BUSINESS LDN

Funded by UK Government

October 2024

PIONEERING ADVANCED DIGITAL SKILLS FOR ALL

Making London the best tech city in the world

Supported by LONDON CHAMBER OF COMMERCE AND INDUSTRY · CBI · fsb · WPI ECONOMICS

Contents

This report has been funded by the UK Government as part of the Pan-London Local Skills Improvement Plan (LSIP). BusinessLDN extends its gratitude to all partners and members who contributed, including the report's authors, WPI Economics, who collaborated closely with us to produce this report.

Foreword

Gaining new skills can be life changing for individuals; providing the right skills in London is the difference between charting the path to future growth or falling behind. It is within this context of wanting to take London from strength to strength that BusinessLDN led the London Local Skills Improvement Plan (LSIP) on behalf of the capital's business groups. One of the things the LSIP report identified was the need for Advanced Digital Skills (ADS) provision to be turbocharged if London is to become the best tech city in the world – a very real possibility if we can get this right.

ADS are critical to future economic success.
We consistently hear from the capital's employers that these are the skills most in demand as they look ahead to the next five years. And while these skills are vital for the future growth of the city's tech sector, that is not the only reason that they are important. ADS will increasingly underpin all sectors, from financial and professional services through to the creative industries that give the city its heart. These skills are also key in the sectors identified as a priority in the LSIP – from revolutionising health outcomes through to speeding up construction processes. Failing to get this right is not an option, as Artificial Intelligence (AI) is set to impact the London labour market more than any other region. As well as being vital for the labour market, expanding the prevalence of these skills also matters for the pay Londoners' take home, as workers with ADS already earn 30% more than those without digital skills. Getting these skills in place, alongside the transferrable skills needed to utilise them effectively in the workplace, is central to the capital's future success, and should be an important part of the Mayor's new London Growth Plan.

Getting delivery right is key. There is already a huge range of skills provision and training available in the capital. This can play a part in plugging the gaps, but it is often challenging for educators to respond to changing demand in close to real time and for employers to know which training will meet the specific needs of their businesses. The challenges in provision are compounded by the need to ensure that ADS fits alongside other important skills such as essential digital skills – important in their own right and as a stepping stone – and the transferrable skills that remain so in demand today. Collaboration between policymakers, employers and training providers is at the heart of making this complex picture somewhat simpler to solve. There are great examples of this happening in practice, with some large companies working to spread talent around their supply chains and setting up bespoke programmes with educators where business demand is identified. But urgent action is needed to scale up existing programmes and to join up interventions so that each is greater than the sum of its parts.

This is why we are calling for the establishment of a London ADS Talent Programme – a public-private partnership jointly funded by business, providers and the Greater London Authority (GLA) to develop and deliver the training programmes that meet employers' and employees' ADS needs now and into the future. As an intrinsic part of the Mayor's new London Growth Plan, this new Programme has the potential to see ADS provision better funded and expanded to reach Londoners from all backgrounds, increasing the diversity of people who have these in demand skills. This report sets out the systemic changes needed to make this wider provision a reality, what employers, providers and the GLA can do now to improve access to ADS, and the funding support business can provide to underpin the actions that will give London the best chance of being at the frontier of technology-led growth into the future.

ADS should be firmly in the minds of the Mayor, providers and businesses as an area where rapid action is critical. London either gets in front of demand now or gets left behind.

MUNIYA BARUA
Deputy Chief Executive
BusinessLDN

London has the potential to be the best tech city in the world

Executive Summary

London is often described as the best city in the world: its diversity, ambition, creativity and dynamism, amongst other things, are second to none. Strong educational institutions and a broad and deep employment market across a huge variety of active sectors mean London is and will continue to be a draw for workers from across the country. Already the engine of UK growth, driving about a quarter of national GDP, London also has the potential to be the best tech city in the world – at the forefront of innovation, harnessing the best of what it delivers already, but taking it to the next level, supporting and accelerating the national economic recovery. This could become a reality if action is taken now to upskill the capital's workforce in advanced digital skills (ADS). With a new Government in power with a growth-focused mission, including plans to reform the Apprenticeship Levy and create Skills England, and a recently re-elected Mayor committed to an ambitious London Growth Plan, the time is ripe for action. That action needs to be led front and centre by the Mayor, backed by businesses and education providers. This report sets out how that could be done.

ADS are essential for the future success of London's economy. Over the past decade, London has positioned itself as Europe's leading tech hub, employing over 589,000 people in the technology sector – but it must continue to innovate if it is to stay out in front. Digital skills are vital across sectors, but particularly for London's traditionally strong sectors, including financial services and the creative industries, which form some of the UK's biggest exports and are a critical part of the UK's 'Services Superpower' future.[i] However, there are significant ADS gaps across many priority sectors, as identified by the London Local Skills Improvement Plan (LSIP).[1] Additionally, two surveys of London business leaders and HR Managers, carried out on behalf of the LSIP, both found ADS are set to be the most sought-after skillset by London employers across the next two to five years.[ii]

The benefits to the economy, businesses and Londoners of tackling this ADS gap are clear. An improvement in ADS could increase annual UK GDP by around **£68 billion**. The average British worker with ADS earns around £11,500 more a year than similar workers without those skills.[iii] The adoption of advanced digital technologies could add £520 billion to the UK's economy by 2030 – powered in large part by the London economy.[iv] It could also support the continued success of London's higher education institutions: an important consideration given London is home to over 40 universities, including four ranked in the world's top 40.

The prize is significant – but tackling this skills gap is inherently difficult, especially in London, which is expected to be far more exposed to the impacts of

1 The London Local Skills Improvement Plan is an initiative funded by the Department for Education and led by BusinessLDN and key partners including the FSB, LCCI, CBI and the Mayor and GLA. Together it forms a data-driven plan for better matching post-16 training provision to employer skills demand and the needs of London's economies. This will help employers meet their skills gaps, fill vacancies and get more Londoners into jobs.

artificial intelligence (AI) than any other UK region and up to five times more exposed than the least affected UK region.[v] The fast-moving pace of technological change – exemplified by the rapid growth of generative AI in the past year – means that employers are constantly adapting their businesses to make better use of new technologies while also trying to forecast what will come next and recruiting and training their workforce accordingly. At the same time, employees need to regularly reskill to keep up with this pace of change, and to stay ahead of the risk that jobs are crowded out by new AI services. This presents a challenge for the skills system to effectively respond – almost in real time – to ensure that employers have access to a workforce with the necessary and relevant ADS.

Our research has found:

- **Challenges in delivering ADS exist across all types of provision** (further education and higher education). Strong leadership and a major coordination effort between local Government, business and providers will be required to help to overcome this.
- **Employer-educator collaboration is vital to respond to rapidly changing technology**, tailoring provision to employers' skills needs, and helping to ensure training results in meaningful work experience.
- **Employers need to be more embedded in the skills system**, making a significant contribution to co-designing and co-delivering ADS training. The Mayor has a vital leadership and convening role here.
- **London's existing innovative arrangements that seek to address these challenges need time to embed into the skills system**. As such, the focus should be on embedding what is working rather than introducing new models, such as a London Digital Skills Partnership, which may not shift the dial and could potentially distract from this process.
- **Transferable skills, applicable across all roles, such as good communication, remain critical** in applying ADS at work, and enabling employees to continuously adapt and learn as their sector's skills needs change.

To tackle these challenges and ensure London can reach its potential as the best tech city in the world, we are calling for ADS to be an intrinsic part of the Mayor's new London Growth Plan.

The Mayor has a unique leadership platform to co-ordinate action at a pan-London level, building on the successful LSIP partnership model between business, education providers and Government, as well as the ideal opportunity to champion the capital's tech ambitions as an intrinsic part of his new London Growth Plan.

In addition, the Mayor can also deploy the existing powers and skills funding of the Greater London Assembly. However, given the limitations in how funding flexibility can be applied to ADS – it is essential that he continues to make the case for further devolution to enable the capital to rise to the challenges and ensure better matching of local supply and demand.

Now is the time to pull all the levers available to ensure London does not fall behind, and becomes a global leader across key digital services and sectors. The section below breaks down the key actors who can put London ahead of the game on ADS with corresponding actions.

As an important part of the London Growth Plan, The Mayor (and the Greater London Authority) should:

- **Establish a London ADS Talent Programme:** This Mayoral-led Programme would bring together the key actors responsible for boosting London's ADS provision in a new public-private partnership between the Greater London Authority (GLA), education providers (in both further and higher education) and business. Using New York City's Mayoral-led talent programme as a model, the Programme would be co-funded and co-designed by the GLA, education providers and business groups (BusinessLDN and other Employer Representative Bodies). It would build upon existing research into workplace ADS needs to deliver training programmes supported by business. The overall aim of the Programme will be to boost business funding for, and design of, educational courses and workforce training in ADS and develop and coordinate a talent pipeline into these. It will be critical that the Programme is designed in a way that reaches Londoners of all backgrounds, increasing the diversity of people with ADS. The Programme would follow in the footsteps of a similar Mayoral-led programme in New York, which has successfully scaled up the delivery and quality of ADS provision through a public-private partnership model.

- **Launch an "ADS for All" campaign, to drive awareness of the London ADS Talent Programme:** The Mayor has a vital convening role in putting ADS at the top of the agenda and boosting the profile of the London ADS Talent Programme. A proactive campaign, designed collaboratively by the GLA and business groups (BusinessLDN and other Employer Representative Bodies), and kicked off with an employer summit would boost employer engagement with existing ADS providers and put this issue at the heart of the business agenda. At a more granular level, an employer-led Task and Finish Taskforce on ADS reporting to the Skills for Londoners Board and aligned to the LSIP, would ensure that actions identified through the campaign and summit are clearly tracked.

Through their existing powers, the Mayor (and the GLA) should:

- **Provide long-term funding certainty for the Mayor's Skills Academies (MSA) Programme:** To deliver the step-change needed in the capital over the next five years, these programmes should be underpinned by a five-year minimum funding award as soon as possible. This would send a strong signal to employers and training providers that these programmes are an integral part of the London skills landscape for the long haul.

- **Set an example on embedding transferable skills in all ADS provision:** To maximise positive employment outcomes as well as meet technical requirements. Strong transferable skills are vital to supporting employees to adapt and learn as the requirements of technical skills change – which for ADS is happening at increasing pace. To support this, the GLA should ensure that transferable skills are embedded within their training provision, particularly digital training, and should work closely with central Government and training providers on how this approach could be rolled out in central Government-funded provision across the capital.

Through constructive engagement with central Government, the Mayor (and the GLA) should:

- **Create a London Careers Service which brings together employment support, careers advice, training providers and employers:** The Mayor should work closely with the new Government to create a one-stop shop model, including a fully devolved London Careers Service. Specifically on ADS, the service could: match employer and provider needs and foster greater collaboration (faster); map out the different career pathways using ADS; and clearly signpost the different options to skills development at these career stages.

- **Press for control over Skills Bootcamps for Londoners to be devolved to the GLA:** While Skills Bootcamps are a nationally-funded programme, the Mayor should make the case for these to be devolved to London, under the oversight and scrutiny of the Skills for Londoners Board, to better align these with London's other skills infrastructure and programmes and provide long-term funding certainty.

- **Ensure the new Government's planned reforms to the national skills system provide sufficient flexibility to support, and focus on ADS provision:** The new Government has announced the launch of Skills England, a body which will coordinate the national skills landscape, including identifying the training that the Growth and Skills Levy (the reformed, more flexible Apprenticeship Levy) can support. The Mayor should work with the Department for Education to ensure that ADS provision is a core element of the training that the Growth and Skills Levy can support.

Providers should act now to:

- **Work with the GLA to create a new Centre of Excellence on 'what works':** This could take the form of a commitment between providers and large tech employers to share evidence on the effectiveness and outcomes of different models of ADS provision and delivery. This knowledge sharing through the Centre of Excellence could lead to the collaborative development of some specialised ADS provision that a wide variety of providers can deliver and through this support a broader range of employer ADS needs. The Centre of Excellence could be managed and delivered by one of the MSAs or Institutes of Technology (IoTs).

- **Continue to embed industry-specific certifications into training courses:** Technology companies, awarding bodies and provider representative bodies should work together to establish the most appropriate certification and courses to align training provision to industry need.

- **Use Adult Education Budget (AEB) flexibility for essential digital skills provision that has clear pathways into ADS training:** Providers are able to use up to 10% of their AEB formula funded allocation for non-formula funded provision. Initially established to support London's recovery from the Covid-19 pandemic, the flexibility should now be focused on priority areas for London's continual growth. Providers should work with the GLA to make sure Level 3 digital skills provision is a key component of a providers offering under AEB flexibility. In particular, the Association of Colleges London could produce a 'best practice' guide on what essential digital skills offerings have a clear pathway into more advanced provision.

The business community, led by BusinessLDN in its LSIP leadership role, should work with employers and providers to:

- **Scope out, deliver and fund a London Train the Trainer Programme for industry-led training in ADS:** This would be an ongoing Programme, designed in partnership between business groups (Business LDN and other Employer Representative Bodies) and the GLA and funded by businesses to get private sector expertise into education settings on a regular basis. The Programme would include co-designed training based upon the latest in-house skills and knowledge, teaching courses directly through secondment schemes, and/or providing equipment. Trade bodies and business organisations should work with providers and the Association of Colleges London to understand where staff shortages are most acute, and identify appropriate companies and staff who have capacity to plug gaps.

- **Establish a Skills London Careers and Training Virtual Hub as a business-led component of the London Careers Service:** The Virtual Hub will focus on career support, including both job matching and training, promoting apprenticeship schemes, course provision and running webinars with careers advice. This Virtual Hub will be implemented across the priority skills areas identified by the LSIP, but with a significant focus on digital, tech, essential and advanced digital skills. This hub will be a valuable resource for new learners, and for people looking to reskill and upskill.

