BUSINESS GROWTH IN THE CLOUD

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Contributors

Adrian Bridgwater
Specialist author on software engineering and application development, contributing to titles such as *Forbes* and *Computer Weekly*.

Hannah Prevett
Business editor of Bridge Studio, contributor to *The Times* and *The Sunday Times* and former staff of *Management Today, Growing Business* and *Information Age*.

Christine Horton
Long-term contributor to specialist IT titles, including *Channel Pro* and *Microscope*, writing about technology's impact on business.

Sooraj Shah
Contributing editor at *New Statesman Tech*, writing regularly for *Computing, IT Pro* and other business tech publications.
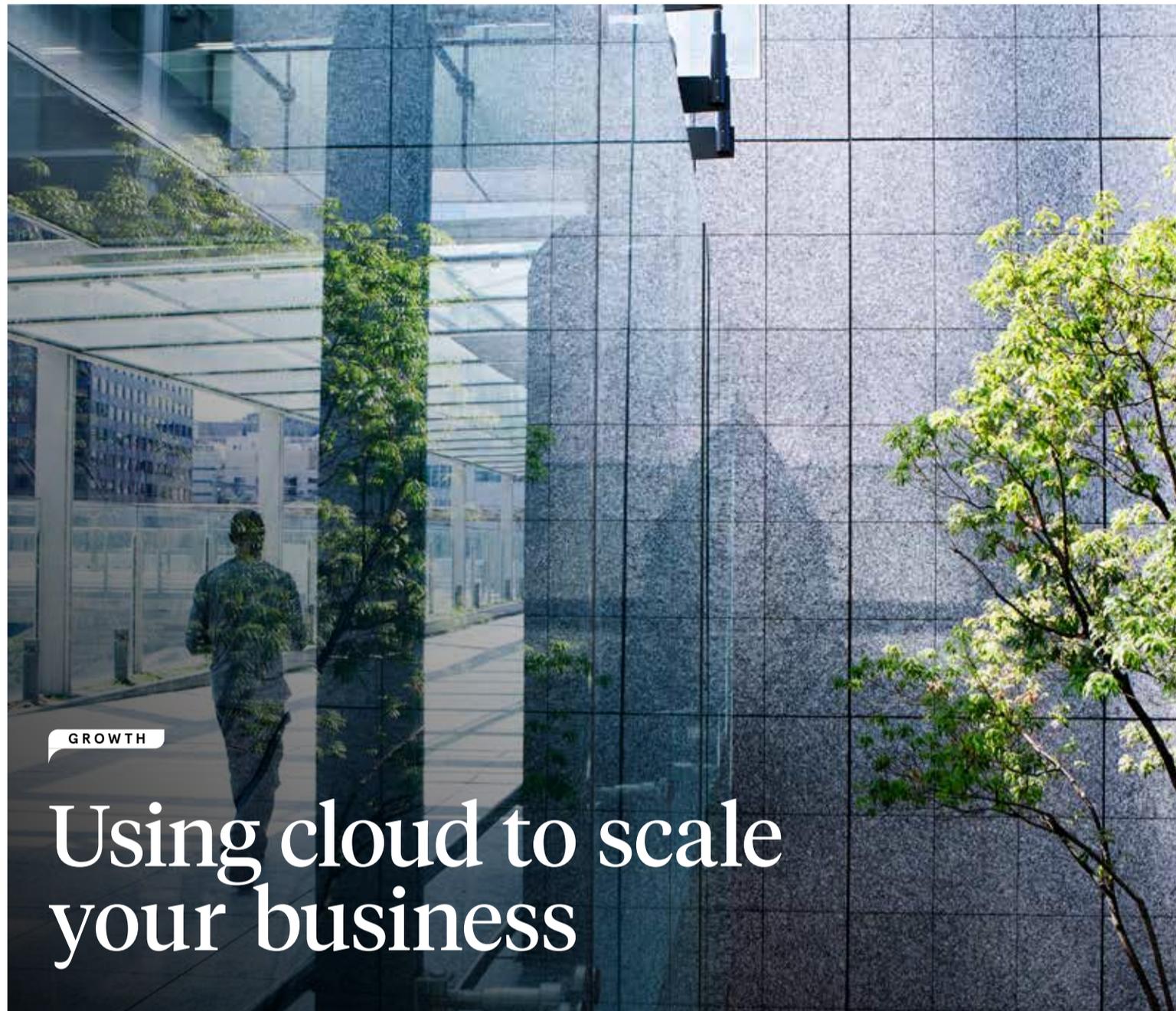
GROWTH

Using cloud to scale your business

Adrian Bridgwater

As the coronavirus hit, it became clear to many businesses that they had to pivot or peril, breathing new life into digital transformation efforts and highlighting cloud computing's ability to fuel significant growth

The world is going through a period of reinvention. Even before the coronavirus pandemic, firms in every vertical were working methodically to achieve business growth. Many were aiming to become software-centric companies, using data-driven workflows and running on the widespread deployment of digital platforms. The drive for digital transformation remains, but the pandemic has accelerated the cadence of what had previously been a reasonably systematic, planned progression.

When COVID-19 struck, many businesses had to close their physical facilities almost overnight. This meant moving to online, virtual, predominantly cloud-based technologies to keep daily operations moving. The technology transformation that companies regarded as important, but essentially aspirational, suddenly became fundamental.

In many cases, firms have realised that to achieve commercial survival and subsequent reinvention for future business growth, they must adapt to an even more digitally empowered world than they had first envisaged.

As frontline healthcare and other key workers kept life running in the UK and elsewhere, the business world realised it didn't have the luxury of planning, strategic counsel or even the option to hold face-to-face meetings. It's well known that when businesses embark upon a new market or product development, the first step is to put the foundations in place. In 2020, there was no time for that. This meant organisations had to find ways to establish faster, more flexible and more efficient working practices with little or no time for foundational planning.

