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Policy paper

Digital and Technologies Jobs Plan

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Ministerial foreword



Every young person should grow up knowing that the future has a place for them.

That is the promise behind this plan. Across the country, young people are full of talent, energy and ambition. They are growing up in a world being reshaped by advanced connectivity technologies, artificial intelligence, cyber security, engineering biology, quantum technologies and semiconductors. They should not just watch that future being built around them. They should help build it.

But for too many, the route in is too hard to see and too hard to reach. Alan Milburn's work on young people and employment has shown the scale of the challenge: nearly one million young people are not in education, employment or training.[footnote 1] Behind that number are lives put on hold, confidence lost and potential wasted. That is a moral challenge, and an economic one.

The government's Youth Strategy is built on a simple belief: young people are not a problem to be solved, but a powerful asset for our national future.[footnote 2] The Industrial Strategy is built on another: Britain's growth will depend on backing the sectors and places with the greatest potential. The Digital and Technologies Sector Plan, published in June 2025, backs six frontier technologies where the UK has world-leading strengths.[footnote 3] This plan brings those focuses together, setting out how we will build the workforce the Sector Plan depends on.

Digital and technology jobs will be central to Britain's future prosperity, security and public services. They are core to building our frontier technologies, and they are needed across the economy. Over the next decade, around 800,000 digital and technology roles are projected to need filling in sectors backed by the Industrial Strategy. Together with industry, our ambition is to open around 200,000 genuine entry-level jobs, including apprenticeships, over the same period. That would make these jobs as open to newcomers as cyber security was in 2022, when a quarter of its job adverts were open to people with less than a year's experience. To get there, employers in the private and public sectors need to offer many more opportunities – such as apprenticeships, work experience and placements – that give young people a real way in.

Demand for the priority occupations covered by Skills England's analysis is projected to rise. We want more people and places to have a route into these opportunities. Government's role is to make it simpler and less risky for employers to offer a first opportunity, and to help those opportunities reach every part of the country.

We are not starting from scratch. In partnership, government and industry, at both national and local levels, have developed the pathways that we now need to build on. This includes the TechFirst programme, developed with employers and led through impactful regional partnerships, with up to £250 million supporting delivery across the UK. This sits alongside an apprenticeship landscape built on standards shaped directly by employers.[footnote 4] And now we are doubling down on our efforts to ensure that young people have the practical skills and experience that employers require through the expanded digital T Levels and the Prime Minister's ambition to create technical pathways for students starting at age 14.

Our next step is to bring these offers together: simplifying the routes available, shaping them around local priorities and giving fair access to opportunities across the UK. That is why this plan will act as a basis for a Skills Deal across all employers of digital and tech talent. It sets out a single offer across all pathways supported by the Department for Digital, Culture, Media and Sport, the Department for Education and the Department for Work and Pensions. It has been developed with the Department for Business, Innovation, Science and Trade, which is responsible for the Digital and Technologies Sector Plan. New social value rules in public procurement will also give more weight to suppliers that create local jobs, apprenticeships and work placements. We will work with Mayoral Strategic Authorities and local authorities in England, and explore with the devolved governments how the offer can align with their priorities, to help local people connect with digital and technology employers.

This matters because opportunity is still not shared fairly. Women and girls, young people from lower socioeconomic backgrounds, disabled people and those without family connections into the sector face higher barriers and are still too often locked out of the jobs of the future.[footnote 5] A country that wastes talent cannot meet its ambitions.

Success will mean young people in every region and nation, whatever their background, getting a real first step into a technology career, and employers finding the skilled people they need to grow.

Young people are ready to play their part in Britain's digital future. Government, employers and the skills system must now play theirs.

Vicky Foxcroft

Parliamentary Under-Secretary of State (Minister for Youth, Gambling, Digital Inclusion, Civil Society and Loneliness)

The digital opportunity

Our mission: get young people into the digital and tech workplace

- Everyone should be able to build the digital and technology skills they need to enter, stay and progress in good work. The biggest challenge today is at the point of entry, especially for young people, so this plan puts opening that door first.
- Digital and technology skills open opportunities both in frontier technologies themselves and across the wider economy. We need specialists who can advance fields such as quantum and semiconductor design, alongside people who can apply AI and cyber security in businesses and public services across every region and nation of the UK.
- These are good jobs: well paid, intellectually demanding, and found in every part of the country.[footnote 6]
- This plan is the start of a process, not the end. It sets a clear national direction for the Digital and Technologies sector, grounded in what employers need, but

delivery must be shaped with those who understand local economies and labour markets best. In England, as more control of the skills system is devolved to local leaders, it provides a common framework that Mayoral Strategic Authorities and local authorities can draw on alongside Local Skills Improvement Plans. In Scotland, Wales and Northern Ireland, where skills are devolved, we will work with each government on how the plan can support its own priorities.

Workforce demand and our ambition

800,000
digital and tech roles to be filled over 10 years.

200,000
entry-level jobs over 10 years.

20,000
entry-level jobs a year on average.

The start of Annex A explains how these figures are calculated.

If these roles go unfilled, there are two national costs.

- The first cost is growth. Developing the digital and technology skills needed in priority occupations will support the UK's ambitions in sectors backed by the Industrial Strategy. This plan aims to help employers build the workforce needed to adopt and apply new technologies.
- National security is the second cost. A strong and diverse domestic supply of

talent shapes our ability to build cyber defences, secure critical networks, address the risks of continued AI development, and innovate across the technologies underpinning critical national infrastructure.[footnote 7]

A four-part plan to reach this ambition

Part	Commitment and ambition	Ways employers can take part
1. Inspire One million young people (Part 1)	We aim to reach one million young people with meaningful AI and technology learning through TechFirst by 2028, a year earlier than planned, alongside wider reforms to the curriculum and technical education, prioritising the most disadvantaged schools in every English region and each nation of the UK. This complements the Prime Minister's ambition to build technical education pathways from age 14.[footnote 8]	Employers can work with TechFirst youth delivery partners as arrangements are agreed, offering expert talks, curriculum-linked projects, mentoring and workplace visits.
2. Open Entry-level opportunities at scale (Part 2)	We will simplify the ask of employers by bringing together opportunities across TechFirst, work experience, T Level industry placements, apprenticeships, undergraduate routes and entry-level jobs into a single Skills Deal. Future Skills Needs Assessments and other published research will inform our understanding of workforce demand, priority roles and the effects of AI.	Employers make one specific, measurable commitment over a stated period, choosing the routes that suit their business, such as work experience, T Level industry placements, apprenticeships or entry-level jobs for young people and career changers. It should be proportionate to their size and capacity and form part of their workforce planning and social value commitments. They give a short update each year so that businesses playing their part can be

		recognised and progress can be tracked.
3. Deliver Local priorities, local people (Part 3)	We will help turn commitments into real opportunities by preparing young people for the workplace, matching them with suitable employers, and helping firms design placements with clear tasks, supervision and support. This will be led locally, working with Mayoral Strategic Authorities, devolved governments and local partners, and coordinated nationally through TechFirst, with dedicated support for small and medium-sized enterprises (SMEs).	Employers work with local partners to shape and host high-quality opportunities: setting out what they can offer, providing meaningful work and supervision, and helping young people understand what is expected in the workplace.
4. Sustain Digital and AI skills across the workforce (Part 4)	We will raise digital and AI capability across the workforce, using AI Skills Boost to help up to 10 million workers build practical AI skills by 2030,[footnote 9] strengthen essential digital skills through the refreshed Essential Digital Skills Framework and Standards, and support digital inclusion efforts to ensure more people can participate in, adapt to and benefit from technological change.	Employers invest in their current workforce, so that staff have access to the digital and AI training they need to benefit fully from these technologies.

Commitments within this plan

20,000

entry-level jobs a year- our commitment with employers, through the Skills Deal.

Over

10,000

work experience and placement opportunities already committed by TechFirst Partners, including Microsoft, Cisco, IBM, Cognizant, Arm, Kainos, QinetiQ and AtkinsRéalis

Industry commitments

- Tech She Can and Accenture: an AI Roadshow aiming to reach more than 10,000 young people across eight areas of the UK in 2027
- Aspiration Digital: free careers events in seven UK locations, reaching around 4,000 young people in 2026/27
- BCS: free professional recognition from April 2027 for every learner who completes a digital T Level, V Level or apprenticeship

20%

social value weighting for contracts worth £5 million or more social value in public procurement

These are the commitments industry has made at publication. Employers will

make further commitments through the Skills Deal.

Our mission

The UK is recognised for its world-class universities, leading research and innovation ecosystem, and technical talent that sits within this.[footnote 10] This is based on a long tradition of invention, from Ada Lovelace's pioneering work on algorithms to Tim Berners-Lee's creation of the World Wide Web. We combine world-class universities with national institutions that anchor deep technical expertise, including GCHQ and the National Physical Laboratory. Global companies continue to invest here, with international investors citing the UK's pool of skilled talent as a key draw.[footnote 11] We also have successful home-grown firms such as Sage, Darktrace and Sophos, as well as UK-rooted global leaders including Arm, GSK and Quantinuum. The challenge is not whether the UK can generate excellence, but whether it can develop this talent at sufficient scale and open participation more widely. Employers across the Digital and Technologies sector and the wider economy need a more diverse workforce that can continue learning as technologies advance.

Between 2025 and 2035, around 800,000 digital and technology roles are projected to need filling in sectors backed by the Industrial Strategy.[footnote 12] This estimate is made up of around 550,000 new roles in the 30 Digital and Technologies priority occupations across the Industrial Strategy sectors that have prioritised them, plus around 250,000 roles in the Digital and Technologies sector that will need replacing as people leave or retire. We do not have estimates for the people who will need replacing in these occupations outside of the Digital and Technologies sector.

Yet many young people who have taken a computing course, finished a degree or completed an apprenticeship are finding it increasingly hard to get in. In cyber security, as an example of a frontier technology, the share of job adverts open to candidates with less than a year of experience fell from 25% in 2022 to 16% in 2025, while 64% of these adverts asked for two to six years in 2025.[footnote 13] Unemployment among cyber graduates rose to 11% in the 2022/23 academic year, against 6% across all graduates.[footnote 14] The issue is not that entry-level work as a whole is disappearing. It is that employer expectations are changing faster than the routes that help new entrants gain experience and demonstrate what they can do – partly because, in a more competitive labour market, employers can favour experienced candidates.[footnote 15]

This plan is about making the route into digital and technology work clearer, broader and better matched to what employers now need. Its mission is deliberately focused: to get young people into the digital and tech workplace. It is built around four parts: Inspire, Open, Deliver and Sustain. The plan has been shaped through engagement with employers and industry bodies, including the Digital Skills Council, BCS and techUK.

