Driving Digital Diversity

Attracting greater diversity through alternative routes into tech

Digital Intelligence

BAE SYSTEMS

The UK's tech sector is fast becoming one of the country's biggest economic success stories of the post-war period. Overall, the sector comprises nearly 8% of the country's total economic output (GVA) and, whilst the economy as a whole has barely grown since February 2020, digital has surged 12% over a similar period. This begs an obvious question. Despite being a seemingly attractive sector with significant resources to hand, why is the IT industry still struggling to tackle skills gaps and attract a greater volume of diverse talent?

To understand more, BAE Systems Digital Intelligence commissioned an independent market research agency to survey over 2,000 people working both inside and outside the UK's tech and cyber security sector. Respondents with a diverse range of characteristics and backgrounds were recruited and polled, including people of varied age ranges, socioeconomic backgrounds, ethnic groups, genders, and from neurodivergent communities.

The first report in the resulting 'Driving Digital Diversity' series explored why diversity matters to the health of the industry and country as a whole, and highlighted what people perceive as barriers to tech careers across different minority groups. In doing so, it shone a light on factors that could be stopping more people from considering tech careers, from misconceptions around the qualifications needed to enter the industry to the influence of education when it comes to career choices.

While barriers to the industry do exist, our study has shown there is a strong appetite for pursuing or switching to a career in tech today. For respondents currently working outside the sector, the **top ranked motivating factors were the higher than average earning potential, flexible or hybrid working opportunities and being offered additional financial support to pursue IT and technology training.**

We'll delve into these themes further in this report, surveying a broad set of groups to find out what the industry can do to attract a greater volume of diverse talent, whether that's people just starting out in their careers or those looking to transition into tech.

Most importantly, we'll explore numerous alternative routes into the sector which don't require traditional university-based qualifications.

In this report you will discover:

Why the tech sector is currently not doing enough around DE&I

Misconceptions about education when it comes to careers in tech

Alternative routes into tech

The importance of inspiring career switchers

How we can get Britain moving

More about the routes into BAE Systems

Currently not doing enough

Many of the respondents don't believe the tech industry is currently doing enough to encourage greater Diversity, Equity & Inclusion (DE&I).

This is evident in the way our respondents regard the tech sector compared to other industries. **65% of the total respondents said they believe diversity is worse in the UK's tech industry than in other sectors.**

When asked if the tech industry could do more to encourage job applicants from different backgrounds:

90% of those **working in the cyber security industry** said it could do more

83% of those **working inside the tech industry** said it could do more

61% of those **working outside the tech industry** said it could do more

Further, almost **two-fifths (38%) of those we polled believe the tech sector could try harder to attract people from minority groups.**

But when we look beyond these perceptions to explore the current state of diversity within the industry the picture is more nuanced. **According to a recent 'Diversity in Tech' report, only 29% of tech workers are women and non-binary genders.** This number falls short of the working population as a whole and **drops to 21% for senior roles.**

The same report, however, found that **25% of tech workers belong to ethnic minority groups,** which includes **18% identifying as Asian** and **5% as Black** – figures that reportedly outperform the share of these groups in the UK as a whole. For example, the 2021 UK census saw 10% of the UK identify as Asian and 4% identify as Black. Yet once again, **diversity drops significantly for senior positions: from 25% to 14%** in the case of ethnic minorities.

There's still clearly a lot of work to do, both to change the perception of the tech sector as one that lags behind on DE&I and to attract a greater volume of diverse talent into the industry. Creating awareness around the opportunities available and highlighting how people can enter the sector through traditional and – especially – alternative routes is vitally important.

This has to start with early education and continue right through to when people are in the workforce. The tech industry needs to better engage with schools, particularly those in underserved areas, to understand how we can best support the curriculum, demonstrate the endless possibilities a career in tech opens up and how young people can pursue roles in the industry. At the same time, a greater effort is required from businesses to engage with minorities across different age groups and outline the options available, regardless of where people are in their careers.

Debbie Forster, DE&I Consultant, commented:

BAE Systems Digital Intelligence's research highlights that the public are wise to companies failing to do what they can, and should be doing, to improve diversity, inclusion and access to tech careers. Tech Talent Charter has been supporting employers for years to provide free DE&I best practice and guidance to employers so that no organisation is left without the insights it needs to change for the better.

