secure and resilient private cloud platform, hosted at Vantage's CWL1 data centre campus near Cardiff. These include compute and storage resources, firewalls, IT support/helpdesk and access to WAN services via connection to the PSBA (Public Sector Broadband Aggregation) which connects Welsh public sector organisations to a private, secure, Wide Area Network (WAN). There are currently 18 server racks drawing a total of 90kW for supporting the data processing and storage requirements.

Business Benefits

Vantage CWL1 provides SRS with a world class data centre solution, offering state-of-the-art critical infrastructure and cooling, abundant space and 100% renewable power, multiple connectivity solutions, along with a convenient location to the M4.

Case study

Vantage UK

Future Potential

In the future, SRS foresees the need for housing up to a total of 30 racks in support of its growing private cloud solution.

Matt Lewis concluded: "The scalable power and space available at Vantage CWL1 will give us plenty of room to expand which brings great peace of mind. And with the growing reliance on cloud and continuing virtualisation, having a very competent engineering team available to support us inside a well-connected carrier neutral data centre will help us to always respond quickly to changing requirements and ensure maximum choice and competitiveness. In CWL1, we have found a safe harbour for securing the future of SRS and the shared services we are responsible for providing on a continuous basis."

"We now have a much more cost-effective data centre solution and one that is fit for purpose for hosting a modern private cloud to seamlessly deliver a common set of services to all our stakeholders. And without any of the burden of capital expenditure just to remain up to date with the latest infrastructure technologies. Furthermore, Vantage's commitment to using 100% renewable power is of key importance to our Council members.

Previously we only had one network connectivity option available to us with BT. Now we can choose from multiple carriers with direct points of presence at Vantage CWL1 as well as leverage further potential cost savings including access to the LINX Wales Internet Exchange and Peering Service."

Matt Lewis, Chief Operating Officer, SRS

Trade Support

It may be surprising that London features top of the Local Digital Capital Index for trade support but given the size of the capitals services sector this weighs heavily in its favour. What should be celebrated is that Scotland has finished second in this component. This is driven by the strong results in Eastern and Norther Eastern Scotland.

Berkshire, Buckinghamshire and Oxfordshire again score well in this area, as does Cheshire, with strong service and goods exports respectively.

The Index provides us with a snapshot into the trade strengths of regions. In order to further this and improve the available data the UK should look to some practical steps to coordinate from the centre in order to leverage the digital strengths of different regions across the UK.

The digital chapters within Free Trade Agreements are to be welcomed. The Department for International Trade's Future Tech Trade Strategy has also been welcomed by techUK and the new Export Strategy is a step in the right direction. However, there is still the possibility to leverage more local knowledge and leadership by bringing devolved government and Mayoral Authorities closer to some of these discussions, particularly where unique strengths can support and benefit the digital elements of free trade deals.

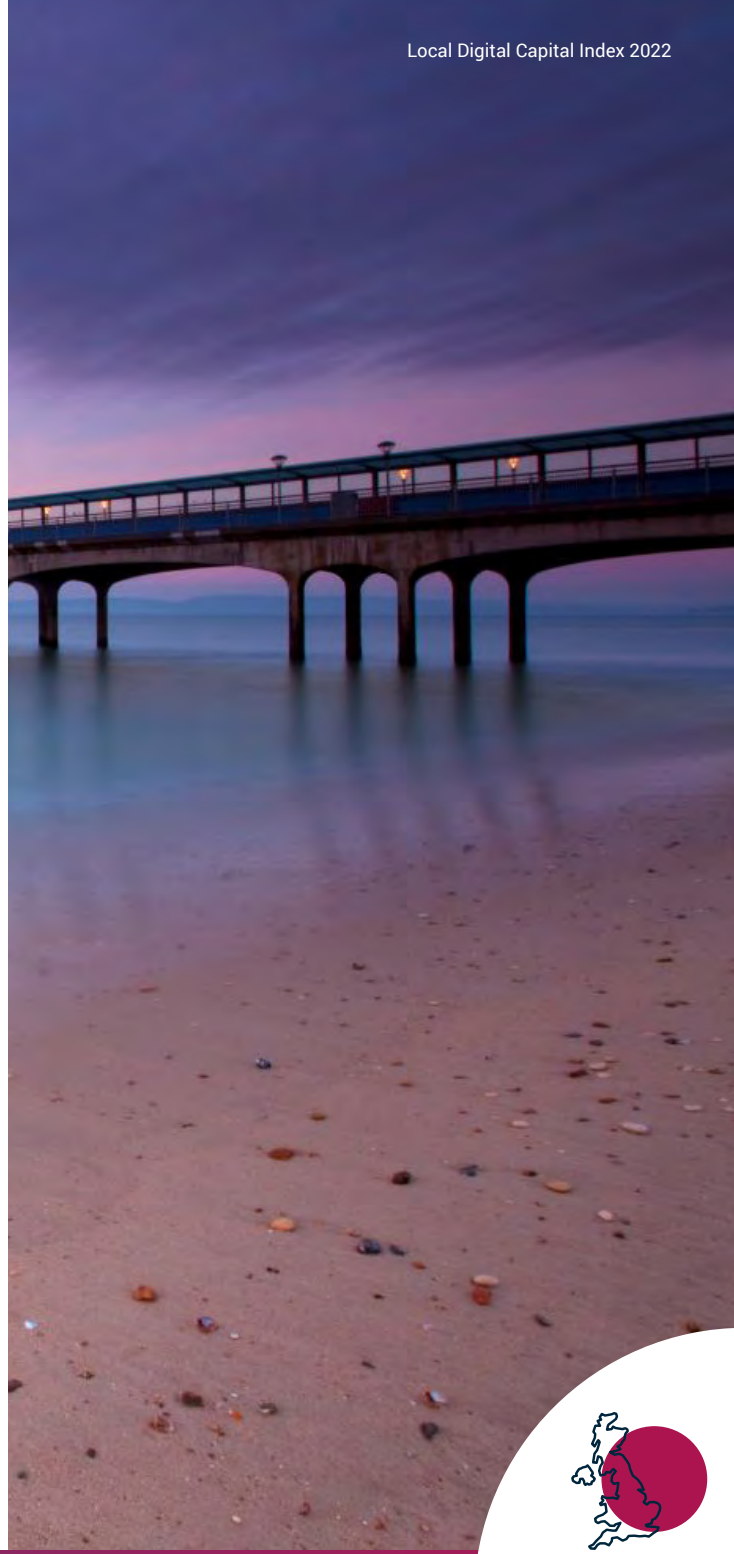
The UK's trade policy should relate to the Levelling Up and Industrial Growth strategies identifying where investment is needed most and how export capabilities will be built and expanded across the UK's nations and regions. Coordination in the centre will help devolved administrations, elected Mayors and others to feed into this work and provide opportunities for further national and regional collaboration. It may be possible to set up bilateral Free Trade Agreement (FTA) sectoral implementation groups (government and businesses) to work on FTA implementation, collecting feedback from industry, working to fill the gaps and providing a further avenue for Mayoral and devolved administration engagement in trade support.