This does not mean that people already in work matter less, or that career changers and returners are an afterthought. These groups are important to the sector's future. However, the biggest current challenge is at the point of entry, where young people face the barriers identified in Alan Milburn's interim report on young people and work. [footnote 16] The plan therefore gives this transition particular focus while retaining support for wider workforce development.

The roles are being created, the supply of talent exists, but the two are not always meeting. Through our engagement, employers have been clear that while the volume of supply is strong, candidates often lack the workplace and practical skills, experience and confidence they need.[footnote 17] New entrants need realistic ways to build and demonstrate them.

Digital and technology: good jobs in every part of the country

The Industrial Strategy highlighted eight sectors with the highest potential and where the UK can grow fastest.[footnote 18] Digital and Technologies is one of them, focusing on six frontier technologies. The Digital and Technologies Sector Plan concentrates on these technologies that have the greatest potential to grow the economy and boost the UK's security and strategic advantage: advanced connectivity technologies, artificial intelligence, cyber security, engineering biology, quantum technologies and semiconductors. The UK has made a deliberate choice to back these technologies where leadership can translate into higher-value jobs, stronger national resilience and export potential.

These technologies already support a substantial workforce, and the skills they need are in demand well beyond the sector. Around 637,000 people worked for companies in these frontier technologies in 2024, within a wider Digital and Technologies sector employing 1.33 million in that year.[footnote 19] Jobs requiring frontier technology skills also exist across the economy, creating opportunities for people with digital and technology skills. Our priority is to keep pace with job growth

in the roles that matter most for growth and national security, many of which employers already find hard to fill. At the same time, the rest of the workforce needs the digital and AI skills to adopt and use these technologies effectively.

The Digital and Technologies sector is a high-productivity sector,[footnote 20] with demand across the sector's priority occupations projected to rise by 27% between 2025 and 2035.[footnote 21] Alongside that growth, there is a continuing need to replace people who retire or move on.

Most importantly, this economic opportunity creates good jobs that are well paid, intellectually demanding and developmental, requiring continuous skill development over the entire course of a career to keep pace with fast-evolving technologies. If we get this opportunity right, they will offer clear and scalable progression from entry level through to senior applied roles.

Building a skilled digital and technology workforce is not solely an advantage to the technology sector; it is a foundation for the whole economy. Of the 30 priority occupations identified for the Digital and Technologies sector, 25 are also needed across other Industrial Strategy sectors. Many are already under strong pressure: around two-thirds (68%) of the priority occupations are in critical or elevated demand across the UK economy, including a quarter in critical demand.[footnote 22] Someone who trains as a software developer, a data engineer or a security analyst is qualified for work in defence, life sciences, clean energy, advanced manufacturing and the creative industries as well.

Not solely a supply issue

The challenge is not simply one of supply. Employers' expectations of experience create a barrier for new entrants, alongside shortages of trained people in some specialist roles. Recent government analysis with LinkedIn describes a contraction in entry-level hiring.[footnote 23] In some specialist roles, such as chip design and PhD-level quantum roles, there is also a genuine shortage of trained people, as Annex A sets out.[footnote 24]

That contraction means that even where the supply of qualified candidates is growing, the transition from education into sustained employment is not keeping pace.[footnote 25] This is therefore, above all, a demand-side plan: its central aim is for employers to open and sustain routes into the sector, not simply to increase the supply of trained people.

A further constraint is how the system looks from an employer's side. In our engagement, employers told us that the same firm is approached separately by several schemes, each with its own process and paperwork, and has to divide a limited capacity between them.[footnote 26] Smaller employers, facing the cost of engaging with several programmes at once, often step back altogether. Intermediaries, who arrange placements on behalf of employers across a city region, report the same pressure, with requests arriving from multiple sectors at once.

T Level co-location: making industry placements easier to offer
T Level co-location models provide a coordinated approach to industry placements, bringing employers, education providers and industry partners together to make placements easier to access, manage and deliver. Funded by the Gatsby Foundation and delivered by Sunderland Software City, Manchester Digital, Lancashire County Council and Tech Cornwall, the model acts as a central point of coordination between colleges and employers. It helps identify placement opportunities, matches learners to businesses, coordinates engagement and supports the placement process, reducing the administrative burden, time and resource required from individual employers. [footnote 27]

Engagement with employers has highlighted four types of barrier relevant to the six frontier technologies:

- Rising experience thresholds: employers increasingly look for experience that new entrants cannot easily gain.
- A gap between education and applied skills: employers most need practitioners who can use a technology in real-world settings, and courses do not always match that need.
- Low awareness of some careers, particularly in advanced connectivity technologies, quantum and semiconductors.[footnote 28]
- Replacement demand when people retire or leave, alongside demand for additional skills.

Growth should be felt by everyone

Talent exists in every postcode: opportunity and growth should too. This is not happening consistently. The UK is relying on too narrow a base of people in too few parts of the country to build the technologies, businesses and discoveries that will shape future growth.[footnote 29] This is economically inefficient and unfair. It also makes shortages harder to fill: a sector that recruits from only part of the population is drawing on a smaller pool of potential workers.

Men outnumber women nearly four to one among students starting computing degrees,[footnote 30] and women hold between 19% and 22% of the roles most relevant to each of the six frontier technologies.[footnote 31] Black applicants to entry-level professional roles, not specifically technology roles, at 17 large UK employers were 45% less likely to receive an offer than white applicants, despite being well represented among applicants.[footnote 32] Only around 9% of technology employees at employers surveyed by the Tech Talent Charter come from lower socioeconomic backgrounds.[footnote 33] And the sector struggles to keep the women it has already trained: an estimated 40,000 to 60,000 women leave their tech roles each year, either leaving the industry or moving to a new tech employer.[footnote 34]

These gaps reflect how people are recruited and promoted, not only who applies.[footnote 35]

Part 1: Inspire- Reaching one million young people

TechFirst learning and outreach (existing support)

Many people working in technology can name the moment they became interested. For too many young people that moment never arrives, or arrives too late to act on. Our focus is on making sure young people can engage with technology early enough to inform their choices, and that this interest is supported by clear and accessible routes into the sector.

Young people need to be inspired earlier, and supported for longer. Evidence from industry and mission-led organisations shows that many young people, particularly from under-represented groups and lower socioeconomic backgrounds, have limited awareness of what these careers actually involve.[footnote 36] Meeting

employers, having a mentor, seeing someone like themselves doing the job and seeing technology being used on real problems can change how young people see these careers.[footnote 37] Inspiration is not simply about awareness. Helping young people see a future they can imagine themselves in can build motivation, confidence and resilience, particularly for those who may have fewer existing connections to the sector. Sustained exposure to employers and relatable role models can therefore help young people not only consider digital and technology careers, but persist in pursuing them.

TechFirst is the government's flagship technology skills programme, backed by up to £250 million, and a key vehicle for inspiring and developing the interest of young people seeking a digital and technology career in the sector and beyond. It builds on the CyberFirst programme, previously delivered by the National Cyber Security Centre.[footnote 38] CyberFirst demonstrated the value of sustained collaboration between government, industry and regional partners. Over almost a decade, CyberFirst-recognised schools achieved growth in GCSE Computer Science participation at twice the rate of non-CyberFirst schools. TechFirst will build on this experience and extend its reach across secondary schools in all nine English regions and the devolved nations, as delivery is agreed with each.

Through TechFirst we aim to reach one million young people across the UK with meaningful AI and technology learning by 2028, a year earlier than planned, weighted towards the schools furthest from opportunity. The youth strand alone is backed by £24 million over three years, delivered through regional partners across the UK.[footnote 39]

Tech She Can and Accenture: taking AI on the road

Industry is helping young people see what AI could mean for their own futures. From February to July 2027, Tech She Can and Accenture are teaming up to take AI on the road. Their AI Roadshow will aim to reach more than 10,000 young people aged 14 to 24 across eight areas of the UK: London, the North West, the West Midlands, Bristol, Edinburgh, Glasgow, Leeds and Newcastle. It will focus on young people from disadvantaged backgrounds and those with the fewest routes into technology, including those who are not in education, employment or training, or at risk of becoming so. Four strands will build AI skills, employability and confidence: a Generative AI Roadshow in schools, a Virtual Work Experience Tech Week for students, a 'What does AI mean for me?' roadshow for 16 to 24-year-olds, including jobseekers, and flagship regional careers events. It builds on Tech She Can's classroom programmes, which have already reached more

than 380,000 students in the UK.

Delivery in every region and nation

In England, TechFirst youth activity is delivered by regional partners funded to work with schools and colleges in their area and connect them with local employers. In Scotland, Wales and Northern Ireland, delivery will work through partners as arrangements are agreed with each government. A central requirement is to reach students and schools that would not otherwise have access to these opportunities. As part of the ambition to reach one million young people, the programme will prioritise meaningful and repeated learning for 400,000 students in the most disadvantaged schools across the country.[footnote 40]

The TechFirst programme looks to embed regionally led, industry-supported pathway creation activities for students from age 11 to build their awareness and skills relating to the digital and technology workforce. This sits alongside the efforts of the Department for Education (DfE) and provides a comprehensive offer to schools and students – setting up the foundations of the practical pathways needed for young people. This package of activity includes:

- Hands-on technology experiences. Practical activity in and beyond schools: classroom sessions, employer-led workshops, outreach days, regional festivals and larger challenge events where young people can try AI, cyber security, robotics, data and digital creativity for themselves.
- Large-scale regional events. Delivery partners will bring schools together with employers, universities and local tech communities through regional events that make technology careers visible and exciting.
- School and college recognition. Schools will be able to apply for TechFirst School recognition awards at Bronze, Silver and Gold levels.[footnote 41] These awards will publicly recognise their commitment to digital and technology learning and pathway creation.
- A national learning platform. Ada Computer Science, delivered by the Raspberry Pi Foundation, gives teachers and students free access to inspirational and educational content across the frontier technologies.[footnote 42]
- Ambassadors and role models. Working through the national STEM Ambassador network, industry experts are volunteering their time and energy to go into schools

and colleges and help bring the possibilities of a digital and technology career to life for the students.

- National competitions. The TechFirst Girls' Competition – delivered by IBM and building on the annual CyberFirst Girls' Competition – and the annual UK Bebras Challenge – organised by the Raspberry Pi Foundation – give students a chance to engage in a way that does not depend on their school already being well resourced.[footnote 43] These are both clear examples of what industry backing makes possible.