- **Creating 'best practice' interventions to incentivise wider employer engagement in ADS development:** This could include encouraging employers to commit to this 'top five' actions list:

  1. Collaboration with training providers to establish short courses that align directly to business needs, with a particular focus on the needs of micro and small businesses;
  2. Establishing internal training schemes that specifically focus on developing ADS, and retraining and reskilling existing staff;
  3. Creating partnerships with supply chains to promote and spread opportunities for ADS training and recruitment;
  4. Exploring partnerships with employer-led provision through Skills Bootcamps for Londoners, IoTs, MSAs and educators; and
  5. Mapping the skills needed to meet technological changes adopted by employers and working with technology companies to support skills delivery.

This is not a case of either/or for any these actions – all of them will be needed to put London at the forefront of ADS development. Achieving this is worth the effort it will take, as it has the potential to deliver the workforce the capital needs to become the best tech city in the world.

Additional options for businesses looking to act now and do more are set out in the next section.

Businesses should also consider a range of practical steps to embed ADS in their organisations

Businesses have a unique opportunity to invest in the future of ADS skills in London – those that want to seize that opportunity should consider the following actions to improve delivery and uptake of digital skills, in their businesses and in communities across London:

- Regularly reviewing and adjusting recruitment and training strategies based on industry developments and emerging technologies.
- Using a data-led approach to identify ADS needs among the workforce, including using a skills taxonomy to measure supply and demand for these skills in the business.
- Using the Grow London Local skills support hub to get up-to-speed with the range of ADS on offer in London.
- Establishing strong Industry-Academic Partnerships by collaborating with universities, colleges and independent training providers to create tailored curriculums and programmes, offering guest lecturers and teachers, and joint research initiatives.
- Becoming a member of an Institute for Apprenticeships and Technical Education (IfATE) trailblazer group, to help create, design and update apprenticeship programmes in ADS.
- Providing employees with access to learning resources, including an online hub, digital literacy courses and other programmes delivered via tailored micro-credentials.
- Creating a peer network which encourages employees to share their experiences and expertise.
- Implementing a mentorship programme for entry-level employees in ADS roles.
- Organising hackathons, innovation challenges, and other competitions to engage with digital talent and identify innovative solutions.

1

Introduction

The Mayor and his team have an ambition for London to be the best tech city in the world. For that to become a reality, the capital needs to turbo charge the action it is taking on developing advanced digital skills (ADS) across the labour market.

In August 2023, the new London Local Skills Improvement Plan (LSIP) was published.[2] One of its key findings was that there is **significant unmet employer demand for people with ADS**. The fast-moving pace of technological change – exemplified by the rapid growth of Artificial Intelligence (AI) in recent years – means that employers are constantly adapting their business needs to make better use of new technologies. This rate of change presents a challenge for the skills system to effectively respond to ensure that employers have access to a workforce with the necessary and relevant ADS.

Two surveys of London business leaders and HR Managers conducted for the LSIP both found that ADS are set to be the most sought after skillset by London employers across the next two to five years.[vi] Meeting this will require a sustained programme of change, as London has digital skills gaps at all levels – with many learners and workers lacking basic digital skills in the context of high levels of digital poverty in London.[vii] These findings informed a key medium-term recommendation of the London LSIP Roadmap to address digital skills in all their forms, as detailed in Table 1.

Table 1: LSIP roadmap action on ADS

ACTION AREA	DETAIL	ACTION FOR	TIMEFRAME
Digital Skills	Galvanise more employer/educator co-design of provision, including embedding industry-standard curricula and certification in Further Education (FE) and Higher Education (HE) courses, especially in areas with fast-changing cutting-edge technology. Support employer engagement through establishing a London Digital Skills Partnership based on the model used elsewhere in England. This would build on the Mayoral Digital Academy Hub.	GLA, business organisations, training providers	Medium

Source: London LSIP

Ongoing work through the LSIP and working with partners such as FutureDotNow and the Good Things Foundation is driving improvements in London's provision of essential digital skills, particularly as a key element of boosting labour market inclusion and social mobility.

However, this only tackles part of the gap. As such, this report focuses on what action is needed to address the ADS gap – centred on these rapidly evolving areas that both employers and educators are grappling with – in order to make progress towards closing it. As such, this report aims to:

- **Determine the nature of ADS needs in London**, and the barriers and challenges to addressing these.
- **Propose an appropriate private-public model for increasing the delivery of ADS training in London**, considering different approaches to these challenges in the UK and internationally.

The core actions that need to be taken are summarised in the Executive Summary and detailed in the recommendations section at the end (section seven) of this report.

2 The LSIP is a Department for Education-funded initiative which brings employers, educators and other key stakeholders together to create a blueprint for transforming the skills system to meet local needs. The London LSIP was led by BusinessLDN in partnership with the Federation of Small Businesses London (FSB), London Chamber of Commerce and Industry (LCCI), and Confederation of British Industry London (CBI), with the backing of the Mayor of London and London Government.

Defining ADS

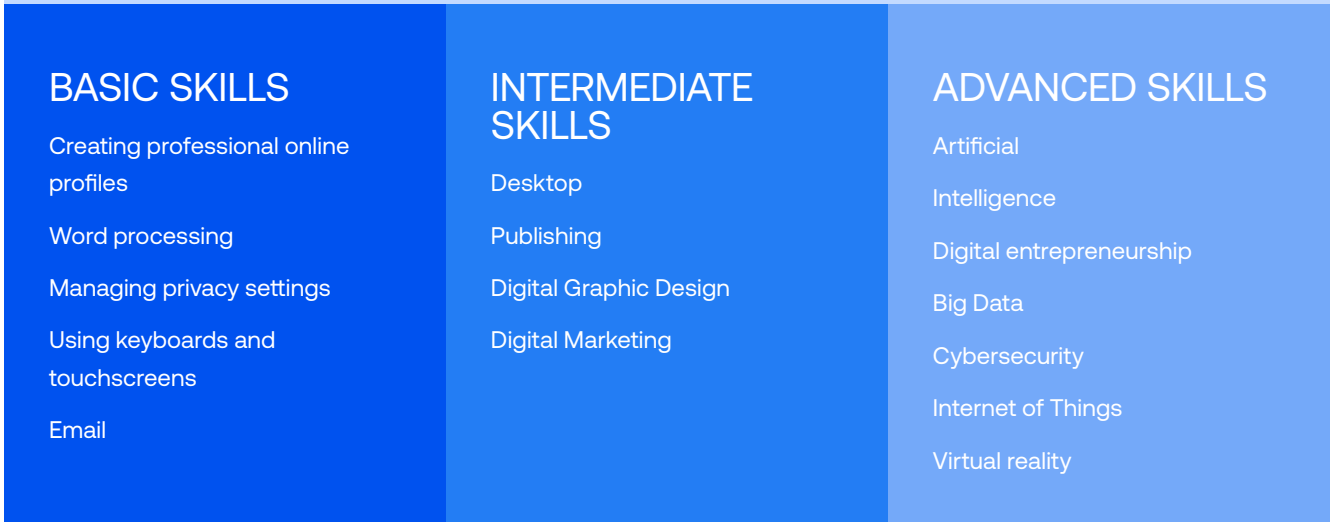
One of the immediate challenges in understanding ADS needs is that there is no common and fixed definition for them. In part, this reflects that these skills are continuously evolving in response to technological developments. The International Telecommunication Union (ITU) has produced the following infographic to outline how ADS sit alongside basic and intermediate digital skills:

Various attempts have been made to create a better definition (see Annex 1). For the purpose of this report, we use a definition of ADS based on research carried out by Burning Glass (now Lightcast) for the Department for Digital, Culture, Media and Sport published in June 2019.[viii] This research breaks ADS down into seven clusters of related skills, which are commonly required together by employers for more technically-oriented jobs:

- **Software and Programming** (programming languages such as Java, SQL and Python);
- **Computer and Networking Support** (set up, support and management of computer systems and networks);
- **Data Analysis** (data analysis tools such as R or Stata, Big Data and Data Science, data mining, management and visualisation as well as machine learning, artificial intelligence, and natural language processing);
- **Digital Design** (Digital production, graphic design, online advertising skills);
- **CRM** (CRM software such as Salesforce or Microsoft Dynamics);
- **Digital Marketing** (Digital marketing technologies such as social media platforms and analytics tools such as Google Analytics);
- **Machining and Manufacturing Technology** (Machining and engineering software and tools such as CNC machining and computer-aided design).

Continuum of digital skills

Source: ITU



The Burning Glass definition has two distinct advantages over other definitions:

1. It uses a robust methodology based upon job postings that can be replicated and updated, with more recent analysis of jobs posting / vacancy data.
2. It combines skills clusters based on employer demand with definable skills levels that broadly align with the Department for Education's classification of higher-level learning as Levels 4 (e.g. higher apprenticeships) through to Levels 8 (e.g. doctorate-level research).[ix]

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Report scope and structure

As the London Office of Technology and Innovation (LOTI) and others have made clear previously, a talent pipeline of ADS is not possible without a greater proportion of London's population having good digital literacy and access.[x] While we recognise the importance of essential digital skills in providing a foundation for ADS, and as important skills to develop in their own right, the report is focused solely on the delivery of ADS. However, the interventions and recommendations we propose – and any new model that could emerge to realise these – may also support the delivery of other types of digital skills too.

ADS are changing at pace, particularly given the explosion in the use of AI, and this will have a fundamental impact on the functioning of the UK labour market and training provision in the future.[xi] Within this report, AI is understood both in terms of the skills that are needed to effectively harness it within a business context (e.g. prompt engineering), as well as those needed to create AI software itself.

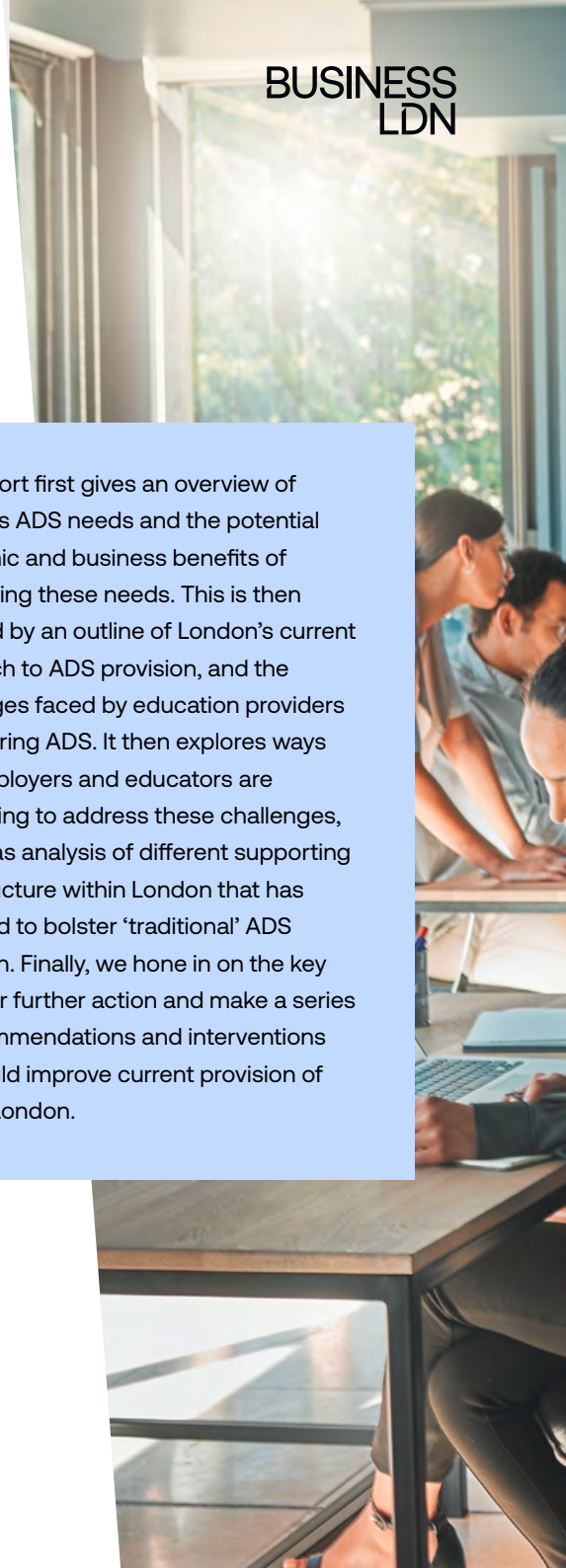
As this is an LSIP report, the main focus is on those issues and actions that can be addressed at a London-level. However, the new Government has taken on the skills challenge at the national level, with moves to reform the Apprenticeship Levy and discussions on creating a Skills England body to coordinate skills and training across the country.[xii] Our recommendations for London are therefore closely aligned with and take account of both the work already happening at the London level through the Greater London Authority (GLA), and the wider national context of improving investment in skills.

The national focus on skills will also bolster the local London recommendations we make here.

The findings contained within the report are based on three main source bases:

1. **Desk-based research** of existing literature on London and the UK's ADS needs and demands.
2. **Interviews** with senior stakeholders in business, education providers, local Government and wider support networks. These interviews focused on London's ADS challenges and gaps, perspectives on how London currently approaches them, and solutions to address these challenges and gaps.
3. **Labour market data** from Lightcast, centred on job openings and Further Education (FE) and apprenticeships related to ADS.

This report first gives an overview of London's ADS needs and the potential economic and business benefits of addressing these needs. This is then followed by an outline of London's current approach to ADS provision, and the challenges faced by education providers in delivering ADS. It then explores ways that employers and educators are attempting to address these challenges, as well as analysis of different supporting infrastructure within London that has emerged to bolster 'traditional' ADS provision. Finally, we hone in on the key areas for further action and make a series of recommendations and interventions that could improve current provision of ADS in London.



2

The business and economic importance of ADS

This section outlines:

- **The importance of meeting advanced digital skills (ADS) needs for London's economy and businesses and to national economic growth**, the economic dividend in addressing ADS challenges, and the critical role ADS play across a number of sectors.
- **Employers' need for ADS**, across different sectors in London, and how this differs to elsewhere in the UK.