For the UK's export strategy to be successful, it must ensure that it utilises the collective power of all the actors involved. Government should work closely with industry to understand what tools and support would be most effective in export promotions allowing the Government to strengthen support and eliminate duplication across government departments.

There should be further consideration given to FTA awareness-raising programmes. The deal is not finished once signed and is only as successful as its practical application. There is a need to promote the benefits of FTAs and provide resources at home and overseas informing how to take advantage of new agreements. This could be webinars, workshops, government website resources, overseas FTA advisors, etc. This allows different stakeholders across the UK to get involved and understand how a free trade agreement could impact them or be taken advantage of, especially for small/medium sized enterprises (SMEs). In addition this would dovetail nicely with regional export and foreign investment promotion campaigns to support regions e.g. UK House as the business hub during the 2022 Commonwealth Games.

Training advisers in the recently set up Department for International Trade regional hubs (e.g. one is in Edinburgh) on what opportunities FTAs bring to businesses and what resources/ tools are available to take advantage of them.

Another practical step would be for the Government to look to expanding the Internationalisation Fund to the devolved administrations. Currently this is only open to SMEs in England. The benefits of this funding should reach across the UK and allow all to participate.



Research and Innovation

When techUK originally published the concept of Local Digital Capital, this component was defined as:

> **"The funding and structure of investment into long-term innovation – to help new ideas and process improvements develop, as well as build towards long-term assets for the local economy like academic institutions and research facilities."**
>
> **(LDC, Concept)**

This is about looking at the money going toward new ideas, process improvements and building new products. This component doesn't assess the idea, improvements or products themselves but rather where the regional spend is going as defined by ONS data, InnovateUK and HMRC data.

The Levelling Up White Paper set out a target of increasing public investment in R&D outside the Greater south-east by at least 40% by 2030. This sits alongside the Government's target to invest £100m in three new Innovation Accelerators in Greater Manchester, the West Midlands and Glasgow City Region, the white paper noted "these new clusters will be our Fourth Industrial Revolution Foundries, leveraging our global lead in scientific research".

As our Local Digital Capital Index results show there is a spread of spending across England. The below table features the top 10 scoring areas in Research and Innovation in our LDC Index.

RESEARCH AND INNOVATION					
Region	**R&D Spend[7]**	**Innovative UK Grants[8]**	**HMRC R&D Tax Credits[9]**	**Index**	**Ranking**
Berkshire, Buckinghamshire and Oxfordshire	0.83	0.70	0.62	0.7	1
Hertfordshire, Worcestershire and Warwickshire	0.73	0.99	0.37	0.7	2
East Anglia	1.00	0.41	0.56	0.7	3
Inner London - West	0.47	0.30	1.00	0.6	4
Gloucestershire, Wiltshire and Bath/Bristol Area	0.42	0.97	0.26	0.5	5
Derbyshire and Nottinghamshire	0.48	0.88	0.19	0.5	6
West Midlands	0.30	0.67	0.43	0.5	7
South Yorkshire	0.22	1.00	0.15	0.5	8
Bedfordshire and Hertfordshire	0.58	0.30	0.38	0.4	9
North Yorkshire	0.27	0.64	0.25	0.4	10

7 Total R&D spending by all sectors (Government, Higher Education, Business, Non-profits), from ONS data
8 Innovate UK Grants in the AI and data economy sectors (amount is the award offered, counted by the year a bid was made), from UKRI
9 HMRC R&D tax credits – total cost, sourced from HMRC

The high scoring regions are perhaps no surprise to readers given the industries in those regions and the presence of research institutions.