Computing at school and AI confidence

Young people's routes into technology careers depend on confident, well-supported teachers. BCS, The Chartered Institute for IT, supports the education workforce across the UK through Computing at School (CAS), with peer-led professional learning, curriculum resources and specialist communities. BCS reports that CAS-supported schools enter 18% more Computing GCSE candidates, who achieve 0.2 of a grade higher on average.[footnote 44] BCS also offers AI Confidence, role-specific professional learning and resources that help all school staff, including non-specialists, use AI safely and effectively. Developed with teachers in UK schools, both are free at the point of use, made possible by industry backing.

Girls outperform boys in GCSE Computer Science, yet fewer than one in five A Level Computer Science entrants in 2026 were girls: the gender gap opens long before university.[footnote 45] TechFirst activity is weighted towards the schools furthest from opportunity and towards girls and students from disadvantaged backgrounds, because under-representation starts early. The TechFirst Girls' Competition exists for that reason, and regional delivery partners are expected to report participation broken down by gender, and by free school meal eligibility and other measures of disadvantage.

England: school and technical education reforms

A curriculum that inspires. Interest needs to be matched by an engaging curriculum. Government is rebalancing the computing curriculum to better equip pupils with the digital and AI literacy they need for their future lives and work, and replacing the computer science GCSE with a broader computing GCSE which supports

progression to a wider range of further study options and careers, while retaining computer science at its heart. This follows the Curriculum and Assessment Review and sits alongside DfE's wider reforms.[footnote 46]

Experience AI: AI literacy in schools

Experience AI is a free AI literacy programme for schools, co-developed by the Raspberry Pi Foundation and Google DeepMind. It gives teachers lesson plans, activities and resources to help young people aged 8 to 16 understand how AI systems and machine learning work, including their benefits and risks. In the UK, the Foundation has partnered with Parent Zone to deliver free Experience AI training for educators online and in schools. Since 2024, Parent Zone has trained 1,147 UK educators, reaching an estimated 88,000 young people. The resources have been downloaded more than 100,000 times in the UK. Worldwide, more than 61,000 educators have been trained, and the resources have been downloaded nearly 1.2 million times across 196 countries.[footnote 47] In the Foundation's evaluation, 89% of students said they better understood what AI and machine learning are, and 87% of educators said the training increased their confidence in teaching AI.[footnote 48]

Technical education pathways from the age of 14. The government is developing new technical education pathways from age 14. The pathways will combine a strong academic core with high-quality vocational qualifications, careers guidance and relevant work experience. We will work with Mayoral Strategic Authorities and local leaders to design locally tailored, vocationally focused pathways for each region for students from age 14. Mayoral Strategic Authorities can bring together employers, training providers, schools and colleges to make technical pathways a success. Greater Manchester has shown what this can look like through the digital pathway in the Greater Manchester Baccalaureate (MBacc), and we want local areas that wish to follow that model to be able to do so.[footnote 49]

Alongside this sits the roll-out of two weeks' worth of work experience during secondary school[footnote 50] – which, for this sector, only works if employers offer the placements.

Technical and vocational routes at 16. The government is introducing V Levels, a new Level 3 vocational pathway that will sit alongside A Levels and T Levels and replace many existing vocational qualifications over time. Digital Systems and Data is among the first V Level subjects, with teaching due to begin from September

2027, giving the technology sector an early opportunity to shape practical, employer-relevant content.[footnote 51]

Government is also introducing two new Level 2 pathways for 16 to 19-year-olds to support progression into further study at Level 3, or skilled employment at Level 2. A Foundation Certificate in Digital Systems and Data will be available for first teaching from September 2027, and an Occupational Certificate in Digital Administration from September 2028, subject to final content development, for students who know the kind of work they want to move into.[footnote 52]

There are 20 T Levels now running, with digital T Levels already offering a structured route into applied technical roles.[footnote 53] Each digital T Level includes a mandatory 45-day industry placement, which is both its greatest strength and its principal constraint: the route only scales as fast as employers offer placements.

Further and higher education support (existing programmes)

It is key for young people to have access to high-quality learning and practical training provision through both further and higher education routes. This includes the government investing:

£295 million to establish 29 new Technical Excellence Colleges in key priority sectors, which will serve over 100,000 students and deepen employer partnerships. Five are dedicated to digital and technology:

- Capital City College Group in London
- Birmingham Metropolitan College in the West Midlands
- Milton Keynes College in the South East
- Gloucestershire College in the South West
- LTE Group in the North West[footnote 54]

Digital and Technologies Technical Excellence Colleges will help build the skilled workforce the UK's growing digital economy needs by expanding high-quality technical training aligned to priority digital occupations and shaped with employers. They will strengthen local and regional skills pipelines by enhancing specialist provision, developing curricula that reflect current and future digital skills needs, supporting teachers through targeted professional development, and creating

clearer routes into digital careers, higher-level study, upskilling and retraining. Through a hub-and-spoke model, they will share expertise, facilities and good practice across provider networks. Each college works with local employers to help ensure its training and facilities reflect industry needs, giving learners access to industry-standard facilities and hands-on experience in settings that reflect the workplace, and giving employers a clear route to help shape the skills and training their future workforce receives.

Further education workforce. A national recruitment campaign encourages more people, including digital professionals, to consider teaching in further education. Eligible early-career further education teachers in priority subjects, including those linked to digital and technology, can receive retention payments of up to £6,000 after tax. The Taking Teaching Further programme helps further education providers recruit industry professionals into teaching and supports their training. From September 2026, the Technical and Vocational Professional Development programme, delivered by the Association of Colleges over three years, will help schools and colleges deliver technical and vocational qualifications to a high and consistent standard.[footnote 55]

The government is also investing £96.8 million in TechFirst scholarships, giving students funding, training alongside their course and structured work experience – summer placements with industry partners and the public sector, or applied industry projects where a formal placement is not possible.[footnote 56] These scholarships support higher education routes into the frontier technologies in the Digital and Technologies sector, combining study with practical experience.

Semiconductor bursaries include the Semiconductor Talent Award, which supported over 300 students in academic year 2025/26 and adds a further 400 in 2026/27 before merging with the TechFirst scholarship scheme from 2027/28, when 500 students will receive semiconductor-specific support.[footnote 57]

The government is also investing £7.8 million to help universities develop new practical AI courses, and graduate traineeships with local organisations.[footnote 58] This is key to making sure recent graduates are best supported with workplace experience development, while also helping local employers and SMEs to have access to individuals that can help them to adopt AI across their organisations.

How industry takes part

Industry already does a great deal here, and this plan builds on it. Employers,

professional bodies and charities run proven programmes in classrooms, at competitions and as mentors, showing young people what a technology career involves – the examples in this plan are only part of the picture. TechFirst brings this effort together under one banner. Members choose how to get involved – hosting placements, volunteering at events or in schools, sponsoring local activity, or championing the programme in their own sector. Employers can contact the TechFirst team through the TechFirst website to find out how to take part, or email TechFirst@dsit.gov.uk.

Aspiration Digital: industry-led inspiration at scale
Human First Collective's Aspiration Digital programme brings young people together with employers, role models and universities through free, large-scale regional digital careers events. In 2026/27, the programme will deliver events across seven UK locations, reaching around 4,000 young people, with a particular focus on social mobility and those furthest from opportunity. Students experience interactive sessions, employer conversations and real-world insight into digital careers, designed to build awareness, confidence and aspiration and help young people see a future for themselves in the sector.

Part 2: Open- Entry-level opportunities at scale

Across the six frontier technologies, one of the most persistent weaknesses is the transition from training into work. Entry-level hiring is contracting, experience requirements are rising, and too many qualified people cannot get in. The causes are not yet clear. Recent government analysis with LinkedIn found that entry-level hiring has fallen broadly in line with the wider labour market since the post-pandemic hiring surge faded, with employers likely to favour experienced candidates where applicants are plentiful. Some of the largest falls are in roles where AI capabilities have grown, such as software engineering, data analysis and data engineering, but this is not yet evidence that AI is the cause.[footnote 59] Employers are increasingly asking for several years of experience for roles that were once open to new entrants, moving away from the expectation that new entrants would learn on the job. Unless young people have the chance to build that experience, shortages risk getting worse.[footnote 60]

For the purposes of this document, ‘entry level’ describes the relevant experience a role requires, not the age or previous employment of the person who fills it. Young people remain this plan’s priority, but career changers, returners and people moving into their first technology role within their own organisation can all take entry-level roles; training for people who stay in the same job is not new entry.

AI is beginning to change entry-level work across the Digital and Technologies sector and the wider economy, alongside broader labour market pressures. As adoption grows, employers will need to redesign entry-level roles rather than simply reduce them. Early-career jobs should enable people to work alongside AI tools, gain practical experience and develop the judgement, oversight and application skills that remain distinctly human. Entry-level roles are also how the sector develops its future senior engineers and specialists: if they are cut rather than redesigned, the shortages of experienced staff that employers report today are likely to grow. Government is already acting: the AI Economics Institute is building the evidence on how AI is changing the labour market, the Early Careers Jobs Alliance is looking at how entry-level roles can be redesigned rather than lost, and AI Skills Boost aims to help up to 10 million workers build practical AI skills by 2030.

The Early Careers Jobs Alliance

Backed by £20 million, the Early Careers Jobs Alliance is bringing together government, employers, trade unions and young people to map how entry-level work is changing in the sector as AI is adopted and recommend how businesses can redesign roles while maintaining entry-level pathways. The Alliance is due to publish an initial report, setting out early evidence and examples of best practice.[footnote 61]

Smaller share of core cyber vacancies open to new entrants

Share of core UK cyber job adverts open to applicants with less than one year of relevant experience.

Year	Share (%)
2022	25%
2025	16%

Source: DCMS and DSIT, Cyber Security Skills in the UK Labour Market (2026), section 4.5.

What government commits to doing to support entry-level opportunities

Simplify the ask: the Digital and Tech Skills Deal
In our engagement, employers told us the current ask is too complicated. Each scheme comes with its own process, paperwork and point of contact, so firms offer cautiously to each rather than committing fully to any.

We are bringing those asks together into one transaction – a deal between employers and government. It is a single ask for one joined-up pathway of interventions. It does not merge those programmes or their funding, and signing the Deal is not a condition of using any of them. The Digital and Tech Skills Deal sets out a single offer covering the routes below, so that an employer makes one commitment rather than several, and signs up once through TechFirst. Organisations can also join the TechFirst Community without signing the Deal.