The business and economic benefits of ADS

By the 2030s, it has been estimated that 90% of all jobs will require digital skills.[xiii] London is already the most actively hiring region for digital skills, with UK Government-funded research finding that the capital had four times as many companies seeking new talent with digital skills compared to the next largest region.[xiv] **Given the pace of technology change, ADS are set to have a key role to play**.

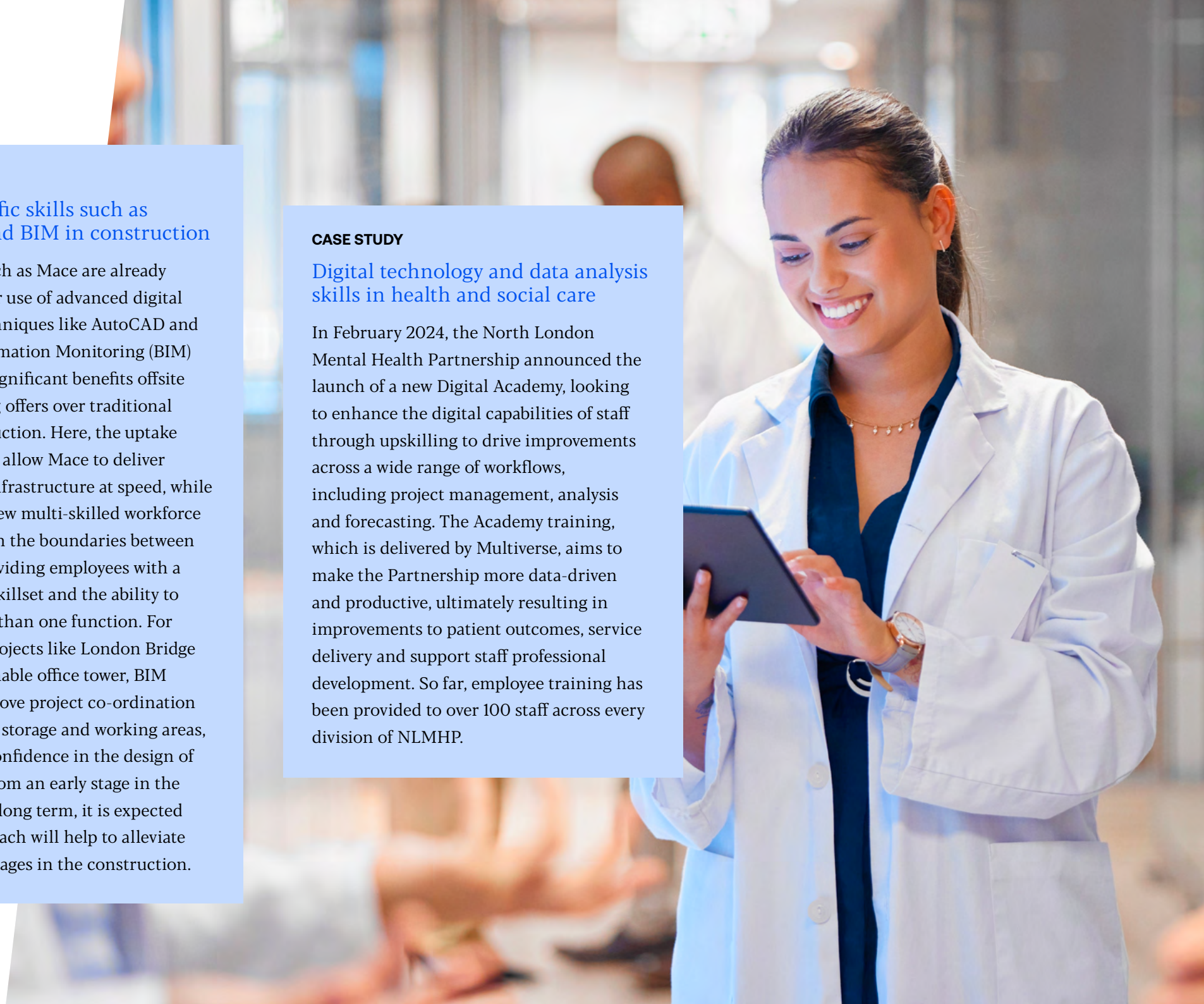
There have been several attempts to calculate the benefits to the economy, society, business and workers of improved adoption and investment in advanced digital technologies and skills:

Research by Public First for Microsoft has estimated that cloud technology and AI could increase UK GDP by over £550 billion by 2035 – the equivalent to increasing annual growth rates by 2% a year. It is also estimated that increased business investment in advanced digital infrastructure, cloud technology, AI and ADS could have an average societal Return on Investment (ROI) of over 5:1 in the next decade – meaning that for every extra £1 spent by companies, the economy could grow by £5. However, the research cautions that a lack of necessary ADS is one of the major issues that could hold back the UK's AI potential.[xv]

Strand Partners for Amazon Web Services (AWS) estimate that the adoption of advanced digital technologies could add an additional £520 billion in gross value added (GVA) to the UK economy by 2030. Around a fifth of this GVA boost (£107 billion) will come from the accelerated adoption of AI technology, and a significant proportion of this will take place in London. Almost a quarter (23%) of AI adoption in 2023 took place in London – the most of any region.[xvi]

Gallup research for AWS has found that an improvement in ADS could increase annual GDP in the UK by around £68 billion each year, through a boost to productivity and workers' incomes. The research also suggests that workers with ADS have annual earnings which are 30% more than those with no digital skills – which translates to higher earnings for those with ADS of around £11,500 a year in cash terms.[xvii]

The need for ADS goes far beyond the technology sector: a wide range of other sectors and occupations will benefit from harnessing their potential. Between 2017 and 2021, LinkedIn data suggests that London saw significant growth in jobs requiring ADS in research (5%), engineering (11%) and marketing (5.5%).[xviii] In addition, across the priority sectors identified in the London LSIP – creative, health and social care, built environment and hospitality sectors – ADS are increasingly important to meeting employers' needs. For example:



CASE STUDY

Sector specific skills such as AutoCAD and BIM in construction

Companies such as Mace are already making greater use of advanced digital modelling techniques like AutoCAD and Building Information Monitoring (BIM) to access the significant benefits offsite manufacturing offers over traditional on-site construction. Here, the uptake of digital skills allow Mace to deliver housing and infrastructure at speed, while developing a new multi-skilled workforce that breakdown the boundaries between trades and providing employees with a more flexible skillset and the ability to perform more than one function. For example, on projects like London Bridge Place, a sustainable office tower, BIM helped to improve project co-ordination around access, storage and working areas, and boosted confidence in the design of the building from an early stage in the project. In the long term, it is expected that this approach will help to alleviate the skills shortages in the construction.

CASE STUDY

Digital technology and data analysis skills in health and social care

In February 2024, the North London Mental Health Partnership announced the launch of a new Digital Academy, looking to enhance the digital capabilities of staff through upskilling to drive improvements across a wide range of workflows, including project management, analysis and forecasting. The Academy training, which is delivered by Multiverse, aims to make the Partnership more data-driven and productive, ultimately resulting in improvements to patient outcomes, service delivery and support staff professional development. So far, employee training has been provided to over 100 staff across every division of NLMHP.

ADS needs in London

One of the key findings set out in the LSIP was that there is significant unmet employer demand for people with ADS, which are expected to be the most in-demand skill set in London in the next two to five years. According to a survey of employers, conducted in December 2022 for the LSIP, more than half of employers (56%) reported a need for ADS.[xix] A subsequent employer survey in February 2024 to monitor progress of the London LSIP found ADS remain the most in-demand medium-term skills requirement amongst employers (54%).[xx]

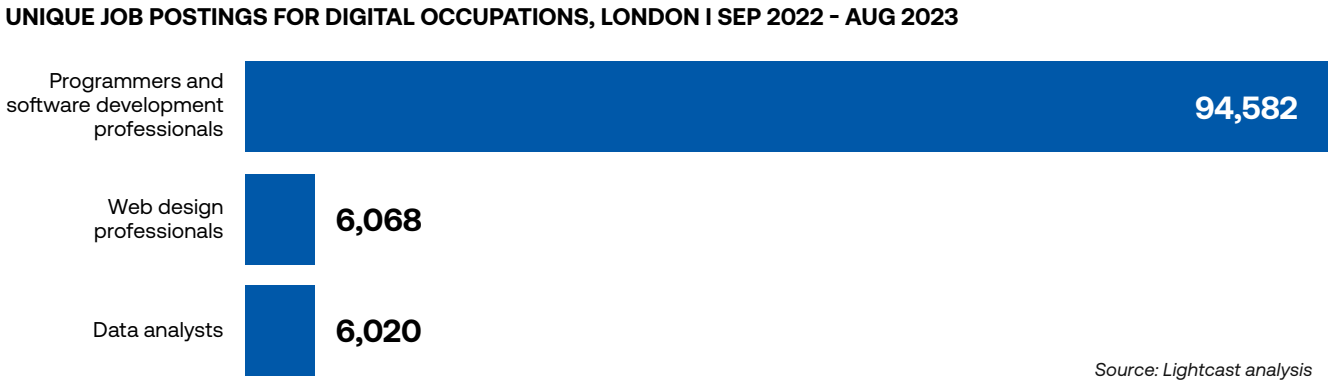
Other research has found that demand is higher amongst employers in London for ADS than elsewhere in the UK due to a stronger market of professional roles reliant on these skills. Research by the Centre for Economics and Business Research (CEBR) for Cisco highlights that for ADS in particular, a third (34%) of employers in London said that the majority of their workers required them, compared to only one in five (22%) in the North and the Midlands.[xxi]

However, with this high level of demand comes challenges in finding suitable candidates with the necessary ADS. Again, this challenge is more acute in London than in other parts of the UK. The same CEBR research found that over half (53%) of employers in London report struggling to recruit employees with the ADS that they need compared with just over one in three (37%) across the rest of Great Britain.[xxii] The Department for Education's Employers Skills Survey suggests the ADS that are most difficult to find in London are specialist knowledge of software, hardware or internal systems, Advanced Microsoft Office skills and application programming and development.[xxiii]

Data on jobs postings from Lightcast[3] illuminates the most in demand digital occupations in London in 2022-23. As Figure 1 shows, programmers and software development professionals are in the highest demand, with nearly 95,000 unique postings in this period.

3 Lightcast is a global leader in the collection and big-data analysis of information on the labour market, including information about occupations, skills in demand and career pathways. Their tools collect real time data from over 65,000 sources, contributing to a database with over 1 billion job postings and billions of other data points.

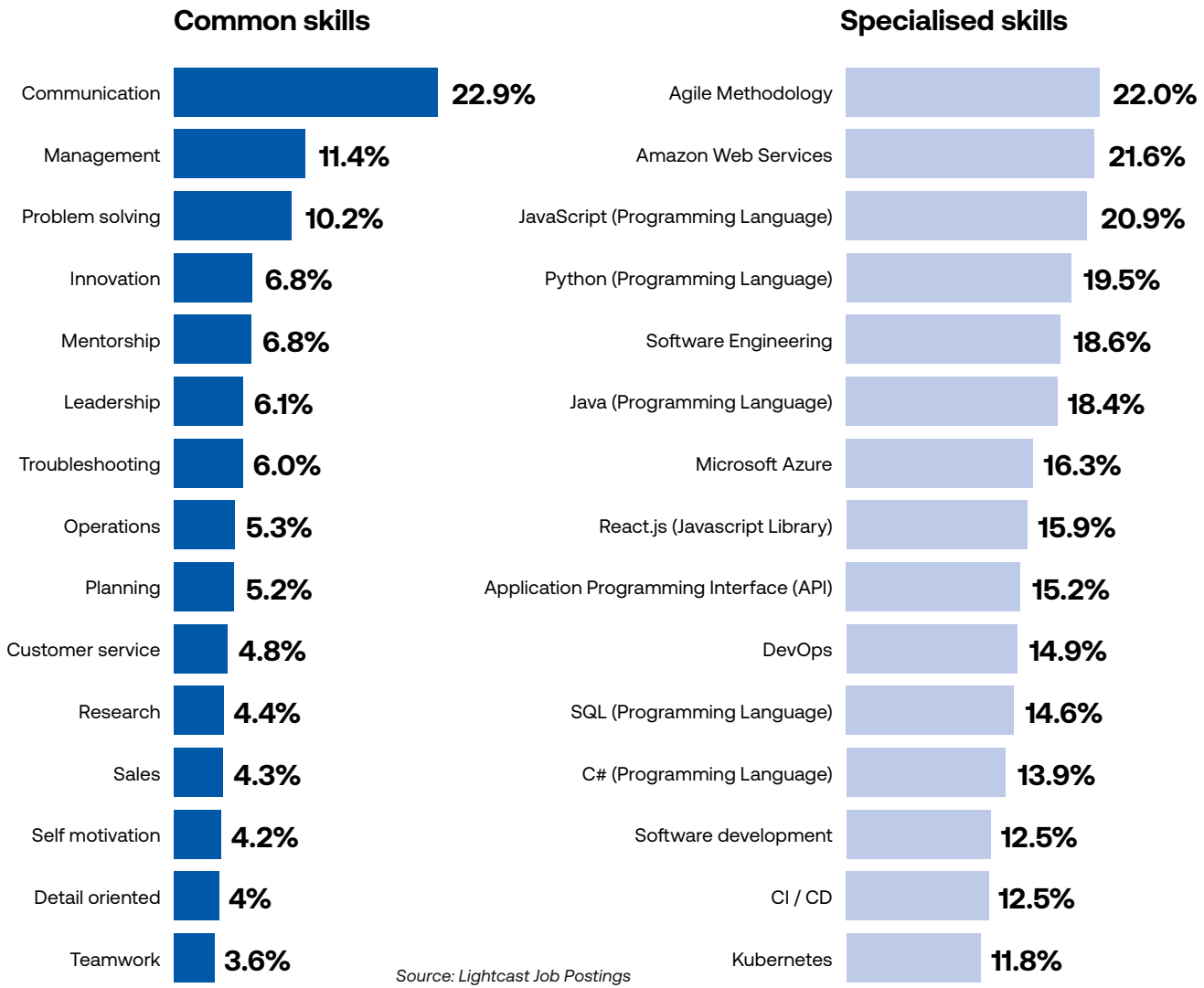
Figure 1: Digital sector top vacancies



As Figure 2 highlights, an analysis of skills described in job adverts for programmers and software development professionals shows the whole range of different skills – both common and specialised – in demand by employers. This demonstrates the importance of both transferable and technical skills for success in ADS roles. This is supported by recent UK Government-funded research which found that the most significant ADS skills gaps exist for roles using programming languages and software-specific skills such as AWS, DevOps and Python. However, there is a growing emphasis by employers on the importance of transferable skills like adaptability, problem-solving, and communication to support these technical ADS capabilities.[xxiv]

Over the last decade, there has been increased business demand for AI technology and for workers with the skills to effectively harness it.[xxv] According to analysis by LinkedIn, it is expected that two of the faster-growing jobs in London in 2024 will be AI Consultants and AI Engineers – with machine learning, natural language processing and data science skills.[xxvi] The Department for Education has found that workers in London are expected to be impacted by advances in AI more than any geographical region of the UK. This high level of impact on the London labour market is due to the capital having a higher proportion of professional occupations – including programmers, financial managers, and IT professionals – and employees who have achieved education or training to at least level 4 (higher apprenticeships and above), which tend to lead to jobs that are the most likely to interact with AI.[xxvii] Clearly, this picture is changing rapidly and a wider range of AI-centred roles will likely emerge.