But there are challenges to this narrative. Our data shows that HMRC R&D tax credits were three times higher for Inner West London than the next placed region (Berkshire, Buckinghamshire and Oxfordshire). Taken against other regions West Yorkshire was less than 9.5% of Inner West London, and even high scoring Gloucestershire, Wiltshire and Bath/Bristol was less than 14.5%.

Going slightly further, East Anglia tops R&D spend within this component but the West Midlands, again while scoring well, is only 33% of the R&D spend in East Anglia and this is only 24.7% for Greater Manchester. This shows some of the challenges when framing the levelling up discussion, the scale of change required and the need to consider outcomes from spending and not just spending itself (which is probably for another study at another time).

techUK has said in the past that there are changes that can be made that would help address this:

1. Expanding the coverage of the R&D tax credit to cover capital expenditure
2. Improving the access to the UK Patent Box to incentivise the exploitation of R&D outputs
3. Reviewing and updating R&D definitions to fit the needs of the modern economy

These changes, placed alongside the efforts to address regional inequalities, can help charge and release further R&D efforts to spur on research and unleash innovation in a bid to go for growth in the UK but importantly across the UK's nations and regions too.

Case study

Dorset Council and the Department for Digital, Culture, Media and Sport

5G RuralDorset: From R&D to sustainable legacy

The ground-breaking, multi-award winning 5G RuralDorset project led by Dorset Council and funded by the Department for Digital, Culture, Media and Sport (DCMS) and industry partners ended in September 2022 at a final project value of £9 million.

The research was designed with the needs of people in rural areas at its heart, seeking to provide innovative connectivity solutions in hard to reach and remote areas such as Dorset's beautiful Jurassic Coast.

Transforming village life

The Rural Community Accelerator research provided public 5G connectivity to the village of Worth Matravers. This tourist hotspot was previously a mobile not-spot and the site now provides essential voice, data and 999 services to residents, businesses and visitors.

The partnership approach, using public sector-owned assets to help Vodafone UK deliver its fastest ever site build in a rural area, provides a useful model for the UK telecoms ecosystem. Indeed Vodafone outlined the part the Dorset Council project played in its future network plans in this blog.

5G at Sea

Connected Coast was a workstream led by Excelerate Technology and provided private 5G connectivity along Dorset's Jurassic Coast. The network will support continuing work around 5G at sea and how next generation connectivity can support the increasingly important aquaculture sector. It

will also continue to serve the Lulworth First Responders and the equipment they use to improve coastal public safety.

Like much of the project, this work has provided new jobs and has seen a number of the partners and contributors significantly grow their team. Jet Engineering for example, who designed and built the world's first 5G connected buoy, went from being a one-man-band to employing 11 members of full-time staff.

Case study

Dorset Council and the Department for Digital, Culture, Media and Sport

5G to support national security

The Innovation Accelerator provided both indoor and outdoor 5G Standalone networks at Dorset Innovation Park (DIP). During the lifetime of the project DIP was designated as the national NSTIx Co-creation Space for Defence Innovation. The park was also chosen as the site for the Ministry of Defence (MoD) Battlelab. The indoor network will remain in place to support the Army's investment in Future Soldier.

In April 2022 the outdoor network was transferred to project partner Kimcell, who will be investing £1m into expanding its capabilities. It will be used to support work involving Government agencies and suppliers concerned with public safety. Further R&D work, including missing persons, mmWave trials with Qualcomm, and AI at the Edge is also being explored. Defence use of the 5G networks at the park will form part of the 'deep tech' test centres supporting MoD and NATO projects. The investment will result in an additional eight new jobs.

Farming of the future

The Future of Food research led by Wessex Internet, provided several 5G private networks across clusters of agriculture and aquaculture farms. The workstream also used existing coverage to connect sensors across farms. The purpose of this research was to prove that by using next generation connectivity, modern farming can become more productive and environmentally friendly. The networks will be left in place with a view to further commercial, research and development and educational uses.

The legacy

The funding made available by DCMS and industry partners has demonstrated the role R&D projects and the collaborative innovation ecosystem they foster in realising digital and wider economic development ambitions.

The project has played an important role in positioning rural Dorset as a leading digital innovation ecosystem in the UK. Dorset now has the UK's largest 5G test infrastructure covering land, sea and air plus a private and secure technology park. This is a great place to do business and is already attracting visitors from around the world.

The project has had a profound impact on the county. From providing enhanced connectivity in remote areas to opening new avenues for employment and innovation, it really has put Dorset on the map as a forward-thinking region.

Finance and Investment

In looking at this component we wanted to understand more about the availability of loans, capital and funding to support the sector in different parts of the UK. More funding available in a location helps boost the opportunities for new businesses and companies to scale up. In building this component and discussing the outcomes it's important to note that some of the measures could only be recorded at NUTS1 and data wasn't available at NUTS2 level. However, some of these measures still provide useful insight.