Route	What it involves	Ways employers can take part
Secondary education work experience	Work experience during secondary school, as part of the roll-out of two weeks' worth of work experience for every pupil[footnote 62]	Placements, particularly in areas with few local technology employers
T Level industry placements	A mandatory 45-day industry placement built into each digital T Level[footnote 63]	Placement capacity; this route scales only as fast as employers offer it
Foundation apprenticeships	A Level 2 route in for young people aged 16 to 21, or up to 24 in specified groups, with up to £2,000 of additional funding for employers[footnote 64]	Taking on foundation apprentices, particularly firms new to apprenticeships
Apprenticeships at Levels 3 to 6	Paid jobs with training, from technician to degree level. From August 2026,	Taking on apprentices, especially young

	apprenticeship training for eligible under-25s is fully funded for all employers[footnote 65]	people, in priority roles, at the level each job needs
TechFirst undergraduate placements	Eight weeks of paid summer experience, with at least £2,000 of support for participation in placements provided through the scholarship	Host summer placements for TechFirst undergraduates
Jobs Guarantee	The government will cover 100% of employment costs for up to 25 hours a week at the relevant minimum wage[footnote 66]	Entry-level roles for young people furthest from the labour market

The new V Levels and the Level 2 Foundation and Occupational Certificates are set out in Part 1.

Evidence and research to inform workforce planning

Skills England produces the annual Sector Skills Needs Assessment, and the 2026 Skills Needs Assessment for the Digital and Technologies sector is the guiding document for this plan: the 800,000 figure is derived from the tables that accompany it.[footnote 67] We will review the evidence every year, drawing on future Skills Needs Assessments and other published research, to better understand where demand is greatest and, where the data allow, where the gender and social mobility gaps are widest.

There remain open questions and considerable uncertainty. An assumption is made that employment for Digital and Technologies priority occupations grows at the same average rate between 2025 and 2035 as that observed in the closely related digital sector between 2011 and 2024; an alternative scenario of 11% growth assumes employment for Digital and Technologies priority occupations grows at the same rate as the wider economy. Neither scenario models the effect of AI.[footnote 68] Government has established the AI Economics Institute to improve our understanding of how AI is changing the labour market, and our annual review of progress will reflect what it finds.[footnote 69]

Better evidence on routes into work

To improve this evidence over time, we will scope with the Department for Education, Skills England and other partners how existing data could be used to understand routes from education into employment: which courses lead to

good Digital and Technologies jobs. The devolved governments will be invited to take part if they wish. This would fill gaps in the evidence on progression and help learners, colleges, employers and government make better-informed decisions.

Existing support to reduce the risk and cost of hiring

The government is investing an additional £2.5 billion by 2029 into the Youth Guarantee and the Growth and Skills Levy. This will support almost one million young people and unlock up to 500,000 jobs, training and learning opportunities.[footnote 70] The Youth Guarantee itself covers 16 to 24-year-olds. It includes the Youth Jobs Grant, worth £3,000 to an employer who hires a young person aged 18 to 24 who has been on Universal Credit and looking for work for six months or more; Sector-based Work Academy Programme placements, which combine short pre-employment training with a work placement and a guaranteed interview; and a national network of more than 360 Youth Hubs.[footnote 71] These are all open to technology employers, and we want many more technology employers to use them.

From August 2026, apprenticeship training in England for eligible under-25s is fully funded for all employers. Employers can receive up to £2,000 for each foundation apprentice, and non-levy employers (typically SMEs) can receive a hiring payment of up to £2,000 for new apprentices aged 16 to 24 starting from 1 October 2026.[footnote 72] Employers also pay no employer National Insurance contributions for apprentices under 25, up to the apprentice upper secondary threshold.[footnote 73]

Free recruitment and matching support. Through the Jobs and Careers Service, Sector-based Work Academy Programmes and Connect to Work, employers can access pre-screened candidates, tailored recruitment campaigns and, for larger firms, a dedicated account manager, at no cost.[footnote 74]

Access to talent developed with government support. TechFirst scholarships and placements and the Technical Excellence Colleges give employers access to work-ready people and a route to help shape the skills and training those institutions provide.

TechFirst AI apprenticeship pathway

TechFirst has funded a proof of concept in North West England to support young people at risk of leaving school without moving into work or further education. Delivered with IN4 Group, TechFirst's regional delivery partner, the programme gives participants a short, intensive grounding in AI fundamentals and core workplace skills, before they progress to a Level 3

AI-augmented digital apprenticeship with a local employer. By linking that training directly to an apprenticeship, this approach gives young people a clear route into skilled work from the age of 16.

As of October 2026, the pilot reports that it has secured Level 3 apprenticeship places, starting from September 2026, with employers including JD Sports and H J Heinz.[footnote 75]

Existing support for lifelong learning and upskilling

The role of Skills Bootcamps. Skills Bootcamps are courses of up to 16 weeks, delivered by Mayoral Strategic Authorities and other local government, that help adults retrain into a specific role or progress in their current work. From 2026/27, in non-devolved areas, 50% of Skills Bootcamps funding is ringfenced for the Industrial Strategy sectors, including the Digital and Technologies sector, and for health and construction.[footnote 76]

The impact of the Lifelong Learning Entitlement. From the end of October 2026, people will be able to apply to the Lifelong Learning Entitlement for funding for eligible courses and modules starting from January 2027, supporting full Level 4 to 6 study and selected modular provision across a person's working life. This should make it easier for people to retrain into technology roles in stages, rather than having to commit immediately to a full degree.[footnote 77]

The option of Higher Technical Qualifications. Higher Technical Qualifications at Levels 4 and 5, of which more than 300 are now approved, fill the gap between Level 3 and a degree and prepare people for technician and developer roles.[footnote 78]

Procurement and social value

Government is a major buyer of digital and technology services, and public procurement is a key lever within the Industrial Strategy to stimulate high-quality employment, tackle economic inactivity, and rebuild the domestic skills pipeline.[footnote 79] In August 2026, the government announced changes to the Social Value guidance in public sector procurement to ensure that every pound of taxpayer money delivers positive, tangible change for local communities. Under the changes, the score for bringing benefits to the local community will double from 10% to 20% for contracts worth £5 million or more.[footnote 80] To ensure bidding promises become contractual deliverables, government departments will allocate key performance indicators to major contracts and make annual progress reports publicly available, ensuring the delivery of good jobs and skills in digital and technology services. Suppliers can deliver on these commitments in many ways, for

example by offering apprenticeships, T Level industry placements and work experience, including through existing programmes such as TechFirst. Social value commitments can also help widen access to digital and technology careers for groups that are under-represented in the sector.

The ask of employers across all sectors

Every employer, public or private, should make an ambitious commitment by 2030 to work experience opportunities, T Level industry placements, apprenticeships or entry-level jobs, choosing the routes that suit their business. Commitments should match what each organisation can realistically offer and fit its workforce plans. Each employer should then give a short public update every year. Young people are the priority for apprenticeship commitments, but apprenticeships remain open to people of any age, including career changers and staff moving into new roles. The final Milburn Review will further highlight the importance of government and employers working together to create clear routes into work and learning for young people. Through these commitments, the Digital and Technologies sector will help turn that ambition into practical opportunities while building its future workforce.

Public sector participation
The public sector will play its part alongside industry. Public sector employers can make commitments through the Skills Deal, and government is already building the skills of its own workforce (see Part 4).

Reporting on delivery
Transparency is key to the commitments we are encouraging. Published delivery reporting lets the firms doing the most be recognised for it, and lets everyone see whether the country is on track. It will cover the number of young people who had an employer encounter, work experience placements and internships hosted, apprenticeships and entry-level roles filled, smaller firms supported and, where the data allow, where in the UK this happened.

Recording opportunities without double counting
Entry level is about limited relevant experience, not a particular age or qualification. Young people are the priority, but career changers and returners can benefit too. Work experience, T Level industry placements, apprenticeships and entry-level jobs are different kinds of opportunity and ideally should be recorded separately. The same opportunity should not be counted twice, including across Jobs Plans. Training for someone who remains in the same job is not new entry. Only entry-level jobs,

including apprenticeships, count towards the 200,000. Work experience and placements are recorded separately.

Work together to widen access

Simply, the Digital and Technologies sector is not diverse enough. Our objective is to open digital and technology opportunities to a wider range of people and places, strengthening routes into and through the workforce.

The gender gap is significant and costly. Independent analysis by Alma Economics suggests that removing the barriers facing women in the digital economy could increase GDP by around £4 billion a year, with women gaining around £7,000 a year on average.[footnote 81] We are working with industry to address these gaps through the Women in Tech Taskforce.

The Women in Tech Taskforce brings government and industry together to tackle the systemic barriers that stop women entering, progressing and leading in the tech sector. It is developing practical interventions to break down these barriers and make sure women across the UK have the support they need to turn their talent into innovation.

The Taskforce was established in December 2025 and has focused its initial efforts on the steps we can take so that women can stay, thrive and lead in the tech sector.[footnote 82] The Taskforce will turn its attention to entering tech, exploring the interventions that will drive meaningful change so that every girl and woman considering a career in tech knows that the industry is for them too.

Alongside the work of the Women in Tech Taskforce, we have launched the TechFirst Women's Programme. Through this programme at least 300 women across the UK will be supported into paid roles in frontier technologies such as AI, cyber security and quantum.[footnote 83] There will be a particular focus on mid-career women and returners and on connecting them with SME employers.

Disabled people remain significantly under-represented across the digital sector, facing barriers at recruitment, in workplace accessibility and in progression.[footnote 84] Disabled workers held 12.9% of jobs in the digital sector in 2025, compared with 17.8% across the UK economy.[footnote 85] We will work with employers and delivery partners – including through the Connect to Work supported employment programme – to make sure routes into digital and technology roles are accessible and that reasonable adjustments are designed in from the start.

Ethnic minority representation also falls with seniority: among Tech Talent Charter signatories, 25% of technology employees are from ethnic minority backgrounds, but only 14% of those in senior roles.[footnote 86] These barriers do not operate separately: gender, ethnicity, disability, socioeconomic background and geography often combine to limit people's chances of working in the sector, and our approach will address those combinations rather than single characteristics.

Some employers hold back from action they could lawfully take because they believe equality law prevents it.[footnote 87] In many cases it does not: the Equality Act's positive action provisions allow employers to take proportionate steps to address under-representation, and we encourage employers to use them, drawing on Equality and Human Rights Commission guidance.

