

Written evidence submitted by techUK (PEG0101)

About techUK

techUK represents the companies and technologies that are defining today the world that we will live in tomorrow. The tech industry is creating jobs and growth across the UK. More than 850 companies are members of techUK. Collectively they employ more than 700,000 people, about half of all tech sector jobs in the UK. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium sized businesses.

Executive Summary:

The beginning of the UK lockdown announced by the Prime Minister on 23 March will be seen as hugely significant date in UK economic history.

The lockdown and the persistence of social distancing has accelerated many of the big changes society and the economy had already been grappling with. The UK's productivity problem, how we encourage SMEs to digitise, the challenges faced by the high street and the climate emergency.

The onset of COVID-19 has accelerated both the challenges and opportunities of these changes, either through the direct impacts of the lockdown itself or the

known economic challenges we face as a result, and the desire, across Government and society, to build back better.

Digital technologies have played a fundamental role in our response to the impacts of the pandemic, but also are vital to the medium- and long-term prospects for the UK economy and society.

The reality is we don't know how long COVID-19 will continue to be a major risk and we also do not know for how long the regular activities that supported our economy, travelling into city centres, going shopping, eating and drinking out, will remain below pre-pandemic levels, or which activities may never return.

Enabling growth Post Pandemic therefore cannot be left to the point that the pandemic is 'over' as by then it may simply be too late. Government, business and society will need to begin acting now to adjust our way of doing business in the short term to mitigate the impacts of the pandemic, but also enact changes for the medium and long term so we are able to better navigate the uncertainties we face.

Digital technology has been core to our ability to adapt to the outbreak, supporting around 80% of economic activity to continue to take place. Technology will also be vital to increasing this back to pre-pandemic levels in the medium to long term.

The benefits of technology are clear, highly digitised firms and industries have been the most resilient to the pandemic, while building up digital capacity post COVID-19 is seen now, more than ever, as a key strategic goal across the world.

There is a good opportunity for the UK to succeed here. The UK is one of the world's largest and most advanced digital economies, with a high-level of technology penetration and the largest and most mature and tech sector in Europe.

However in the context of Brexit, the securitisation of trade and the climate emergency, the UK will need to be confident and forthright in our desire to press our digital advantage and have a mature discussion about the role the UK plays in the global economy to be successful.

This will mean squeezing the value out of our digital sector as we confront domestic social and economic challenges, seizing the opportunity of leading in the fight against the climate emergency and positioning the UK internationally as a secure, open and world leading digital economy.

In our response to this BEIS Select Committee Inquiry techUK sets out five key challenges where tech can support a return to growth as well as some practical steps for Government in the short, medium and long term.

I. Addressing the productivity problem and levelling up through tech: addressing the UK's long tail productivity problem and improving the balance of

highly productive firms across the country will be vital to building a resilient and high productive economy that can achieve post-pandemic growth.

techUK suggests a radical programme of support to SMEs to digitise, through an ambitious **Digital Adoption Fund, Digital Business Link** and leadership from Government to ensure that every business moves quickly to become a digital business.

The Government should also seek to empower local authorities to grow their own local tech clusters by **increasing local Challenge Funds, empowering local authorities to use their procurement budgets to create innovative local economies** and building networks to encourage investment in nascent tech clusters **across the UK through a GREAT style campaign.**

Underpinning all this will be high quality digital infrastructure based on gigabit capable broadband and 5G. The Government must set out **a determined strategy to achieve a next generation UK telecoms network.**

II. Redesigning education and training for the post-pandemic world: the UK suffers from a serious digital skills gap. Currently 17.2 million people in the UK workforce do not have the essential digital skills required for work, yet, 82% of all job vacancies require digital skills.

The economic impacts of COVID-19 will mean re-skilling and re-training will be vital to our immediate and long-term growth prospects.

This will require **a fundamental review of how we deliver education and training** and putting in place the support needed to restructure the education system for the future. For example, by reducing bureaucracy and by **boosting funding to the national retraining scheme** as well as **supporting local digital skills partnerships.**

III. An industrial strategy for innovation, next gen tech and smart regulation: central to the UK's long-term growth will be an industrial strategy that focuses on sustainable and innovative growth, helping the UK lead in key technologies and creating a regulatory framework that encourages businesses to invest in the UK.

Government must therefore focus on delivering an R&D roadmap focused on developing innovative clusters and **supporting UK researchers turn their world leading research into the next generation of innovative companies.**

Firmly **establishing the UK's lead in potentially revolutionary technologies such as Quantum computing**, supporting spillover innovation and creating a

regulatory approach which allows the **UK to maintain its position as a world leader in high standard, proportionate business regulation.**

Any review of our industrial strategy will also mean establishing a deeper understanding of the value of the digital economy and getting **better at measuring the contribution of the digital and data sectors.**

IV. A trade strategy that positions the UK as an active champion of free and fair digital trade: like the rest of the world the UK is trying to manage the impacts of COVID-19. However, COVID-19 has hit at a time when the UK is going through a period of change regarding trading relationships

techUK sees a great role for the UK as a champion of free trade principles in digital trade, while becoming as a high investable economy with an international focus.

The Government should therefore seek to **establish, an ambitious digital trade strategy** based on techUK's report, A Vision for UK Digital Trade Policy, and seek **to boost inward investment through smart engagement with foreign Governments and international business.**

V. Seizing the opportunity to lead in the fight against climate change:

COVID-19 has brought home in the starkest terms the need to be prepared for high risk events. None is more important than addressing the ongoing climate emergency. However, in crisis there is opportunity as the leaders in green and clean tech will be central to a global green recovery.