The NUTS1 Finance and Investment results are:

Region	Equity Finance[10]	VC in tech[11]	SME Lending[12]	High Growth[13]	Investment in ICT Sector[14]	Inward investment in ICT[15]	Ranking
Greater London	66.00	28000.00	110,355,232,372	2695	8106.35	60787	1
South East	9.00	5000.00	64,398,095,005	1715	3608.35	23956	2
South West	5.00	720.00	51,843,671,221	990	1717.61	6071	3
North West	5.00	1300.00	48,338,897,885	1300	2062.44	5454	4
Scotland	3.00	680.00	38,262,068,124	745	1675.47	11996	5
East of England	8.00	2600.00	33,318,321,539	1070	1858.53	4647	6
East Midlands	1.00	480.00	27,069,236,412	770	1130.94	10776	7
Yorkshire and the Humber	1.00	400.00	35,088,221,963	890	1324.24	4753	8
Northern Ireland	1.00	55.00	23,068,556,390	285	489.35	957	9
West Midlands	2.00	500.00	43,126,711,605	865	1394.1	4052	10
North East	1.00	127.00	15,552,956,140	325	541.71	1605	11
Wales	1.00	135.00	20,048,653,033	440	693.13	871	12

It's worth highlighting the huge level of SME lending in Greater London, when added with the South East and East of England this comes to over £208 billion. Compare that figure with the North of England and Scotland (£137 billion) and even when adding in the two Midlands regions it still only reaches (£207 billion). These figures are skewed by London but when taken with the venture capital in tech figures show that for firms outside London there is less access to capital.

Even inward investment in ICT (value of inward foreign direct investment in the information and communication sector) favours London and the South East, though it should be noted

10 Equity finance in region as a percentage of the total value of equity finance in the UK, sourced from British Business Bank
11 The total value of venture capital investment in tech companies in US $, sourced from TechNation
12 Total value of SME lending in British £, sourced from UK Finance
13 Number of high growth businesses (all industries), sourced from ONS Business Demography
14 Value of Gross Fixed Capital Formation investment, source ONS Regional GFCF estimates
15 The value of inward FDI position in the Information and Communication sector (SIC code J), sourced FDI by ITL

that Scotland and the East Midlands score well in this component.

At NUTS2 level the data follows a similar trend. Investment in the ICT sector in Greater Manchester is 21% of Inner West London's figure (and Greater Manchester scores 10th in this component of the Index) and is 16% for the West Midlands. The all of London is included this is 11.6% for Greater Manchester and 8.8% for the West Midlands.

The North East of Scotland has less than 6% of the number of high growth businesses compared to Inner West London. In terms of inward investment for the same regions, NE Scotland secured 1.2% of Inner West London's figure.

High growth businesses in city regions shows that London has 2695 high growth businesses, compared to 1755 for Greater Manchester, West Yorkshire, West Midlands, Merseyside, and Tyne and Wear combined.

This report doesn't seek to advocate full economic re-distribution to the UK's nations and regions. The strength of London and the South East is good for UK plc and should be seen as something we harness to grow the wider economy.

However, the geographic disparities in funding and access to funding are concerning. We need to make it easier for tech firms to start-up and scale up in the UK's nations and regions. At the moment this is weighted too heavily toward London. If talented people in the UK feel they need to pivot toward London to give their business or their career the best chance, then this is a problem for the tech sector and a huge hurdle when seeking to level up the UK. To give regional economic growth the best chance then funding, VC support, angel investment and initiatives to support start-ups and develop scale-up's need to be directed toward the UK's nations and regions.

Region	High Growth Businesses	Region	High Growth Businesses
Greater Manchester	540	Inner W London	1295
West Yorkshire	415	Inner E London	745
West Midlands	385	W and NE London	315
Merseyside	210	Outer NE London	185
Tyne and Wear	205	South	155
	1755		**2695**

Data Ecosystems

We know that open, accessible, and interoperable data ecosystems can drive economic growth and improve public services. In fact, the Open Data Institute (ODI) has shown that data sharing can generate social and economic benefits worth between 1-2.5% of GDP. However, there are several existing barriers to data sharing which needs to be tackled by Government to unlock this potential value.

A report published by techUK earlier this year, shows that progress to achieve this under Mission 1 of the National Data Strategy has lost its momentum, which risks the UK falling behind internationally on data-driven innovation, and less digitally advanced regions across the UK, even more so. There is also a missing link in National Data Strategy which should seek to prioritise and coordinate the opening up of public sector data, which could be a game-changer for data-driven innovation and helping so solve pressing societal challenges.

There are several barriers to private and public sector data sharing, such as a lack of legal and regulatory certainty, technical standards, incentive and knowledge. These barriers are underpinned by wider challenges within the digital economy, such as the digital skills gap and questions around ethics and citizen trust. While techUK supports the ambition of the Mission 1 Policy Framework to develop market interventions to deliver greater data sharing, we urge Government to move from policy thinking to implementation.

These challenges contribute to techUK's reluctance to provide a score for this component of Local Digital Capital. As such we include it in the concept but not within the Index, as the index is driven by public, open and transparent data that's available. As techUK noted in 2021, "improving data on data ecosystems should therefore be a mission for both the public and private sector." It's fair to say we are still not there.

The absence of agreed benchmarks on data means that it is difficult to ascertain where the UK is placed and where it should aspire to be. Additionally, this makes gathering regional data extremely difficult and providing comparisons as part of the Index almost impossible.

A strong data ecosystem is comprised of a number of elements which need to come together and work in unison such as identifying the right data sources, collecting good quality data and being clear on how you are planning to use it and the benefits it brings.