Join the employer community through TechFirst

TechFirst is the banner for this offer. It brings the Skills Deal, existing government programmes and industry's own commitments together in one place. Any organisation can join the TechFirst Community, the single place to register a commitment to the TechFirst mission: opening more doors into technology careers for young people. Organisations can join by contacting the TechFirst team, who will follow up to work out where a contribution will have most effect. Being part of the Community does not have to mean taking part in the TechFirst programme itself: members can support the programme, or offer any combination of the routes in the Skills Deal – work experience, T Level industry placements, apprenticeships, undergraduate placements and entry-level roles. Members who sign the Skills Deal record the specific contribution they will make, and organisations can join at any time. We will also bring community members together to test ideas and tell us how the plan is working.

Organisations ready to make a larger, formal commitment across several strands can become TechFirst Partners, agreed directly with the TechFirst team through a memorandum of understanding. TechFirst Partners, including Microsoft, Cisco, IBM, Cognizant, Arm, Kainos, QinetiQ and AtkinsRéalis, have together committed over 10,000 work experience, placement and learning opportunities, including TechFirst scholarship placements and T Level industry placements. Existing routes, such as the Jobs and Careers Service and apprenticeship services, remain open to all employers.

We will work with techUK, BCS and other trade and professional bodies to agree

how commitments are gathered, how delivery is reported, and how the Skills Deal is promoted to their members. Sector bodies and regional networks have the reach and standing with employers that government does not, and the deal will work best if it is built with them.

Part 3: Deliver- Local priorities, local people

Working with the devolved governments

Skills policy is devolved. Scotland, Wales and Northern Ireland each run their own funding, apprenticeship and education systems, and this plan does not seek to replicate or override those arrangements. Several of the named programmes in this plan – foundation apprenticeships, T Levels and V Levels, Technical Excellence Colleges, Skills Bootcamps as described here – are English provision. Where a programme operates UK-wide, such as TechFirst, delivery is adapted to work through the systems that already exist in each nation. Annex B sets out the position in Scotland, Wales and Northern Ireland.

We will work with the Scottish Government, the Welsh Government and the Northern Ireland Executive to explore how the Skills Deal can align with their own initiatives and priorities, including developing nation-specific versions where it is appropriate and mutually beneficial. Any nation-specific Skills Deal arrangements will be co-designed and agreed with each government, shaped by its own priorities and processes. We will continue to work closely with the devolved governments to ensure digital and technology skills are championed across the UK, supporting growth and opportunity in each nation.

Many of these workforce challenges are consistent across all parts of the UK, but they are experienced and solved locally. The roles in short supply are concentrated in different places, and depend on different combinations of employers, colleges, universities and local institutions. Semiconductor skills gaps in South Wales and fast-growing demand for AI skills in Scotland's Central Belt are not the same challenge and will not have the same answer.[footnote 88] The plan takes a national approach to identifying the roles that matter, while recognising that delivery has to work through the structures that already exist in each place.

Matching employer commitment to local opportunity

We need a clearer view of which employer commitments lead to placements. The Skills Deal provides a proposed route for gathering employer updates, while local brokerage could help connect offers with suitable opportunities. Reporting must be limited to information that participating employers can provide.

What is missing is a broker: an organisation in each area that knows the local employers, holds the offers they have made, knows the young people looking for them, and puts the two together. It would not be a new national body or a website, but a local function, staffed by people with existing relationships on both sides, whose job is to turn offers into placements.

Brokerage covers a wide range of needs. A broker matches schools and colleges seeking work experience placements, young people not in education or employment looking for a route in, undergraduates who cannot get the experience employers ask for, and career changers retraining into the sector – against employers who have made commitments but do not always know where to direct them.

Manchester Digital Switchboard
Manchester Digital's Switchboard initiative provides a single route for technology employers to offer work experience, placements, internships, apprenticeships and mentoring.[footnote 89] Since launch, it has secured support from a growing group of Greater Manchester tech employers and provides practical support to help businesses, including SMEs, create opportunities for early-career talent.

TechFirst school and college delivery contacts

- North East – RTC North: TechFirst@rtcnorth.co.uk
- North West – IN4 Group: TechFirst@in4group.co.uk
- Yorkshire and Humber – RTC North: TechFirst@rtcnorth.co.uk
- East Midlands – IN4 Group: TechFirst@in4group.co.uk
- West Midlands – WM5G Ltd (Digital Innovators contact): TechFirst@digitalinnovators.co.uk
- East of England – Tech Educators: TechFirst@techeducators.co.uk

- London – STEM Learning: TechFirst@stem.org.uk
- South East – STEM Learning: TechFirst@stem.org.uk
- South West – techSPARK: TechFirst@techspark.co
- Northern Ireland: TechFirst@belfastmet.ac.uk
- Wales: Wales@cyberfirstschools.co.uk
- Scotland: TechFirst@EducationScotland.gov.scot

Existing programme contacts, not a new brokerage offer or a regional allocation of the 200,000 ambition. Nation-specific Skills Deal arrangements remain subject to co-design and agreement.

We will work with Mayoral Strategic Authorities and local authorities in England, and explore with the devolved governments what brokerage could look like in each place. The answer in a large city region with a dense technology cluster is not the answer in a rural area with few local technology employers. In addition to a local brokerage role, the Department for Work and Pensions is providing jobs brokerage across Great Britain through the new Jobs and Careers Service. This will connect employers to motivated candidates with the right skills and experience.

In England, Local Skills Improvement Plans give employer-led intelligence on what each area needs. This then forms the basis of mutual effort and partnership with the relevant regional authorities as they set the skills priorities that most impact local people. This Jobs Plan should be read as a complementary piece to this existing arrangement.

In many places the right organisation already exists – a sector body, an employer network, a college partnership or a Careers Hub – and the intention is to build on what works rather than create something parallel to it. Any further support for brokerage will be decided separately, and will depend on agreement of the delivery model with local partners. Government is investing £240 million in Mayoral Strategic Authority Local Apprenticeship Service pilots, which connect young people aged 16 to 24, especially those not in education, employment or training, to local apprenticeship opportunities. Following an initial £140 million announced in December 2025, the Chancellor announced a further £100 million on 28 September 2026, enabling the pilots to expand to all 14 Mayoral Strategic Authorities: seven form the first wave, with the remaining seven joining from spring 2027.[footnote 90] This plan is aligned with those pilots; the wider brokerage described here – covering T Level industry placements, TechFirst placements and entry-level roles as well as apprenticeships – is broader than the pilots are funded to test.

Whatever form it takes locally, brokerage should follow a few simple principles. Employers offer what they can, from a single work experience placement to a full apprenticeship programme, and brokers help them find the right people for it. Support runs both ways: young people are prepared for the opportunity, and employers, especially smaller ones, get practical help to design and host it. And brokers reach smaller firms through the local partners they already work with, such as sector bodies, employer networks and colleges, rather than expecting them to find a national scheme.

Preparing young people for the opportunity

Brokerage alone is not enough. Young people need to understand the tasks and expectations of the placement, and employers need to be ready to host and supervise them. Preparation matters as much as matching.

The TechFirst AI Apprenticeship Pathway in the North West (see the case study in Part 2) is the model we are learning from. It works with young people at risk of becoming NEET (not in education, employment or training) and gives them practical AI and digital skills alongside the behaviours employers expect at work.

> **Multiverse: an AI-first apprenticeship for young people**
> Multiverse's AI-first early talent apprenticeship, launched in September 2026, is built for those at the start of their career. It aims to deliver 2,000 opportunities for young people every year.[footnote 91] It is designed to build work readiness and AI skills, giving young people a springboard into work and employers the confidence to hire them. Apprentices first build data and AI literacy, then learn to use AI responsibly and safely, then apply those skills to real workflows from day one. The training is designed with young people in mind, with more hands-on support to help them navigate the world of work.

We will look to extend this approach through TechFirst, and support host employers with clear guidance on what a good placement involves: defined tasks, a named supervisor, and a realistic view of what someone at the start of their career can contribute. Where a placement does not work well, its design is often as much of a factor as the person taking it.

Help SMEs access the talent they need

Smaller firms are central to whether this plan succeeds. The offer needs to work for businesses with limited capacity to train, little time to navigate government schemes and difficulty absorbing the cost and risk of an inexperienced hire.

In our engagement, smaller firms told us about the difficulty of understanding what matters, where to start, who to trust, and how to get skills and support without excessive cost or management time. Across the UK economy in 2024, 42% of vacancies at sites with 2 to 4 employees were hard to fill because applicants lacked the skills, qualifications or experience needed.[footnote 92]

Cyber Essentials: a route into cyber security

Cyber Essentials is the minimum cyber security standard recommended by government for organisations of all sizes.[footnote 93] Its network of Certification Bodies provides a potential base of employers through which new entrants could gain practical experience. These Certification Bodies provide entry points for young people looking to enter the cyber security workforce.

IASME is exploring an apprenticeship that would create a practical route into cyber security employment. Building on a pathway that combines training, mentoring and paid workplace experience, it aims to help employers recruit new talent while opening cyber careers to people who may not have followed traditional routes into the profession.

Sharing best practice among SMEs is key. This can be done through forums and networks that allow the sharing of what works through case studies, pooled training, mentoring, adoption partnerships and clearer signposting for smaller firms. Government will also simplify how smaller employers navigate the skills system, so that a firm can identify relevant training, find the right local partners and understand what engagement involves without needing dedicated staff to navigate government schemes.

Part 4: Sustain- Digital and AI skills across the workforce, and good jobs to

stay in

Digital and AI capability is now a requirement across the whole economy, and the specialist roles this plan prioritises cannot be filled or used well by organisations whose wider workforce lacks basic digital confidence. It sits in a sector plan because the sector both supplies these skills and depends on everyone else having them.

The scale of the gap is significant: around 22.4 million people, 55% of the UK labour force, cannot do all of the digital tasks that are essential for work.[footnote 94] The case for closing that gap is strong. The Centre for Economics and Business Research (Cebr) has estimated that for every £1 invested in basic digital skills training, £9.48 is gained across the economy.[footnote 95]

AI systems can already carry out a growing range of professional tasks to a high standard, with real potential to raise productivity if they are used well.[footnote 96] But those gains are not automatic. They depend on people knowing how to deploy, supervise and integrate these tools into everyday work. If capability does not rise across the workforce, the gains will be uneven and smaller than they should be, adoption and growth will be slower, and the jobs this plan is about may not materialise at the pace we expect.