The UK can lead here by becoming a hub for green and clean tech. This can be supported by **pursuing a deep digitisation of the energy grid** to more effectively manage carbon emissions, creating a practice of **embedding sustainability in our business models** and leading the world by Establishing **an International Centre for AI and Climate Change** as part of our COP26 programme.

I. Addressing the productivity problem and levelling up through tech:

COVID-19 has not only changed the way we work, it has also created a psychological shift in how people see and view how they can work.

Around 60% of workers report they want to work more from home taking advantage of that increased flexibility, signaling a shift in transport patterns.¹

¹ [UK workers say they will continue to work from home after lockdown is eased](#) – The HR Director May 2020

The benefits of digital technologies and cloud computing are clear and strongly associated with increased productivity, greater creativity, increased sales, and expanding market access.

However, the UK picture on digitisation and productivity is imbalanced and overall lags comparative European countries for the diffusion of productive companies across the economy.

For example, while the UK has more highly productive businesses than France and Germany, these only employ 5 per cent of the workforce, while lower productivity firms account for around 69 per cent of the UK's workforce, compared to only 60 per cent and 65 per cent in Germany and France respectively.²

These productivity differentials are also regional in the UK, with London and the South East holding a large share of the UK's highly productive businesses with lower concentrations across the rest of the country.³

Overcoming this long-tail productivity problem will mean addressing barriers to digital adoption in business, bridging the digital divide between the nations and regions of the country and underpinning all of this with next generation digital infrastructure.

Digital businesses have also survived the impact of COVID-19 better. There is a now a short window for businesses to digitize. Not only because this what their competitors are doing, but also because should there be a second wave, a localized spike or persistently reduced footfall on high streets, then achieving a balance between online and offline delivery will become essential to the ability of small businesses to survive and thrive.

Fixing the long tail productivity problem by reducing barriers to digital adoption among SMEs:

Small and medium-sized enterprises (SMEs) across the country face three primary barriers when it comes to adopting digital technologies: awareness, capability, and cost.

Awareness: many SMEs will have been forced to utilise digital tech as a necessary tool to allow their business to continue to operate as a result of the pandemic.

However, while many businesses have adopted new solutions, we must accelerate further digital transformation.

² [From ostrich to magpie: increasing business take-up of proven ideas and technologies](#) – CBI 2017

³ [How good is your business really?](#) – Be the Business 2018

Achieving this will require strong messaging from Government and industry on the benefits of digital tools and how these can be deployed.

At a high-level Government's and local authorities must put digital and productivity at the core of their messaging, while using local growth hubs, local enterprise partnerships and organisations such as Scottish Enterprise and Invest NI to target support and communications on the need to embed digital in business models across the country.

Capability: another significant barrier for SMEs is a lack of capability to adopt digital technologies. Many SMEs do not have the budgets, time, expertise, or capacity to evaluate their needs, find suitable products, undertake the digital transformation process, and evaluate their own business practices to ensure that the technology is fully utilised.

To overcome this barrier, government should restore the now defunct Business Link programme, and focus it solely on the issue of digital adoption.

This programme would build on the existing "Business Basics" proposals and the support already provided to organisations like "Be the Business" and "Digital Boost", and would provide tailored support for the adoption and rollout of basic, new, and emerging digital technologies to SMEs that are not currently utilising them. The link would proactively reach out and help educate business owners and purchasing managers on what solutions are available and what would be the best fit for their business.

Cost: cost issues are likely to be persistent in the immediate aftermath of the pandemic with likely higher levels of consumer and business debt, while demand may be suppressed due to increased unemployment and a loss of consumer confidence.

Digitisation can help SMEs overcome the challenging circumstances in which they operate, however to see wide spread uptake we will need to build confidence in the business base to take the leap and digitise, this will be particularly challenging during an economic downturn where SMEs have repeatedly expressed a hesitancy to borrow to invest, even where loans are offered interest free.

Government will need to think differently here, finding alternative routes to reducing costs for SMEs. For example:

- offering loan repayment relief to those SMEs that took up schemes such as the Coronavirus Business Interruption Loan Scheme (CBILS) or the Bounce Back Loan Scheme (BBLs) if they make investment in digitisation or digital skills part of their return to growth,
- increased grant funding in the form of a Digital Adoption Fund to ensure the continued uptake of digital technologies by firms across the country,

- extending the VAT deferment offered in the COVID-19 response for a further year with flexible repayment options to allow SMEs to better manage cash flow.

Building up tech clusters across the country:

The UK has the most highly productive firms in Europe; however, these make up a small proportion of the overall total. 5 per cent of the UK's workforce are in highly productive firms, while lower productivity firms account for around 69 per cent of the UK's workforce.⁴

These highly productive workers are also heavily concentrated in London and the South East. To ensure a full and equitable return to growth post pandemic this imbalance needs to be corrected.

The response to COVID-19 has shown that local, targeted interventions can be more effectively and targeted than trying to apply national programmes to a diversity of different settings.

To truly level up the country the UK Government will need to support tech clusters across the country. To do this central Government should seek to empower Devolved Administrations, combined authorities and local government to grow their own tech clusters and incentivise innovation.

