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Growing the economy and growing the UK tech sector:

Competitiveness, investment, productivity, and public services

techUK's submission to HM Treasury ahead of the Autumn Statement
October 2023

About techUK

techUK is a membership organisation launched in 2013 to champion the technology sector and prepare and empower the UK for what comes next, delivering a better future for people, society, the economy and the planet.

It is the UK's leading technology membership organisation, around 1000 members spread across the UK. We are a network that enables our members to learn from each other and grow in a way which contributes to the country both socially and economically.

By working collaboratively with government and others, we provide expert guidance and insight for our members and stakeholders about how to prepare for the future, anticipate change and realise the positive potential of technology in a fast-moving world.

Introduction:

In June 2023 techUK published our *UK tech Plan: How the next Government can use technology to build a better Britain.* The Plan set out 18 opportunities and a series of regulatory reforms that could be seized to leverage technology for the benefit of people, society, economy and the planet delivering a tech sector that contributes £200bn per year to the economy, supports higher skilled higher paid jobs and more resilient and efficient public services.

While our Plan sets out a longer-term vision beyond a single budget cycle the Government could do much to move toward seizing the opportunities outlined in our Tech Plan at the Autumn Statement.

The tech sector is the UK's modern economic success story, but we can't be complacent:

In 2023 the UK has established itself as a leading tech economy, with a strong digital sector and globally leading research and start-up ecosystem. The tech sector is one of the UK's modern economic success stories, with its contribution to the economy rising over 25% between 2010 and 2019, and now adding £150 billion to the economy every year. This makes it one of the country's most valuable economic assets and the leading tech sector in Europe.

However, our success must not breed complacency. There is now a fierce global race over the key technologies that will shape the future: from AI and Quantum to green technologies and semiconductors, competition between governments to attract talent, bring in investment and grow tech clusters is greater than ever.

How technological innovation is already helping the UK:

- **Caring for an ageing population:** virtual wards are making it easier to care for people in the community saving the health system up to £2,000 per patient per annum. Additionally, more than four in five NHS workers believing greater technology investment can help to attract new people into the NHS.
- **Growing the economy:** Generative AI is already helping boost productivity with a recent survey showing it can increase productivity by 14% with more junior workers benefiting the most, getting more time back to train and upskill.
- **Reducing the cost of public services:** Digital IDs are reducing the cost and accelerating delivery of public services with people in Scotland no longer having to travel into council buildings to verify their identity for a range of services. Saving both the public and local authorities time and money.

Already our competitors are deploying serious and focused strategies to build on their tech and industrial strengths or to supercharge their start-up ecosystems. The

Inflation Reduction Act (IRA) has changed the game when it comes to attracting major capital investment. Other European countries such as France have also made significant gains through a focused strategy on tech sector growth, supporting a resilient start-up ecosystem despite global financial turmoil and exploiting difficult trading conditions between the UK and Europe.

Growing the economy and growing the UK tech sector: *Competitiveness, investment, productivity, and public services*

2022 presented significant challenges for the UK tech sector, as soaring energy prices and a talent shortage resulted in a major drop in confidence. However, 2023 has the potential to end on a brighter note with techUK members showing a cautious optimism about their growth and investment plans in our latest Digital Economy Monitor Survey.

While business optimism has turned a corner techUK members see wider economic challenges on the horizon that could threaten their business plans including the impact of inflation and high interest rates, skills and investment challenges and a more competitive global market for tech.

However, despite the challenges UK tech companies are ambitions for the future with techUK members telling us they are focusing on growth, efficiency, and sustainability but need Government support to meet their aims.

To capitalise on this renewed optimism the Autumn Statement should serve as a shot in the arm to the sector and build a longer-term growth narrative for UK tech.

As the Treasury considers its options techUK and our members suggest the Autumn Statement should focus on four themes:

- **Competitiveness:** ensuring that UK tech can attract and train talent at more easily and cheaply than our closest competitors, that we help grow tech clusters across the country, respond effectively to the Inflation Reduction Act and build a highly competitive regulatory environment.
- **Investment:** by tackling the reasons why companies choose not to make major investments in the UK and where we lose out to our competitors. By improving our inward investment offer, reforming the UK's R&D tax credit and scale-up offer and investing in key innovation infrastructure and reducing.
- **Productivity:** ensuring that as new technologies diffuse across the economy the UK is ready to take advantage of the AI revolution, we become a higher skilled nation, more able to retrain underpinned by modern working practices and strong digital connectivity.
- **Public Services:** improving the quality and efficiency of our public services and ensuring that new technology can support better outcomes across the NHS, criminal justice system and local public services.

Executive Summary:

I – Competitiveness

Objective	Policy change	Benefit
Driving the creation of globally competitive tech clusters across the UK	Incentivise local and combined authorities to invest in digital projects	Addressing of the digital divide across the UK and unlocking the global competitiveness of UK's innovation economy
	Review how the British Business Bank and National Infrastructure Bank work with local and combined authorities	Better signposted and accessible investment opportunities for tech SMEs
	Ensure that each region of the UK has a regularly updated digital strategy	Ensure a joined-up approach across the UK
	Ensure that Investment Zones are operational and are 'tech zones'	To attract tech sector investment
Reform the visa system	Simplify the application process and reduce the cost of UK visas to match our competitors	Better enable firms to recruit the talent needed to grow and boost UK competitiveness
Respond to the Inflation Reduction Act and EU Green Deal Industrial Plan by supporting green technology adoption	Digitise the national grid and prioritise connections for strategically important projects	Reduce the cost of net zero by up to £16.7bn per year, and ensure UK's future competitiveness
	Include telecoms and data centres in the Energy Intensive Industry Scheme to boost resilience, competitiveness and investment	Ensure the UK's networks are resilient and competitive, improve investment in the UK
Regulatory reforms	Design a system of regulation that is ready for the increasing pace of technological change and innovation	Address the rising cost of compliance for businesses in the digital sector and promote innovation