The cloud model of service-based computing centralises on a shift away from capital expenditure (capex) costs and responsibilities because the cloud provider supplies the infrastructure, technology platforms, and many of the software services and applications. This move to an operational expenditure (opex) model gives even small companies the chance to access economies of scale that were once reserved for large enterprises.

The business benefits of cloud can be translated directly into fast-track business growth for startups and accelerated scale-up development for organisations on the cusp of expansion. Equally, a more flexible ability to tap into opex-charged computing resources can allow established companies to reinvent, co-create and collaborate, prototype and innovate in ways they may not have considered as recently as the turn of the millennium.

Implications for business growth of cloud backbones are far reaching. World regions that were once technology poor can now, with an internet connection, tap into the same "pipe" as businesses anywhere

78%
of the UK's fastest growing tech companies use AWS

67%
of companies using AWS said their business or operating model would not be possible without the cloud

Public First 2020

> **Organisations that tap into the power available from the cloud engine room position themselves intelligently for business growth**

Kohei Hara / Getty Images

storage, information management and networking functions of cloud. Progressive companies looking to exploit the full potential for business growth in the cloud will need a full toolset of technology functions.

A fully featured cloud service provider will offer somewhere in the region of 200 services all aligned for specific tasks and functions. This would typically include technologies built to service data analytics, robotics, machine-learning and artificial intelligence, internet of things, mobile devices as well as virtual and augmented reality.

But despite all this on-tap power, many organisations still, unfairly, regard cloud computing as complex, tough to orchestrate and difficult to implement. This is where customers should look to the breadth of expertise available inside their chosen cloud service provider. Web-based training, self-paced labs, customer support, third-party offers and, in some cases, service credits for startups are all available.

They say the best technology is tech the user is not even aware of. These are software tools and applications users will access every day, without necessarily thinking about the fact they might be delivered via the cloud. From communication and collaboration services to data-rich applications, visualisation tools and business dashboards, the cloud has massive breadth and depth. It is capable of delivering uptime and service power rapid-growth and indeed, in 2020, rapid-change firms need, without the capital outlay that would have been required before the cloud era.

Cloud provides a platform for computing that acts as a flexible business platform for commercial growth, agility, expansion and change. Organisations that tap into the power available from the cloud engine room position themselves intelligently for business growth and digital transformation. The cloud is industry agnostic, largely location agnostic (depending on local broadband access) and, above all, it is software application agnostic, which means that quite literally anything is possible.

Over the next decade, the total impact of the cloud on gross domestic product is likely to double as a growing share of the economy takes advantage of cloud technology. Adopted correctly, there's no cumulus fluff on the computing cloud. It offers solid steps towards new heights of business growth. ●

around the globe. A three-person startup in a city with no particular technological prowess or community can potentially have as much access to computing power as a firm in Silicon Valley.

In a recent Public First survey, carried out in partnership with Amazon Web Services (AWS), 67 per cent of companies using AWS, said their business or operating model would not be possible without the cloud. This is part of our new normal.

Some companies still harbour misgivings and uncertainties about the business benefits of cloud. If our IT stack and data is never on our own premises, then how do we know whether our information is safe? If we have to use even more expansive cloud services in the post-COVID era, for more complex data exchange and collaboration applications to support remote working, how can we be sure remote security exists? The fact is that most cloud service providers know more about network security than most organisations, whatever the industry vertical.

Security, data governance and information compliance functions will all form a central part of a comprehensive enterprise cloud service provider offering at its core. But organisations have the chance to leverage far more than "just" the core computing,

Cloud computing powering business growth

Cloud services, combined with cutting-edge technology and high-quality data, can power growth for startups and smaller businesses

L ike every great story, "it all began in a pub", says Doug Johnson, on the beginnings of Futrli, the business prediction and planning software company of which he is chief technology officer.

Futrli's founder and chief executive Hannah Dawson had bought a pub in Devon in 2003 and soon found herself encountering serious cash-flow issues. In the first six months, a brown HM Revenue & Customs letter landed on her doorstep containing a £40,000 VAT bill, which she hadn't properly accounted for, and as a result she nearly lost it all.

Futrli was born a decade later in 2014 out of a need and a want to ensure no small and medium-sized enterprise feels as helpless and alone and terrified as she did on that morning. Today, the Brighton-based company, which has received £4 million of venture capital funding, employs 50 people and offers three products.

Its products include Flow, which helps small businesses identify hidden late payers and calculate the right time to pay bills, for example if a business needs to pay a supplier or if they are owed money from a customer, and Advisor, which includes features such as integrated three-way cash-flow forecasts, scenario modelling, management reports and dashboards, and has been used by 1,500 accountancy firms supporting 65,000 small businesses.

More recently, Futrli launched Predict, a new type of financial prediction software for small and growing businesses that supports them as though they have their own team of advisers. The new release couldn't have been more timely, explains Johnson, as businesses need all the tools at their disposal to help them weather the cash-flow storm caused by coronavirus-related uncertainty.

"Our revenues have gone up during this time as there is an increased demand for our services," he says. "We couldn't have launched Predict at a better time because there's a desperate need for businesses to have this information at their fingertips."

The launch has gone smoothly, with Predict immediately becoming available not just to UK businesses, but to the company's clients in 130 countries around the world. This is thanks to Futrli's collaboration with Amazon Web Services (AWS), the cloud services provider.

Johnson prizes the opportunity "to work with an infrastructure partner

that allows us to be able to bring a product to market, scale rapidly, without us having to worry about purchasing hardware and predicting how much hardware we might need, and then avoiding the long lead time which would be involved in getting it all set up".

The relationship dates back to 2017, when Futrli moved its services to the AWS Cloud to help it grow. Access to AWS's international regions and the Amazon Aurora regional database, a relational database which runs in the cloud, was a key driver for the collaboration. This was especially valuable in the southern hemisphere where the company had been expanding, but where it was proving difficult to maintain the speed and quality of service customers had come to expect in Europe.