Whilst having some data is definitely better than no data at all, organisations need to create and implement their digital strategies with the understanding that this is an on-going exercise. Updating and maintaining these strategies is just as important as making data fit for purpose and uncovering its intricacies.

Incentivising the standardisation of data through legislation and mandates can sometimes provide the necessary motivation to work toward creating an excellent data ecosystem. There needs to also be a shift in perspective to be able to have a more holistic view and grasp the long-term advantages of undertaking the initiatives to develop data standards, create open-source platforms, make data trustworthy and transparent to be used for the greater good of the entire economy and bring value on a large scale.

As in other cases, local leaders have a role in this work. While they shouldn't seek to undertake activity that clashes or is in conflict with the wider national strategy, more local data plans and publication would be welcome in helping deliver innovation, reform and business engagement. Pilot projects from health to transport are welcome but need to be placed in the wider regional context and activity. Data for data's sake delivers little for people, business or public services.

Collaboration and Coordination

The final part of our Index is Collaboration and Coordination. To butcher two analogies it is the forever missing part of the jigsaw but also the obvious cornerstone of the building. It is impossible to accurately measure but also explains why there are areas with good digital skills and infrastructure but poor adoption – there is a missing element which means that a locality is less than the sum of its parts.

The UK's tech sector has grown in the first half of 2022 and while it remains to be seen if the UK's growth can continue at the same pace through the remainder of 2022 and into 2023, the appetite for collaboration hasn't dimmed. As a horizontal sector spanning everything from accountancy to logistics, the tech sector is inherently collaborative – evidenced by the wealth of digital festivals:

Our focus is on building culture, community and education that promotes and supports tech innovation.

CodeBase

The Leeds Digital Festival is an open, collaborative celebration of digital culture in all its forms. Whether you're interested in coding, fintech, social media, AI, healthtech, data, start-ups, digital music, cyber security or AR/VR, we've got something for you.

Leeds Digital Festival

Manchester Tech Festival is a weeklong festival in October 2022 which will highlight the diverse talent, showcase the innovative businesses and bring together the eco system and the community.

Manchester Tech Festival

Our mission is to help create and foster an environment of collaboration, give businesses a platform to celebrate their success and inspire people to get careers in tech and achieve great things.

Birmingham Tech

"Overcoming the lack of talent, increasing sector collaboration and driving R&D activity are all areas we know that our industry wants us to focus on."

Katie Gallagher, Chair of UK Tech Cluster Group

Central Government alone cannot “make” collaboration happen from London. It has neither the resources, finances or capacity to be able to do this. But it can and should drive synergies between programmes such as Help to Grow: Digital and Gigabit broadband vouchers.

Devolved Government, Mayors and Councils are all willing to play their part and help and calls for more funding alone won’t tackle the UK’s stark regional discrepancies. But they can leverage their political, policy and ultimately convening power to bring together the public and private sector in their localities.

The public sector and private sector must work closer together and help to create more digitally skilled, digitally enabled communities that see careers working with or in the digital tech sector as likelihood rather than a possibility or aspiration.

This won’t be quick, and neither will some of the work be grand or revolutionary, but it’s essential to create the foundations for building strong regional and local tech ecosystems.

There is also an important role for the third sector and wider. There are many charities such as Start Point (a coffee shop in Stockport) who offer free digital training to help ensure people, some of those who won’t necessarily come forward for a local authority run programme, are supported and have a safe place to improve their digital learning.

There isn’t enough emphasis on digital challenges and collaboration in areas such as data ecosystems (as flagged earlier). This lags behind where the UK should aspire to be and failure to build coordinated partnering now that is making a demonstrably impact will leave us playing catch up. The UK should look internationally at best practice and seek to pioneer work in this field.

At techUK we feel regional forums, working with but not owned by councils or combined authorities, are one of the vehicles needed to tell a regions story, address challenges, secure inward investment, spearhead initiatives and provide a space where the public and private sector are discussing and acting together.

The task is to think globally and act locally.

Case study

Kagool

The key to Kagool's rapid growth? A culture of innovation.

West Midlands based tech company Kagool has grown rapidly, from 15 people to over 600 across the globe, all within the space of 5 years. Their focus has been on innovating with advanced technologies and data to help clients reach their business goals. No doubt, the organisation has expanded at a phenomenal rate.

So, what has driven this growth? Kagool is all about innovation. The company fosters a culture where employees are excited to be experimenting with completely new technologies, and they're not afraid to aim high and take risks. With this attitude, they can quickly build knowledge and experience on the latest technologies, including advanced analytics, mixed reality, robotics, data science, drones, and more.

One example of the success of this approach is Kagool's work with Microsoft to transform the engineering field. Kagool created a demo to show how mixed reality, Internet of Things, and data science can be combined to give an end-to-end predictive maintenance and remote diagnosis solution for any physical assets around the globe.

> **"Kagool has expanded massively in the Middle East and Asia Pacific regions in the past year, despite the challenges in the global economy. And it just goes to show how quickly you can progress when you're not afraid of taking risks and going for it with the right team around you."**
>
> **Dan Barlow, Group CEO at Kagool**

Case study

Kagool

Transforming engineering with mixed reality and IoT and effective collaboration

Adoption of mixed reality and new wave technologies is still in its infancy, but they are becoming increasingly accessible for mainstream business applications. Kagool has been working with Microsoft to create an innovative solution, demonstrating how engineering and maintenance can be made more efficient and adaptable with these technologies.