II – Investment

Objective	Policy change	Benefit
Boost inward investment into the UK	Review and consider accepting the findings of the Lord Harrington review of Foreign Direct Investment	Improve the UK's inward investment offer
	Remove barriers in the planning system for major investments	Tackle barriers to major investments
	Restate the Government's commitment to the allowing the Digital Services Tax to fall away	Ensure tax is sustainable and collected only on the appropriate revenue
	Provide certainty over application of VAT to private hire vehicle operators	Adding clarity and allowing for business planning
Give investors' confidence with five-year plan for the R&D Tax Credits and making full expensing permanent:	Develop and implement a long-term strategy for UK's R&D incentives	Gives businesses the confidence to invest and help the UK reach the target of 3% of GDP being invested in R&D
	Make full expensing permanent	Give confidence to long term investors and improve the competitiveness of the UK's capital investment relief
Fixing the UK's scale up economy	Make the Enterprise Investment Scheme and Venture Capital Trust schemes permanent; reforming the Seed Enterprise Investment Scheme	Give start-ups certainty over existing support schemes
	Launch a British 'Scale-up Sprint'	Address the UK's £15bn scale-up gap and drive investment opportunities into critical technologies

	Reform the planning system, foster innovation through Investment Zones, and adopt the National Infrastructure Commission's recommendations for reforming the Nationally Significant Infrastructure Projects regime in full	Accelerate the pace of change in the UK
Supercomputing	Respond to the recommendations made in the Future of Compute Review and give clarity over the spending on compute infrastructure	Ensure the UK has the computing power needed to support next generation technologies
	Facilitate ongoing international collaboration	Leverage UK's leadership and allow for access to global large-scale computing to complement UK's domestic capabilities
	Lead the global race for Quantum commercialisation	Secure market share in a future $850 billion industry
Maintaining the UK's position as a global fintech leader	Speed up delivery of Central Bank Digital Currency, deliver the frameworks for Smart Data, and Digital ID	Facilitate the uptake of new technologies such as AI and machine learning to deliver fintech services.
	Support financial services sector in identifying and building solutions of value to the economy	Stimulate the economy

III – Productivity

Objective	Policy change	Benefit
Taking full advantage of the AI revolution	Additional funding to support the UK's regulatory landscape and help ensure the implementation of the AI White Paper is a success	Ensure a robust AI governance framework
	Map out existing and upcoming regulatory initiatives	Allow businesses to plan for their compliance activities in advance
	Ensure that the UK has a strong AI ecosystem	To support greater levels of AI adoption across the UK and allow the UK to remain attractive place for AI investment
Incentivise digital adoption through the tax system	Provide a "Small Business Digital Growth Allowance"	Nudge SMEs to greater technology adoption
	Better signposting the tech support and grants to SMEs	Make navigating programmes and grants that support SME needs easier
	Deliver a roadmap that supports digital record keeping across tax, e-invoicing and other forms of record keeping	Boost in productivity, greater digital adoption and greater access to information about the economy for the government
Full fibre and 5G rollout	Devise a new strategy that includes targets to achieve 85% full fibre take-up by 2030, and encourage adoption	Boosted productivity and economy-wide benefits
	Reassess spectrum fees to ensure money is being effectively investment in UK networks	Bridge the investment gap for nationwide 5G services
Addressing skills gap	Review the National Curriculum	Ensure digital literacy and digital skills are cross-curricular and integrated throughout primary and secondary education
	More funding for teacher training and computing education	Integrate technology more deeply into education

	Urgently reform the apprenticeship levy and establish an online Digital Skills Toolkit	Aid the population in upskilling or re-entering the labour market
	Maintain a modern and flexible approach to work	Plug skills gaps across the country and improve the attractiveness of working in the UK
Digital inclusion	Establish a National Inclusion target and implement a comprehensive, cross-departmental 5-10 year strategy focused on providing universal access, skills, motivation, and trust for internet use	Grow fundamental digital skills among the population
Digital identity	Accelerate delivery of the legal framework for digital IDs and allow full interoperability between public and private sector digital IDs.	Stimulate UK economy and support innovation

IV – Public services

Objective	Policy change	Benefit
Digitising public services across the country	Establish a cross governmental taskforce to drive the removal of legacy IT across core public services by 2030	Embed digital technologies across public services and the country
	Assess which common challenges could be addressed through emerging technologies	Improved public sector productivity and better supported population
	Allow full interoperability between public and private sector digital IDs.	Support innovation and provide more security
	Further investment in training	Digitally upskilled staff
	Continued grant funding to ensure councils have the infrastructure to detect emerging vulnerabilities	Deliver resilient and sustainable local public services
The procurement challenge	Address longstanding issues in the UK's public procurement regime	Reduce the cost of public procurement whilst enhancing the UK as a leading digital nation through demand signalling.
	Update legacy IT across government and move towards cloud-based services	Help cut cost, improve services and increase security
NHS and social care digitisation	Allocate the £2.1 billion earmarked for digital health and social care to drive a comprehensive digital transformation	Enable seamless integration of technologies that not only reduce waiting times but also enhance staff efficiency and facilitate proactive, preventive treatments
	Implement Rt Hon Patricia Hewitt's recommendation on the creation of Citizen Health Accounts	Empower citizens to be co-creators of their own health
		Enabling the criminal justice system to better leverage digital tools could cut the cost to the public of cyber and fraud related crime in the UK, which

		amounted to £4.1 billion between April 2022 and May 2023.
Criminal justice system digitisation	Develop a digitally enabled end-to-end Criminal Justice System.	Improve the digital experience for the Criminal Justice system users, and improve public trust
	Upgrade legacy technologies; improve interoperability and the integration of systems; and tackle other barriers including funding and procurement processes	Aid in coping with the ever-increasing demand
	Allocate funding for training and professional development within Policing and across Criminal Justice agencies; and rethink the Criminal Justice approach for attracting talent	Upskilled staff

Competitiveness

Driving the creation of globally competitive tech clusters across the UK:

The UK grapples with a notable digital divide, characterised by unequal access to digital infrastructure, skills, and online public services across regions, with a heavy concentration of venture capital and equity finance in London. Digital adoption rates vary, notably between the southeast and the rest of the UK. The 2023 Gross Value Added (GVA) data for the tech sector underscores these disparities across different regions in the UK. For instance, London's high GVA per person is remarkably high at £9,083, contrasting sharply with the West Midlands at £2,055, and even lower in Scotland at £1,979 and Wales at £1,348.