> **As we expand into new global markets, the knowledge that AWS has a presence in every market gives us great comfort**

"There was a time when we didn't have any software or anything running in the Asia-Pacific region. The customer experience was pretty terrible because everything felt slow. As we expand into new global markets the knowledge that AWS has a presence in every market we potentially want to move into in the future, or even multiple presences, gives us great comfort," says Johnson.

Although the collaboration with AWS pre-dates his tenure at the company, Johnson says he has taken further steps to embed cloud technology into Futrli. "I could see when I joined that the team had gone down the path of building software in the cloud, but we are now all in with AWS," he says.

Despite the rapid growth of the company, Johnson has been able to keep his internal technology operations team lean and it still consists of only two infrastructure engineers reporting to him. "I'm of the view that if there's an AWS-managed service for something, we should use it, and we should use AWS as an extension of our own operations team. [This way] we can keep our own team as small as possible and maximise what we can get from the experts on hand at AWS."

To read the full report into how AWS is driving value for UK businesses, visit awsimpactreport.publicfirst.co.uk

VALUE OF THE CLOUD

Cloud computing is enabling businesses of all sizes to generate additional revenue, save costs and improve efficiency, and the value of further adoption across the UK could be enormous

ECONOMIC VALUE

£**8.7**bn

economic value is generated by AWS for businesses across the UK, which is equivalent of...

0.4%

of UK GDP

AWS DELIVERING GAINS

£**2**

return for every £1 customers spend on AWS from higher revenue and reduced costs

67%

of AWS customers say their business or operating model would not be possible without the cloud

81%

estimated that the cloud was helping them earn additional revenue

THE GREENER OPTION

88%

reduction in a company's carbon footprint by moving its workload to AWS

200,000 tonnes

of CO_2 emissions saved each year by UK customers of AWS, the equivalent of...

400 million trees

CLOUD HAS POTENTIAL TO LEVEL UP PRODUCTIVITY ACROSS THE UK

Regional cloud prevalence, gross value added (GVA) in 2019 and estimated GVA if prevalence rises to London's level of 52 per cent

CLOUD PREVALENCE
18% — 52%

● Cloud GVA (£bn)
● Potential GVA at 52 per cent prevalence

18% Scotland — 1.2 → 3.5

19% North East — 0.5 → 1.4

27% Yorkshire and the Humber — 1.8 → 3.4

No data Northern Ireland — 1.2 / 0.9

52% North West — 4.9 / 4.8

25% East Midlands — 1.5 → 3.1

44% West Midlands — 3.8 / 3.2

19% East of England — 1.6 → 4.5

44% Wales — 1.8 / 1.5

52% London — 10.2

39% South East — 5.3 → 7.1

45% South West — 3.9 / 3.4
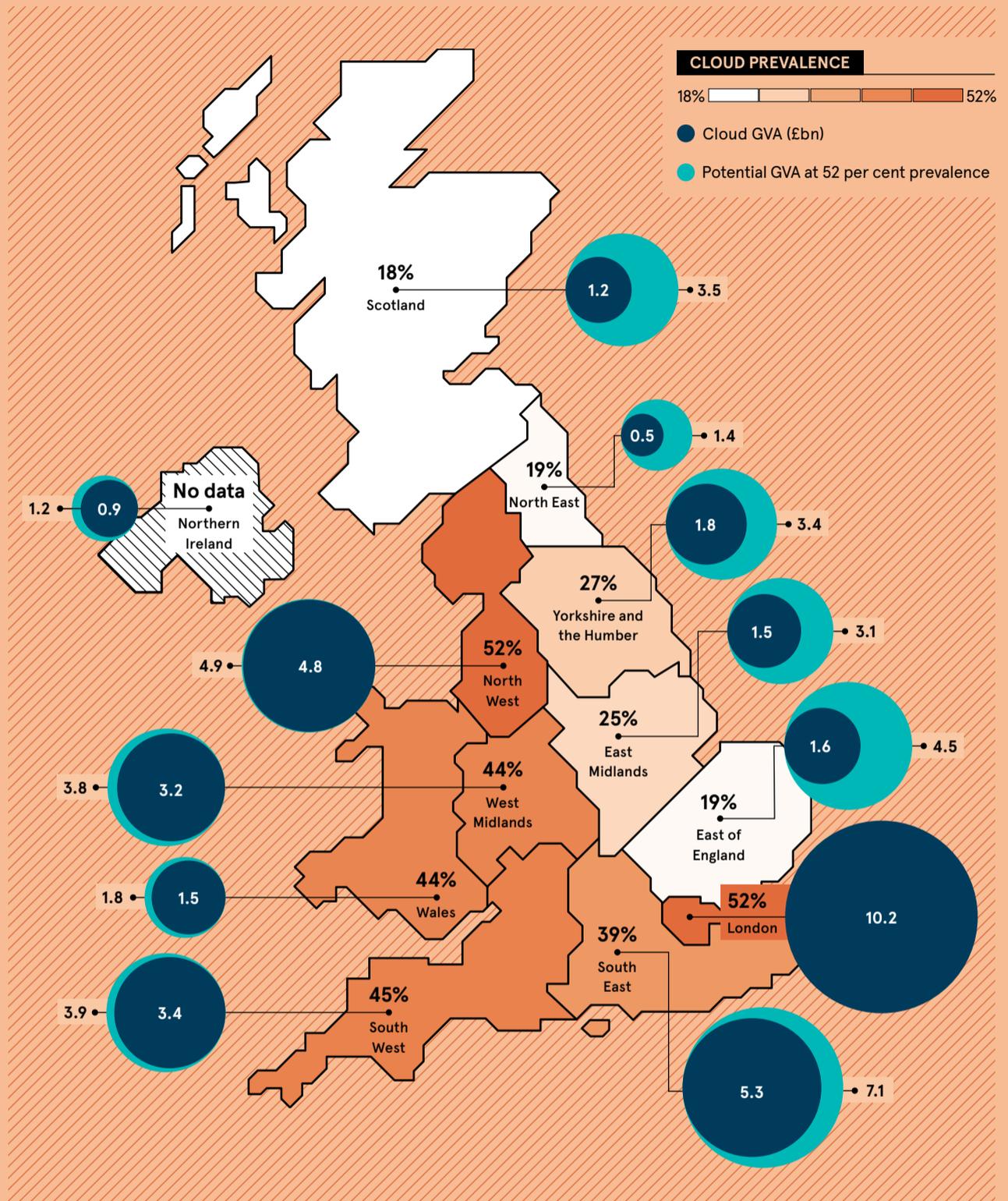
CLOUD BOOST BY COMPANY SIZE