Figure 2: Top skills demanded for programmers and software development professionals



Source: Lightcast Job Postings

3

Delivering ADS in London

This section outlines London's current advanced digital skills (ADS) provision, with a focus on an analysis of the FE and Apprenticeship achievements for qualifications containing ADS, as well as an overview of how provisions introduced by the previous Government operate in London.

London FE ADS provision

Analysis carried out by Lightcast of the priority occupations identified by the LSIP report for the Digital cross-cutting theme found there were around 1,500 FE course achievements across London in 2022-23 related to these roles from levels 4 to 7, representing 500 full-time learner equivalents.[4] This represents just 1.7% of the FE course achievements identified as digital skills across all levels in this dataset, and 17% of level 4-7 achievements across the LSIP priority areas. The data can be explored fully in Annex 2.

Comparing the achievement data to enrolments during the same year, enrolments are much higher with 5,890 total enrolments and 2,190 full time learner equivalent enrolments. This is more than a quadrupling of full-time learner equivalents. The full data tables are available in Annex 2.

This marked difference may reflect a combination of the shift in employer and learner demand for ADS courses, as there are many more people enrolling today than there were completing courses started in previous years (albeit this also likely reflects that some learners drop out before completing their course).

As well as increasing achievements and enrolments in these areas to create a steady supply of skilled employees to meet growing demand, it is also important to ensure course provision is designed with the employer in mind, to ensure they remain sustainable into the future by delivering what employers actually want.

Advanced Digital Apprenticeships in London

Turning to apprenticeships, Table 2 highlights that there were about 900 achievements in 2023 in London across five standards that are relevant to the target occupations. The majority of these were Data Analyst achievements at Level 4.

Table 2: Apprenticeship achievements in ADS by Level and subject area

APPRENTICESHIP STANDARD	LEVEL	TOTAL ACHIEVEMENTS
Software developer	Level 4	108
Data analyst	Level 4	547
Digital and technology solutions professional	Level 6	209
Embedded electronic systems design and development engineer (degree)	Level 6	3
DevOps engineer	Level 4	36
Total		900

Source: Lightcast and IfATE API

4 Please note these figures do not include HE achievements as HE is out of scope of the LSIP activities.

Apprenticeships are an important part of the picture in addressing ADS gaps, given the extent to which they allow learners to apply skills they have learned directly into a workplace setting. However, there are barriers to getting sufficient employer engagement in implementing apprenticeships, which is explored further in chapters 4 and 6.

The new Labour Government's plans to reform the Apprenticeship Levy have the potential to boost apprenticeships in ADS and will be particularly important for reskilling as employers adapt their existing workforces to ever changing technological demands. Labour have pledged to set up Skills England to identify skills and labour needs, improve training opportunities and ensure skills policy is aligned with national economic needs. This will include the creation of a new, flexible Growth and Skills Levy, replacing the current rigid rules.[xxviii]

These FE and apprenticeship numbers are small in comparison to the skills demand identified in the earlier section, such as the need for 95,000 software programmers and developers in the space of a year. This suggests that there is a need to significantly scale up advanced digital FE provision in London, to address employer skills needs and provide good jobs for Londoners. However, as our research shows, only a small part of recruitment into ADS roles takes place from FE and apprenticeships at present.

Higher Education provision in London

Alongside FE and apprenticeships provision, a key provider of ADS in London is the capital's Higher Education (HE) sector. London is home to over 40 universities, including four ranked in the world's top 40. Across these universities, ADS form a core element of learning across Undergraduate Degrees (Level 6) and Master's Degrees (Level 7) as well as PhD research (Level 8) across the disciplines of Computer Science and Engineering as well as wider science and social science subjects. Increasingly, ADS are also being embedded into the curricula of humanities subjects, recognising their importance to the future career prospects of students regardless of their area of study. For example, economics courses increasingly build in some elements of programming languages such as Python for use in econometrics. In addition, students can develop ADS through extracurricular activities and provision from Student Support Services.

London does particularly well at graduate retention and attraction – especially for those degrees most likely to make use of ADS. A recent analysis found that 71% of London graduates with STEM (Science, Technology, Engineering and Mathematics) degrees remain in the capital to work, and the city attracts 56% of non-London STEM graduates to work after graduation.[xxix] Whilst HE is outside of the scope of the LSIP, our recommendations for providers are equally applicable to driving universities towards improving and increasing their ADS provision.

Other ADS provision in London

In addition to the provision of ADS through FE, HE and apprenticeships, there are a series of initiatives introduced by the previous Government that have expanded the provision of ADS in London and other parts of the UK.

Digital Skills Bootcamps for Londoners

Skills Bootcamps are a Government-funded initiative offering free, intensive tech-focused training for adults over the age of 19. Courses vary from 12-16 weeks and cover multiple sectors and skills, including digital. Skills Bootcamps focus on higher level training (Level 3 – 5) and within digital skills these include software development, digital marketing and data analytics. These are designed to quickly upskill participants and target both current and future workforce needs. A Skills Bootcamp placement often concludes with a job interview opportunity. In London, 26 digital Skills Bootcamps are currently run across 13 providers.

Approaches and aims of various Skills Bootcamps vary depending on the provider. For example, the bootcamp provided by the independent non-profit Generation featured in the case study below combines training with extensive continued pastoral support and matchmaking to employers. Others, such as the Skills Bootcamps for Londoners provided through the GLA, focus on delivering in-demand sector specific skills training to a wide variety of learners (including construction and green digital skills).[xxx]

Our research interviews with key London providers and employers revealed a mixed view of Digital Skills Bootcamps. They were seen as a particularly useful type of provision to help respond to the rapid pace of change. However, they were not seen as a rapid route to high-quality employment, and it was highlighted that greater clarity is needed around the role of Skills Bootcamps and how this is conveyed to learners to improve uptake.

> "I'm a big fan of Skills Bootcamps. They're a solution for taking away barriers to entry, getting lots of people into that industry and getting them pump-primed."
>
> **College Principal, January 2024**

There are also questions as to the effectiveness of the funding model. More than a third of the budget allocated to the Skills Bootcamps has gone unspent, despite learner starts targets being exceeded. This is due to a high number of participants failing to complete their course or gain employment after it, as the funding is structured to deliver 60% of the total fee to providers only upon the learner's completion of the Skills Bootcamp or their moving into a new or better job. Following a recent Freedom of Information request, there have also been questions about the quality of training being provided, and whether interviews being offered are delivering the jobs promised.[xxxi] In part, these quality concerns stem from Skills Bootcamps lacking critical devolved involvement, meaning they cannot be fully designed and delivered in a way that would work most effectively for London. Unlocking the full potential of Skills Bootcamps would require changes to who is responsible for of this provision to better address current challenges.

CASE STUDY

Generation UK: Bootcamps for Londoners Facing Significant Barriers to Employment

Generation, an independent nonprofit founded in 2014, is trying to bridge the gap between the 1 million unemployed people in the United Kingdom and the 1 million vacancies, specifically those where there is a skills-gap and employers struggle to hire.

Generation's aim is to help people into employment opportunities they otherwise could not access. This is achieved through profession-specific skills bootcamp training, focussed on in-demand careers – mainly in the tech sector – with extensive ongoing pastoral support and matchmaking to employer partners.

Generation's bootcamps are 10-12 week full-time, profession-specific programmes that teach the technical, mindset and behavioural skills required to succeed in a role. Learners receive extensive, ongoing pastoral support and mentoring for the course duration and additional assistance for up to six months after the course completion to help them into employment. Generation work with employer partners to match-make learners to roles, along with assisting them with applying for vacancies in the open job market. Programmes are taught online and are free of charge, ensuring accessibility for learners.

Professions that Generation delivers bootcamps in include Cloud Practitioner (AWS, Azure, and Google), IT Support with Cyber Security, Data Analytics, Date Engineering, as well as green sector and healthcare programmes.

Since launch in 2019, Generation have supported 1,036 Londoner's. They have helped diverse beneficiaries facing significant barriers to employment, with around 70% being from an ethnic minority background, 20% having a disability, 45% are from a low socio-economic background and around 70% being young adults (under 30 years old).

Of those who complete Generation's six-month placement phase 65-70% enter employment. Looking specifically at tech programmes in London, 584 people have been placed, achieving average starting salaries of £28,500.

Generation plans to continue to assist around 400 learners in London during 2024. The key phases to their work include selecting programmes in response to significant unmet employer demand, with curriculums designed with employer need at the centre; learner outreach referred from wide channels such as the Department for Work and Pensions (DWP), social media, alumni, and charity partners;

selecting learners facing multiple barriers to employment based on motivation, not academic/work experience; remote delivery of a blended curriculum covering key technical skills, mindsets and behaviours; extensive mentorship, pastoral and wrap-around support including 1:1's throughout the bootcamps and for up to 6-months post-programme; and supported placement with active matchmaking to live vacancies with employer partners and help with 'self-applying' for open market roles'.

Higher Technical Qualifications (HTQs)

HTQs were introduced by the previous Government to provide alternative provision to apprenticeships and degree study – both for people at the start of their career and for those people retraining or upskilling. HTQs cover both new and existing level 4 and level 5 qualifications (such as Foundation Degrees, Higher National Certificates and Higher National Diplomas), which are developed by awarding bodies in collaboration with employers to ensure students are learning the skills employers need.[5] The first HTQs, taught from September 2022, had a focus on digital qualifications to cover jobs such as network engineers, software developers and data analysts. As of August 2024, approved HTQs for ADS courses in London were being provided by Pearson Education, the British Computer Society, London South Bank University and the University of East London.[xxxii]

As with Digital Skills Bootcamps, there was mixed view of HTQs that emerged from the interviews. There was some support for their emphasis on co-design with employers and aligning to employer standards but there were concerns raised around scaling up their provision and the need to raise awareness amongst learners if they are to be a viable alternative to degree and apprenticeship study. There was a worry that HTQs only added additional complexity – especially for employers – in an already crowded skills landscape.

> "It's really hard being an employer in the UK because you get asked to do so many things. There is work experience, T-levels, Skills Bootcamps, the new HTQs. You can't do all of these things. There's so much coming at you, you have to choose what you do, and you usually stick with what you know."
>
> **Large employer, January 2024**

A lot has been done already to get to the current level of ADS provision, but it will take a renewed, combined effort to better align supply and demand in the years ahead. The next section looks at how providers (and businesses) can respond to the pace of change, the role of transferrable skills alongside ADS, and some specific challenges facing further education.

5 The qualifications last between one and two years full-time, with part-time and distance learning options. There is flexibility in the institutions that can teach HTQs – including FE colleges, universities or independent training providers. To receive the HTQ quality mark logo, qualifications need to be approved by the Institute for Apprenticeships and Technical Education (IfATE) as meeting the knowledge and skills needed by the sector.

4

The challenges for providers in delivering ADS

The following section summarises the challenges for providers in addressing advanced digital skills (ADS) needs in London, which were outlined by different stakeholders in the skills system. These are across the following key themes:

- **Responding to the pace of change**
- **The role of transferable skills alongside technical skills (including in HE)**
- **FE specific challenges**

Responding to the pace of change

All stakeholders recognised that technologies, and the skills needed to harness these, can change very rapidly. The pace of technological change can be observed in phenomena such as Moore's law, which states that the number of transistors on an integrated circuit (and hence its processing power) will double every two years with little rise in cost. This means that the potential power of digital technology is rapidly expanding, so its application in a business setting is subject to constant change.[xxxiii]

Employers recognise the pace of technological change not only impacts their business practices and functionality but also requires employees to be continuously reskilling and upskilling – and for new learners and education providers to be responding as best they can to the pace of change.

FE colleges reported challenges forecasting future digital skills needs as they are more reliant than HE on signalling from employers regarding where to focus changes to their curriculum and course delivery. The uncertainty this creates for FE providers leads to issues in terms of educational planning, workforce preparation and potentially missing out on a critical area of demand.

The role of transferable skills alongside technical skills (including in HE)

A common finding of the research was that having the right broader transferable skills was as important in ensuring successful employment outcomes as formal qualifications for roles that required ADS. These interview findings echoed other research, highlighting the importance of transferable skills to employers' hiring decisions. For example, a survey of employers conducted for the City of London Corporation found that three-quarters (74%) of employers prioritise transferable skills equal to or above technical skills when recruiting new employees.[xxxiv]

As Government-commissioned research has pointed out, it is increasingly important that interpersonal skills and cognitive competencies are embedded into the training for occupations where ADS are used to solve problems – occupations that are only likely to grow and evolve over the next decade.