Unlocking the global competitiveness of UK's innovation economy, and tackling the longstanding productivity issues, hinges on the benefits of digital transformation being shared across the UK. Indeed, the Government's own research shows that by effectively supporting regional digital ecosystems, the tech sector's annual economic contribution could increase by £41.5 billion by 2025 creating 678,000 more jobs.[1] Similarly, if the six regions with the lowest digital GVA were to catch up to the UK median, it could potentially inject an additional £4.8 billion into the UK economy, yielding new job opportunities, business growth, and enhanced productivity.

To support creation of globally competitive tech clusters across the UK, the UK government should:

- Incentivise local and combined authorities to invest in digital projects by encouraging and standardising digital delivery roles in every Council's Senior Leadership Team, with responsibility for supporting economic growth, improving digital skills and boosting digital adoption.

- Review how the British Business Bank (BBB) and National Infrastructure Bank (NIB) work with local authorities and combined authorities to support local plans to grow their tech ecosystems and invest in digital infrastructure. Investment opportunities available via the BBB and should be clearly signposted and accessible for tech SMEs while local and combined authorities where possible should be given support for NIB bids if there is a strong underlying case.

- Each region of the UK should have a regularly updated digital strategy that outlines region-specific steps authorities are taking to achieve the UK government's digital priorities, such as boosting productivity through

[1] Department for Digital, Culture, Media & Sport: Assessing the UK's Regional Digital Ecosystems - 2021

technology, improving public services, levelling up, and net zero. The strategy should include a specific and measurable deliverables.

- Ensure that the confirmed Investment Zones (IZs) in South Yorkshire and the Liverpool City Region are operating by January 2025; and to establish an IZ in the South West of England. IZs must also be 'tech zones' to attract people to work in them base their business in them, and secure new future investment and the Government should work with the tech sector to ensure that as investment zone packages are delivered they encourage tech sector investment.

Reform the visa system to reduce costs:

Migration plays a vital role in sustaining ongoing innovation, competitiveness, and employment opportunities in the UK. However, the steep visa costs act as a deterrent for businesses and adversely affect the UK's attractiveness as a hub for tech companies.

In early 2023, techUK members reported that obtaining a visa for a UK-based staff can be up to six times more expensive than for EU-based staff. For a five-year sponsored visa, small UK firms bear a burden of £6,910, while larger firms face a cost of £11,030. Firms also view the system as complex and slow.

Despite the already high costs, the UK immigration fees have been raised further. The cost of a Certificate of Sponsorship (CoS) for Skilled Workers has increased by 20%. The annual cost of the Immigration Health Surcharge is set to increase by 66% from £624 to £1,035. Further the surcharge for children and students will increase from £470 to £776.

With domestic shortages in critical tech roles ever more pronounced and competition for skilled talent increasing the higher cost and complexity of the UKs visa system puts UK firms at a disadvantage versus their peers.

To boost competitiveness the Government should:

- Work with industry to identify ways to streamline the visa application process aiming to reduce administrative burdens for applicants, firms and government agencies.

- While visa processing fees are expected the Government should set an ambition to keep these competitive with the UK's closest competitors in Europe and other English speaking countries.

Respond to the US Inflation Reduction Act (IRA) and EU Green Deal Industrial Plan by supporting the widespread adoption of green technologies:

The government needs to urgently reassure the private sector and investors following the recent policy shift by the Prime Minister. Businesses are now questioning investments and the long-term policy direction on net zero.

Adopting a strategic stance towards the US Inflation Reduction Act is essential given the substantial subsidies for green tech development resulting from its passage. The UK has many existing building blocks in place for technological innovation and implementation towards net zero following the blueprint Net Zero Strategy, so should seize the opportunity to respond to the US IRA.

techUK research in collaboration with Deloitte has highlighted that existing digital technologies have the potential to reduce UK carbon emissions by 15% by 2030 while contributing an additional £13.7 billion in Gross Value Added (GVA) to the UK.

To realise the full potential of net zero, the government should prioritise industry collaboration, supply side measures, and schemes to bring down the costs of electricity for the enabling infrastructure for our future economy.

To boost our green tech competitiveness the Government should:

- Reduce the cost of net zero by up to £16.7bn per year by digitising the national grid. The Government needs to work at speed to reform how our grid infrastructure is being upgraded. This should include reforms to Ofgem, to give the regulator a formal duty to achieve net zero by boosting grid capacity and increasing connection speeds. Further, the Government needs to work with Ofgem and the National Grid to prioritise connections for strategically important projects such as data centres, semiconductor fabrication plants, supercomputers and future telcoms networks as well as working with the energy sector to identify and action the near-term high impact upgrades to the national grid. Without improving the speed and reducing the cost of connection times, the UK's future competitiveness will be severely undermined across range of sectors from semiconductors to artificial intelligence (AI).

- The UK's high electricity costs make it the second most expensive country in Europe for investment in cutting edge digital infrastructure. Whilst we support initiatives such as the Energy Intensive Industries Scheme (EIIS), this scheme is currently limited to a small subset of traditional manufacturing industries identified within the EU's State Aid Guidelines on Energy & Environment. As a result, it excludes several strategically important electricity-intensive industries, including data centers and telecoms networks. This makes the UK a less attractive market for investment for such industries where energy costs are a major and increasing determinant of site selection. Redesigning the scheme to include strategic industries and large energy users will be vital to improve investment in the UK. techUK would welcome opportunity to work

with the Treasury to review the EIIS scheme to ensure it is fit to meet the demands of the UK's future economy.