At the centre of our work is our belief that data is vital for understanding what we need to do next. Our Diversity in Tech report is a leading source of diversity information for the tech sector, based on a sample of over 800 companies and 230,000 tech employees. Not only does it surface diversity benchmarks for companies to compare to, it also provides insights on the strategies that companies are using to make a difference.

Overcoming misconceptions about education

No-one can downplay the pivotal role formal education can play in driving career success. However, when it comes to a career in tech, this isn't the whole story.

When the segment of our respondents working outside the tech and cyber security industry were asked what they think the top five barriers to pursuing a career in IT are, they responded:

- **51%** Needing a tech or IT-oriented degree
- **41%** A lack of tech education at primary and secondary school
- **40%** A lack of understanding about the opportunities available
- **38%** Tech not being highlighted as an attractive or exciting career path at school
- **27%** The financial cost of pursuing higher education in tech

There's clearly a view among respondents who haven't worked in the tech sector that education and encouragement from an early age are important drivers for pursuing a career in the industry. In fact, **over half of the respondents (51%) felt they needed to have a tech or IT-oriented degree to pursue a career in tech.**

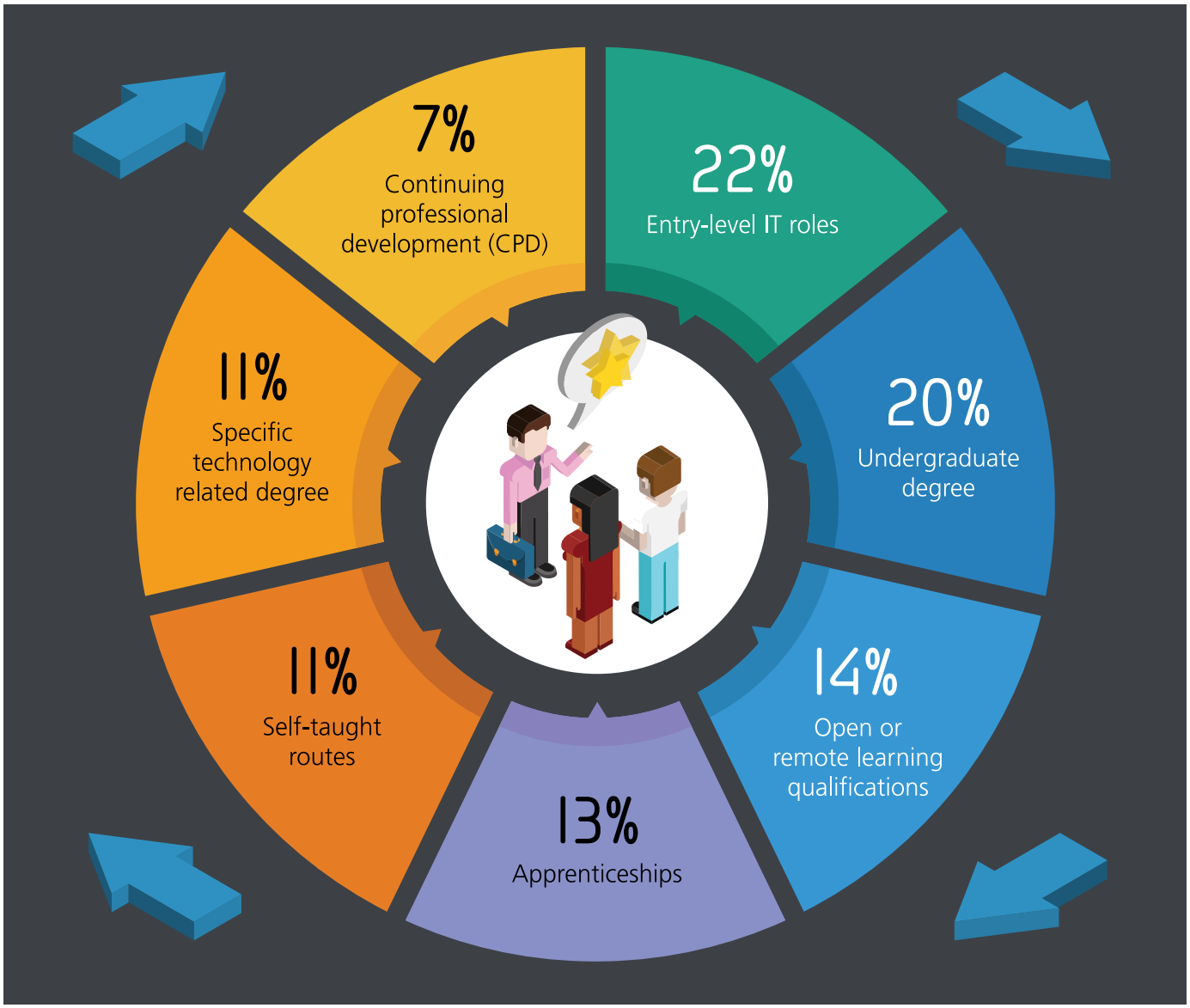
Also common among respondents is the concern that **IT education will be expensive, as highlighted by 27%.** However, this figure rose amongst **Black men (41%)** and **women (40%)**, **men with an annual household income of under £50K (30%)** and **neurodivergent people on the same income (31%).**