The research argues that too narrow a focus on the technical skills elements could lead to some ADS becoming obsolete or superseded. Importantly, critical transferable skills need to be developed and acquired so that individuals can adapt to fast-changing technologies.[xxxv]

There was an overall view from the education providers we interviewed that long-term changes to hiring practices are on the horizon, with a shift towards skills-led recruitment.[xxxvi] Some employers are already moving away from specific degree requirements towards focusing on skills and capabilities that do not neatly map onto how degree programmes are currently taught. As such, providers could benefit from re-evaluating the importance placed on 'traditional' approaches to higher and further education and increase their focus on transferable skills.

There was support for better alignment between transferable skills and ADS. For example, this included reframing some transferable skills such as communication and teamwork to recognise the greater usage of AI prompt engineering (communicating effectively with an AI system to get the best response) and a greater need to clearly define the implications and applications of these types of skills, especially in how education and training is delivered.

Initiatives such as the Royal Academy of Engineering's "Engineers 2030" have sought to address this within higher education STEM courses, by highlighting the growing need for transferable skills that bridge the gap between purely human tasks and those that can be automated – including problem-solving, analytical thinking, and communication, which are crucial for interacting with AI and machine learning systems.[xxxvii]

> "We're thinking about what the digital future means for those sorts of transferable skills. But there is still this slight separation from digital skills, whereas actually I think there's something rather more fundamental of redefining what fundamental core skills actually are."
>
> **University, February 2024**

Several interviewees highlighted that more needs to be done to incorporate ADS within relevant apprenticeship provision. It was noted that current digital standards within apprenticeships could benefit from being updated and moved away from an occupation-led approach towards one that sees ADS as important transferable skills in their own right. The benefits of this to apprentices as they embark upon their careers is supported by Nuffield Foundation research which found a positive earning differential can be seen by those with ADS integrated into apprenticeships, as these skills are important in preparing for higher paid and more productive jobs across sectors and occupations.[xxxviii]

While employers expect applicants to have the necessary technical skills where relevant, equally as important is being able to demonstrate they can apply these in a workplace environment. There was a broad consensus amongst employers we spoke to that a combination of structured learning (such as university courses) and practical, applied learning experiences (through placements and simulated experiences in Skills Bootcamps) are beneficial to realising this. However, this cannot be achieved without employers being sufficiently plugged into ADS education and training.

Further Education: specific challenges

As noted earlier in the report, ADS are a critical element of FE's offering. For FE colleges, there are four major challenges to the effective delivery of ADS:

1. **Balancing the type of provision and attracting suitable learners:** FE is often balancing a broad offering across entry-level, basic and ADS as well as seeing themselves as playing an important role in addressing digital poverty to ensure wider social access and to reduce digital harms. In addition, FE colleges see a shortage of students willing to pursue ADS courses, which can often be a source of frustration as these courses require significant time and resource commitments. To get around this, and to appeal to demographics who may be more likely to enrol on ADS courses, some colleges offer flexible delivery of courses, including modular delivery and evening and weekend classes to accommodate the schedules of working professionals.

2. **The shortage of qualified teachers in the ADS space:** There is difficulty in recruiting and retaining qualified digital teachers due to salary disparities with industry and the financial constraints placed on the salaries that can be offered in FE. This has a significant

impact on the type and quality of the FE sector's offering in the ADS space, and innovative approaches are needed to attract and retain talent, including using industry talent more regularly in training where possible. This approach would allow FE providers to respond more effectively to developments within ADS.

3 **Gaps in mathematical skills:** There is a concern that the level of mathematical proficiency among some students acts as a barrier to entry for progress into higher-level advanced digital learning and professional development as most advanced digital training is underpinned and dependent upon a relatively advanced mathematical understanding. Each year around 30% of 16-year-old students in England fail to attain a standard or strong pass in GCSE mathematics.[xxxix]

4 **Lack of standardisation and collaboration in education:** Colleges often see themselves as in competition with each other which can hamper collaboration; each college wants to be seen as the place offering the best course within a particular area. There was some suggestion that colleges should work more closely to ensure a broadly standardised learning experience – particularly in important skills areas such as digital – to ensure consistent and high-quality learning opportunities across different boroughs that creates common ground for all London FE learners. Beyond this, colleges could carve out key specialist teaching in specific skills or sectors, underpinned by this standardised programme.

5

Responding to the challenges

In light of the challenges outlined, this section explores what action employers and educators are already taking to address these challenges and deliver advanced digital skills (ADS). It focuses on:

- **Employer-educator partnerships** – the efforts that employers and educators have made to create partnerships within the existing system to improve the delivery of ADS.
- **Broadening the talent pool** – where larger companies have sought to implement initiatives to improve their internal delivery of training and development, as well as boost the diversity of their intake.

This section then explores what additional infrastructure has been established in London to complement, support and go beyond traditional provision, including the Mayor's Skills Academies Programme.

Employer–educator collaboration

A fundamental principle underpinning the LSIP is the importance of collaboration across the skills system, particularly between employers and providers. Addressing skills gaps against a rapidly evolving landscape due to the speed of technological change requires employer-educator collaboration. Often, employers have different perspectives of what skills employees should come equipped with – some employers are more concerned about ensuring employees have relevant specific technical skills, while others are more concerned with balancing broader skill sets and attitudes. This creates challenges for how educators balance their teaching and underlines the importance of close employer relationships to educators.

However, employer–educator collaboration often lacks clear entry points and mechanisms for engagement that can effectively link employers to the skills system. Some FE providers are responding by making greater use of flexible short courses that can be taught by industry specialists – who are grappling with using new technologies and skills themselves – rather than their full-time staff. Some colleges have been able to do this by using the 10% funding flexibility within the Adult Education Budget to offer bespoke programmes and additional services delivered by industry. This includes bolt-on modules to meet specific employer needs, as well as a variety of accredited and non-accredited courses tailored to specific sectors. An example of this is the 01 Founders Initiative.[xl]

CASE STUDY

01 Founders Initiative

Co-founded by Capital City College Group and backed by entrepreneurs, tech firms and educationalists, this initiative provides a free-to-access coding school with a job guarantee, requiring no previous experience or learning. It is team-based and gamified, creating an enjoyable learning environment where students learn from their peers and teach other as they progress.

Broadening the pool of potential talent

One way larger employers have sought to respond to ADS gaps is to design their own recruitment schemes and training programmes (which can be delivered both internally and externally). These may not always be aligned to accredited training, and as such there have been calls for industry-standard curricula and certifications to be recognised within FE and HE programmes where they are externally provided.[xli]

A longstanding challenge with jobs requiring ADS is the lack of diversity amongst employees and prospective applicants. Some employers are taking the initiative to improve their recruitment from non-traditional backgrounds such as Amazon Web Services' (AWS) internal Restart and Microsoft's Connector programmes.

While employers do not expect new employees to be 'finished articles', they value candidates who demonstrate an appetite to understand how various skills tie together and how they can be applied in different contexts. Here, individual curiosity and drive play a significant role in skills development – employers value candidates who actively seek out knowledge and are curious about new technologies. Early career employees who have this approach were seen to be better able to adapt and learn a variety of advanced skills, supplemented by additional training and support.

CASE STUDY

AWS Restart Programme

AWS's Restart Programme is designed to support underrepresented and underserved communities gain access to careers in tech. The Programme, which functions as a bootcamp, focusses on providing digital skills training and connecting individuals with job opportunities. There is emphasis on collaboration between AWS and various organisations, including Westminster Education Service and The Prince's Trust, in the delivery of Restart and it is through these collaborations that ADS training has been provided, and participants connected with job opportunities.

CASE STUDY

Arcadis "Archangel" Internal Training Programme

Arcadis run an internal training programme called "Archangel" which focuses on rapidly mobilising resources and solving specific challenges within a structured training framework. External individuals may sometimes contribute, though the programme mainly relies on internal expertise to address common internal challenges and developments. A purpose of the programme is to anticipate future trends in ADS, such as model generation and robotics, and the need for a multidisciplinary approach that includes hardware aptitude alongside software skills and bringing together different areas of the company to improve knowledge and skills. More broadly, Arcadis is committed to creating a culture that values continuous improvement and encouraged employees to undertake further learning through external training programmes and community development initiatives.

The role of supporting infrastructure

There are three existing key London initiatives to address the challenges of (a) improving the level of collaboration between employers and providers and (b) broadening the talent pool engaged in ADS provision: the Mayor's Skills Academies (MSA) Programme, Institutes of Technology (IoT) and Ada, the National College for Digital Skills. Table 3 below provides summary detail and analysis on what each of these offers. Annex 3 provides a fuller analysis of the strengths, weaknesses, opportunities and threats of each of the supporting infrastructure.

Table 3: Summary of London's digital skills supporting infrastructure

INITIATIVE	DESCRIPTION	NUMBER	ANALYSIS OF IMPACT
The Mayor's Skills Academies Programme– Digital	The Mayor's Skills Academies (MSA) Programme are designed to address skills shortages in priority sectors (creative, digital, green, health, social care and hospitality). Launched at the end of Q4 2021/22 as a Mayoral-led response to the economic impact of the Covid-19 Pandemic, MSAs bring together employers, education and training providers, alongside sector bodies to create clear pathways into employment for Londoners. They also ensure a coordinated offer of training, work experience and general guidance for people looking to access jobs and skills opportunities. The Digital MSAs began delivery in 2022/23 and offer courses in software development and engineering, programming, web development, cyber security and data analysis, coding, cloud services.	Six Digital MSA Leads: Capital City College Group, City of London Corporation Adult Skills and Education Service, Leading Inclusive Futures through Technology, Generation, Croydon College, Westminster Adult Education Services.[xlii]	MSAs have been broadly well-received as a tool to engage with employers and link up provision in key skills areas. They have been successful in exceeding outcomes – particularly boosting short-term employment opportunities – but tracking their long-term impact is deemed important. The funding flexibility provided by MSAs allows for innovative programs, but coordinating these with employers can be challenging. Although the MSA Programme facilitates coordination among providers, more could be done to engage employers effectively through the Mayor's convening power and industry bodies. ***"I think the MSAs are incredible at what they're trying to do; bringing public sector, local community, and business together. I think there's flashes of that in other regions, but the biggest and most vocal has definitely been the work that's happened in London."*** – **Large Employer, January 2024**

INITIATIVE	DESCRIPTION	NUMBER	ANALYSIS OF IMPACT
Institutes of Technology	IoTs bring education and business closer together and are designed to encourage collaboration between colleges, universities and business to deliver technical education from level 3 – 7. They are designed to increase the number of learners with higher technical qualifications (such as HTQs or higher or degree apprenticeships) and provide the skills that businesses need, both now and in the future. Businesses are involved in the design and delivery of training, helping to shape the curriculum to suit their needs. IoTs provide access to state-of-the-art facilities and industry-standard equipment to embrace new technologies and methods of teaching.	Three in London. West London (Specialisms in Construction, Digital, Energy, Engineering).[xliii] London City (Specialisms in Aerospace, Automotive, Construction, Digital, Energy, Engineering, Transport).[xliv] East London (Specialism in Construction, Creative, Digital, Engineering, Manufacturing).[xlv]	IoTs are a unique environments due to their combination of HE and FE, allowing for experimentation and risk-taking. They are more conducive to collaboration with industry, with formal governance roles for employers and a focus on meeting industry needs. In particular, IoTs address the education gaps and differences in teaching practice that exist between HE and FE by co-locating institutes and promoting joint working. IoTs are exploring joint recruitment of staff to teach HE and FE programs in an attempt to address challenges in attracting staff to educational institutions. ***"I see IoTs as a new kind of Public-Private Partnership model, that in many ways anticipated the requirements of the LSIP accountability agreements because they have formal quasi-governance roles for industry and we have industry telling us what we, as educators, need to do. And if I fail to meet the KPIs, the DfE and the GLA can take their money back. I can't think of any other bit of the education world where we are financially incentivized to give employers what they need and not just what we want to do."*** – **College Principal, January 2024**

INITIATIVE	DESCRIPTION	NUMBER	ANALYSIS OF IMPACT
Ada, the National College for Digital Skills	The UK Government established five National Colleges in in 2016. The National Colleges were introduced to improved parity of esteem between technical and academic education across level 3-6 and address the shortfall in learners taking higher-level technical courses and enhance skills delivery in key growth sectors and specialisms – including digital skills. The Colleges are employer-led and provision is based upon an up-to-date understanding of the industry and delivered in a way that accurately simulate the workplace. The National College for Digital Skills (Ada) opened in London in September 2016 and currently provides: Classroom-based learning at Level 3 across three curriculum pathways combined with termly 'project weeks' that are designed and supported by Ada's industry partners. Higher Level Apprenticeships (Levels 4 Software Development and Data Analysis) and Degree Apprenticeships (Level 6 with pathways in Cyber Security, Data Analysis, Software Development and Tech Consultancy). From September 2024, a T-Level in Digital Production, Design and Development which includes a 45 day work placement.	One. London Sixth Form and Apprenticeship Campus in Victoria (opened in August 2023 to replace previous campuses in Tottenham Hale, Wood Green and Whitechapel).[xlvi]	Ada was highlighted as being an important success story of the Government's National College initiative. A Government-commissioned process evaluation of National Colleges found that, across most areas of the evaluation, Ada had a smoother initial set-up and delivery of provision than other National Colleges.[xlvii] Ada's success was seen as rooted in its strong employer engagement and involvement within the provision of learning. This has led to good outcomes across academic attainment of learners, initial job opportunities and career progression of its alumni. Ada also has made a significant contribution to boosting the ADS of a diverse range of learners. ***"Ada provides unparalleled access to tech companies through project-based learning so that our students are well prepared for the world of work. We have a real focus on supporting learners into fantastic jobs; for example, we now have more 6th form graduates working as software developers for Google than any school or college in the country ... We have also focused on people that are underrepresented in the tech sector such as those from ethnic minority backgrounds, women and those who identify as non-binary, and those from a low-income background. Over 80% of our learners meet at least one of those diversity criteria."*** – **Ada senior staff member, June 2024**

6

How can we go further?