Regulatory reforms:

Despite the government's recognition of the importance of a light touch, pro-innovation regulatory approach, the regulatory burden and costs for businesses have continued to rise.

The 2020s is a major turning point for this with new rules on competition, data protection, online safety, artificial intelligence and telecommunications being introduced in the UK and around the world. These rules don't just affect the tech sector but have enormous cross-cutting economic and social impacts.

The decisions made by regulators now send powerful signals to the market that can often be the deciding factor for investment decisions, bearing a significant impact on the UK's global competitiveness.

The UK also has a huge competitive opportunity post-Brexit to design a flexible, responsive and adaptable regulatory system that encourages innovators and gives companies certainty as they innovate.

In our UK Tech Plan techUK made a number of recommendations to ensure we design a system of regulation that is ready for the increasing pace of technological change and innovation.

To ensure that the regulatory framework supports UK's global competitiveness, techUK recommends the following actions:

- **Boosting regulator capabilities:** Provide adequate funding for the regulators, enable regulators to collaborate and pool resources and expertise in key cross cutting areas such as AI and give regulators more flexibility on pay, hiring and retention;
- **Clear direction:** provide clear directions to the regulators, for example via the greater and more regular use of strategic steers and creating a mechanism for regulators to seek policy statement from government in situations where regulatory duties conflict, or regulators reach the limits of their remit;
- **DSIT as the home for better regulation principles:** following recent Departmental changes the Department for Science Innovation and Technology (DSIT) should become the home for Britain's better regulation initiatives. This would move policy closer to policy experts in the highest impact areas, quantum, AI, biotechnology, future telecoms, and space technology;
- **Growth Duty:** Require all UK regulators to have due regard to economic growth in the discharge of their functions and take an important first step by announcing at the Autumn Statement the growth duty will be extended to Ofcom, Ofgem and Ofwat;

- **Task and Finish**: Enable regulators to establish “task and finish” groups with industry, academia and government to explore difficult or crosscutting issues aiming to find market-based or technological solutions before considering regulatory action. Government should also be able to request regulators carry out task and finish exercises via strategic steers;
- **Sandboxing:** Utilise sandboxes strategically, prioritising areas with the highest potential for value creation and impact, including the already planned AI sandbox, and examining the case for quantum, Digital ID and online safety sandboxes;
- **Regulators Pioneer Fund:** Increase the funding for the Regulators Pioneer Fund and run the competition with multiple rounds over a five-year period;
- **Emerging tech taskforce:** Set up an Emerging Technologies Taskforce under the Centre for Data Ethics and Innovation, to undertake a horizon scanning responsibilities which anticipate and convene discussions around potential emerging ethical challenges across emerging technologies and policy debates;
- **Sir Patrick Vallance Review:** Fully adopt and implement the recommendations made within the Pro-innovation Regulation of Technologies Review: Digital Technologies by Sir Patrick Vallance. This included key regulatory reforms to unlock innovation including introducing a Future of Transport Bill in the next Parliamentary session to unlock innovation and release pent up capital across automated transport applications. Further the Government needs act on the recommendations of the review and move at speed amend the Computer Misuse Act 1990 to provide greater legal protections for cybersecurity researchers and professionals, ultimately promoting innovation and releasing investment into the sector.

Investment

Boost inward investment into the UK:

When deciding where to build a major global hub, a business will weigh up a number of factors about each potential destination, access to talent, access to markets and the business environment including tax, investment incentives, infrastructure and running costs.

Across a range of these factors the UK scores well, with the potential for strong partnerships between the business and the UK’s world leading universities, a friendly business environment and well-regarded regulators.

However, while these act as the UK’s strengths, there are several underlying barriers to investment which must be addressed if the UK to cement its position.

One area in particular where the UK has fallen behind is a limited inward investment function that is often not as effective as our nearest rivals. Establishing a partnership with the UK Government’s Department for Business and Trade to deliver a business case for an investment can be difficult. techUK members report that

other countries do this more effectively than the UK and that this can often swing the investment decision.

To increase our chances of attracting inward investment the Government should:

- Review and consider accepting the findings of the Lord Harrington review of Foreign Direct Investment which techUK understands will make a series of recommendations to improve the UK's inward investment offer, suggest creating new responsibilities for ministers to focus on attracting investment and tackle barriers that can undermine investment cases.

- Tackle barriers to major investments such as data centres, supercomputers, semiconductor fabrication plants and future telecoms networks by removing barriers in the planning system and speeding up the time it takes for strategic investments in key technologies to receive energy connections.

- Restate the Government's commitment to the allowing the Digital Services Tax to fall away once a decision is reached at the OECD and while the Digital Services tax remains in operation work with companies across the tech sector to ensure the tax is sustainable and collected only on the appropriate revenue.

- Following recent High Court rulings, 15,000 private hire vehicle (PHV) operators of all sizes across the UK are facing major uncertainty over application of VAT. If left unaddressed, operators face a major and unplanned potential hike in VAT which will have likely result in increased costs for consumers, reduced numbers of drivers in the PHV sector with further knock-on impacts to transport and local economies. Additionally, this will have impacts on the sharing and platform economy.

Give investors' confidence with five-year plan for the R&D Tax Credits and making full expensing permanent:

The government is considering merging the R&D Expenditure Credit (RDEC), and the SME scheme – into a single scheme. In the draft legislation, the rate at which this expenditure credit is to be calculated is set at 20%, being the rate at which the existing RDEC has been set since 1 April 2023. Even with the allowance for innovation intensive companies the reforms announced at the last budget in practice will mean a significantly reduced generosity of the R&D to credit scheme for small companies, thus posing a risk to vital growth sectors in the UK.

This change this comes following a series of repeat changes to the R&D and incentive schemes, which have created policy uncertainty, shaken business confidence, and resulted in some R&D investment being moved abroad.