Estimated average revenue increase from using AWS, by number of employees

UP TO 9 EMPLOYEES	10 TO 49 EMPLOYEES	50 TO 99 EMPLOYEES	100 TO 249 EMPLOYEES
£11,000 extra revenue	£61,000 extra revenue	£35,000 extra revenue	£93,000 extra revenue

CLOUD TOOLS DRIVING GROWTH

Number of cloud tools used, compared with business growth

ANNUAL GROWTH

- ● Stayed the same size or shrunk
- ○ Grown 0 to 5 per cent
- ● Grown 6 to 20 per cent
- ● Grown 20+ per cent

NUMBER OF CLOUD TOOLS USED

0
- 60%
- 23%
- 15%
- 2%

1-2
- 40%
- 30%
- 23%
- 7%

3-4
- 31%
- 33%
- 27%
- 10%

5-10
- 18%
- 30%
- 40%
- 12%

10+
- 9%
- 31%
- 47%
- 13%
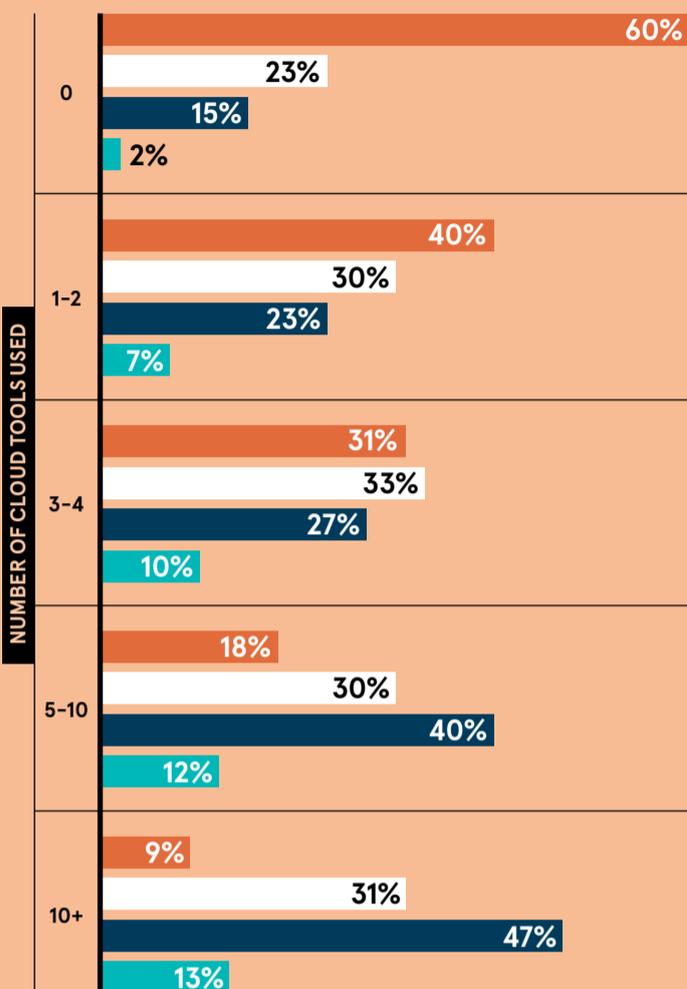
MULTIPLE CLOUD BENEFITS

Percentage of AWS customers who have seen the following benefits

CLOUD HAS...

Made it easier to innovate and bring new products to market
84%

Made it easier to be agile and react quickly
82%

Helped us to deliver better customer service
80%

Made it easier to adopt new data-intensive technologies, such as AI and big data
79%

Helped us to win more customers
58%

Helped us to be more profitable
56%
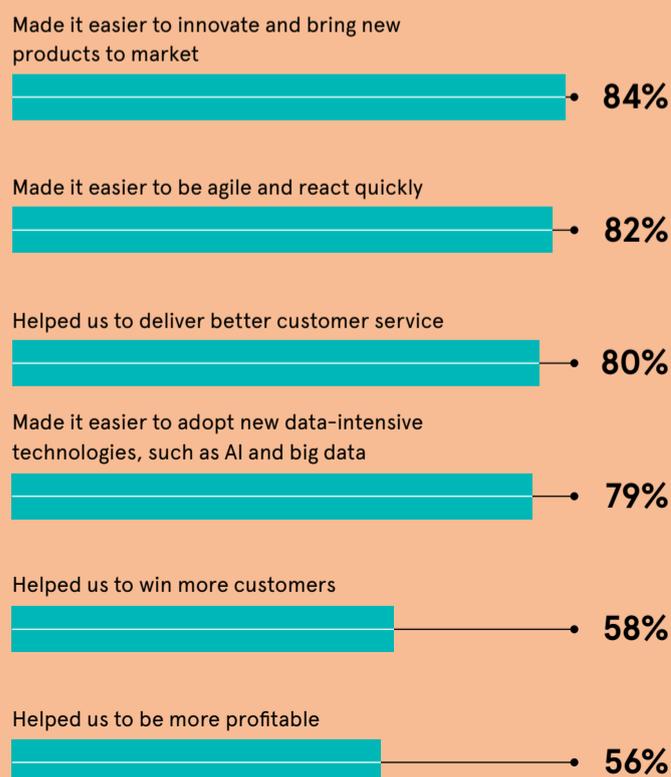
All data is provided by Public First 2020

Managing the books and boosting productivity

Any small business will know the pain of keeping accounts up to date. It can often involve juggling multiple spreadsheets and a pile of receipts

As former freelancers themselves, Ed Molyneux, Olly Headey and Roan Lavery decided there must be a better way to manage the books. In 2007, the trio founded FreeAgent, an online accounting platform for small and micro businesses.