AI Skills Boost (existing support)

AI Skills Boost is the government's flagship initiative in this space. It helps people across the workforce learn practical AI skills so they can adapt to AI in everyday work rather than be displaced by it, closing skills gaps in the groups that need support most and supporting productivity through wider AI adoption. The programme aims to reach up to 10 million workers by 2030.[footnote 97]

Get Tech Certified: building digital skills across the public sector
Government is building the digital and technology skills of its own workforce. The Government Digital Service's Get Tech Certified campaign gives civil and public servants across the UK free access to industry-recognised training and certification, delivered in partnership with leading technology training providers. From 1 October to 31 December 2026, it offers more than 250 free learning and certification pathways, from beginner to advanced, across areas including cloud, cyber security, data, AI and software

engineering. It is open to anyone curious about digital and technology skills, not only digital specialists, and this year includes dedicated learning and events for women in tech. It builds on more than 10,000 learner registrations in 2025.[footnote 98]

Essential digital skills for everyone

The Essential Digital Skills Framework sets out the baseline digital skills adults need for everyday life and work. Employers, training providers and community organisations can use it to identify skills gaps, design training and help people build the confidence to get online safely. These are not specialist skills, but they are the foundation everything else is built on. Government is refreshing the Framework during 2026, with updates reflecting AI, online safety and changing workplace expectations.[footnote 99]

In July 2026, government also published revised Essential Digital Skills Standards for organisations that design or deliver essential digital skills provision in England. Based on the Essential Digital Skills Framework, their content has been updated and expanded in response to technological change, including AI, and they apply to Entry Level 1 up to Level 2. The Standards are available for use in Scotland, Wales and Northern Ireland.

This matters beyond employability. People without essential digital skills are more exposed to fraud and online harm, and closing that gap is part of how the country becomes more resilient as well as more productive.[footnote 100]

Professional standards and progression

A workforce that does digital and AI well is a workforce that has clearly defined what individuals need to know and be able to do in their roles. This applies to digital and technology practitioners too, and the answer lies in professional standards like those in medicine and law. Professional bodies already show what this can look like. BCS, The Chartered Institute for IT, has established professional standards, recognition and structured learning pathways that follow an industry-recognised framework, setting out what people need to know and be able to do at every stage of their career. The UK Cyber Security Council has established professional standards,

recognised specialisms and a career pathway framework for cyber security.[footnote 101]

We will build on this and work with professional and sector bodies to develop clearer standards and progression routes in the other areas. This gives employers greater confidence in the capability of the people they hire, and gives individuals clear sight of what a career looks like beyond the first job. It should be practical and employer-recognised rather than bureaucratic. In our engagement, stakeholders, including trade unions, told us this is one of the most useful things the plan can do, particularly for smaller firms and for companies outside the technology sector that need technical staff, because published standards also set expectations about pay and training investment. We will also review, with the Department for Education and the Department for Work and Pensions, how recognised professional standards, such as those of BCS and the UK Cyber Security Council, could be reflected in skills programmes.

BCS professional recognition

From April 2027, every learner who completes a digital T Level, V Level or apprenticeship will be able to be recognised by BCS against a professional standard, at no cost. BCS will report how many are recognised every year and track trends over time.

BCS provides a verified record of professional recognition, mapped to SFIA, that employers can check with BCS. It stays with the individual and grows with them from their first qualification to Chartered status.

What digital and technology professionals need at each career stage

BCS, The Chartered Institute for IT, maps its professional registration and membership grades to the levels of the Skills Framework for the Information Age (SFIA). Ethical practice, guided by the BCS Code of Conduct, runs through every stage and deepens as responsibility grows.

Stage (SFIA)	Registration (grade)	Skills, knowledge and competence	Ethics
Entry (1 to 2)	Part RITTech (AMBCS)	Supervised; foundational technical and digital skills, core tools knowledge, communication, learning	Follows Code of Conduct
Practitioner	RITTech	General direction; applies skills,	Acts with

(3)	(MBCS)	solves problems, owns work, supports team	integrity, raises concerns
Specialist (4)	Advanced RITTech (MBCS)	Substantial autonomy; specialist expertise, plans work, manages risk, enables others	Applies ethical judgement
Expert (5)	CITP (MBCS)	Fully accountable; broad IT knowledge, leads complex work, influences stakeholders, delivers outcomes	Weighs legal, social and ethical impact
Director (6 to 7)	CITP (FBCS)	Industry-level influence; sets strategy, leads change, develops others	Champions responsible tech

Key: RITTech: Registered IT Technician; CITP: Chartered IT Professional; AMBCS, MBCS, FBCS: Associate Member, Professional Member and Fellow of BCS.

Good jobs and worker voice

These should be good jobs for the people already doing them, not only for those entering. Government will work with industry, professional bodies and trade unions to strengthen standards on job quality and progression, and to maximise opportunities for the domestic workforce rather than see these jobs move offshore.

Good jobs are central to economic prosperity and quality of life in the UK. That is why the government's Plan to Make Work Pay is bringing employment rights legislation into the 21st century, extending the employment protections already given by the best British companies to millions more workers across the country.[footnote 102]

Community trade union and Google: AI skills training for union members
Since 2024, Community and Google have partnered to deliver AI skills

training for the union's members and workplace representatives across sectors including manufacturing, education and logistics. In a pilot of Google's AI Works programme, which has used classroom workshops, online webinars and one-to-one support, more than 1,000 members have been trained on practical uses of AI. The programme was designed to help workers take greater control of AI adoption in their workplaces, enhancing their confidence and dignity at work during a period of disruptive technological change. Research conducted with participants found that weekly AI use increased from 17% to 61% three months after training. Participants reported saving an average of 2.1 hours per week, and 75% said the training had improved their productivity, skills or confidence at work. [footnote 103]

Sir Charlie Mayfield's independent Keep Britain Working Review highlighted the scale of the problem of people falling out of work because of ill health and disability, and the vital role employers can play in building healthier, more inclusive workplaces. [footnote 104] Officials across government are working with employers, providers, regions and wider stakeholders towards three outcomes: reduced sickness absence, improved return-to-work rates and better participation and retention of disabled people. We want digital and technology employers to embrace this agenda by staying close to the Keep Britain Working programme, which for some employers may include joining the Vanguard and directly helping to shape this work.

Employers of digital and technology talent in the Digital and Technologies sector and across the wider economy should be able to show that the opportunities they offer are fairly paid. We will work with industry and unions on what that commitment looks like in practice, and the Skills Deal will reflect it.

The Digital Skills Council (DiSC)
Delivery of this plan is overseen by the Digital Skills Council. The Council brings together senior figures from major employers, industry bodies and regional organisations, and gives a cross-cutting view of a sector that spans six distinct frontier technologies and a high proportion of small firms. It is co-chaired by the Parliamentary Under-Secretary of State and by an industry co-chair.

As the Council takes on oversight of this plan, its role will evolve. We will strengthen it by adding sector experts for each of the six frontier technologies, bringing the established technology councils into a clearer

relationship with it, and working with a wider group of partners, including professional and trade bodies, trade unions and Mayoral Strategic Authorities. Because digital skills are needed in every sector, the Council will also work with other sector councils. It will review progress against this plan each year and give employers and delivery partners a single place to raise what is working and what is not.

Governance and review

The Digital Skills Council will monitor progress against the sector's employer commitments, escalate risks to delivery, and report regularly to government through the department responsible for the sector. This will provide clear leadership and accountability for delivering the commitments set out in this plan.

The Industrial Strategy Unit in the Department for Business, Innovation, Science and Trade will work across government to track delivery of government commitments and maintain an overview of progress against employer commitments across all Jobs Plans. Over the coming months, it will work with the Department for Work and Pensions, the Department for Education, other departments and sector bodies to set out how the Jobs Plans will be governed as a programme, including roles and responsibilities, common reporting arrangements and how progress is tracked across sectors.

Three years after publication, progress will be comprehensively reviewed and an updated plan published. The updated plan will:

- report openly on progress against the government and employer commitments in this plan;
- provide an updated assessment of the sector's workforce and skills needs; and
- set renewed targets and commitments, informed by progress, changes in the sector and lessons from the first three years.

Annex A: Priority roles and workforce evidence

About the headline figures

The 800,000 is an indicative estimate of how many people employers will need to hire between 2025 and 2035 – not a target or a forecast of net new jobs. It adds together around 550,000 new jobs in 30 Digital and Technologies priority occupations, across the Industrial Strategy sectors that have prioritised them, and around 250,000 people who will need replacing as they retire or leave jobs in the Digital and Technologies sector. It does not include people who will need replacing in these occupations outside the Digital and Technologies sector.

For the Digital and Technologies sector on its own, the figure is around 488,000 (239,000 extra jobs and 249,000 replacements). The estimate assumes that employment in these occupations grows between 2025 and 2035 at the same average rate as in the closely related digital sector between 2011 and 2024, and it does not model the effect of AI. Projections of employment for priority occupations were produced by analysts at the Department for Science, Innovation and Technology, using ONS data (the Annual Survey of Hours and Earnings and the Annual Population Survey) and DCMS projections for the digital sector, and have been endorsed by Skills England.

The 200,000 entry-level jobs over 10 years, around 20,000 a year, is an ambition shared by government and industry, not a forecast. Progress will be reported each year. ‘Entry-level jobs’, including apprenticeships, are roles open to applicants with less than one year’s relevant experience, rather than a specific qualification or skill level. Depending on the occupation, they may require qualifications from Level 3 upwards and align with SFIA responsibility level 2.

This annex describes priority roles across each of the six frontier technologies and summarises the workforce evidence used in this plan. It is not a ranking of shortages. The roles in this annex were identified by government analysts and sector teams from job advert analysis and employer recruitment patterns. They are different from the 30 Digital and Technologies priority occupations behind the 800,000 estimate, which come from the official classification of occupations used in national statistics (the Office for National Statistics’ Standard Occupational Classification).