To assure businesses that the UK is a stable location to invest in, the Government should:

- Develop and implement a long-term strategy for its R&D incentives that gives business the confidence to invest and helps the UK reach the target of 3% of GDP being invested in R&D. The government should consult on and set out a five-year plan for the future of the R&D tax credit that should focus on improving customer service elements, such as the speed of and clarity around claims, expanding the definition of R&D and aligning it with the globally used OECD Frascati definition, ensuring the rate of the credit remains competitive versus our peers and seeking to better regulate claims to reduce fraud and misuse. Further are the Government moves to merge the R&D schemes it should work with techUK, R&D intensive companies and start-ups to ensure that the new scheme does not inadvertently damage investment plans.

- The Government should move to make full expensing permanent in the Autumn Statement. Full expensing has significantly improved the competitiveness of the UK's capital investment reliefs. To ensure this welcome scheme can deliver its true benefits the Government needs to at least extend the relief beyond March 2026, ideally making it permeant, in order to give confidence to long term investors and unlock the true potential of this welcome incentive.

Fixing the UK's scale up economy

The UK has established itself as a strong place to start a tech business, which gives tech founders a strong basis to start from and begin the initial growth stages of their business.

However, as start-ups grow, the UK's business environment creates barriers to that growth, including under-investment in the tech sector from UK financial institutions, uneven spin-out conditions and regulatory barriers. Additionally, there are also high lab costs, with laboratory space expenses in London surpassing those in New York and Boston, while in Oxford and Cambridge, they exceed those in Singapore, Seattle, and San Diego.

To support the scale-up economy, the UK Government should:

- Give start-ups certainty over existing support schemes by making the Enterprise Investment Scheme (EIS) and Venture Capital Trust (VCT) schemes permanent as well as reforming the Seed Enterprise Investment Scheme (SEIS) by raising the cap for both investors and start-ups. Additionally, the period under which businesses can claim SEIS should be extended to three years.

- The Government should launch a British 'Scale-up Sprint' to identify, within six months, new investment vehicles and regulatory changes that could create investment opportunities into critical technologies such as green tech, AI, quantum and semiconductors. The *Sprint* should continue work being done

following the Edinburgh reforms and Mansion House Statement and bring in founders, early-stage companies and larger corporates to identify new investment vehicles and opportunities.

- Aim to reduce planning and construction barriers to lab space nationwide, ensuring lab space is able to be competitively built across the UK and helping to bring new research and innovation funding to areas like Manchester, Birmingham, Leeds, and Glasgow.

- Reform the planning system giving greater consideration to proposals for constructing economically significant sites; approve critical infrastructure projects like the Oxford-Cambridge Arc to enhance connectivity; while also confirming the outstanding Investment Zones and developing them as a network for encouraging new innovation and future investment in strategically important sectors.

- Adopt the National Infrastructure Commission's (NIC) recommendations for reforming the Nationally Significant Infrastructure Projects (NSIP) regime in full, which will accelerate the pace of change in the UK.

Supercomputing investments

Large-scale computing (LSC) - also referred to as high-performance computing (HPC), or supercomputing - enables the processing of large-scale data and rapid problem-solving. It is vital for science, research, and innovation and underpins value chains across the economy. Access to advanced compute power is essential to R&D in a range of sectors, including healthcare, engineering, finance, particle physics, and materials science.

However, the UK's compute infrastructure lags behind other nations, and the window to remain competitive in LSC is quickly closing. Whilst the EU, USA, China, and Japan pursue powerful exascale systems (a type of ultra-powerful supercomputing), the UK's share of global LSC capacity has decreased by three-fifths over five years, falling to 2.0% in 2019[2]. Lack of investment in this vital infrastructure will harm the UK's competitiveness in academia and key industries like life sciences, aerospace, and financial services and could jeopardizes growth in industries like AI and quantum, both of which have been identified in current government policy as key pillars of the UK's science and technology ecosystem.

The government has announced an investment of around £900 million in both exascale and a separate artificial intelligence (AI) research resource. To ensure that this investment is spent well and that the UK can regain its competitive edge in compute infrastructure, it will be crucial to engage with industry.

To ensure sufficient investment in supercomputing, the Government should:

[2]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1018875/UK_Computing_report_-_Final_20.09.21.pdf

- Respond to the recommendations made in the Future of Compute Review; and to engage closely with the industry to clarify how the £900 million announced by the UK government to build much-needed compute infrastructure will be spent.

- Facilitate ongoing international collaboration, ensuring that UK researchers and businesses gain access to global LSC systems to complement our domestic capabilities. The UK should advance on the progress made by re-joining Horizon Europe to join the European High-Performance Computing Joint Undertaking. Doing so will be vital to securing compute capabilities for the UK allowing us to actively engage in the establishment of a pan-European supercomputing infrastructure, while also securing vital support for our national research and innovation endeavours.

Quantum commercialisation

Quantum technologies will play a vital role in unlocking innovation in the UK and internationally, enabling groundbreaking advancements across various sectors, including drug discovery, carbon capture, and battery research. These advancements are essential for achieving the UK's ambition to become a science and technology superpower.

The UK's commitment to building a quantum innovation ecosystem is a key success since the establishment of the National Quantum Technologies Programme (NQTP) in 2014. This -pioneering programme has already delivered £1bn in quantum technology investments and will be instrumental in attracting an additional £2.5bn, solidifying the UK as a world leading quantum-enabled economy by 2033, as set by the National Quantum Strategy.

To realize the vision outlined in the Quantum Strategy and cultivate a thriving quantum ecosystem, the government should:

- Maintain its commitment to the commercialization of all quantum technologies throughout the strategy's lifespan. This involves creating a technology roadmap and establishing quantum sandboxes to address the unique developmental requirements across various quantum technologies. These measures will expedite the shift from research to deployment and commercialization, and foster innovation and growth in this critical sector.

- Expand programs like SparQ for market readiness across diverse industries and provide robust high-performance computing resources for quantum simulations.. Emphasizing quantum's importance in the broader computing landscape, clarifying the procurement process for publicly-owned quantum compute resources, and engaging external supply chains is essential. Additionally, enhancing quantum security, developing quantum skills, and

establishing the UK as a global leader in responsible innovation are all integral facets of a successful quantum strategy.