The previous sections set out the problems in addressing advanced digital skills (ADS) needs and go into some depth on the existing attempts that have been made to address these challenges. While it is not a panacea, the need for collaboration between employers runs through the heart of additional solutions. Effective partnership is needed to address:

- **The pace of technological change** – to ensure there is an unbroken line between employers' changing skills needs and how education provision responds.
- **Broadening the talent pool and developing holistic skillsets** – only by working together can employers and providers ensure that there is the required teaching and meaningful work experience to provide learners with the broader skillsets to thrive in digital jobs.

The next section considers the ingredients for the most effective collaboration approach to delivering ADS in London. It draws on the interview findings, evidence across the UK, best practice from companies, and international case studies.

A Digital Skills Partnership in London would not shift the dial

Other parts of England have created Local Digital Skills Partnerships (DSP) to tackle local digital skills challenges, bringing together representatives from business, education, public sector and the third sector. DSPs employ a Regional Coordinator to raise awareness of the importance of improved digital skills across their respective regions. By working collaboratively with regional and national stakeholders, Regional Coordinators are developing new innovative models to improve digital skills across their regions, boost their local economies and share best practice with other DSPs, combined authorities and LEPs.

Given the introduction of DSPs elsewhere, it has been considered whether they could also move the dial on ADS in London. However, based on the interviews, wider discussions and research there appeared little appetite for a Digital Skills Partnership in London. The reasons why included:

- London moving towards a DSP would be moving against the grain of how other large metropolitan areas in England have sought to address digital skills gaps – Greater Manchester has never had a DSP and the West Midlands has recently stopped operating a DSP as they felt that the West Midlands Mayor and Combined Authority were better placed to provide direction over the region's digital policy.
- The scale of the challenge – and the pace at which challenges are evolving – in London was considered too large and varied for a DSP to effectively manage.
- While DSPs are useful for bringing together business and operating as a sounding board, this was seen as mostly beneficial at the start of the DSP.
- DSPs were seen as mostly focused upon issues of building up essential digital skills, boosting digital inclusion and tackling digital poverty – all issues that London faces – but had taken limited action on addressing ADS needs.
- The involvement of the Combined Authority (or GLA in London's case) can limit a DSP's ambition to solely local issues given the reticence of local bodies to make calls on national policy, though this may be less of a factor with the Labour Party in power in both London and national Government.

While we do not suggest a full copy of the DSP approach in London, there are a number of relevant learnings from the model for how we might move forward in London. The Government's 2021 review of DSP's provide some guidance on this.[xlviii] The review identified two major challenges that would need to be addressed if the Local DSP model is to be further developed, and scaled across the country:

- Collaboration and joint working between Local DSPs and large corporates has had limited success, and more needs to be done to find effective ways in which to roll out the national skills programmes of large corporates into Local DSP regions.

- There needs to be a firmer commitment from the Department for Digital, Culture, Media and Sport to fund the Regional Coordinators over the medium-term rather than on an uncertain year-by-year basis, while also allowing for greater flexibility in the digital skills interventions funding can be used for.

Providing policy certainty for evidence-backed ADS provision is imperative

Throughout this research, London was seen to already have programmes that worked well and were relatively forward thinking compared to what had been introduced in other parts of the UK – most notably the MSAs and the three London-based IoTs (see Annex 3 for more detail on these). These initiatives were, on the whole, seen as valuable, with a recognition amongst many interviewed that the benefits would only be realised in the longer-term and there was clearly room for improvement in terms of how these different interventions interact with each other, their specific focus and how they engage with business.

Realising the long-term benefits of existing schemes requires policy certainty by both national (for IoT and the National College of Digital Skills) and regional Government (for MSAs) to cement these initiatives into the London training landscape, rather than shifting to a new model. The IoT model of bringing together HE and FE learners is one example of an innovative proposition that would benefit from an incubation period so results can be seen and evaluated for further rollout. In addition, while Skills Bootcamps offer flexibility in meeting employer demand in an agile manner, there is a need for greater clarity from policymakers about the purpose and expectations of Skills Bootcamp provision given the relatively short time period they run.

This policy certainty, however, is contingent on strong outcomes from these programmes and institutions and it is vital that robust and effective metrics are in place that can track how well provision is meeting expected outcomes. As a result, there is a need for further evidence on 'what works' to realise the benefits of the existing ADS ecosystem.

There is a need to embed employers into the ADS training system

Engaging businesses in skills training and development is a major skills policy challenge, and not one confined to ADS. One reason there is optimism around the impact of IoT is their direct link to employers, including providing a clear governance role for those employers. This is a key learning for developing collaboration to address the ADS needs of the future.

The convening power of the Mayor was seen as being able to play a key role in bringing business to the table and building an effective feedback loop between employers, educators and regional policymakers in a manner that builds trust, credibility and impact. New York City provides an international example of what mayoral convening power can achieve in bringing together employers, educators and wider stakeholders.

There is a common challenge of engaging smaller firms (SMEs) in skills training such as apprenticeships, but the issue seemed particularly acute for ADS. Interviewees suggested that some SMEs – especially the most innovative startups – are able to get around their skills gap by hiring staff with experience and training previously provided by large employers. As a result, SMEs are less likely to see the value in investing in the training landscape when they are able to directly recruit the necessary skill level, especially considering their limited capacity and resources. As such, there was a belief amongst some that trying to engage SMEs was a time and resource intensive exercise and gains could be difficult to realise. However, previous initiatives in London have had success in scaling up apprenticeships at SMEs. For example, since 2020 Workwhile's Apprenticeships London project has supported SMEs in the capital to create apprenticeship opportunities for low-paid, disadvantaged and marginalised Londoners. In total, over 1,750 new apprenticeships have been created and over £15 million in unspent Apprenticeship Levy funds redistributed.[xlix]

One way around this could be for large employers to better support their supply chains as a way to boost skills amongst SMEs. Some large employers in the ADS space are taking steps in this direction, such as the Microsoft Connector (see case study below). Building this collaborative rather than competitive approach to skills development can be an important way to spread opportunity through key anchor employers within the advanced digital space.

CASE STUDY

New York City Tech Talent Pipeline

The New York City Tech Talent Pipeline (NYC TTP) is a mayoral initiative, founded in 2014, to build partnerships between City Government, employers and educators to support the growth and development of the digital and tech sector. The TTP is supported by the NYC Department of Small Business Services.

The initiative was backed by an initial $10 million public-private investment, TTP has worked with over 225 industry partners to define workforce needs and develop and test industry-informed tech education solutions. This has in turn seen the creation of over 30 tech bootcamps in NYC – the largest number in the United States – and training programmes, including NYC Tech-in-Residence Corps, NYC Web Development Fellowship and Data Analyst Training Accelerator.

In total, the initiative has engaged over 400 employers and 17 local colleges, as well as leading the City University of New York (CUNY) 2X Tech Program which has doubled the number of CUNY graduates with tech-related bachelors. The TTP was widely seen to have met its initial goals and is currently seeking to encourage more private funding for educational and workforce programs as well as setting new goals to boost the diversity of those with digital skills.

CASE STUDY

Microsoft Apprenticeship Connector

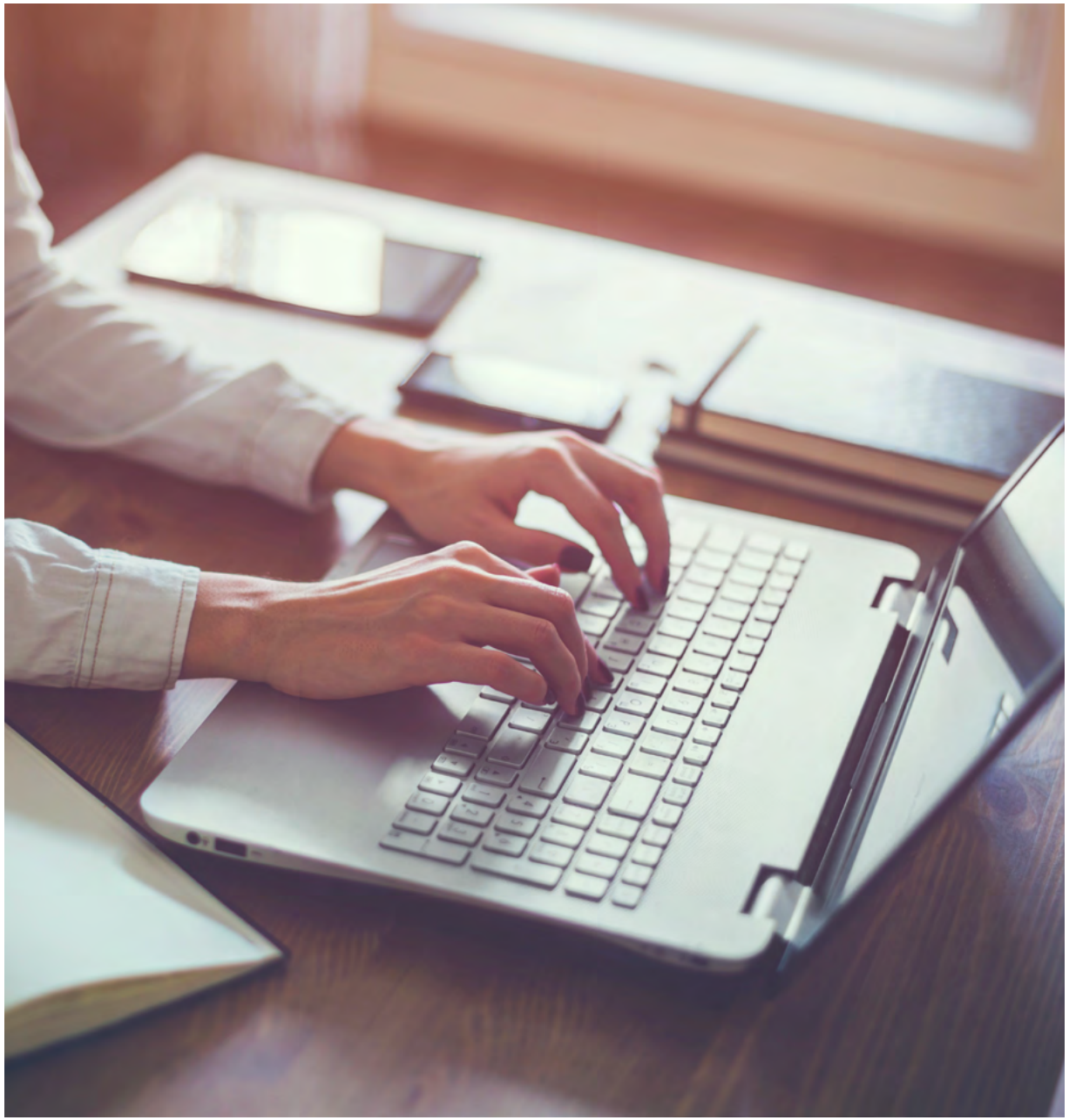
Microsoft have recently launched the Microsoft Apprenticeship Connector, an initiative designed to bridge digital skills gaps. The Microsoft Apprenticeship Connector is a platform that has three purposes:

Advertising digital vacancies, bootcamps and opportunities for learning and training, designed to enable young people to find the opportunities that are right for them.

Signposts applicants towards other vacancies and employers, even if they have been unsuccessful in applying to a different company (most are part of Microsoft's Partner Network or supply chain).

Providing employers with demographic and geographic insight that can be used to identify and better target under-represented groups and boost the diversity of their hiring.

By pooling opportunities across one platform, with a single access point for roles, The Connector allows for talent to be recycled and shared as well as simplifying the process of finding opportunities to reach a larger and more diverse pool of candidates.



Equipping learners with the necessary skills to thrive in the workplace

Transferring the technical ADS acquired within an education setting into the workplace remains a critical challenge to overcome. Research by the Chartered Management Institute found that 78% of employers believe graduates do not arrive in the workplace fully equipped with the skills they need to be work-ready.[I]

This had two related aspects:

1. The lack of workplace experience as part of most training or education provision that learners receive, and businesses not having the capacity or personnel in place to provide this for inexperienced learners.

2. A lack of lifelong learning opportunities and a culture and infrastructure that supports this. For individuals who may be seeking to improve their ADS to better meet employer demands, a number of barriers exist to personal development. In a survey for AWS, more than half (52%) cite the cost of training, 41% point to the time cost involved with undertaking training and a third (32%) of learners lack knowledge of the skills needed to advance in their careers.[Ii]

CASE STUDY

SkillsFuture Singapore

Introduced in 2015, SkillsFuture Singapore is a statutory board under Ministry of Education with the aim of fostering a culture of lifelong learning and continual skill development, in particular in response to technological change. One of the flagship SkillsFuture initiatives is the SkillsFuture Credit, which provides all Singaporean citizens aged 25 and above with an initial credit of SGD500 to use towards various approved courses and training programs. This credit is periodically topped up to encourage lifelong learning (the latest in 2020 to be used by the end of 2025). In addition, from May 2024 a more generous top up of SGD4,000 will be made available for 'mid-career' citizens (aged 40-60). The SkillsFuture Credit can be used for a variety of training schemes across short courses, full-qualifications, Career Transition Programmes that are available across different industries and skills levels. For example, these include the short course SkillsFuture for Digital Workplace 2.0 training programme that focuses on automation, cybersecurity risk, data analytics and in-demand digital tools.

Other countries have sought to introduce national initiatives that seek to better support employers and employees in workplace development of ADS – such as South Africa's Learnerships, Canada's Advanced Digital and Professional Training Programme or the European Digital Skills and Jobs Coalition. In addition, some places have taken a more active approach to building lifelong learning opportunities as a critical part of working life. The most notably international example of this is the SkillsFuture programme in Singapore.

What is clear from those countries that are making significant progress in their ADS provision, explored in the case studies below, is the critical role of national-level policy and programmes. While this report is focused on London-level action, it is important that the aims and ambitions of regional and national policy and programmes are aligned if London is to become the best tech city in the world.