FreeAgent is designed to make it easier for business owners to manage finances and allow them to focus on what they do best: running and growing their companies.

FreeAgent helps businesses with everything they need to keep their finances in order, from time-tracking, expense management and invoicing, through to self-assessment tax returns, VAT calculations and automated filing with HM Revenue & Customs.

FreeAgent had been employing Amazon Web Services (AWS) storage capabilities since its inception, while running its own hardware in co-located datacentres. At the time, with its growth on a predictable course, this suited the company's needs.

However, in 2018 FreeAgent was acquired by NatWest Group, which was a huge step-change for the business. With sudden access to hundreds of thousands of small business customers, it became difficult to anticipate demand for FreeAgent's services.

The company turned to AWS because of its ability to scale in line with its business requirements, enabling it to accommodate for any surge in customer numbers, while optimising its hosting budget. Since this time, FreeAgent has moved several production services to AWS and will move everything to AWS later this year.

FreeAgent's relationship with AWS now allows it to use more time and resources to focus on other priorities, including helping its small business customers to level up their productivity.

So how does FreeAgent help its customers be more productive? One significant way is by leveraging the data it collects to provide valuable insight and advice to customers about their business performance, which is especially important during the current period of economic uncertainty.

FreeAgent looks to AWS to take care of the underlying technology infrastructure, so it can instead concentrate on delivering exceptional service to its customers.

"There are lots of technologies AWS offers that we would struggle to create ourselves, such as serverless computing or machine-learning," says Headey, FreeAgent's chief technology officer.

"We can make sure that regardless of the demands in terms of number of customers, we can still offer a service that is fast, responsive and has high availability. But we can also put new technologies in the products and new features in front of customers faster; things we wouldn't be able to do without the unique support AWS provides."

An example of how FreeAgent is leveraging machine-learning is for automatically categorising bank transactions. Knowing which accounting category a transaction should be assigned to is a common painpoint for customers.

The company uses Amazon SageMaker, a fully managed machine-learning service that provides every developer and data scientist with the ability to build, train and deploy machine-learning models that result in a higher degree of accuracy over more traditional, rule-based systems. Automating this work with SageMaker ultimately saves customers precious time, allowing them to focus more on their core business.

Working with AWS has also enabled FreeAgent to be less siloed. Headey says: "Previously, a lot of our knowledge was highly specialised and separate from the rest of the business in our operations team. At scale that becomes a bit of a problem. A lot of this kind of specialism is effectively outsourced.

"AWS provides us with flexible, secure infrastructure and services on demand, so we can focus on the design of the systems, how we want data to flow and the tooling we use. We can broaden the knowledge pool away from just operations engineers."

FreeAgent now has more than 100,000 customers, but this is still the tip of the iceberg, says Headey. "There are over five million small businesses in the UK. That's a huge number of potential customers we want to reach, whose problems we can solve," he says. "Also, there are now many people who have been furloughed, as a result of COVID-19, or lost their job, who will have gone into self-employment in some way. The more we can help serve them, the better."

> " We can make sure that regardless of the demands in terms of number of customers, we can still offer a service that is fast, responsive and has high availability

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Kevin Murray / Getty Images

Rise of the cloud natives

A new wave of cloud-first startups are coming into their own, and reaping the considerable benefits of being able to adapt and scale at speed, free from the constraints of on-premises infrastructure

Sooraj Shah

Rest Less is a startup that aims to help the over-50s get the most from life, from new jobs to financial wellbeing, volunteering, learning and more. Its founder and chief technological officer (CTO) Sara Stephens explains that the company was built in the cloud and this has enabled it, like many other cloud-native businesses, to scale up rapidly, while keeping costs down.

"We have enterprise-grade infrastructure for a tiny little startup; it's so much more efficient," she says. "While we knew about the benefits of cost and speed compared to on-premises infrastructure, we hadn't thought about the added benefit of being able to react quickly to change our infrastructure.

"Our configuration wasn't quite in the sweet spot it needed to be in and it was really easy to reduce our costs, whereas if you purchase kit, you can't just get rid of it to reduce costs."

For David Bishop, founder and CTO of ecommerce site Love the Sales, without cloud computing there wouldn't have been a company. It simply would not have been able to handle a growth in demand without having to pay extortionate, unviable fees.

"If we had to purchase enough servers to cater for Black Friday and run them through the whole year, [that would be] a huge, unnecessary cost, which is significant for small businesses like ours," he says.

"With cloud computing we can change our capacity more dynamically, spinning up servers and shutting them down when we don't need them."

Reacting quickly is a trait that cloud-native businesses have embedded into their work culture from the outset. It means that when they require new services, they're more easily able to decide what it is they need, who it is they need it from, implement these services quickly and adapt working practices to suit.

"We're using cloud computing for our mobile device management and will be using it for mobile app management, and this has helped us with security. So we can now manage all devices and make sure they're up to date and running their patches, feeding into the cybersecurity. It is hugely helpful as it would be an absolute pain to manage

> ❝
> **We can change our capacity more dynamically, spinning up servers and shutting them down when we don't need them**

something like that on-premises otherwise," says Stephens.