Maintaining the UK's position as a global fintech leader:

The UK is a global leader in fintech with the sector having the potential to raise £7.3bn in capital investment in 2023 and on course to see the number of UK fin-tech businesses double by 2030[3].

Beyond just economic growth highly innovative approaches including Open Banking and Open Finance, AI and Central Bank Digital Currencies have the possibility to improve the day-to-day financial health of consumers, increase the systemic strength of the financial system and increase financial literacy across society.

To secure the economic and society benefit, the government should:

- Speed up the delivery of a Central Bank Digital Currency and shore up the fundamentals of our fintech system by delivering the frameworks for Smart Data and Digital ID – the latter being a key dependency for the former. This will facilitate the uptake of new technologies such as AI and machine learning to deliver fintech services.

- Review where existing regulation may benefit from revision in light of new technologies; such as where AI can deliver more tailored guidance to customers without straying into the realms of 'financial advice'. This would bring about better outcomes for customers by closing the advice gap and accelerate adoption of these technologies.

- Support financial services sector in identifying and delivering upon usecases that can deliver utility and value to both customers and firms. The role of the HMT-backed Centre for Finance, Innovation and Technology (CFIT)'s coalitions are one such scheme which are building solutions to prove usecases which have benefits to the real economy such as SME finance. Further financial support to ensure its continuance would provide a solid platform for the UK to become world-leaders in the delivery of Open Finance.

Productivity

Taking full advantage of the AI revolution

AI is set to drive huge productivity benefits in the UK. The anticipated economic benefits over this decade are significant with estimates predicting that the UK's GDP will be up to 10% higher in 2030 from the development and adoption of AI.

[3] FT Adviser: Why is the UK so successful in fintech? https://www.ftadviser.com/investments/2023/01/30/why-is-the-uk-so-successful-in-fintech/

However there currently exists a “missing middle” of small to medium-size enterprises throughout the UK that are already falling behind when it comes to digital and AI adoption and therefore missing out on the benefits the technology has to offer. These are businesses that are currently struggling with basic enabling actions such as access to talent, data, and compute, as well as issues such as a lack of funding for POC trials and access to compelling business cases.

Additionally, given the increasingly complex AI governance landscape, many companies, especially SMEs, feel overwhelmed by the number of existing and upcoming policies, guidance, standards, and regulation related to AI governance. The speed at which the AI regulatory environment is evolving also means that companies face challenges in planning their compliance activities and could have significant operational impact on them.

To support greater levels of AI adoption across the UK, and to ensure a robust AI governance framework, the government should:

- Ensure that the regulators are able to quickly build their capabilities and capacity to understand and respond to developments in AI, as well as adapt to their new roles and responsibilities as set out in the UK Government’s White Paper; and that the new Central Function is sufficiently resourced to ensure coordination across regulators. The Treasury should commit to providing additional funding to support the UK’s regulatory landscape and help ensure the implementation of the AI White Paper is a success.

- Clearly map out both the existing, and upcoming regulatory initiatives, how they interact, and identify current overlaps and gaps. This will provide clarity and certainty for companies trying to navigate what is currently a complex governance landscape, allowing them to better plan for the initiatives that may have a significant operational impact on them. It will also provide clarity and certainty for businesses, academics and the public who want to understand the right approach to responsible innovation. The map could take a similar shape to the Financial Services Regulatory Initiatives Grid, which is a joint initiative by the regulators and HM Treasury as an observer member, published twice a year and setting out the planned regulatory initiatives for the next 24 months. This is a task that could be undertaken by the Central Function proposed in the AI whitepaper, or as a joint effort by the regulators.

- Continue to support initiatives that deepen the understanding of the public’s attitudes towards AI such as the detailed tracker surveys run by the CDEI91 as well as creating a forum that enables a considered and sustained public debate on new and evolving issues related to AI. This forum would help to gain a better understanding of public attitudes to AI and address any emerging areas of concern. Regulators should also be encouraged to understand their stakeholders and the public’s attitudes towards AI in the sector’s they regulate through conducting surveys and studies.

- Ensure the key fundamentals of the UK's AI ecosystem are strong. AI start-ups, university research departments and the investments of UK HQ's and global companies have driven the success of the UK AI industry. To further bolster this, the UK needs to increase access to talent, unleash scale-up funding into the sector, ensure that UK AI companies have access to the infrastructure the sector needs (such as new and advanced semiconductors, computing capability both via the cloud and from an exascale supercomputer) and secure access to cheap energy, lab space and high speed digital connectivity to ensure AI services can be accessed across the UK. Furthermore, we to ensure we get the right incentives for both small and large businesses to adopt AI technologies as set out in techUK's report AI Adoption in the UK: Putting AI into Action and we develop a competitive regulatory environment that is flexible, responsive and adaptive.

Incentivise digital adoption through the tax system

The Productivity problem remains one of the UK's major challenges. Digital adoption is a vital tool for addressing this, yet the UK lags behind its OECD and European competitors when it comes to our Small and Medium Sized Businesses (SMEs) taking up productivity boosting digital software[4].

The SMEs are the backbone of the economy and are helping drive innovation, supporting millions of employees and customers collectively. Therefore, ensuring that SMEs across the economy can confidently access and use the latest digital services is critical.

To boost productivity using digital technology, the government should consider a range of financial and regulator incentives, including:

- Underpinning tech investment by providing a "Small Business Digital Growth Allowance" - a time-limited tax relief on productivity software. It would allow SMEs to claim a deduction of 140% against their corporation tax bill for qualifying expenditure with an estimated cost of between £300-£350m. Such an intervention would also give the economy a needed boost at a time when increasing growth and business productivity is vital, particularly to help reduce inflation[1].

- Better signposting the tech support and grants being offered by existing UK tech firms to SMEs. Improving and streamlining the process will help time-poor but willing SMEs to navigate to programmes and grants that support their needs much quicker.