Drawing on our discussions with local authorities and stakeholders across the country techUK has set out a number of suggestions for how to do this:

Local Challenge Funds: Challenge Funds such as the Local Digital Fund, and more recent, Local Digital C-19 Challenge have shown to help drive up innovation and allow local authorities to develop solutions to local problems while also increasing the base of innovative companies in their area.

These Challenge Funds are a step in the right direction, but industry needs to be consulted on their design

Enhanced commissioning and procurement powers: as place shaper, local government has a leading role in the recovery.

A [recent report by the Local Government Association](#) outlines that commissioning and procurement are among the biggest levers that councils have in building inclusive economies. It states there is considerable scope for councils to influence their local economies with their spending and ways to take spending decisions to build an inclusive focus.⁵

⁴ [From ostrich to magpie: increasing business take-up of proven ideas and technologies](#) – CBI 2017

⁵ [Building more inclusive economies](#) – Local Government Association 2020

Nearly half of all local government expenditure is accounted for by procurement.⁶ In 2017/18, local government saw around £79 billion of revenue expenditure and £19 billion of capital expenditure spent on procurement.

Councils' procurement budgets are almost always the largest such local spend in any given area. Procurement is part of a bigger transformation and innovation puzzle. If done well and outcome-focused, it can help stimulate the govtech market and create better, more productive places

Empower local leadership to innovate: however, while procurement can be an effective tool, local procurement teams can be risk averse so governance within councils and regional authorities need to be put in place to create a culture of innovation.

To address this, senior leadership, from the Board to the elected level, needs to empower councils to innovate. One step is to evangelise more widely the Ministry for Housing and Local Government's Local Digital Declaration which ask senior leaders to be a signatory and commits them to collaborating and ensuring services are fit for the digital age.

techUK is a co-publisher of the [Local Digital Declaration](#) and we have seen the benefits it has in stimulating transformation and collaboration across boundaries. Secondly, any future challenge/innovation funding should be designed with tech innovators brought in to help with its creation and embedding a focus on early market engagement.⁷

Early market engagement with suppliers is also vital as it allows the opportunity to articulate the problem and understand innovations in the market or a problem-led procurement exercise where suppliers are clear how their technology can help the local government tech market.

Empowering local actors to grow their economies has been shown to work in other jurisdictions. For example, Barcelona's social and sustainable urban innovation aims to create a vision where technology is an instrument to empower people and transform the city. A key part of this is fostering collaboration to meet the new challenges and demands facing the city and its citizens, through the [i.lab laboratory](#).

Any future devolution deals should also make sure digital is at the heart of them. This could be a commitment to a regional Chief Digital Officer or regional data store. By agreeing to put digital governance measures in place, alongside a commitment to open data the region is clearly sending a message that it is open to innovate. The GLA's London Datastore is a great example of local innovators and SME's solving local challenges through open data.

⁶ [Government procurement – the scale and nature of contracting in the UK](#) – Institute for Government 2018

⁷ [Local Digital Declaration](#) – MHCLG 2018

Building investment networks across the UK: Increasing tech sector investment nationwide is vital to ensuring innovation and increasing adoption of new technologies.

London has seen successful in tech due to the networks between highly talented, educated people, an openness to international talent and links to funders from the private sector.

Increasing investment and replicating these networks are seen by many regions and Devolved Government's as key to helping mature their growing tech sectors. The Government should seek to ensure investors can access clusters outside London by supporting expos and internal trade missions modelled on DIT's GREAT campaign. Such internal trade missions are used by other countries such as Canada.

Building resilience into the economy and society with world leading digital infrastructure:

Throughout the COVID-19 crisis the UK's digital infrastructure has proved to be incredibly robust despite some massive increases in traffic. The experience of the last few months has underlined why it is so important to keep investing in the next generations of technology including Gigabit networks and 5G.

The UK's telecoms sector wants to deliver on the Government's ambitions for Gigabit networks. To do so it needs Government support, and that support must be meaningful and delivered at pace.

Before the epidemic, the Government was already taking positive action. It is now time to supercharge that. In addition to the wider macro-economic measures available to incentivise investment into the UK, we believe that there are two broad areas where Government should act to make the UK the best place to invest in and deploy digital infrastructure.

Government has a key role in funding areas that are not commercially viable for the private sector alone. This does not mean that Government needs to bear all of the cost in these areas – far from it. But it can leverage private sector investment either through match funding or by bridging the gap between commercial viability and the cost of deployment in these areas – areas which often tend to be rural with low levels of population density.

Government has committed to £5bn of funding for full fibre deployment in areas where the business case for the private sector alone doesn't stack up. It has also committed to delivering this funding in an 'outside-in' approach to ensure that the hardest to reach areas, and those who are most poorly connected both physically and digitally, are not the last to benefit from Gigabit networks.

The Government now needs to quickly bring forward detailed plans on how it intends to deploy this funding to provide certainty to commercial operators and ensure that wholly private sector funded deployments can go as far as possible.

The Shared Rural Network agreement is in place. Now Government and the industry must move quickly to deploy this infrastructure so that citizens and companies can take advantage of this wider coverage. This includes making it a focus of the Infrastructure and Projects Authority as well as exploring how policy lessons from this project are applied to 5G deployment.

Looking to the future it is important we look beyond connectivity when talking about digital infrastructure and examine how we can build the right data infrastructure to unlock the full economic potential and social power of data and remain a world leader in the development of technologies such as AI and Quantum.