Kagool's demo involves a Lego model of a digger, representing the real-life asset, and a digital twin of the model, which can be viewed as a hologram with a Hololens, or as a 3D model on a tablet or desktop screen. The digital twin displays information in real-time from IoT sensors on the physical asset, including temperature, rotations per minute, vibrations, and any other key metrics.

If an organisation manages a large volume of globally dispersed assets generating big data sets, digital twins can be used to:

- Remotely diagnose a performance problem anywhere in the world, create an inspection order, deploy maintenance personnel and order replacement parts through seamless connectivity with the ERP system.
- Predict what failures are likely to occur and in what circumstances to intelligently set maintenance intervals, reduce downtime and save costs.
- Develop new commercial models based on pay-per-use through continuous ingestion storage and transformation of big data at high velocity.
- Centrally monitor performance against pre-set tolerances to identify problems, take preventative action and reduce downtime.

This architecture gives real time visibility of the maintenance and use of the assets to improve service levels. It also allows to carry out remote inspections, reducing travel and risk for front-line staff, whilst ensuring the machinery runs at optimum performance.

This solution is an example of how experimenting with new technologies with an open mind can lead to exciting new outcomes. This demo, first developed in Kagool's Coventry office, is now being shown at ~40 Microsoft Technology Centres across the globe, from Paris to New York to Sydney to Singapore.

Data innovation can help organisations reach their goals

From advanced analytics to Artificial Intelligence to the Metaverse – every modern organisation has some interest in data. Whether they are looking to increase efficiencies, scale their operations up, or become more resilient, organisations are always looking for technology solutions.

Kagool's strength in providing solutions largely lies in their culture. They recognise the importance of giving employees the space to experiment, leading to innovative new solutions.

Case study

Starship Technologies

Can we befriend robots?

Starship Technologies is the world leader in autonomous robotic delivery and you can have a look at a Day in the Life of a Starship Robot here.

They operate autonomous delivery in the US, Estonia, Germany and Finland but the biggest and most sophisticated operations centre is in Milton Keynes – a city that has fully embraced their robots to the point that when Milton Keynes bid for city status, the bid was delivered in one of their robots!

The looks of a futuristic city

Starship Technologies provides a popular local service that has gone from being a novelty to a normal way of life in Milton Keynes (and in nearby Northamptonshire where they have been operating since December 2020), but there are other benefits to Starship too.

The operation of their robots is zero emission and 70% of their customers in Milton Keynes say the delivery has replaced a car journey for them. As a result, they estimate that they have reduced carbon emissions in the area by over 400,000kg. Businesses they work with report double digit increases in sales and have taken on extra staff to service demand. Starship also employs local people as Field Assistants in operations and robot maintenance.

Keeping communities at the heart of their work

As a company Starship Technologies strive to be a part of the communities they operate in, working closely with accessibility groups and schools. They love to talk about their work and why STEM matters with young people, and because robots are cool, this gets plenty of interest. As demonstrated by the successful workshop they ran for young people at the Cambourne Science Festival this summer where they revealed what their robots do and talked about the technology and engineering behind their autonomy.

Starship now operates in both West and North Northamptonshire, Bedford and Cambridgeshire and hopes to work with local authorities and leaders to expand their low emissions, innovative delivery method across the UK.

Last-mile delivery is the most expensive and carbon intensive of the whole supply chain. The pandemic has hastened the move towards on-demand, online ordering of (often) lower value deliveries. Air quality and congestion are increasingly important issues, and it is the responsibility of us all to lower carbon emissions and tackle climate change. Starship can – and does – play a key role in tackling the challenges of the modern world.

Nations and Regions Snapshot

London

It will come as little shock that London is at the apex of the regional list, but also snaps up 3 of the top 4 spots when considering the new smaller regional statistics. Strengths are visible across almost all the competencies. However Outer East and NE and South London score poorly on R&D and trade. Perhaps this is offset by the close proximity to high performing neighbours?

Wales

Wales' scoring masks areas of good practice and that Wales' skills score is high shows the potential for growth. Improving digital infrastructure is important to change that perception but the Digital Strategy for Wales sets out some of the work underway and planned.

Northern Ireland

Northern Ireland's scoring remains in the lower half of the table. However, this figure may not recognise the nuances such as the strength of home grown firms like Kainos or the strength of the cyber security in the region. With over 65k Higher Education students, over 74k digital occupations and 285 high growth businesses, there is further potential for tech growth.

Yorkshire and Humber

Yorkshire and Humber offers another mixed picture of intra-region variation. Infrastructure scoring is better in the more 'urban' areas however these areas don't score as well as North Yorkshire for finance and investment. Middle to low scoring in skills and adoption add to the regions mixed picture.

North West

The North West was 7th in 2021 and retains that position in 2022. However, the updated data this year shows an intraregional divide.

Greater Manchester and Merseyside have strong digital infrastructure scores but fall back on other components. Digital skills and developing R&D further form two obvious areas of future focus. There is a rural/urban spilt in the region with Cumbria seeing particularly low scores in infrastructure, skills and adoption. Greater Manchester's 540 high growth businesses (HGB's) and 130k digital occupations is a significant achievement and with a further 210 HGB's on Merseyside and over 60k digital occupations this adds to the regions digital growth potential.