- There is a strong relationship between digital reporting requirements and productivity increases. The EU estimates that digital record keeping and reporting is delivering Member States a net annual benefit of £8 billion. The

[4] https://www.weforum.org/agenda/2022/06/inflation-there-s-a-vital-way-to-reduce-it-that-everyone-overlooks-raise-productivity

Spring Budget estimated that the UK has already lost £1.75bn in lost tax due to delays in Making Tax Digital, as well as the benefits a clearer picture of the tax base would bring to Government decision making. We are currently falling behind Europe in the digitisation of our economy, completing the implementation of Making Tax Digital and mandating e-invoicing would go some way to helping the UK catch-up with our European peers. To start this the Treasury at the Autumn Statement could deliver a roadmap that supports digital record keeping across tax, e-invoicing and other forms of record keeping to boost productivity, encourage digital adoption and give Government greater access to information about the economy.

Full fibre and 5G rollout:

Next-generation networks are key to driving innovation and economic growth, providing the high-speed connections businesses need to start and scale. Widespread 5G adoption could add £159 billion in cumulative Gross Value Added by 2035, while nationwide full-fibre coverage could boost productivity by over £50bn and bring up to 1 million people back into the workforce[5].

To boost productivity through adoption of next-generation networks, the government should:

- Engage with the telecoms sector to devise a new strategy that includes targets to achieve 85% full fibre take-up by 2030; encourage the widespread adoption of standalone 5G across businesses; enact supply side reform to remove the remaining barriers to the deployment of fibre and accelerate the nationwide mobile infrastructure upgrades; review the delivery of the 'social tariff' to improve targeting and communication of the scheme to ensure it reaches those in most need; and consider pro-competition interventions to support sector expansion, leading to lower prices and improved service quality.

- Reassess spectrum fees to ensure money is being effectively investment in UK networks. The Government should request that Ofcom to reviews and reports on the efficacy of the Annual Licence Fees (ALFs) which mobile operators pay to use spectrum in the UK. A recent study published by the UK Spectrum Policy Forum has concluded that Ofcom setting ALFs to reflect full market value (as directed to by the Government) is no longer required to secure efficient use of the tradable spectrum. ALFs could be removed or the money (up to £360m p.a.) re-invested in the mobile industry, better supporting economic growth or improving network resilience. Frontier Economics have estimated that there is a multi-billion investment gap between what the levels of investment which the mobile sector can deliver and what is needed to deliver standalone 5G services nationwide. Enabling reinvestment of ALFs would be an important step towards closing this investment gap.

[5] Full Fibre Could Bring 1 Million UK People Back into Workforce – ISP Review 2021

Addressing skills gap

- With technology evolving rapidly and workplaces undergoing transformation, digital skills continue to be a concern, both for the current workforce and the future. Notably, there are gaps in digital skills across the wider UK population, and the data on digital skills is often inadequate and challenging to monitor effectively.

To bridge the digital skills gap and promote economic growth, the government should:

- Undertake a thorough review of the National Curriculum to ensure digital literacy and digital skills are cross-curricular and integrated throughout primary and secondary education.

- Integrate technology more deeply into education through funding teacher training and computing education; mandating computing qualifications for all students by age 16; incorporating digital ethics education and essential workplace skills into the curriculum.

- Revisit and enhance the Apprenticeship Levy to make it more flexible; enact an Employment Bill, and establish an online Digital Skills Toolkit to assist individuals and employers in identifying accredited courses to boost digital skills.

- Maintain a modern and inclusive approach to work. For instance, we can make flexible work requests available to all suitable employees from day one, enable digital right-to-work checks, and promote the establishment of local co-working hubs near high streets. This not only creates more community space for collaborative work but also enhances access to local businesses. Additionally, introducing a Single Enforcement Body responsible for ensuring clear and consistent obligations among 'gig economy' firms can bring greater job security. While these are long-term goals, sending strong signals to businesses and the wider market that reforms are coming could have a significant impact.

- Businesses already offer a wide variety of online and in-person training, from basic digital skills right through to courses on the latest technological developments. We need to find a way to bring these initiatives together and increase the confidence people have investing their time in training opportunities. We see the solution as accreditation of courses and training materials, many of which will be driven by industry. Combined with a digital skills platform this could provide a valuable tool for Government to help drive upskilling. techUK has extensive experience of accrediting courses through our company Tech Skills.

Digital inclusion

Central to the government's priority in the levelling up agenda is the concept of ensuring a more equitable distribution of opportunities throughout the UK, including enhancing well-being and social capital. Additionally, by addressing the barriers that people face in getting online, the UK could boost its economy by £21.9bn[1]. Research from the Centre for Economics and Business Research, and the Good Things Foundation estimates that every £1 invested in digital inclusion generates a society wide return of £15. The report also finds that an investment of £1.4 billion could reap economic benefits of £13.7 billion for UK plc.

To realise this vision, it is essential to set an ambitious national target for digital inclusion and to engage in partnerships with charities and local government to tackle the digital divide.

To grow fundamental digital skills among the population, the government should:

- Establish a National Inclusion target and implement a comprehensive, cross-departmental 5-10 year strategy focused on providing universal access, skills, motivation, and trust for internet use. This should be led by a newly created Cabinet Office Minister for Digital Inclusion and implemented through a dedicated Digital Inclusion Unit in the Department for Science, Innovation and Technology.

Digital Identity:

The development of digital identity technology provides a promising means for people to participate in the digital world with ease, protect themselves from growing online threats, such as fraud and significantly improve the productivity of business services and transactions. Helping this nascent market grow into a strong tech ecosystem should be a key priority for the coming years in order to help UK companies seize a stake in a global market predicted to value $40.44 billion by 2027.

To enable digital ID's to grow the economy and boost productivity the Government should:

- Accelerate the delivery of the Data Protection and Digital Information Bill, providing the legal framework for digital IDs and work with the sector to clarify the operation of the trust framework.