She explains that part of the ability to react quickly is that if an issue occurs, for example if the database grinds to a halt, companies can increase the size of that database. This will come into effect in a matter of minutes, which means business can continue while the company looks into the matter thoroughly, rather than having to take the website offline for a number of days to fix the issue.

According to Nicholas McQuire, analyst at CCS Insight, this cultural shift of being able to react quickly has meant many cloud-native businesses were most resilient when the coronavirus spread. "As they had embraced the cloud prior to COVID-19, they were able to react and change their businesses pretty quickly as a consequence of it," he says.

"They're more familiar with being able to pivot more swiftly, roll out products quickly and have the ability to scale up or down as and when they've seen a change to their macroclimate. This is all really part of the mindset of smaller startup businesses."

There are also benefits of being cloud native for IT staff as they have more control over the applications they build. "Whereas before you had one large structure, now the cloud enables you to have many smaller structures, which are much easier to manage and make changes to. This would have been very difficult to do when using on-premises infrastructure," says Bishop.

Commercial feature

In addition, IT staff have a bigger number of services they can deploy and experiment with. Many of the latest machine-learning tools are built on cloud infrastructure, while software-as-a-service, or SaaS, tools such as Zoom, Slack and Atlassian are used regularly by both cloud-native businesses and larger enterprises.

According to new research by Public First and Amazon Web Services, businesses that use more than three cloud tools are twice as likely to be growing than businesses that use none.

Cloud-native startups also rely less on IT support. "We were able to go remote overnight. It wasn't a big issue; no one has had to go into the office to sort things out. We don't have long-running IT support teams, but because it's enterprise grade, it's load balanced, it has disaster recovery so it if falls over, it just picks itself up again," Stephens explains. "That isn't just a cost saver; it's a mental and physical-health saver for your staff."

Cloud computing is not just having an impact on startups that have used cloud infrastructure from the start. For instance, there is an industry within an industry, as cloud computing companies have small partner companies that consult on and develop technology solutions for the cloud.

Many small and medium-sized enterprises and larger outfits have also shifted workloads to cloud infrastructure in major transformation projects. Some of the biggest companies have created cloud-native offshoots focused on innovation. These innovation arms allow them to act much like a cloud-native startup, so they can experiment with technologies, fail fast and learn quickly.

The aim for these businesses is to then transfer their findings or working practices into the main organisations. The fact that they are trying to use this method shows they know cloud-native businesses have an upper hand when it comes to innovation.

2x

more likely for businesses to grow if they use more than three cloud tools

£1.4BN

potential boost to productivity and wages if cloud prevalence in the North East matched that of London

...the equivalent of

3

years' pay

Public First 2020

As the pandemic has shown, cloud computing has been a major reason why so many businesses could transition quickly to remote working and change their business priorities. According to Public First, however, there is still a wide disparity in the uptake of cloud by businesses across the UK.

Public First found that if cloud prevalence in the North East matched that of London, it would help to boost local productivity and wages by 2.6 per cent, or £1.4 billion, the equivalent of three years' pay rises. There would also be less reliance on tech hubs in London or Berlin, for example, as cloud computing can enable firms to set up anywhere.

While cloud computing is having a positive impact for many businesses, it is cloud-native startups that are setting the bar for the way in which cloud can be best utilised and others are following suit. ●

POWERING REVENUE GROWTH

Businesses using more than ten online or cloud tools that say their revenue has grown in the last three years — **91%**

Businesses using three to four online or cloud tools that say their revenue has grown in the last three years — **70%**

Businesses not using any online or cloud tools that report their revenue has stayed the same or shrunk in the past three years — **60%**
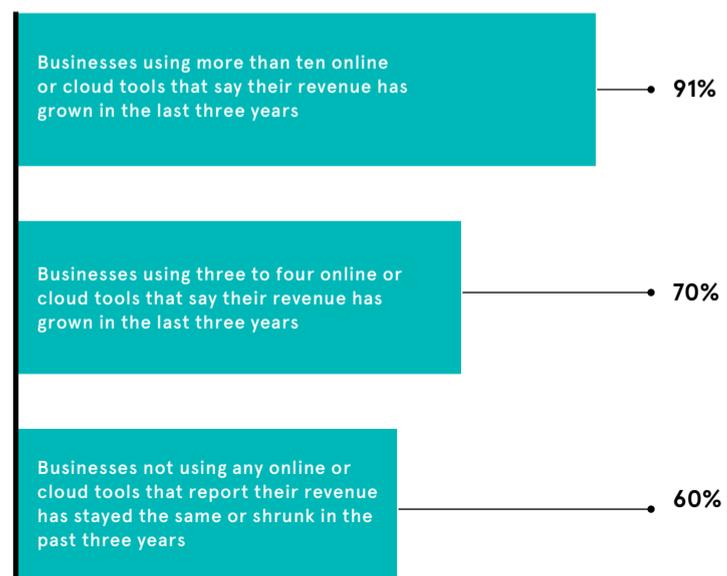
Public First 2020

New generation of small businesses serving the big hitters

Working with a cloud leader enables smaller businesses to offer their services to major corporates

The chances of a large business working with a technology startup would once have been extremely low. However, since the introduction of cloud computing, startups and small and medium-sized businesses (SMBs) have used it as a launchpad to offer specialised services to a wide range of companies.

This is where Amazon Web Services (AWS) differentiates itself as a cloud leader. The AWS Marketplace is an online software store that helps customers find, buy and immediately start using software and services on AWS. Large enterprises can easily call upon specialised startups and SMBs to help them manage, integrate and use their cloud technology more effectively.

Companies on the AWS Marketplace are instantly recognised as being able to meet the demands of customers.