Advanced connectivity technologies

- Sector importance. Advanced connectivity technologies (ACT) and the networks they underpin are crucial for connecting people, businesses, and critical public services. They enable data to move across communications networks and network infrastructure in an increasingly digitised economy, including advanced wireless systems such as 5G and the transition to 6G, non-terrestrial networks, and advanced optical networks. They are a foundational, system-level enabler of productivity, competitiveness, and nationally critical infrastructure.
- Workforce and skills gaps. ACT companies employed around 109,400 people in the UK in 2025. The sector faces skills shortages across both advanced network operations and field delivery functions: around 60% of telecoms engineers are over 50, and the sector is estimated to face a 30,000-person engineering shortfall over the next 10 years.[footnote 105] Beyond core engineering fundamentals, the sector needs skills in (i) radio frequency planning and optimisation, (ii) fibre and optical network design, (iii) spectrum and interference awareness, (iv) network security for telecoms infrastructure, and (v) integration skills for open radio access networks (open RAN) and interoperable architectures.
- Recruitment challenge. Employers tell us the challenge is twofold: attracting enough people into ACT careers and developing specialist skills aligned to rapidly changing technologies. The shift to open and interoperable networks, softwarisation and AI integration creates additional demand for specialist skills that are also in high demand across competing sectors. Concurrently, the current workforce is ageing, with particular risk concentrated in network builders, technicians and maintenance engineers. Strengthening the visibility of ACT careers and improving alignment between education pathways and employer needs are critical to meeting future workforce demand.
- Entry-level route. Existing routes include apprenticeship schemes and employer-led training for field delivery roles; undergraduate study within broader electrical and electronic engineering or computer science pathways; and a small set of specialist master's programmes. However, many prospective entrants are unaware of ACT careers because pathways are embedded within broader engineering and digital disciplines rather than promoted as a distinct sector. In related subjects, including electrical and electronic engineering, recent growth in postgraduate numbers has come largely from overseas students, so postgraduate supply may be sensitive to changes in visa and immigration policy.[footnote 106] The EPSRC Federated Connectivity Hubs will also support a more visible pipeline into telecoms research careers, bringing doctoral students into a coordinated national training ecosystem alongside the Centre for Doctoral Training in Future Open Secure Networks (CDT-FORT) and the Centre for Doctoral Training in Diversity-Led, Mission-Driven Research (CDT-DiveIn), and helping address low awareness of opportunities in the sector.[footnote 107] Current

training provision does not adequately reflect future ACT skills needs, particularly in radio frequency (RF), terrestrial and non-terrestrial network integration, cyber security, AI and data architecture.[footnote 108]

- AI and automation. High-priority skills include integrating AI with telecoms infrastructure, managing digital twin environments, applying generative AI for customer engagement, and implementing machine learning operations and data governance.[footnote 109] These requirements largely build on existing STEM and digital capabilities. The key challenge is ensuring that ACT remains an attractive destination for individuals with these transferable skills as competition for talent continues to grow across the digital economy.
- Priority roles. (a) Network build, installation, operations and maintenance roles, which are essential to maintaining and expanding UK connectivity infrastructure; and (b) specialist engineering roles needed to design, integrate and operate increasingly software-defined and AI-enabled networks.

Artificial intelligence

- Sector importance. AI is increasingly important for technological change and economic growth, improving efficiency, enabling innovation and creating new opportunities. Between 2022 and 2024 the UK's AI ecosystem grew by 85% to more than 5,800 companies.[footnote 110] AI is both a technology in its own right and a capability that supports growth across the wider digital and technology sector.
- Workforce size. AI-related employment in UK AI companies grew from around 50,000 in 2022 to around 86,000 in 2024.[footnote 111] Demand for roles requiring AI skills rose sharply in 2025, while growth in overall job postings slowed.[footnote 112]
- Skills gaps. 97% of organisations surveyed identified at least one skills gap, with 57% reporting a technical skills gap.[footnote 113] The most significant gap is in understanding AI concepts and algorithms, which has risen from 55% to 60% since 2020.[footnote 114] 28% report that technical skills gaps are affecting their ability to meet business goals.[footnote 115]
- Recruitment challenge. 88% of organisations surveyed use on-the-job training rather than structured education and training programmes.[footnote 116] The gap between theoretical knowledge and practical application remains a major challenge for employers' recruitment.[footnote 117]
- Entry-level route. Entry routes remain underdeveloped. The share of organisations

hiring apprentices into AI roles rose from 3% in 2020 to 19% in 2025, though apprentices are still only 3% of their AI workforce, and only 13% of graduate schemes include AI training, leaving a persistent gap between what education provides and what employers expect.[footnote 118]

- AI and automation. AI tools are reducing time spent on routine tasks while increasing demand for system oversight, integration, evaluation and assurance. [footnote 119]
- Priority roles. (a) Applied AI and machine learning engineers; (b) data engineers with strong data and systems capability; (c) AI product and delivery specialists; (d) AI assurance, ethics and governance roles.

Cyber security

- Sector importance. Cyber security protects businesses from financial loss, reputational damage and disruption caused by cyber attacks. The sector increased its annual revenue by 11% to £14.7 billion in the last year alone.[footnote 120] It is both a high-growth sector in its own right and an enabling workforce for secure growth across the wider digital and technology sector.
- Workforce size. The cyber sector employs 69,600 full-time equivalent staff, a 3% increase on the previous year. The wider cyber workforce is estimated at 145,900 people across the UK. Growth has slowed to 2% year on year, and 53% of cyber firms expect to grow their workforce in 2026, down from 67% previously.[footnote 121]
- Skills gaps. 57% of UK businesses had a basic technical cyber security skills gap, up from 49% the previous year.[footnote 122] 24% of cyber businesses said technical skills gaps affected their ability to meet business goals.[footnote 123]
- Recruitment challenge. Employers tell us that governance and risk management roles are among the hardest to fill, followed by security testing and secure system architecture.
- Entry-level route. There was 14% growth in cyber security graduates between 2022/23 and 2023/24, with 7,950 cyber security graduates in 2023/24.[footnote 124] But only 16% of core cyber job postings in 2025 sought candidates with less than one year's experience, compared with 25% in 2022, while 64% required two to six years.[footnote 125] Unemployment among cyber graduates rose to 11% in 2022/23, against 6% across all graduates.[footnote 126]
- AI and automation. In cyber security job postings, demand for automation skills

rose from 11% to 15%, and AI skills from 4% to 9%, between 2024 and 2025. [footnote 127] 70% of cyber businesses said staff were using AI in their day-to-day work, and 73% expected their need for AI skills to increase over the next 12 months.[footnote 128]

- Priority roles. (a) Security analysts and incident response roles; (b) penetration testers and security testers; (c) security architects and secure system design roles; (d) governance, risk and compliance roles. These sit alongside the UK Cyber Security Council's published specialisms and the growing community of entry-level roles supporting Cyber Essentials across the economy.[footnote 129]

Engineering biology

- Sector importance. Engineering biology underpins innovation across health, agrifood, chemicals, materials and the environment. These technologies are transforming industries, from healthcare through novel vaccines to sustainable production methods, and supporting low-carbon fuels and precision-bred crops.
- Workforce size. In 2022/23, engineering biology companies employed approximately 50,000 people across the UK.[footnote 130]
- Skills gaps. Employers tell us the main constraint is a shortage of applied, interdisciplinary capability at the interface of biology, engineering and digital technologies. Available candidates rarely have the full combination of skills needed, so organisations have to develop capability internally. This is most acute for SMEs and scale-ups, where delays in accessing skills directly constrain growth and commercialisation. Firms also face challenges attracting data science, automation, robotics and machine learning talent, where those skills are increasingly central to design-build-test-learn workflows and digital biofoundry operations.
- Recruitment challenge. Employers report that demand for fermentation scientists significantly outstrips supply, particularly for people with experience running, troubleshooting and optimising fermentation and downstream processes beyond bench scale. There is also a shortage of engineers able to translate biological processes from research into stable, repeatable, regulated production environments. While doctoral-level talent is available, candidates with hands-on industrial delivery experience are significantly harder to find.
- Entry-level route. Employers tell us most entrants come through higher education, usually with a STEM degree. The Prime Minister's Council for Science and Technology (2023) has highlighted the complete absence of technical or

vocational courses tailored to technical roles.[footnote 131] Government's post-16 reforms aim to strengthen technical routes below degree level, including through T Levels and the new V Levels at Level 3, and Foundation and Occupational Certificates at Level 2. Providers expect to expand T Level delivery by 2027 to 2028, with the strongest projected growth in Business and Digital routes. Expanding degree apprenticeships, introducing flexible training at undergraduate and master's levels, and supporting technical careers have been identified in published research and stakeholder engagement as vital to building the skills base the engineering biology industry needs.[footnote 132]

- AI and automation. Engineering biology is increasingly data- and automation-driven, yet employers struggle to recruit scientists who can combine deep biological understanding with coding, data analysis, modelling and AI-enabled experimentation. These roles are central to high-throughput platforms and digital biofoundries, and shortages are limiting the uptake of AI within the sector.[footnote 133]

- Priority roles. (a) Fermentation scientists, especially at industrial scale; (b) process and production engineers focused on engineering biology and bioprocessing; (c) computational biologists with AI and automation capability.

Quantum technologies

- Sector importance. Quantum technologies exploit the properties of quantum mechanics to deliver new or improved technological capabilities. Oxford Economics estimates that quantum computing could raise UK productivity by up to 7% by 2045, equivalent to adding up to £212 billion to the economy.[footnote 134]
- Workforce size. The sector's early stage of development and rapid pace of advancement have made it difficult to accurately quantify the size and characteristics of the workforce. Based on 2022/23 data, UK quantum small and medium-sized enterprises employed around 1,700 people, with salaries more than 40% above the national average.[footnote 135] The Quantum Insider projects that new jobs in quantum computing alone could reach 250,000 globally by 2030 and 840,000 by 2035.[footnote 136]
- Skills gaps. As the sector has advanced, there has been a growing need for engineering roles across a wide range of disciplines and levels, from technicians through to professors of engineering and those with significant industry experience. Hardware engineers and technicians are needed to address pressing challenges including scaling qubit numbers, integrating quantum sensors,

packaging technologies and optimising manufacturing processes.

- Recruitment challenge. Several engineering and technical roles are difficult to recruit for.[footnote 137] There may be limited awareness of career opportunities for engineers within quantum, as well as a perception that these roles require significant quantum expertise. This is compounded by wider engineering skills shortages across the economy. People typically gain highly specialised quantum skills through a doctorate in quantum sciences or a closely related field.
- Entry-level route. Employers tell us that quantum specialists make up a significant proportion of their workforce, and demand for their skills is expected to grow as the sector does. The UK will rely on both international and domestically trained talent to meet demand for these roles. The planned Centre for Quantum Commercialisation Skills will help researchers develop commercial skills and work with industry. This includes supporting researchers exploring opportunities to spin out companies.[footnote 138]
- AI and automation. Quantum computing is expected to support high-value applications such as simulation and optimisation and may be used as part of AI systems, so adoption will increase demand for people who can apply quantum capabilities in real-world settings. The main workforce implication is therefore demand expansion and role-broadening; as quantum technologies scale, demand is expected to rise not only for deep quantum specialists but also for a wider pool of quantum-literate engineers and technical professionals with baseline quantum awareness alongside domain skills. Evidence also suggests that, as with AI following the step-change in large language models in 2022, demand for quantum-literate skills could accelerate quickly once key milestones and adoption tipping points are reached.[footnote 139]
- Priority roles. (a) Quantum specialists, including quantum algorithm scientists, quantum photonics engineers and experimental quantum physicists; (b) hardware engineers and technicians with domain expertise in electrical, mechanical, systems and process engineering; (c) software engineers to enable the development and adoption of quantum computing.