Nations and Regions Snapshot

Scotland

Scotland demonstrates a mixed picture in terms of the overall strength of the tech sector. While some localities show very positive results that indicate Scotland's tech sector is as competitive as anywhere else in the UK, there is also a lag for many rural areas.

Skills are a strength in Eastern and North Easter Scotland, and with Eastern Scotland (the region including Edinburgh) finishes 11th overall. With over 189k higher education students – more than the West Midlands, there is further skills potential. Digital infrastructure is an area for improvement in ensuring digital reaches beyond the urban areas/cities of Scotland.

South West

The strong regional performance is totally driven by Gloucestershire, Wiltshire, Bath and Bristol. The other areas all fall into the bottom third and clearly there is a challenge for these rural and coastal communities. Digital infrastructure is a clear element for improvement across the whole SW but many other measures require attention and action.

North East

The wider North East's scores appear to be high (digital infrastructure) or low (skills or finance and investment). However some of this needs considering against their peers e.g. on R&D Tees Valley and Durham score well and both NE regions receive more Innovate UK grants than West Yorkshire. However the service sector exports aren't as good when comparing the same regions and they have less high growth businesses.

West Midlands

Overall the region does well when considered as a whole and within the region there are strengths to note such as digital infrastructure strengths as well as significant R&D strengths. With over 108k digital occupations in the WM sub-region and 385 high growth businesses this compares well against their peers. Furthermore the HE students in the West Midlands (187,100) is more than the North West (175,300) and significantly more than Y and H (139,155) and the North East (71,680)

Nations and Regions Snapshot

South East

The South East ranks second and all the 'sub regions' relatively score well overall. The strong performance by Berkshire, Buckinghamshire and Oxfordshire – 1st in digital adoption and in R&D is notable. Similarly Surrey, East and West Sussex and Hampshire and the Isle of Wight score well (with 7 top 10 spots across the different components collectively). Digital infrastructure is the area for potential improvement with no sub-region entering the top 10 despite strong scoring in other measures.

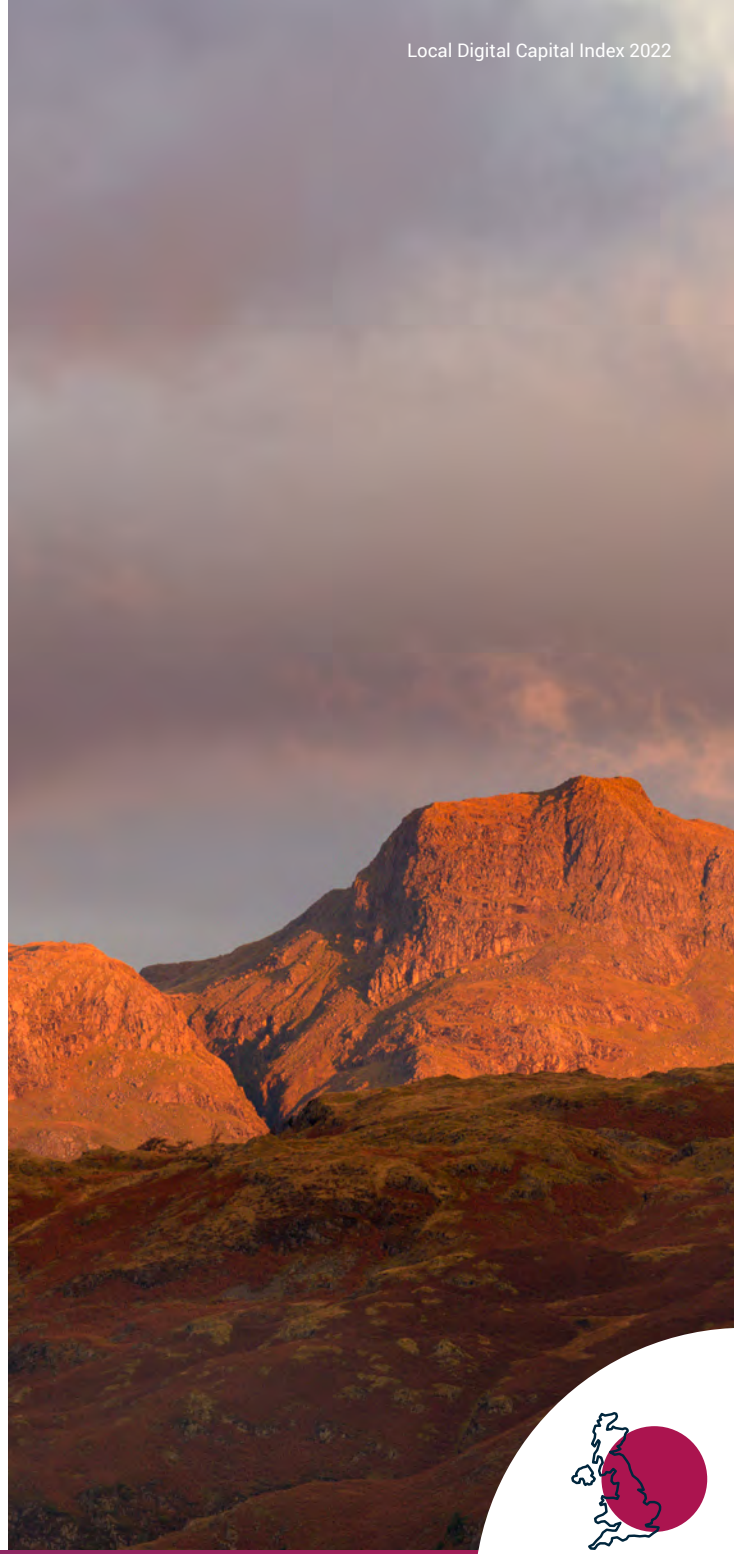
East Midlands

Perhaps surprisingly Derbyshire and Nottinghamshire score well, powered by decent mobile coverage, good numbers in digital occupations and inward investment in ICT. But it's a 6th place score in R&D that really means this patch scores well.