High Performance Computing (HPC) or supercomputing, is already a key part of the UK's national digital infrastructure providing vital compute power and resources to academia and industry alike. But, the lack of a long-term strategy for the development of the next generation of UK HPC and supercomputing capabilities already risks the UK being left behind in the development, adoption, deployment and use of advanced digital and data technologies.

If it is the UK's aim to be a global centre of excellence for scientific discoveries and cutting edge innovative R&D, and a leader in the use of data and development of AI, we must keep pace with the rest of the world in HPC. Right now we are not.

For example the US and China have invested heavily in the development of new HPC infrastructure; the US is reported to have spent \$1.8 billion on three supercomputers while China already has the world's fastest supercomputers. The EU's recently published Digital Europe Strategy announced a 2.7 billion Euro investment into supercomputing and data processing capabilities.

II. Redesigning education and training for the post-pandemic world:

While some businesses may snap back to how they used to operate before, the lockdown and changing habits under it will create demand for new products and services. For example, many may continue to work from home, while e-commerce may see accelerated growth.

Any permanent shift in demand will require business to adapt to meet this. Some business models have adapted well, others will need to make changes, however others will become unviable and demand shifts will impact employment patterns.

With 6.3 million people furloughed⁸ and 49.2 per cent of adults in employment working from home in April 2020⁹, the public health crisis is forcing us to confront the digital skills gap that the UK had before the pandemic with increased urgency.

Currently 17.2 million people in the UK workforce do not have the essential digital skills required for work, such as managing digital records or using digital collaboration tools¹⁰. Yet, 8 per cent of all job vacancies require digital skills and research indicates that improving digital skills and ability to use digital tools could add £9.9 billion to the UK economy.

In 2016 this skills shortage was identified as a “major risk to business growth, innovation and broader societal development.”¹¹

The UK has also suffered from significant regional income disparities and these may be made worse by COVID-19-related furloughs and layoffs. The UK economy could [forfeit as much as £141.5 billion in GDP growth](#) if we fail to close the digital skills gap, indicating investment in digital skills would likely bring a good return on investment. Indeed, the current reliance on digital tools is an opportunity to engage workers, employers and educators on the importance of digital skills.

With long-term structural changes taking place, it is unlikely that we will go back to the way we worked before the pandemic. As the Fourth Industrial Revolution charges ahead, companies will find that they can automate certain tasks and may discover they can get by with fewer employees.

The increase in working from home has also seen businesses look further afield for staff than the cities where offices are based. This could promise greater opportunities for workers outside major cities, however equally it could also see a rise in digital offshoring.

In response to this Government will need to look more flexibly at immigration and working requirements, for example as Estonia has done in its Digital Nomad’s Visa.¹²

The cumulative effect of COVID-19, changing attitudes to work and new workplace technology will mean we will need to be more flexible in our approach to skills and retraining. This will mean a greater focus on lifelong learning, modular courses and

⁸ <https://www.theguardian.com/business/2020/may/04/over-a-fifth-of-british-employees-furloughed-in-last-fortnight>

⁹ <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronavirus/theukconomyandsocietyfasterindicators/23april2020>

¹⁰ https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf

¹¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492889/DCMSDigitalSkillsReportJan2016.pdf

¹² [Digital Nomad Visa](#) – Government of Estonia

constantly reviewing and reanalysing what skills we need to teach ourselves to remain adaptable to change.

A structural change to the way we deliver education and training: techUK believes significant structural changes are needed to the education system to ensure the next generation are equipped with the skills needed for the future of work from the get-go. Our research, detailed in our report: [Preparing for Change](#), shows that we should be optimistic for the future but need to make changes now to equip ourselves for it. Automation and new technologies will accelerate the disruption of the jobs market.

In terms of education, skills and reskilling, this means we must ensure we are prepared for the future automation of many jobs while we rebuild after this public health crisis. This includes more work on Adult and Further Education.

Tech companies are committed to building a strong domestic talent pipeline for example through apprenticeships. Engineering and Manufacturing Technologies and ICT apprenticeships continue to remain in the top 6 sector areas of apprenticeship starts in England, with 81,000 starts in 2018.

Collaboration must also extend to leverage our universities. The impact of coronavirus on UK universities is likely to be dramatic. In supporting our universities sector through this difficult time, we must reinvent them for the future, working hand in hand with industry to develop the skills needed for the future. The Institute of Coding has been an exemplary partnership between Government, Industry and the Higher Education sector.

A determined and targeted approach to reskilling: More needs to be done on reskilling Digital training courses have seen a surge in interest during lockdown, so Government must build provisions around upskilling and reskilling in order to maintain this momentum. This may include continued funding for the National Retraining Scheme and more Local Digital Skills Partnerships and considerations for the National Skills Fund.

The pandemic has highlighted the problems of poor digital skills and exclusion and over we have seen some ground-breaking and potentially life-changing initiatives launched by both industry and Government. It is vital that these much-needed changes are locked-in and built on into the future as the economy recovers and reinvents itself.

Identifying the skills we need in a more automated economy: Deloitte states 62% of UK business executives say that their tech talent pool does not have the capability they need to deliver their digital strategy¹³. New technologies such as AI and Machine Learning are creating requirements for specialist skills that the labour

¹³ Deloitte (2018) [Less than half of executives believe they have the skills and abilities to lead in the digital economy](#).

market is struggling to supply—which has intensified competition for talent and grown tech salaries.

The development of talent in the future will depend on generations with digital skills and a sound understanding of the application of skills. Ensuring this requires that we ensure that everyone has access to the equipment and infrastructure necessary for developing digital fluency and confidence.