Fortunately, steps are being taken to ensure that university education is not prohibitively costly. In fact, data from 2022 reveals that record numbers of students from social mobility cold spots applied for places at higher education institutions. A number of private sector enterprises sponsor scholarship courses designed to feed the pipeline of talent into their industries, while bursaries and grants can also help to offset living and/or tuition costs.

Click here for the 'Percieved Barriers to Careers in Tech' report for more insights

Alternative routes into tech

When it comes to the perception that you need a degree to work in tech, the truth is that there are many other routes into the industry besides traditional higher education. In fact, for respondents currently working in the tech and cyber security industries, a degree was only one of several popular pathways.



There are now a huge range of online and in-person partially and fully funded courses designed to help people improve their skills in specific areas. Notable providers include **Code First Girls, Coding Black Females, Colorintech, MindWeaver, Codecademy** and **School of Code.** Many of these are fully funded and provide intensive or part-time "bootcamp" style training and resources to get students and career switchers into jobs as quickly as possible. One UK job site lists nearly 14,000 IT training courses.

A closer look at some of the alternative routes into tech:

Apprenticeships

Apprenticeships combine practical training in a job with study. This means working as a paid employee within an organisation alongside experienced staff to gain relevant skills, while simultaneously getting time for training and study related to your role. At BAE Systems, we offer a range of apprenticeship opportunities – Intermediate (Level 2), Advanced (level 3) and Higher (Level 4 or 5). The 'Levels' refer to the school-level relevant qualifications you gain at the end of the apprenticeships.

Degree apprenticeships

If you're a school leaver and you're not sure whether an apprenticeship or university is right for you, degree apprenticeships can help you make a leap in your career while continuing your studies. This means combining your studies with hands-on, real-world work, gaining invaluable skills to turbo-charge your career and get a qualification upon completion. At BAE Systems, we offer Level 6 degree apprenticeships, supporting you by funding your tuition fees and paying you a competitive salary so you can focus on the vital role you'll play in helping us build a safer and more secure tomorrow.

Theresa Palmer, Global Head of Diversity, Equity & Inclusion, BAE Systems Digital Intelligence commented:

When it comes to the perception that you need a degree to work in tech, the truth is that there are many other ways in besides traditional higher education. As we work to address the tech skills gap, highlighting how people can enter the sector through alternative routes is crucial.

It's not just people about to leave school or in their early careers we should be addressing, but those of all ages who are looking to move jobs. Thanks to increasingly popular alternative pathways, such as apprenticeships, it has now become easier to make a change, regardless of your age and where you are in your career.

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T-level industry placements

Launched in 2020, T Levels are new two year courses which are taken after GCSEs and are broadly equivalent in size to three A Levels. Developed by employers and education providers, the courses aim to meet the needs of industry, preparing students for entry into skilled employment, an apprenticeship or related technical study. Many organisations, including BAE Systems, offer T-level industry placements, which give you the chance to see what working life is really like. And, at the end of your placement, there's a chance you could be offered a full-time position on one of our apprenticeship schemes.

Click here to explore our apprenticeship programmes and T-Level industry placements

Fully funded bootcamp

Open to everyone – from school-leavers to career changers – bootcamps enable people with little to no technical experience to gain new skills, such as software engineering, coding and cyber security. Offering beginner or intensive options, many of these bootcamps are fully funded by either the UK government, through partnerships with organisations such as BAE Systems Digital Intelligence or a combination of both, meaning enrolling comes at no cost to the individual. For example, we partner with a number of social enterprises offering bootcamps, including Code First Girls, School of Code, Coding Black Females and Tech Returners. Our national security team also runs its own bootcamp, **The National Security Academy.** This is a 16 week programme which trains people in software engineering skills and, upon completion, deploys them on to fee-earning projects. For those who already have some software development experience, our **Cyber Accelerator** also provides an opportunity for individuals to take their first step into the world of national security. Completing a bootcamp could help to fast-track a career in technology, opening up a range of job opportunities in the sector.