Take the example of Matillion, a Manchester-based SMB that specialises in helping businesses to bring their siloed data together. Matillion's software was born in the cloud and built to work in cloud data warehouses, specifically Amazon Redshift. The company strived to be able to offer its services to the biggest companies in the world.

An opportunity came as a result of the AWS Marketplace, when global publishing company Elsevier wanted to make better use of its data to provide it with a competitive edge.

Elsevier used Amazon Redshift, which was an easy, cost-efficient choice that integrated smoothly with the company's existing AWS systems. However, Elsevier's old system for extracting usable data from this warehouse, known as ETL (extract, transform, load), was buckling under the weight of growing demand.

It needed support from a company that specialised in Amazon Redshift and used the AWS Marketplace to identify potential partners. It was here that Elsevier found Matillion's ETL for Redshift product.

"AWS provides the cloud platform and Amazon Redshift provides the data warehouse and analytics engine. But that's not the end of the project," says Matthew Scullion, founder and chief executive of Matillion. "Organisations need to get the data onto the engine, and they need to join that data together and turn it from raw material to information that can be acted upon by the business."

Matillion tackled Elsevier's problem by streamlining its data pipeline and creating a simple graphical user interface,
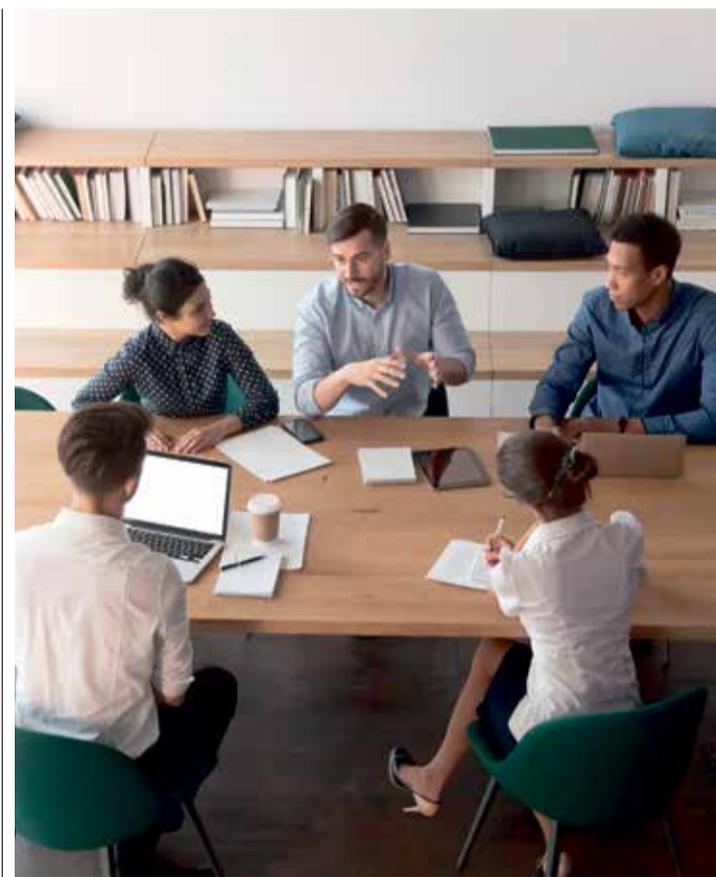
making the data digestible and accessible to people across the business, regardless of role or background.

The outcome has removed technical glitches, giving a better service to customers, while also freeing up developers and analysts to focus on innovation elsewhere. As a result, Elsevier has benefited from being able to make better decisions using data.

"The cloud offers a disruptive software company like ours a huge market of customers to sell to. Matillion was filling a gap where Elsevier wanted to innovate with data, at an accelerated rate," says Scullion.

> " The cloud offers a disruptive software company like ours a huge market of customers to potentially sell to

Matillion is a good example of how the AWS Marketplace offers SMBs an opportunity to work with and improve large, established businesses.

Matillion is part of the AWS Partner Network (APN), which means it is provided with business, technical and marketing support from AWS. It has continued to create products purpose-built to work with AWS and the majority of its annual revenue now comes from collaborating with the company, with more than 80 per cent of its work on systems like Amazon Redshift.

In nine years, Matillion has gone from 12 employees to over 200 and has more than 800 global customers, including several with revenues of over £500 million and some exceeding £1 billion.

"AWS Marketplace has made it a lot easier for us to build commercial relationships with those customers," says Scullion.

It's in areas like ETL where AWS is helping cloud-native startups and SMBs to gain business from large enterprises, as they can specialise in a specific area that supports existing AWS customers.

To read the full report into how AWS is driving value for UK businesses, visit awsimpactreport.publicfirst.co.uk

Commercial feature

Sky's the limit going global in the cloud

Migrating to the cloud can take the pain out of going global for ambitious companies looking to grow cross-border businesses

The banking industry is at a strategic inflection point. Challenger banks are shaking up the market with app-driven access to cheaper and more flexible services. Some traditional high street banks have extended the opening hours of their premises. Others have realised that many people are happy to never physically visit a bank at all, preferring to carry out all transactions and inter-actions online.

Key among the services of modern-day banking is having the flexibility to do what you want with your money, when you want to do it and from wherever in the world you want to do it from. Take, for example, the ability to transfer money across borders, an action that in and of itself hasn't been completely reinvented as a standalone discipline by any of the banks, new or old.

It was this gap in the market that Taavet Hinrikus and Kristo Käärmann, from Estonia, sought to fill when they started TransferWise.

Founded in 2011, the idea for TransferWise was born while the duo were working close to each other's offices in London. At the time, Hinrikus was the first employee of Skype and was paid in euros, a currency not widely accepted in the UK outside the confines of Heathrow Airport. At the same time, Käärmann worked for Deloitte and was paid in sterling, but needed euros to pay a mortgage in Estonia.