When jobs are augmented or impacted by technology, the skills' mix and hybrid skills required to perform the jobs will change, some more than others. Human creativity and 'soft skills' will be crucial skills in the redesigned roles of the future. Research indicates that, while tasks are being automated, the "essentially human" parts of work are becoming more important. Skills, often described as 'soft skills' such as empathy, communication, and strategic decision making will become more valuable than ever.

III. An industrial strategy for innovation, next gen tech and smart regulation

After the pandemic the UK will need to revitalise its industrial strategy to build a new strategy for innovation and growth.

This will require a strategic approach which seeks to cement the UK's role as a leader in the development of potentially revolutionary technologies such as Quantum, an R&D roadmap that seeks to improve the UK's capacity to develop and commercialise research into the next generation of world leading companies and an approach to high standard proportionate regulation that builds confidence in the UK as an investment destination.

Not only will these core building blocks be important but any UK industrial strategy should also focus on addressing the grand challenges the country faces, through blue sky's research, a UK ARPA and other challenge funds that seek to ensure that the spill over of ideas across disciplines can be used to find novel solutions and create innovative new products.

The health response to COVID-19 has underlined the success in spill overs between different industries. Whether that was between healthcare and the military in the creation of the nightingale hospitals, or between F1 and medical research in the ventilator challenge.

These kind of spill overs are hugely successful and can sometimes require only basic coordination. For example, much of the UK's fintech success is attributed to the tech cluster in Shoreditch simply being close to the City of London.

Ensuring the UK can take advantage of new innovations and cutting-edge technologies:

If the UK is to be a world-leader in scientific research, it is vital that data and technology infrastructure is in place to not only support scientists and enable industry to commercialise scientific discoveries and develop sustainable business models.

To do this effectively, we must maintain pace with the best in the world. For example, the US and China have invested heavily in developing High-Performance Computing (HPC) infrastructure; the US is reported to have spent \$1.8 billion on three supercomputers while China already has the world's fastest supercomputers.

The new EU Digital and Data Strategy highlights Europe's intention to invest four to six billion Euros by 2022 in infrastructure with a focus on cloud computing and other services including HPC. In addition, Germany has recently announced investment of 650 million euros to progress quantum research and market development-focused work.

The announcement in May that the UK has become the first country, outside of the US, to join the global COVID-19 High-Performance Computing consortium is welcome. It shows that the UK has significant HPC leadership, experience, and expertise to offer. However, we must not become complacent in the UK's ability in this key part of our technology and R&D infrastructure.

Long-term investment must continue in key computing infrastructure including HPC, AI and quantum as these will form the technological foundations upon which scientific research will be possible.

This can be achieved by supporting more formalised avenues for commercial interaction between the NQTP research hubs, industry, and end users (the German model mentioned above is a good example of facilitating this interaction). However, we must also by ensure there are pathways to bring in and retain quantum and

other engineering talent, as this is what will make innovative devices, products, and services a reality.

While constructing this infrastructure is a long-term goal, commitments to investment and the development of structures in the short-term send important signals about the UK's intent.

For example, by continuing funding of the UK's National Quantum Technologies Programme. This would send a strong message around the world of the UK's commitment to R&D and HPC and quantum technologies.

This kind of infrastructure also plays an important role in attracting key talent and their placement across the country will leverage additional investment to take advantage of it.

An R&D strategy focused on economic growth:

The tech sector sits at the fulcrum where research becomes commercialised, with many of the UK's most successful tech companies having their roots in our world-class university and research institutes.

However, while the sector has benefited from UK research, it has often been third-party actors, VCs, and City investors which have driven commercialisation, not the UK's R&D ecosystem.

In short, the UK's current R&D strategy is very good at supporting the "R" in R&D, but lags in the development of that research into new companies, products, and services. This can hold back growth while limiting the development of new companies around the UK's research hubs and universities across the country.

Utilising R&D as a tool of economic growth: government should focus on using innovation policy as a tool of sustainable, outcome led economic development. This should include realigning where public money is invested to maximise buy-in and further investment from the private sector.

techUK suggests BEIS re-focuses on a variety of key indicators when it comes to innovation policy.

Currently, there is a tendency to focus on predominately academic indicators to determine what constitutes good science, for example focusing on 'research excellence' and the use of metrics like citations as indicators of success. While important, these fail to take full account of the economic development that good innovation policy can bring.

To ensure there is a strong connection between the economic value of science, research, and its applications the Government should ensure metrics such as private investment in locations near research institutes and universities, patent citations, and the sustainable growth of new companies in the area, are given

additional weight we assessing outcomes and should be set as targets for new investments.

Developing UK tech clusters: China and Israel have effectively used special economic zones (SEZ), or clusters to promote the growth of their tech sectors. Israel's cyber security cluster around Be'er Sheva has helped the country become a world leader in the field with a number of positive spill over into other parts of the Israeli tech sector.

The UK could follow this best practice by developing existing policy commitments with a greater focus on place replicating the cluster or SEZ approach. For example, combining commitments made in the budget such as the £120 million commitment to create eight new Institutes of Technology, the £400 investment committed to non-golden triangle locations and the £300 million for experimental mathematical research. Increasing the focus on place by matching Government funding to areas where there are nascent or already thriving business sectors (e.g. battery tech in the west-midlands the Government could support existing centres of excellence become world leaders.