However the region suffers the same rural/ urban split as other areas and Lincolnshire's challenges draw the wider East Midlands to 8th overall (up on 10th in 2021).

East England

The East of England ranks 3rd at NUTS1 level and at 'sub-region' level – Bedfordshire and Hertfordshire, Essex and East Anglia – all the regions perform relatively well. Digital Infrastructure should be improved in East Anglia but Finance and R&D both score in the top 10. Digital skills in Essex (12th) is a success and further exploration on this would be worth exploring.



Recommendations

techUK's Local Digital Capital Index helps us see the reality and challenge facing the UK. These are steps that should be taken by the Government to seek to empower local leaders, work with business and encourage more data to be shared and available to inform decision making (and track progress).

- Ensure that **Project Gigabit reaches all areas of the UK**, particularly rural communities and **more national comparable data on 5G** coverage. Digital infrastructure underpins much of the scoring – it's hard to feature higher up the Index without it. Better data, an increased focus on rural reach and pursue 5G where innovation can be bolstered and furthered using this technology.

- **Investment Zones** have been announced by the Government and are seeking expressions of interest. This provides an opportunity for clearly defined areas to be used to roll out and prepare for the further role of new technologies such as autonomous vehicles (AV). These new investment zones allow digital infrastructure to be in place immediately with built in capacity for the future, to provide capacity for dedicated AV lanes encourage the adoption of new technologies and help speed up readiness for AV regulations in 2025. **Investment zones must also be 'tech zones'** to attract people to work in them, base their business in them and secure new future investment.

- **Improved skills data** is essential to ensure that activity and comparisons are consistent across the UK. techUK would want to go further looking at education data, subject choices, progress, demographic data, job seeker training, and skills/training for those in work. Further analysis on the most tech skilled would also be useful in looking at the 'most talented' but also improving the wider populations confidence in their own digital skills.

- **Digital action and activity** to be identified in **future Levelling Up bids** and projects to help address regional divides and exclusion. This doesn't need to necessarily be funding toward digital projects directly but actually how improving a town centre can improve digital skills or what else could be done to improve digital infrastructure on the back of this e.g. free Wi-Fi in town centres..

- **More data shared** more regularly on initiatives such as **Help to Grow Digital**, to allow local activity to support national schemes. Central Government schemes are great but they need local activity to sustain and complement them. LEPs, Chamber of Commerce, CBI, techUK etc., can all look to signpost to further support or encourage uptake in regions where it is low.

- The data needed to measure **data ecosystems** across the UK still **isn't conclusive** or consistent and needs to be addressed. Government should look to running a testbed with a Combined Authority to build a working model that can be adopted elsewhere.

- **Devolved Government** and elected **Mayors** need to **publish and regularly update their digital strategies**. Central Government can't do this alone, and needs to empower more local activity and accountability. At the moment digital strategies are written but the activity to support them, or where tech partners could get involved isn't clear. Further collaboration is needed, regular updates/progress points and the input from the sector more regularly.

- **Finance and investment regionally lags behind London**. There must be improved access to VC and angel investment, better signposting to support and test new proposals such as creating new ringfenced regional funding in partnership with elected Mayors focused on outcomes and supporting vital national infrastructure. Using the discussions around the **new 'trailblazer' devolution deals** to consider devolving a **further role on trade and investment powers to elected Mayors to help attract investment** outside London and the South East. Most of, if not all, the UK has strengths it can sell and market. More local input on trade can help to shift the numbers so the UK is less reliant on some regions.

- **Changes** to standard industrial classification (SIC) and standard occupation classification (SOC) codes to **better mirror the tech sector** and changing occupation, to allow better tracking and better data capture. At the moment the figures are outdated. They may suit the butcher, the baker and the candle stick maker but they don't suit a 21st Century economy where jobs are changing, sectors are increasingly using tech and new roles are developing quickly. While this may seem a dull administrative change, it's needed to improve data, analysis and planning.

- If we are to ensure digital connectivity reaches all areas of the UK, then **Mayors and Combined Authorities have an important role to play**. At the moment a relationship run from the centre will have its limitations, when local leaders know their area best, where potential development will be coming, how this links with the wider plan and who'll benefit. Better collaboration locally, digital champions and broadening engagement is needed to help champion and secure improved digital connectivity.

techUK
FOR WHAT COMES NEXT

techUK Nations and Regions Programme

techUK champions the tech sector throughout the UK. We work with local authorities, devolved government, and local and national policy makers to advocate for the tech sector in strengthening economic growth and resilience across the nations and regions. We provide opportunities for our members and stakeholders to meet, develop relationships, and collaborate to drive forward projects that build stronger local economies.

Visit the Nations and Regions Hub on our website