Semiconductors

- Sector importance. Semiconductors are fundamental to the world's digital infrastructure, delivering on AI opportunities and the development of advanced technologies. Dedicated semiconductor companies generated an estimated £10.6 billion in revenue in 2025.[footnote 140] The UK has a strong global reputation

in chip design, compound semiconductors and next-generation technologies including photonics.[footnote 141]

- Workforce size. The 2025 Semiconductor Workforce Study described a UK semiconductor workforce of approximately 27,245 individuals, with 69% employed in technical roles. Design-related roles accounted for 64% of technical positions, with integrated circuit (IC) design, software development and research and development particularly prominent.[footnote 142]
- Skills gaps. Retirements add to demand, with an estimated 39% – over 10,000 workers – expected to retire within 15 years.[footnote 143] Even under the lowest demand scenario, and including the need to replace workers who leave, the sector could face an average annual shortfall of approximately 2,100 workers, which over five years would leave a cumulative gap of more than 10,000 people. [footnote 144]
- Recruitment challenge. 90% of respondent companies perceived a moderate or acute shortage of people to fill key technical roles. Respondents requiring manufacturing and process engineers and technicians, and IC design engineers, are experiencing the most acute shortages, with 50% to 60% reporting acute shortages.[footnote 145]
- Entry-level route. Annual inflows of higher education graduates are estimated at 870, with a significant share from electrical and electronic engineering courses. [footnote 146] UK-domiciled graduate numbers have plateaued, and long-term international student retention remains uncertain. Nearly half of semiconductor employers surveyed feel that current university courses do not fully align with industry requirements.[footnote 147]
- AI and automation. AI is increasingly being used within chip-design workflows, but demand for chip designers is still expected to grow, driven by growth in the AI hardware market.[footnote 148]
- Priority roles. (a) Integrated circuit design engineers, commonly known as chip designers; (b) manufacturing and process engineers; (c) semiconductor technicians across process, equipment, test, production and quality. Employers have also identified advanced packaging and verification engineering as an area of growing importance.

How the priority roles were identified

- The priority roles in this annex were identified using a combination of online job

advert analysis and qualitative sector analysis. Occupations with a large proportion of digital or technical skills were identified from job adverts, then cross-referenced with sector-specific employer recruitment patterns. That combined list was then refined with sector policy teams. The roles listed describe applied and specialist capabilities relevant to each technology; they are not a ranking of where demand is strongest. The resulting priority roles were then validated with industry and sector experts for each technology area.

- Across all six frontier technologies, this plan describes applied practitioners who can move a technology out of research and into real-world use. The sector is broad – government estimates total employment in the Digital and Technologies sector of around 1.33 million people in 2024, spanning everything from IT support and digital marketing through to advanced research and engineering – but the priority roles in this plan are drawn from the six frontier technologies, where around 637,000 people worked for companies in 2024. The plan's entry routes apply wherever those roles are needed across the economy, and Part 4 addresses the wider workforce.[footnote 149]

Cross-cutting capabilities and workforce planning

- Software engineering, data engineering and digital delivery appear consistently as requirements across all six frontier technologies. Skills England analysis confirms that programmers and software development professionals are a priority occupation across seven Industrial Strategy sectors, and that IT business analysts, architects and systems designers are similarly cross-cutting.[footnote 150] This plan does not treat these as separate technology pillars, but strengthening them is essential to filling the specialist roles set out above, and they will be reflected in delivery and provider engagement.
- These same occupations appear in the Creative Industries Jobs Plan, which government is also publishing. Rather than approach the same employers twice for the same roles, the two plans will coordinate their engagement with industry.
- Our analysis of priority occupations will be shared with the Migration Advisory Committee so that domestic training investment and immigration policy are mutually informed. This plan is focused on strengthening domestic routes into these roles. It recognises that some of them currently rely on international talent and that global competition for expertise is significant.[footnote 151] It does not seek to reopen immigration policy, but workforce planning should be realistic about where domestic supply can be strengthened and where short-term pressures remain acute.

Annex B: Digital and technology skills across the UK

Scotland

Scotland has a well-established digital and technology sector, with employment concentrated in the Central Belt and clusters around Aberdeen, Dundee and Inverness, where health technology activity at Inverness Campus, home to UHI's Life Sciences Innovation Centre, is growing. Skills Development Scotland's 2025 Sectoral Skills Assessment for Digital Technologies reports that recruitment is slowing overall, with job postings for programmers and software development professionals declining by around 14% between July 2024 and June 2025. At the same time, postings requiring at least one AI skill have more than quadrupled over the past decade, with around 5,700 recorded in Scotland between July 2024 and June 2025.[footnote 152]

Scotland's strengths run wider than AI. It has an established cyber cluster and a data cluster of more than 300 companies, alongside significant activity in photonics and quantum.[footnote 153] Technology Scotland's 2025 photonics survey found that nearly 80% of respondents had experienced a skills gap in the previous 12 months, with demand for action across the skills system.[footnote 154] There is a significant data and AI skills gap across Scotland. While 68% of digital technology companies intended to recruit during 2025, demand for less experienced new entrants has softened, though interest in graduate apprentices and people who have retrained remains strong.[footnote 155]

Scotland has published a number of strategies that align with the priorities in this plan, including the AI Strategy for Scotland 2026–2031, the refreshed Digital Strategy for Scotland published in November 2025, the Digital Economy Skills Action Plan, the Strategic Framework for a Cyber Resilient Scotland 2025 to 2030 and its associated action plan, and The Data Lab's Data and AI Skills Framework.[footnote 156] The Scottish Government has also committed to funding at least 150,000 apprenticeship opportunities over the current parliamentary term and to producing a single national skills plan for Scotland by spring 2027, and is establishing a Future Jobs Observatory to assess the impact of AI on the workforce and guide national skills planning. On cyber skills specifically, Scotland has established a coherent

framework of cyber security qualifications, including apprenticeships, spanning schools, colleges and universities as well as workplace learning, upskilling and retraining.[footnote 157]

Key delivery partners include Skills Development Scotland, all three of Scotland's enterprise agencies – Scottish Enterprise, Highlands and Islands Enterprise and South of Scotland Enterprise – along with The Data Lab, ScotlandIS and techUK. CivTech is also relevant to this plan: it strengthens tech SMEs' access to public sector contracts and, in doing so, creates the real opportunities that trained people need in order to get in. These strategies point to shared challenges with the rest of the UK around AI adoption, access at entry level, and the need for applied, employer-recognised routes into technical roles.

Wales

Wales is home to around 3,600 technology companies employing more than 45,000 people.[footnote 158] It has particular strengths in compound semiconductors, with the globally recognised CSconnected cluster in South Wales supported by research partnerships with Swansea and Cardiff Universities and the Semiconductor Catapult.[footnote 159] There is also a growing cyber security cluster in South Wales, anchored by a Cyber Innovation Hub led by Cardiff University with partners including Airbus, Thales NDEC and Tramshed Tech, and an emerging AI market driven by home-grown and international companies.[footnote 160]

Regional skills studies report employer demand for advanced digital skills, including software development, data analysis, cyber security, cloud and AI.[footnote 161] The Welsh Government's AI Plan for Wales identifies access to AI skills as one of the biggest barriers to growth for employers, and its Digital Strategy for Wales aims to build a workforce with the digital skills, capability and confidence to excel in the workplace.[footnote 162] CSconnected has reported an urgent need to strengthen semiconductor skills in Wales, citing challenges in the talent pipeline, workforce readiness and training provision.[footnote 163]

Wales has been proactive in building capacity to address this. Initiatives include CSconnected's Sparking STEM Futures programme, which introduces young people to semiconductor technology; START-SEMI, a skills, talent and re-education programme for semiconductors led by Swansea University from 2023 to 2025; new semiconductor qualifications from the Welsh Joint Education Committee (WJEC), developed with industry, making WJEC the first UK awarding body to create a

qualification route into the industry, available to learners from 2024; and two Centres for Doctoral Training, across both Cardiff and Swansea Universities, in semiconductors.[footnote 164] The Cyber Innovation Hub represents a £20 million investment aimed at training 1,750 people in cyber skills and establishing high-growth companies in the Cardiff Capital Region by 2030.[footnote 165]

Regional Skills Partnerships across Wales provide labour market intelligence at sub-national level, and the Welsh Government's Flexible Skills Programme supports employer-led upskilling. The nature of digital and technology demand in Wales is shifting towards more advanced digital and emerging technology capability.

Northern Ireland

Skills and economic development in Northern Ireland sit with the Department for the Economy, whose priorities include increasing the proportion of working-age people in good jobs and raising productivity – both of which this plan supports directly.[footnote 166] The Department has identified its own set of priority sectors, which do not map neatly onto the six frontier technologies used here, and each of its sectoral plans carries specific skills commitments.

Northern Ireland has a significant and growing software economy: around 46,000 people worked in software roles or businesses in 2022, and software industries generated around £915 million in gross value added in 2021.[footnote 167] It also has an established and productive cyber security sector, employing over 2,750 people and generating more than £258 million in direct gross value added.[footnote 168] The Skills Barometer 2023–2033 found that, under its high-growth scenario, information and communication technology (ICT) is projected to be one of the top three fastest-growing sectors and is expected to generate more expansion demand than any other.[footnote 169]

Northern Ireland has strong models to build on. Assured Skills Academies are short, employer-designed pre-employment programmes, typically six to eight weeks, fully funded by the Department for the Economy and delivered with Invest Northern Ireland and further education colleges, where everyone who completes an academy is guaranteed a job interview with the recruiting employer. Recent academies include AI and data delivered with EY, and software sales delivered with local software companies.[footnote 170] The Skill Up programme offered fully funded, accredited retraining and upskilling for adults from Level 1 to Level 7 through colleges and universities. Belfast Metropolitan College runs Digital Skills Academies aimed at

people with little or no prior digital experience, including those furthest from the labour market.[footnote 171]

The AI Collaboration Centre, funded by Invest Northern Ireland and the Department for the Economy, supports AI adoption and upskilling across the Northern Ireland economy and provides fully funded AI-related postgraduate courses through Ulster University and Queen's University Belfast.[footnote 172] The Department's Digital Skills Action Plan 2024–2034 sets out action to grow the digital talent pool, widen participation and create alternative pathways into the sector. This sits alongside the Department's three-year Skills Action Plan, which provides the wider framework for aligning skills provision with current and future economic needs.[footnote 173] The Assured Skills model is a strong existing example of the brokerage function described in Part 3, and we will draw on it.

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