Anna Brailsford, CEO, Code First Girls commented:

Hiring talent from alternative routes into technology is now a business imperative. According to our research, by 2025 there will be one qualified female computer science graduate for every 115 roles in software, data, AI/ML and cyber. Organisations cannot rely on traditional, graduate recruitment methods if they want to build truly diverse and representative teams.

Here at Code First Girls, our online coding courses are on average 700% oversubscribed. The demand is there, women want to learn to code. Since the global pandemic, we have also seen a 126% rise in career switchers applying to our programmes. Providing flexible, free, and virtual training are just some of the ways that we are reducing barriers for women to reskill into the technology workforce.

CODE FIRST GIRLS

A separate recent study reveals that government and business both play a major role in improving the social mobility of younger generations—through work experience, apprenticeships, closer collaboration with educators, and upskilling programmes. There's an open goal here in front of a tech sector still grappling with the challenge of improving DE&I. By supporting and publicising alternative pathways to careers in tech, employers can not only help to alleviate skills and diversity gaps, but also break down persistent barriers to greater social mobility. And get the UK thriving again.

Career switchers

It's not just people in their early careers we should be turning our attention to, but people in the workforce looking to move jobs. It has now become easier to make a change, regardless of your age and where you are in your career, made more possible by these alternative pathways.

In fact, **nearly half (48%) of respondents from outside the sector said they'd think about moving jobs to work in tech. 44% out of this proportion specifically called out major new tech innovations** as encouraging them to seek out roles in the sector. Moreover, the number of people who said they'd consider switching to tech careers increased to **65% for minority respondents.**

A similar share **(49%) of tech workers we asked said they did indeed transition into the sector later in their working life.** The figure is slightly lower **(41%) for the cyber security professionals** we polled, but still notable – indicating the viability of career switching as a means to reduce tech and cyber skills shortages and improve DE&I.

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Not all career paths are linear. Many of our own employees at BAE Systems Digital Intelligence transitioned into tech roles later in their careers. Meet Divya, Katie, Jen and Jon:

Divya Thapa, Software Engineer at BAE Systems Digital Intelligence and graduate of Code First Girls

From recruitment to coding

I had worked in recruitment for several years when I decided to switch careers. Prior to the nanodegree, I'd completed Code First Girls' career switcher course and benefited from being a member of the community of women it had built so far. Because Code First Girls caters for women, all of its courses are run in the evening, which makes it easier to attend. They are also free of charge.

The Code First Girls programme was fun. Our instructors made sure it was interactive and that we got to know one another in the cohort. The final presentation was the highlight for me. As each group presented their project, it showcased every individual's 13 weeks of commitment, hard-work and sheer determination that got us to the place where we wanted to be. The pride in all projects that were presented reflected the skills, confidence and inspiration that Code First Girls had helped us achieve.

Technology is something that I was always fascinated but intimidated by. It took a whole year or two of procrastination to attend a workshop to begin my coding journey back in 2019. Do not be afraid to take that first step – remember there are many others with you!

Katie, National Security Apprentice, Lead Engineer

From biomedicine to software engineering

I studied biomedicine for eight years, during which time I completed a PhD in Childhood leukemia in 2016 and then went on to work as a postdoctoral researcher for two years before having my first child. I was then planning on being a stay at home parent, but found that I wanted to have a career.

I had some experience with coding as part of my PhD and, as a result, I signed up for a Department of Education funded online course run by QA. While these were originally held in Manchester, the pandemic meant they were virtual. This meant I could study around childcare commitments, which wouldn't have been possible if I had to travel.

We had talks from employers during this time and I applied to the BAE Systems National Security Academy scheme. We completed 14 weeks of virtual learning and were then put onto client projects to put our new skills into practice while continuing with studying.

Whatever you do first in your career doesn't define you; you can switch at any point and there's lots of support out there. Careers in tech and cyber are really flexible – BAE Systems, for example, is supportive of hybrid working and you can study around family needs. You also don't need a degree to get into computer science: there is a myriad of alternative routes into tech, apprenticeships being one of them.