This approach could be further supported by ensuring there is dedicated support from regulators through sandboxing schemes and creating spaces to engage with funders and agencies such as UKRI. By taking this kind of place-based approach Government can help boost co-location benefits and support the levelling up agenda.

Further incentivise business activity in R&D by accelerating Government's plans to allow investments in data tools (such as data analytics) and cloud computing to qualify for the R&D tax credit, and to allow for the R&D tax credit to be claimed against investments in the physical premises where R&D takes place – a facilities tax credit similar to that in other jurisdictions such as South Korea.

BEIS could also look at identifying an R&D supply chain of key inputs and outputs that make up the UK's R&D ecosystem.

This would help identify where there are weaknesses as well as strengths, helping stakeholders and potential investors navigate a complex system and identify gaps in the market that they could address.

A regulatory system that builds confidence in the UK as a place to do business:

The UK's strong track record of balanced, proportionate clear and predictable regulation. It has often topped the charts among the OECD as the best country to start and grow a business, while recent innovations in fintech and a strong investment base make it easier than ever to run and fund new companies from the UK.

This track record and good business climate, is a major contributor to why UK tech raised more than £10bn from investors in 2019¹⁴ and is often the EMEA headquarters for large technology companies from the North America, Asia and Europe. The UK tech sector is now growing at six times the rate of the wider economy, adding £149bn to the economy in 2018, according to DCMS.

Ensuring the continuation of this positive business environment will be vital to the post-COVID recovery, particularly as many other countries see the growth of their own tech sectors as strategically important and are seeking to become more competitive to secure business from leading markets, like the UK.

The UK's global dominance in tech would not be helped by poor regulatory changes that reduce the attractiveness of the UK market to investors and cut consumers off from the businesses that they want to spend money supporting.

What the UK needs is good, proportionate regulation that maintains the UK's reputation a highly competitive but also high-standard market. As the industry has grown, so too as the regulatory environment become increasingly bus with initiatives such as:

- A proposed new approach to tackling online harms;
- The Information Commissioner's Office's new Direct Marketing Code, ad tech review and Age Appropriate Design Code;
- Competition and Markets Authority (CMA) digital advertising market study and digital markets taskforce;
- DCMS review of digital advertising
- An approach to the Digital Services Tax which captures non-digital activities and contains unclear definitions of marketplace;

In such a busy regulatory landscape there is a real risk of uncoordinated regulation from multiple directions that risk not capturing the cumulative effect or the potential contradiction in each.

This uncertainty and confusion could undermine business confidence, threatening the UK's position as a leader in this market.

techUK would therefore urge the Government to seek to 'air traffic control' regulatory approaches to the tech sector to ensure that new proposals are fully developed and designed with consumers interests at heart.

In addition, it is vital that regulation is developed on the basis of evidence, following regulatory best practice to hear from the entirety of the market rather than focusing engagement on well-known or large players.

¹⁴ [Tech nation 2020 report](#)

We have been encouraged by the CMA's approaches to the Furman Review and the digital advertising market study as an example of good practice for informing new regulatory approaches. This approach has engaged widely to understand the market and thought deeply about the impacts various kinds of regulation would have.

The CMA's approach has been praised internationally and it is recognised as a world leader in developing approaches to digital regulation. However, as the amount of digital regulation increases, we must ensure that all regulators have the skills and expertise required to engage in these often complicated areas.

Ensuring that this is achieved, and replicating this approach across the UK's regulation of the tech industry will help the UK maintain and enhance its places as a leader in good, proportionate and predictable regulation that supports high standards and good levels of consumer protection.

Leveraging Open Data and developing a market for Digital IDs:

One key technological trend is the sharing and reuse of data resources currently siloed in private companies, academic research banks and public sector databases. The UK needs to build on the principles of Open Banking to extend the accessibility of data to innovative market players, within the principles of data protection, user control and data minimisation.

The Government can support this by continuing the work of BEIS on 'smart data' and look to extending this to other sectors; restart the National Data Strategy so that it connects policy and regulatory actions for opening up data across the economy.

Facilitating the emergence of a digital identity market as the key method of secure access for users to the connected open data economy detailed above. This can be done by removing existing legislative barriers which prevent digitisation, such as the legal mandating of paper ID documents.

The Government can also support a market for Digital Identities by opening up access for private sector ID providers to public data bases (DVLA and passport). Working with the private sector Government can help design interoperable standards that will allow for the provision of ID services to both the public and private sectors.

Better measurement of the digital economy:

As economy has become more digital the measurement of the digital economy and its value to the UK has become more important. However, at the moment the methods used by Government and official statistics authorities such as the ONS are not effectively capturing the value of the digital and data to the wider economy.

Recent revisions to ONS data on the telecoms sector has shown much larger increases in efficiency than previously thought.¹⁵ New experimental data analysed by the Department for International Trade (DIT) is beginning to highlight the value of digitally delivered services to the UK economy, making up around 67.1% of total UK services exports.

However, the DIT report openly admits that data collection on data and digital and therefore the estimates of the true value of the digital economy remains difficult with the data sets we currently use.¹⁶ This point is underlined in techUK's report *The UK Digital Sectors After Brexit*, where the value of data and digital to the economy and future trade could be inferred, however direct data collection and analysis was difficult.

Arriving at a better understanding of the contribution of the digital sector to the economy will help us better understand the nature and make-up of the economy as a whole, target interventions more efficiently and achieve a better understanding of the contribution the digital and data sectors make to the real economy.