- Allow full interoperability between public and private sector digital IDs and change the law where needed to allow digital IDs to have parity with traditional IDs across all business and public service settings.

Public services

Digitising public services across the country

As well as supporting the individuals' interactions with the world, the pandemic demonstrated how digital technology could help us to reimagine the running of key public services, from justice to health and even Parliamentary debates. If deployed right digital public services can provide 24/7 access, reduce admin costs for Central and Local Government and automate processes increasing the speed of public services. However, ensuring these are deployed and taken-up across the country is a major challenge, with a lack of common standards, poor interoperability, legacy systems, limited secure-ID verification and a lack of skills holding back widespread deployment.

To embed digital technologies across public services and the country at large, and to deliver resilient and sustainable local public services, the government should:

- Establish a cross governmental taskforce, under the leadership of a Minister for Central Government Digital Transformation, to drive the removal of legacy IT across core public services by 2030.

- Assess which common challenges could be addressed through the use of emerging technologies, including adoption of large language models to reduce the number of Universal Credit claims that are rejected annually because they are not fully filled out upon submission.

- Allow full interoperability between public and private sector digital IDs and change the law where needed to allow digital IDs to have parity with traditional IDs inside the UK.

- Allocate further investment to train council leadership and upskill staff to make the most of their existing and new technology estate; and continue grant funding to ensure councils have the infrastructure and effective backups in place to detect and prevent emerging vulnerabilities.

The procurement challenge

The UK has a large procurement budget, with £379 billion spent across the UK on procurement in 2021/22. This budget is essential for delivering public services but can also act as a tool to support the UK's industrial base, particularly in defence and health technology. The UK has some world leading procurement approaches with the creation of G-Cloud, the Digital Marketplace buying platform, new leadership in procurement from the Central Digital and Data Office (CDDO) and sandboxes on financial services and age verification that have helped to open up opportunities for Government to access a wider range of suppliers, as well as creating a more open market for UK businesses including SMEs.

However, while the system has improved, there remain several barriers that mean both Government and UK industry are not getting the most out of public procurement investments.

- Address longstanding problems in the UK's public procurement regime, expanding the scope the UK's procurement regime to include enabling disciplines such as pre-market engagement, contract management, category management and supplier relationship management; and develop joint government and industry 'social value playbook' to help provide consistent guidelines for social value in procurement, which considers the nuances of the tech sector.

- Upskill Government buyers, a lack of experience and risk aversion among buyers in Government means that bids for contracts are often given to the 'safe bet', usually large incumbent firms meaning SMEs and start-ups can lose out and Government can miss opportunities to support innovation. Increasing buyer experience will also be vital to delivering on the potential of reforms in the Procurement Bill.

- Address the issue of legacy IT across Government, legacy IT remains a serious problem, costing the taxpayer £2.3 billion annually to maintain IT systems that are less capable and secure. Updating legacy IT and moving towards more cloud-based services would help cut cost, improve services and increase security.

NHS and social care digitisation

By 2030, one in five people in the UK will be aged 65 or over, placing a colossal burden on an already struggling care system[6]. Despite meaningful progress, waiting lists for elective care in England remain stubbornly high[7] and without major reform, waiting times across a vast range of services are likely to continue growing.

Poor health impacts the ability for an individual to participate in society, but also comes at a cost to economic growth. For example, data shows that health-related economic inactivity loses the UK over 130 million working days a year, costing the around £180 billion in GDP.[8] Therefore, digital transformation across health and social must be seen as a key to supporting overall health and wellbeing services.

To improve outcomes for patients and the health of the nation the government should:

- Allocate the £2.1 billion earmarked for digital health and social care to drive a comprehensive digital transformation, to enable seamless integration of technologies that not only reduce waiting times but also enhance staff efficiency and facilitate proactive, preventive treatments.

[6] Microsoft Word - FINAL MAY LLFS.docx (ageuk.org.uk)
[7] NHS backlog data analysis (bma.org.uk)
[8] Boosting workforce health can help the UK achieve economic growth ambitions, says CBI | CBI

- Promote digital innovation, and a shift towards long-term funding for the NHS and social care to ensure supplier stability and prioritise system transformation and technology-driven prevention funding.

- Empower citizens to be co-creators of their own health. For example, through implementing Rt Hon Patricia Hewitt's recommendation on the creation of Citizen Health Accounts.

Criminal justice digitisation:

- Tackling and preventing crime will always be one of the public's highest priorities. Crime is expected to be increasingly complex and transnational, thus encompassing a range of threats, from fraud and cybercrime to violence against women and girls. For example, over a 13-month period, there were 350,000 reports of cyber and fraud related crime in the UK, amounting to £4.1bn cost to the public between April 2022 and May 2023.[9] Therefore, it will be crucial to enable criminal justice system services to better leverage digital tools, and to make policing more resilient to cyber threats and data hacks.

To digitise the criminal justice system, the government should:

- Develop the much needed digitally enabled end-to-end Criminal Justice System. This will improve the digital experience for the different users of the Criminal Justice system: victims, witnesses, police officers, the CPS and through to barristers and judges. Doing so will be vital to improving public trust by not only boosting the criminal justice system's ability to confront crime but also by ensuring the police and other agencies are not being left behind by increasingly digitally capable criminal actors.

- Upgrade legacy technologies; improve interoperability and the integration of systems; and tackle other barriers including (but not limited to) funding and procurement processes, thus making market more accessible for SMEs.

- Allocate funding for training and professional development within Policing and across Criminal Justice agencies from entry-level roles right through to broader strategic and operational leadership in Policing, The Home Office, and Ministry of Justice. Additionally, rethink the Criminal Justice approach for attracting talent, such as leveraging suppliers' under-utilised capacity, or a national programme to encourage graduates from the sciences to join as "data apprentices."

[9] NFIB Dashboard (Public) (arcgis.com), https://colp.maps.arcgis.com/apps/dashboards/0334150e430449cf8ac917e347897d46