CASE STUDY

Canada's Advanced Digital and Professional Training Programme (ADaPT)

ADaPT is an employer-centered, work-integrated learning programme created in 2013 by the Diversity Institute (DI) with support from the Future Skills Centre to address the digital skills gap for post-secondary school graduates and the entry-level job market. In particular, ADaPT aims to provide digital skills to graduates of varied academic backgrounds, with around 48% of participants come from arts and social sciences backgrounds. Learners are admitted onto the programme following a needs assessment, that sometimes involves employers. ADaPT courses combine training for in-demand digital skills – such as coding and data analysis – alongside transferable skills – such as business writing and presentations. The courses are periodically updated in accordance with employer demands and needs, with over 400 employers involved in the programme. In addition to employer-aligned learning, learners on the programme are supported by wider wraparound supports, including career counselling and coaching to help with job-search activities and matching. ADaPT has been highly successful, achieving a placement rate of 90% and has been particularly successful supporting female and ethnic minority learners into digital occupations.

CASE STUDY

European Digital Skills and Jobs Coalition

This initiative brings together national authorities, non-profit organisations, companies and business associations, and education providers across Europe. They work collectively to increase digital skills and competencies in the wider population, the labour force and across the education system. It also encourages engagement from business – specifically for member organisations to take action to reduce the digital skills gap in Europe.

The coalition has trained over 11 million people and aims to bridge the digital skills gap at both European and national levels.

7 Recommendations

The previous sections have set out the nature and scale of the advanced digital skills (ADS) gap, the prize attached to closing it, how current provision and partnerships in London seek to address this gap, and the barriers to further progress.

While good work is underway and has already been done, it is clear that closing the ADS gap will require coordinated action across the capital. London has the potential to be the best tech city in the world – at the forefront of innovation, harnessing the best of what it delivers already, but taking it to the next level. This could become a reality if action is taken now to develop and upskill the capital's workforce in ADS. That action needs to be led front and centre by the Mayor, backed by businesses and education providers to deliver on this vision of the capital's future.

There is no single solution to addressing ADS needs, rather there is a clear need for the Mayor, GLA, businesses (and their representatives) and providers to pull out all the stops to both make the existing system work as well as it can and to introduce new mechanisms that can support ADS becoming a consistent priority for all parties.

It is important to note that our recommendations are aimed at London-level actors, in keeping with the remit of the LSIP. However, where appropriate and important to do so, some of our recommendations require London-level actors to engage with the new Government to ensure alignment with their new national-level skill agenda. We also know that recommendations to drive essential digital skills are critical to underpin the development of ADS. However, these are not discussed in any detail here, except where there is a clear focus on supporting essential digital skills to create pathways into ADS.

Table 4 below sets out in more details the approach outlined here in Figure 3 – all parties doing everything they can to move the dial now.

Figure 3: Framework for delivering ADS in London

Table 4: Report recommendations

To ensure London can reach its potential as the best tech city in the world we are calling for ADS to be an important part of the Mayor's upcoming London Growth Plan.

Only the Mayor has the unique ability to galvanise the GLA, education providers and the wider business community into action. Acting as the figurehead of London's tech ambitions, we would like to see the Mayor place a focus on developing, training and upskilling in London Growth Plan. The Mayor has a singular leadership platform to coordinate action and set out a delivery roadmap that will need all key stakeholders to contribute in order to meet the ambition of being the tech capital of the world.

Now is the time to pull all the levers available to ensure London does not fall behind, and in fact continues to grow into a global leader across key digital services and sectors. We have broken down in the section below who needs to do what to rapidly put London ahead of the game on ADS.

As an important part of the London Growth Plan, the Mayor (and the Greater London Authority) should:

WHO IS THE RECOMMENDATION FOR?	WHAT IS THE KEY ACTION?	WHAT CHALLENGE DOES IT SOLVE?
GLA, with support from providers and business organisations	**Establish a London ADS Talent Programme:** This Mayoral-led Programme would bring together the key actors responsible for boosting London's ADS provision in a new public-private partnership between the Greater London Authority (GLA), education providers (in both further and higher education) and business. The Programme would be co-funded, and co-designed by the GLA, education providers and business groups (BusinessLDN and other Employer Representative Bodies), building upon existing research into workplace ADS needs to deliver training programmes supported by business. The overall aim of the Programme will be to boost business funding for, and design of, educational courses and workforce training in ADS and develop and coordinate a talent pipeline into these. It will be critical that the Programme is designed in a way that reaches Londoners of all backgrounds, increasing the diversity of people with ADS. The Programme would follow in the footsteps of a similar Mayoral-led programme in New York, which has successfully scaled up the delivery and quality of ADS provision through a public-private partnership model.	The convening power of the Mayor has been shown elsewhere (e.g. the West Midlands) to advance digital skills to the top of a region's skills agenda. As well as setting out a clear agenda for the capital, the Mayor's involvement and commitment to co-funding a Programme would also boost employer engagement. The Mayor would also provide critical coordination of the Programme, addressing existing barriers to partnership working which can limit the benefits of existing employer feedback mechanisms in tailoring education provision to employer's needs. Working to address these barriers is known to lead to better long-term job outcomes.[lii]

GLA – with the support of providers, business organisations	**Launch an "ADS for All" campaign, to drive awareness of the London ADS Talent Programme:** The Mayor has a vital convening role in putting ADS at the top of the agenda and boosting the profile of the London ADS Talent Programme. A proactive campaign, designed collaboratively by the GLA and business groups (BusinessLDN and other Employer Representative Bodies), and kicked off with an employer summit would boost employer engagement with existing ADS providers and put this issue at the heart of the business agenda. At a more granular level, an employer-led Task and Finish Taskforce on ADS reporting to the Skills for Londoners Board and aligned to the LSIP, would ensure that actions identified through the campaign and summit are clearly tracked.	Building up support, interest and enthusiasm for new policy choices is critical to their success – especially for those where business is required to play a key role in delivery. The Mayor is uniquely placed to use his convening power to galvanize business action on a skills area that is a top priority for them.

The Mayor (and the Greater London Authority), through their existing powers, should:

WHO IS THE RECOMMENDATION FOR?	WHAT IS THE KEY ACTION?	WHAT CHALLENGE DOES IT SOLVE?
GLA	**Provide long-term funding certainty for the Mayor's Skills Academies (MSA) Programme:** To deliver the step-change needed in the capital over the next five years, these programmes should be underpinned by a five-year minimum funding award as soon as possible. This would send a strong signal to employers and training providers that these programmes are an integral part of the London skills landscape for the long haul.	Embedding new approaches to delivery of ADS can take time. Ensuring that current models of provision can remain in place long enough for employers to become fully aware of them is hampered by lack of certainty around their longevity and funding. Greater certainty and longevity results in better awareness of these schemes by employers. As a result, there is greater employer engagement with skills initiatives and they are more tailored to employer skills needs.

GLA	**Set an example on embedding transferable skills in all ADS provision:** To maximise positive employment outcomes as well as meet technical requirements. Strong transferable skills are vital to supporting employees to adapt and learn as the requirements of technical skills change – which for ADS is happening at increasing pace. To support this, the GLA should ensure that transferable skills are embedded within their training provision, particularly digital training, and should work closely with central Government and training providers on how this approach could be rolled out in central Government-funded provision across the capital.	ADS needs do not exist in a vacuum. Transferable skills and workplace experiences complement ADS to support positive work outcomes for learners. Addressing these alongside ADS will deliver more successful work outcomes from training and education, addressing skills gaps and boosting growth.

The Mayor (and the Greater London Authority) should engage with central Government to:

WHO IS THE RECOMMENDATION FOR?	WHAT IS THE KEY ACTION?	WHAT CHALLENGE DOES IT SOLVE?
GLA, working with central Government	**Create a London Careers Service which brings together employment support, careers advice, training providers and employers:** The Mayor should work closely with the new Government to create a one-stop shop model, including a fully devolved London Careers Service.	Specifically on ADS, the Service could: match employer and provider needs and foster greater collaboration (faster); map out the different career pathways using ADS; and clearly signpost the different options to skills development at these career stages.
GLA (including by influencing central Government)	**Press for control over Skills Bootcamps for Londoners to be devolved to the GLA:** While Skills Bootcamps are a nationally-funded programme, the Mayor should make the case for these to be devolved to London, under the oversight and scrutiny of the Skills for Londoners Board, to better align these with London's other skills infrastructure and programmes, and provide long-term funding certainty.	The GLA having control over Skills Bootcamps for Londoners, as well as MSAs, could lead to better coordination between the provision offered by these routes as well as funding certainty for Skills Bootcamps. Coordination could also provide clarity to employers and learns on their different purposes, potentially boosting participation.

GLA (including by influencing central Government)	**Ensure the new Government's planned reforms to the national skills system provide sufficient flexibility to support, and focus on ADS provision:** The new Government has announced the launch of Skills England, a body which will coordinate the national skills landscape, including identifying the training that the Growth and Skills Levy (the reformed, more flexible Apprenticeship Levy) can support.[iii] The Mayor should work with the Department for Education to ensure that ADS provision is a core element of the training that the Growth and Skills Levy can support.	National and regional skills policy has, at times, operated in silos independent of each other. The new Government's proposed reforms to the skills system provide an opportunity for regional Government to ensure greater alignment with the aims of national policy, and ensure that the key skills areas within London – such as ADS – are prioritised and informing national policy. Greater cooperation between different level of Government will provide policy certainty and direction, creating stability for employers, providers and learners engaging with the skills system.

Providers should act now to:

WHO IS THE RECOMMENDATION FOR?	WHAT IS THE KEY ACTION?	WHAT CHALLENGE DOES IT SOLVE?
IoTs or MSAs, providers, business organisations, GLA	**Work with the GLA to create a new Centre of Excellence on 'what works':** This could take the form of a commitment between providers and large tech employers to share evidence on the effectiveness and outcomes of different models of ADS provision and delivery. This knowledge sharing through the Centre of Excellence could lead to the collaborative development of specialised ADS provision that a wide variety of providers can deliver and through this support a broader range of employer ADS needs. The Centre of Excellence could be managed and delivered by one of the MSAs or IoTs.	There are a range of different models for employer-provider collaboration in addressing ADS needs in London, but a lack of clear evidence yet on 'what works' as a model or intervention. Greater transparency of performance data can provide better evidence to grow existing and future collaborations that seek to address ADS needs, leading to better job outcomes for Londoners, and more productive firms.
Providers, business organisations	**Continue to embed industry-specific certifications into training courses[6]:** Technology companies, awarding bodies and provider representative bodies should work together to establish the most appropriate certification and courses to align training provision to industry need.	For training to result in a positive work outcome it needs to be delivered in a way that speaks to existing industry requirements, particularly from large technology providers.[iv] While there is some good practice, this does not yet happen consistently. Addressing this will deliver better work outcomes for Londoners due to greater collaboration, and reduced employer skills gaps.

6 Industry-specific (or vendor) certifications are offered by major technology providers or trade associations such as CompTIA, Cisco, ISACA, Linux Professional Institute, Microsoft, Oracle and VMWare.

Providers – with the support from the GLA	**Use Adult Education Budget (AEB) flexibility for essential digital skills provision that has clear pathways into ADS training:** Providers are able to use up to 10% of their AEB formula funded allocation for non-formula funded provision. Initially established to support London's recovery from the Covid-19 pandemic, the flexibility should now be focused on priority areas for London's continual growth. Providers should work with the GLA to make sure Level 3 digital skills provision is a key component of a providers offering under AEB flexibility. In particular, the Association of Colleges London could produce a 'best practice' guide on what essential digital skills offerings have a clear pathway into more advanced provision.	Flexibility of course provision is essential for keeping up with the rapidly changing demand for tech skills. Leveraging the flexibility in the AEB for non-formula funded provision for those essential digital skills offerings most likely to lead into more ADS provision will maximise the number of learners equipped to progress into ADS training. This will ensure a fuller pipeline of learners for ADS, and in time more Londoners with these skills.

The business community should embrace its role in making London the best tech city in the world by:

WHO IS THE RECOMMENDATION FOR?	WHAT IS THE KEY ACTION?	WHAT CHALLENGE DOES IT SOLVE?
BusinessLDN, business organisations, providers	**Scope out, deliver and fund a London Train the Trainer Programme for industry-led training in ADS:** This would be an ongoing Programme, designed in partnership between business groups (Business LDN and other Employer Representative Bodies) and the GLA and funded by businesses to get private sector expertise into education settings on a regular basis. The Programme would include co-designed training based upon the latest in-house skills and knowledge, teaching courses directly through secondment schemes, and/or providing equipment. Trade bodies and business organisations should work with providers and the Association of Colleges London to understand where staff shortages are most acute, and identify appropriate companies and staff who have capacity to plug gaps.	Providers face challenges recruiting sufficient staff with the right skillsets to train the future digital workforce. This is particularly challenging in the area of ADS given the fast pace of technological change, elevated competition for salaries and existing shortages for these skillsets in the wider sector. Employer support and resourcing of training will allow a more coordinated approach to training needs, and distribute existing industry knowledge more effectively, optimising skills outcomes.

BusinessLDN, business organisations, providers	**Establish a Skills London Careers and Training Virtual Hub as a business-led component of the London Careers Service:** The Virtual Hub will focus on career support, including both job matching and training, promoting apprenticeship schemes, course provision and running webinars with careers advice. This Virtual Hub will be implemented across the priority skills areas identified by the LSIP, but with a significant focus on digital, tech, essential and advanced digital skills. This hub will be a valuable resource for new learners, and for people looking to reskill and upskill.	The Virtual Hub will provide an essential key point of information, collecting resources for learners to search for more information on courses, jobs in particular sectors or colleges. One of the major challenges for ADS is a lack of information on availability of training, and employer demand for different skillsets, resulting in a mismatch between ADS supply and demand. This hub seeks to improve the match between the skills employers need and the training learners are undertaking, and therefore ultimately skills provision.
Business organisations	**Create 'best practice' interventions to incentivise wider employer engagement in ADS development:** This could include encouraging employers to commit to this 'top five' actions list: • Collaboration with training providers to establish short courses that align directly to business needs, with a particular focus on the needs of micro and small businesses; • Establishing internal training schemes that specifically focus on retraining and reskilling staff to develop ADS; • Creating partnerships to share ADS recruitment and retraining schemes within supply chains to promote and spread ADS opportunities; • Exploring partnerships with employer-led provision through Skills Bootcamps for Londoners, IoTs, MSAs and educators ; and • Mapping the skills needed to meet technological changes adopted by employers and working with technology companies to support skills delivery.	Employers are keen to do more to support both the skills system and ensure that they are getting the most out of the skills system. However, employers are often unclear about the best ways they can support skills delivery, and undertaking this activity can be time and resource intensive. Better coordination of opportunities, boosting awareness amongst employers and better training / job matching for learners.