As we move forward from this crisis there is a major role here for the ONS, Treasury and Bank of England to gain a better understanding of this crucial part of the economy to ensure future economic interventions are more targeted and better suited to an economy which has become more digital.

IV. A trade strategy that positions the UK as an active champion of free and fair digital trade

Like the rest of the world the UK is trying to manage the impacts of COVID-19. However, unlike many other countries COVID-19 has hit at a time when the UK is going through a period of enormous change when it comes to our trading relationships and our role in the world.

As of 1 January 2021 the UK will no longer be a member of the EU Customs Union and Single Market having left the bloc in January 2020.

¹⁵ [UK's growth rate could be revised after large revisions to official data](#) – Financial Times 2020

¹⁶ [Understanding and measuring cross-border digital trade](#) – Department for International Trade 2020

As well as negotiating its future relationship with the EU the UK is also seeking to agree new free trade agreements with priority partners (the USA, Japan, Australia and New Zealand) and define a new role at the multilateral level with an independent trade policy and new investment strategies to ensure the UK can continue to be a global investment hub.

techUK believes the UK can be a leader in global conversation on digital trade and carve an important economic niche as a large economy in the European continent, but with a flexible global approach to trade and investment.

Achieving this however will require a mature discussion on the UK's role in the world and a strategic plan that plays to our comparative advantages in the modern global economy.

A Vision for UK Digital Trade Policy:

As one of the world's largest digital economies the UK has benefited from the rapid expansion of global digital trade.

Estimates produced by DIT show that the UK exported £190.3bn of digitally delivered services in 2018, 67.1% of total UK services exports.

The UK imported £91.1bn digitally delivered services, achieving a trade surplus of £99.2bn in digitally delivered services in 2018.¹⁷

These figures not only show the UK's success at delivering services digitally, but the value to the UK of predictable and stable trading rules in the global digital economy.

Now that the UK has left the EU, it is an active participant in a global trading system that is increasing becoming securitised and subject to great power struggles, between three major trading blocs, the US, EU and China.

Outside of these three blocks the UK has an important role to play in partnership with others to shape the system, putting our shoulder to the wheel to advocate key principals we want to develop, such as digital trade, and building alliances against harmful practice and protectionism.

This will require a mature discussion about our role in the world and a deft management of our global ties and alliances.

techUK has set out our vision for a successful UK digital trade policy in our report a ['A Vision for UK Digital Trade Policy'](#)¹⁸

The report sets out 12 key recommendations for UK digital trade policy to succeed, based around objectives of ensuring UK trade becomes digital by default and provides a strong counterweight to growing trends towards digital protectionism.

¹⁷ [Understanding and measuring cross-border digital trade](#) – Department for International Trade 2020

¹⁸ techUK - A Vision for UK Digital Trade Policy - 2019

12 recommendations made by techUK in a Vision for UK Digital Trade Policy:

- Enable the cross-border flow of data without compromising data protection standards
- Prevent the forced localization of data
- Facilitate regulatory access to data
- Prevent separate treatment for cross-border flows of financial data
- Secure the expansion of the Information Technology Agreement in both geographic and product coverage
- Make the moratorium on customs duties on electronic transmissions permanent
- Prevent the mandatory transfer of source codes, algorithms, or encryption keys as a condition of market access
- Support the development of AI through enabling open government data and text and data mining
- Establish cooperation on the regulation of AI, fintech and other emerging technologies (*note; the UK is already leading here in its proposals for a dialogue in emerging technologies in the UK-EU FTA negotiations)
- Establish cooperation on cyber security issues with an emphasis on a risk-based approach
- Standardize minimum de minimis thresholds to facilitate e-commerce
- Secure recognition of e-signatures and expansion of paperless trading

Supporting inward investment in the UK post pandemic:

Inward investment makes a significant contribution to the UK economy – from job creation and wages through to productivity gains and fostering innovation and R&D.

The UK has long been one of the world's top performers at attracting foreign direct investment (FDI) – consistently ranking among the top countries in terms of the number of inward investment projects and [capital investments](#).

Investments into the UK to date have largely relied on investors seeing the UK as a place offering stable, pro-business environment that is open to talent and skills, innovation, research and development, and global collaborations.

As the crisis is putting unprecedented strain on the business environment, now more than ever it is vital that this remains the case with conducive business environment that welcomes investments.

Some of the key recommendations that can help maintain UK's attractiveness for FDI include:

- **Ensure the UK has a steady supply of domestic and foreign skills:** companies come not only to invest but also to hire talent that will develop company's presence in a new market. The focus for the UK should be on a steady supply of the skills foreign and domestic businesses need.
- **Invest in a world-class digital and physical infrastructure:** foreign investors welcome the UK Government's ambition to give the majority of the country a 5G coverage by 2027, having stressed the importance of digital infrastructure for the UK to keep speed with other markets. While the UK is a world leader in superfast connectivity, with more than 95% of premises covered, next generation Fibre to the Premises (FTTP) – or 'full fibre' – coverage is only 4%, and lagging behind current world leaders like South Korea (around 99%), and Japan (around 97%).
- **Ensure the UK maintains dependable laws and regulatory system:** one of the big UK attractions to foreign investors is its dependable rule of law and regulatory system. This is reinforced by the World Economic Forum's Global Competitiveness Rankings, which favour those countries with a stable business environment and strong corporate governance. Ensuring a stable regulatory system is especially pertinent for UK to maintain its global attractiveness for FDI. This includes areas, such as strong and stable auditing market.
- **Attractive tax system:** among the number of UK fundamentals that make it attractive to foreign investment is the UK's low statutory rate of corporation tax as well as the ease of working with the UK's transparent tax authority. The UK needs to maintain the levels of corporation tax and continue to simplify businesses' engagement with the tax authority.
- **Support innovation and R&D:** the UK needs to ensure that it continues to be at the forefront of advances in technology and that it builds a workforce to augment it – which means investing in R&D, building a culture of innovation and creating a competitive offer for companies to base their innovation and R&D centres in the UK.