Jen Openshaw, Software Engineer

From beauty and the National Trust to software engineering

A few years ago, as my two young sons slept, I sat at home wondering what to do about my career. I had moved across the country, which meant my previous job working in the heritage sector was no longer an option. I was now living in a rural part of the UK, and I didn't think it would be possible to have an interesting career while also being the best mum possible.

I was always intrigued by technology. Even when I worked for the National Trust, there would be many times I found myself wishing I'd studied computer science (instead I studied history at Cambridge and gained a NVQ Level 2 in beauty therapy). I started doing a few free coding tutorials and then I signed up to a part time boot camp offered by Manchester Codes. This was perfect because I could attend on week nights and weekends, enabling me to balance childcare.

The rest was history. Shortly after completing my course I joined the team at BAE Systems Digital Intelligence as a graduate, working as a software engineer on one of our national security clients. I have been able to keep learning while working flexibly. I have also loved being involved in our partnerships with Manchester Digital, Greater Manchester's digital and tech trade body, and Digital Her, a programme launched by Manchester Digital that aims to tackle the shortage of women employed in the region's digital and tech industry.

Jon, Software Engineer

From the hospitality industry with no coding knowledge to software engineer

While I've always been interested in tech, after dropping out of university I went into an unfulfilling and stressful job in hospitality and retail. A few years ago, I looked into changing careers into tech and have never looked back.

As a first step, I started upskilling myself with a coding boot camp, but I was also interested in an apprenticeship that could support my learning and development. I had little to no actual coding knowledge and very little experience, so I wanted something that provided me with the training I needed to get my foot in the door and I was interested in working for a big company as it could bring me the security and experience I needed.

The BAE Systems Digital Intelligence apprenticeship suits me perfectly. I work five days a week and have two self-development days, involving personal study or working on project work. On Wednesdays I support the internal team and then on Thursday and Friday I attend The Software Institute which provides more structured learning.

Conclusion – Getting Britain moving

Everyone should be able to achieve their potential. Coupled with the perception that the tech and cyber sector is lagging behind other industries when it comes to DE&I, the UK is also said to have one of the worst rates of social mobility in the developed world. And what's more, according to industry reports, only 9% of tech employees are from lower socio-economic backgrounds when compared to 39% of the UK population. The bad news is that social mobility is reportedly harder now than at any point in that past half-century, which could have an outsized influence on the health, wealth and happiness of millions of people.

The good news is that **over three in five (63%) of our respondents in tech and cyber security roles think that if their industry focuses more on hiring those from minority groups** – which includes people from lower socio-economic backgrounds – it will help the country to become a global tech leader.

This starts with transparency. Many tech workers believe their employer still isn't being open enough with measurement of DE&I, and others suspect they talk the talk but don't walk the walk on diversity and inclusion. Yet by promoting alternative routes into tech careers, organisations can drive long lasting change and start to address the talent gap. There's still plenty of work to do. But there's also cause for optimism.

Methodology statement

An online survey was conducted by Walr among 2,053 UK respondents. Within this sample, quotas were applied to target 501 technology professionals, 520 specialists in cyber security and 1,032 general consumers to compare their perceptions and experiences relating to the technology field. Respondents with a diverse range of characteristics were recruited for the research. They included people of varied age ranges, socioeconomic backgrounds, ethnic groups, genders, and from neurodivergent communities.

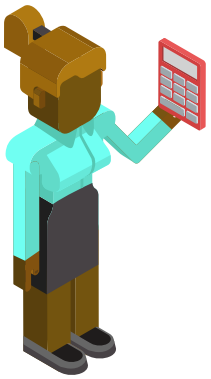
The research fieldwork took place between December 11 - January 2, 2024.

Find out more about career opportunities at BAE Systems

Click the links below to find out more about becoming a part of BAE Systems Digital Intelligence.

BAE Systems Digital Intelligence career opportunities

BAE Systems Graduate schemes



BAE Systems apprenticeship schemes

BAE Systems industrial and summer placement opportunities

Find out more about our DE&I strategy, Employee Resource Groups and about our DE&I partners here

We are Digital Intelligence

Digital Intelligence is part of BAE Systems and employs over 4,800 digital, cyber and intelligence experts that collect, connect and understand complex data to help protect nations, businesses and citizens around the world from advanced threats. Our services, solutions and products span customers in central government and government enterprises, critical national infrastructure, law enforcement, military, national security, space and telecommunications.

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