Businesses should also consider a range of practical steps to embed ADS in their organisations

For those employers looking to do more, the section below sets out a menu of options that businesses could take to improve delivery and uptake of digital skills, in their businesses and in communities across London, ahead of the implementation of the changes outlined above. Direct actions could include:

- Regularly reviewing and adjusting recruitment and training strategies based on industry developments and emerging technologies.
- Using a data-led approach to identify ADS needs among the workforce, including using a skills taxonomy to measure supply and demand for these skills in the business.
- Using the Grow London Local skills support hub to get up-to-speed with the range of ADS on offer in London.
- stablishing strong Industry-Academic Partnerships by collaborating with universities, colleges and independent training providers to create tailored curriculums and programmes, offering guest lecturers and teachers, and joint research initiatives.
- Becoming a member of an Institute for Apprenticeships and Technical Education (IfATE) trailblazer group, to help create, design and update apprenticeship programmes in ADS.
- Providing employees with access to learning resources, including an online hub, digital literacy courses and other programmes delivered via tailored micro-credentials.
- Creating a peer network which encourages employees to share their experiences and expertise.
- Implementing a mentorship programme for entry-level employees in ADS roles.
- Organising hackathons, innovation challenges, and other competitions to engage with digital talent and identify innovative solutions.

Next steps

The recommendations outlined above will form the basis of BusinessLDN's advocacy and campaigning on advanced digital skills (ADS) over the coming years, including influencing the Mayor's London Growth Plan through to 2028.

Alongside this, BusinessLDN will continue to take broader steps to deliver the London LSIP, by transforming the skills system and ensuring Londoners from all backgrounds can build great careers.

BusinessLDN will act as a galvanising force unilaterally and in partnership with other business organisations, continuing to bring together employers, providers and others to use the LSIP as a springboard to shift the dial on ADS in London, to ensure employers have the talent they need and Londoners from all backgrounds are able to access the jobs of the future.

Annex 1: ADS definitions

ORGANISATION	DEFINITION	SOURCE
International Telecommunication Union	Advanced skills are defined as those needed by specialists in ICT professions such as computer programming and network management. These include artificial intelligence (AI), big data, coding, cybersecurity, Internet of Things (IoT) and mobile app development. The ITU outlines that advanced skills are typically acquired through advanced formal education (equivalent to level 6 Qualifications in the UK), though the importance of other learning channels such as specialist bootcamps is also acknowledged. A somewhat unique skill set that is picked up in the ITU's definition of ADS is digital entrepreneurship, defined as: "a high intensity of utilization of novel digital technologies (particularly social media, big data analytics, mobile and cloud solutions) to improve business operations, invent new business models, sharpen business intelligence, and engage with customers and stakeholders."	International Telecommunication Union's (ITU) Digital Skills Toolkit, March 2018[lv]
CBI / Tata Consultancy Services	A survey of 250 businesses and interviews with CBI members found that there was a broad agreement on the definitions of ADS amongst employers. For most businesses, ADS included: IT support and system maintenance (81%), software engineering and development (77%), data analytics (77%) and digital marketing and sales (72%). At a qualitative level, businesses also highlighted their increasing need for specific ADS including: programming, visualisation, machine learning, data analytics, app development, 3D printing expertise, cloud awareness and cybersecurity.	Delivering Skills for the New Economy, June 2019[lvi]

Burning Glass (now Lightcast)	For their research commissioned by the Department for Digital, Culture, Media and Sport, Burning Glass (now Lightcast) analysing 10.2 million online job postings, collected in the UK in 2017-2018. From this, two categories of digital skills are defined: Baseline Digital Skills and Specific Digital Skills. Specific Digital Skills are broken down into 7 clusters of related skills, which are commonly required together by employers for more technically-oriented jobs: • **Software & Programming** (Programming languages such as Java, SQL and Python); • **Computer & Networking Support** (Set up, support and manage computer systems and networks); • **Data Analysis** (Data analysis tools such as R or Stata, Big Data & Data Science, data mining, management and visualisation as well as machine learning, artificial intelligence, and natural language processing); • **Digital Design** (Digital production, graphic design, online advertising skills); • **CRM** (CRM software such as Salesforce or Microsoft Dynamics); • **Digital Marketing** (Digital marketing technologies such as social media platforms and analytics tools such as Google Analytics); • **Machining & Manufacturing Technology** (Machining and engineering software and tools such as CNC machining and computer-aided design); A list of common occupations for each of these skill clusters, was provided but was not exhaustive. The research found that one or more Specific Digital Skills are most likely to be required for middle-skill jobs (59%) – jobs with a Level 3-5 educational requirement – or high-skill jobs (67%) – jobs with a Level 6-8 educational requirement.	No Longer Optional: Employer Demand for Digital Skills, June 2019[lvii]
WorldSkills UK, Learning & Work Institute	For their research on the digital skills gap, WorldSkills UK and Learning and Work Institute defined ADS as having both a breadth and a depth, outlined as: "a good knowledge across a range of digital skills, as well as in-depth specialist knowledge in one or more area, such as computer aided design, coding, specialist digital software."	Disconnected: Exploring the digital skills gap, March 2021[lviii]
High Speed Training	High Speed Training – who provide online vocational courses – outline that there are five core ADS that are increasingly demanded and important to the workplace. These are: User experience design; Coding; Programming, web and app development; Search Engine Optimisation (SEO), Search Engine Marketing (SEM), content creation; and Data analysis.	Digital skills for the workplace, April 2022[lix]

Annex 2: Data tables

Table 5: FE achievements in ADS by Level and Sector subject area

SECTOR SUBJECT AREA (LEVEL 2)	LEVEL	TOTAL ACHIEVEMENTS	FULL TIME LEARNER EQUIVALENTS
Media and Communication	4	9	5
Media and Communication	5	8	7
ICT Practitioners	4	907	103
ICT Practitioners	5	12	8
ICT Practitioners	6	176	176
ICT Practitioners	7	95	95
ICT for Users	4	151	44
ICT for Users	6	18	18
Crafts, Creative Arts and Design	4	94	69
Crafts, Creative Arts and Design	5	2	2
Crafts, Creative Arts and Design	6	1	1
Total		**1,500**	**500**

Source: Lightcast and DFE

Table 6: FE enrolments in ADS by Level and Sector subject area

SECTOR SUBJECT AREA (LEVEL 2)	LEVEL	TOTAL ACHIEVEMENTS	FULL TIME LEARNER EQUIVALENTS
ICT Practitioners	4	3,580	388
ICT Practitioners	5	49	33
ICT Practitioners	6	872	872
ICT Practitioners	7	546	546
ICT for Users	4	570	168
ICT for Users	6	21	21
Crafts, Creative Arts and Design	4	115	85
Crafts, Creative Arts and Design	5	7	7
Crafts, Creative Arts and Design	6	1	1
Media and Communication	4	35	19
Media and Communication	5	62	52
Total		**5,890**	**2,190**

Source: Lightcast and DFE

Annex 3: SWOT analyses London's digital skills supporting infrastructure

MAYOR'S SKILLS ACADEMIES (MSA) – DIGITAL

Strengths

- Mayoral oversight, devolved control and localised nature means they are close to issues.
- Bringing together FE and employers in a partnership approach with a specialised- focused on key skills gaps.
- Collaborative approach bringing together different colleges allows for a pooling of resources and expertise.
- Aligned with both GLA and LSIP skills priorities.
- There is a clear, data-led oversight of how they are performing and this data suggests that they have been relatively successful in achieving their aims – more than 2,500 employers engaged and more than 10,000 Londoners helped into work through the MSAs.
- Ability to connect with local communities and respond to local needs and challenges – but also with geographic coverage across much of Greater London.

Weaknesses

- Concerns around how well MSAs are embedded alongside 'traditional' provision, and whether the GLA can effectively help integrate them into London's skills system – without this they may lack a large scale profile and level of awareness amongst learners and employers.
- Coordination between the different MSAs is often limited, especially in terms of sharing best practice sharing and joined-up processes.
- Long-term structure and funding uncertainties post-April 2025.
- Lack of HE involvement in Digital MSAs could be seen as a notable omission, especially for delivering higher-level learning.
- Entry points for employers could be clearer.
- Geographic coverage can be confusing at time, with some pan-London offering, some link to sub-regional areas as well as some places seeing overlap/duplication but others lacking coverage.

Opportunities

- Better alignment with central Government policy, the potential to become a local arm of Skills England to provide policy certainty or to offer help with Apprenticeship Levy employer spending.
- Coordination between MSAs could improve best practice and alignment to careers education / hubs.
- GLA to create a more unified, but adaptable, 'best practice' approach.
- Increase the provision (courses available, providers and employers engaged, flexibility of access - online and in person, timings, length of course).
- Getting more employers of different sizes and sectors engaged with the programme can improve outcomes.
- AI and other fast moving technological changes could mean a flexible localised approach has a lot of value.

Threats

- Vulnerable to political change in London and nationally as well as any uncertainty around the future of LSIPs.
- Employer and other stakeholder disengagement if entry points aren't made easier and clearer, and responsibilities outlined.
- Long-term funding risks, both locally and centrally.
- Expansion of MSAs could complicate further the wider skills landscape through duplication or overlap.
- Lack of uptake amongst learners and a risk of training providers exiting MSAs.
- Adaptability of digital skills provision in face of fast-moving technological change could make MSAs redundant – especially if larger employers move to bring skills provision more in-house.

INSTITUTES OF TECHNOLOGY (IOTS)

Strengths

- Collaboration between FE, HE and employers which is embedded into a governance structure and good investment from all partners – included UK Government.
- Delivery of niche qualifications other providers would not necessarily always deliver.
- Offer a good alternative pathway into HE.
- Bring together strengths of all key actors – provides a robust academic education with work based and vocational experience.
- Providing a clear governance role to employer creates a clear route to ensuring that employer skills needs are responded to by the education providers.

Weaknesses

- Lack of clarity of what their purpose is – and where they are located in the skills landscape.
- Issue of whether there is enough business support for IoTs outside of their core 'anchor' employers.
- Could see provision shift away from digital, with greater focus on other specialisms.
- Complex partnership board could be potential for disagreement in approach.
- Limited number of IoTs may means they are considered an ineffective response to skills changes en masse.
- Risk of employers pulling out if outputs not optimal, throwing the future of IoTs into doubt.
- Long-term future largely dependent upon national Government policy.

Opportunities

- Could boost employer engagement if can show they are route to reskilling.
- Scalable to provide unique and niche courses in response to technological change through a test and learn approach.
- Big opportunity with introduction of Lifelong Learning Entitlement and growth of Degree Apprenticeships to increase volume of learners – especially with growing interest in seeking alternatives to HE.
- Localised partnerships may be less vulnerable to political change.
- Offering a range of qualification means their provision can be useful to a wide range of roles and sectors.
- Expansion of provision – and number – in London specifically.
- Can be used to promote digital skills across wider network of partner organisations within an IoT.

Threats

- Need for more Government funding to scale, which unclear given fiscal position.
- Seen as too complex and costly which could make them liable to be politically vulnerable to change in policy.
- Concerns over whether IoT have the best existing partners involved, with the strength of business support critical to their long-term success.
- There are other approaches to digital skills education that may be seen as more accessible align better with Government priorities in terms of seeing outcomes at scale and pace.
- Competition from traditional education providers could minimise impact. These are what learners know and they are more likely to be drawn to these unless IoT boost their brand/ PR.

ADA, THE NATIONAL COLLEGE FOR DIGITAL SKILLS

Strengths

- Excellent outcomes, for example 100% pass completion of the BTEC National Diploma in Computing and more sixth form graduates working as software developers for Google than any school or college in the country.
- Employer-led approach aligns to business needs industry engagement with learners at all levels and across all qualification types – regular industry roundtables and Industry Advisory Board established.
- Core curriculum provided to all learners with ability to 'specialise within a specialism' – interest to employers in particular.
- Project-based element of teaching seen as an effective way to model the workplace.
- Engaged founders who actively sought industry support for a new college offering specialist digital provision prior to the announcement of the National Colleges policy.
- Strong social missions and clear desire to recruit diverse student cohort. Over 80% of Ada learners meet at least one of the college's diversity criteria (ethnic minority backgrounds, low-income backgrounds and women and those who identify as non-binary).
- Successful in attracting private donations and endowments – supported by a dedicated member of staff responsibility for fundraising and engagement.

Weaknesses

- Not developed at existing education providers – establishing 'from scratch' led to delays to key infrastructure being built, scaling up learner numbers and delivery of apprenticeship programmes.
- Funding model is based on working capital loans and employer investment to cover operating costs – standalone from DfE.
- Difficulty in recruiting staff with relevant industry experience – largely due to salary expectations.
- Decision over what coding languages to teach did not meet the business needs of all employers Ada work with.

Opportunities

- Greater use of industry to co-fund programmes and salaries to boost learner intake and staff recruitment / retention.
- Recruiting industry partners to deliver provision.
- High employer demand for digital skills provide opportunity for high level of employer engagement and future industry financial support.
- Greater use of Alumni network who have progressed to mid-level positions to support current learners.
- Further development of Degree Apprenticeship offering and expansion of provision through T-Levels, HTQs and Lifelong Learning Entitlements.
- Expansion of provision, with a new campus outside of London in Manchester as well as moving into providing events and services for third parties.

Threats

- Scope too narrow meaning learner numbers could be too low to achieve both a broad intake of learners and achieve financial sustainability.

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