V. Seizing the opportunity to lead in the fight against climate change:

Climate change is perhaps the greatest challenge that we and future generations face. Seeking to return to growth, but in a way that addresses the climate emergency and supports good environmental outcomes has become a central tenant of the approach taken by many businesses and Governments to the recovery from COVID-19.

This approach is not just been driven by Governments, but from the bottom up by consumers and businesses who see sustainability as central feature in the delivery of products and services.

This demand for change will be a defining feature of our recovery and future economic model. Therefore, taking a lead in the production and clean and green tech is a major comparative advantage.

The UK has an important role to play here, with the chair of the Committee on Climate Change, academia and industry experts seeing the role of technology as central to delivering both large short-term economic multipliers and shift our emissions trajectory towards net zero, and creating a new industry that can deliver growth in the long term.

It is also important to note the tech sector's commitment to reducing its own emissions. And that while some products and tech solutions require large amounts of power, the sector as a whole has made great strides to tackle its carbon footprint and has produce more sustainable business models.

For example, Microsoft is aiming to remove from the environment all the carbon the company has emitted either directly or by electrical consumption since it was founded in 1975.¹⁹

Ensuring the deep digitization of energy networks: the deep digitisation of energy networks needs to become a national infrastructure priority. Ofgem cite lack of digital capability in networks as the reason for under ambition on decarbonisation in their network reforms.

Making deep digitisation a priority and investing in grid upgrades will stimulate investment in deliver the handling capability of the vast amount of data at a sub-second granularity required to dynamically manage a zero-carbon (and more affordable) grid.

Low carbon transport infrastructure: further incentives to encourage uptake of electric cars will help the UK achieve its net zero target. Stronger financial incentives and clarity on the allocation of the £500m already committed to electric vehicle (EV) infrastructure will help achieve this.

techUK also supports the development of a data driven EV charging infrastructure strategy, which considers grid reinforcements, charging points and flexibility technologies, to ensure the money is targeted where it can make most impact.

Embed sustainability in our business models: Government can embed sustainability by ensuring all of its investments that it supports have mandatory net zero ambition clauses attached to them e.g. recipients reporting to CDP, setting science-based targets (SBTs) and demonstrating clear emission reduction plans that are measured YOY.

SMEs are responsible for over half of total business energy across the UK. Motivating them to invest in energy efficiency however has been a challenge. Energy costs typically represent a low proportion of total operational costs for SMEs and they have limited resources to commit funds.

techUK members support a proposal suggest by the Green Alliance in last year's *A Smarter Way to Save Energy*²⁰, which proposed a new business energy efficiency

¹⁹ [Microsoft will be carbon negative by 2030](#) – Microsoft 2020

scheme aimed at SMEs and introduced in partnership with energy service organisations (ESOs).

This would help to ensure expert delivery of projects at scale with the ESOs acting as aggregators. Payment to the ESOs could be modulated based on the efficiency innovations employed. As recommended by Green Alliance, smart sensors and analytics should be a core offering to being to more accurate measure energy use by these companies and understand the effectiveness of various interventions.

Showing UK leadership in the green recovery:

In the immediate aftermath of COVID-19, we have recommended focusing on two technology areas for R&D and investment:

An International Centre for AI, Energy and Climate: techUK is one of several signatories, drawn from the technology and energy sectors and from academia calling for an international centre for AI, Energy and Climate to be established in the UK²¹. The combination of fundamental advances in AI, the UK's leadership in AI, and the emerging recognition of the potential for AI to support the net-zero transition mean that the case for UK leadership on AI for climate has never been clearer. Recent analysis suggests AI can help reduce global emissions by up to 4 per cent against business as usual by 2030, whilst concurrently supporting an increase to global GDP of 4.4 per cent.

Digital Twin Deployment Fund: Incentivise the development and deployment of digital twins (which can dramatically de-risk and accelerate experimentation, innovation and resilience building activities in clean growth infrastructure projects) via a new £50m Digital Twins Deployment Fund, to fund innovative enterprises and cross-sector initiatives that assign a monetary value to data infrastructure, that facilitate the creation of data asset portfolios and support the development of holistic strategies to track data asset growth and ROI.

Increasing the focus on place by matching Government funding to areas where there are nascent or already thriving business sectors (e.g. battery tech in the West-Midlands) the Government could support existing centres of excellence in becoming world leaders.

July 2020

²⁰ Green Alliance (2019) A smarter way to save energy <https://www.green-alliance.org.uk/a-smarter-way-to-save-energy.php>

²¹ https://c1760be6-74a3-4224-83de-d985c6659dc0.filesusr.com/ugd/37770d_ab54935e39a04531a66e85b282d8920b.pdf and https://c1760be6-74a3-4224-83de-d985c6659dc0.filesusr.com/ugd/37770d_fa62e3c11d844ac998d5f358b23ee56c.pdf