After being stung by banks' inflated exchange rates and fees once, they found a way to exchange money between themselves using the mid-market rate quoted on Reuters. They started TransferWise with a vision of being able to give ordinary people the chance to benefit from faster, cheaper and more transparent international transfers. A healthy number of people work internationally every year and there is clearly a need for this type of functionality.

More than eight million customers now use TransferWise to move over £4 billion in cross-border transactions every month. The company estimates that together these customers save some £3 million a day in bank fees. Headquartered in London, TransferWise has 14 offices and more than 2,200 employees across four continents. Its investors include Virgin's Sir Richard Branson and PayPal co-founder Max Levchin.

Hinrikus and Käärmann think that one of the main reasons TransferWise has flourished is because of the company's initial vision and determination to go global. To help achieve this, TransferWise switched from using specific datacentres housing its own servers to placing nearly all its operations onto the Amazon Web Services (AWS) Cloud.

Part of the team who led the onboarding and governance of this transition for the company was Thomas Hewer, engineering lead, platform governance and architecture at TransferWise. "When we wanted to expand to a new country, instead of having to find new datacentres and install new servers, we could simply increase our use of the cloud, saving huge amounts of time and effort," says Hewer. "AWS had effectively done a lot of the hard work for us already."

The company chose the AWS Cloud because it is specifically designed to host large-scale, international operations, has a solid track record for performance at this level of enterprise application delivery and is highly regarded by financial regulators.

These factors proved particularly valuable as the company formed relationships with commercial and central banks in new countries. Because the AWS Cloud operates in the same way worldwide, it has also facilitated innovation at TransferWise, including the rollout of new products for different regions. As Hewer puts it: "We don't have to reinvent the wheel every time we do something."

AWS supports all financial services customers with the secure, resilient global infrastructure, services and expertise they need to accelerate release cycles, improve decision-making, reduce costs and streamline operations. Its infrastructure delivers the highest level of security and resiliency to meet local and global compliance regulations, while supporting innovation at any scale and speed, and satisfies the security and compliance needs of the most risk-sensitive organisations.

"

When we wanted to expand to a new country, instead of having to find new datacentres and install new servers, we could simply increase our use of the cloud

To read the full report into how AWS is driving value for UK businesses, visit awsimpactreport.publicfirst.co.uk

TransferWise

Meet the small firms going global

International expansion is both a dream and a risk for many small businesses, but switching to cloud-based infrastructure is a good first step

Hannah Prevett

A cornerstone of Boris Johnson's successful election campaign was his commitment, and slogan, to "Get Brexit Done". For the 340,500 UK small and medium-sized enterprises doing business internationally, questions remain over ongoing trade negotiations and the terms Britain will be able to agree, or not, both with the European Union and the rest of the world.

When coronavirus took hold, these questions were put to one side as struggling small firms focused on trying to deal with the hammer blow of the pandemic. But at the same time, lesser-told stories of success have begun to emerge.

Small companies in the ecommerce sector are thriving, for example. One such business is fulfilmentcrowd, an 85-strong fulfilment outsourcing company near Manchester, which managing director Lee Thompson says has seen "two to three years of growth in two to three months" during COVID-19.

The ability to grow at speed and adapt to increasing and evolving customer needs is only possible because of fulfilmentcrowd's cloud infrastructure. The decision to turn off the company's datacentre in 2019 and switch to a cloud-based infrastructure was a pivotal moment in the company's success, says Thompson.

Switching to a cloud-native model has also enabled the business to slash its operating costs, both the costs of hardware and maintenance, which amounted to £600,000 a year, and what Thompson refers to as the "unknown costs" of committing staff to a low-value task. "If I've got a very senior developer who's having to upgrade a server, that's a cost which is disproportionately high," he says.

Many other businesses are also leveraging the benefits of cloud-based infrastructure to help growth. New research conducted by Public First, on behalf of Amazon Web Services (AWS), found companies running on the cloud are nearly three times as likely to be growing more than 5 per cent a year than those that are not.

Cloud use is even more prevalent among the UK's fastest-growing companies. According to the Public First research, 16 of the UK's 17 "unicorns", companies that are valued at more than $1 billion, are powered by AWS. Babylon, a healthtech unicorn headquartered in London, which enables users to have virtual consultations with doctors via text and video, now has more than 4.5 million registered users worldwide.

Via the app, the patient describes their symptoms to a virtual assistant that then suggests relevant health information followed by self-care treatment advice or a video call with a doctor. Babylon uses artificial intelligence to access 530 million knowledge streams, the largest knowledge base in primary care medicine. The app "learns" from every interaction it has with a patient, so its accuracy is forever improving.

"We use natural language processing so the app can talk with patients in a friendly, human way," says Dr Ali Parsa, founder and chief executive of Babylon. "We take the data and infer what is likely wrong with the patient using probabilistic graphical modelling." Babylon also uses predictive analytics to tell the patient what will happen if they follow a suggested course of action.

From the very outset, Babylon was set for international growth and it needed to collaborate with a cloud services provider that could match its global ambition.

"AWS was a natural partner for us because of its scale," says Parsa. "It enabled us to distribute our servers worldwide. Imagine in the past, if we wanted to grow we had to find new spaces one by one, place our own servers there one by one."

Sarah McVittie, co-founder of Dressipi, a fashion prediction platform which works with retailers including John Lewis, Topshop and River Island, says her company wouldn't be able to process its customers' mountains of data and offer them actionable insights in real time without the elasticity of a cloud-based infrastructure.

"Cloud has changed the speed at which we can process the data. For any one of our clients, we're processing millions of datapoints. We are producing 40 million outfit suggestions a night for some of our clients. That wouldn't be possible and would be way too expensive without the cloud," she says.

Shamus Rae, founder and chief executive of EngineB, a startup applying the principles of open banking to corporate data, says being able to leverage microservices means small businesses can punch above their weight from an innovation perspective.

"It means when you're trying to compete with larger organisations, you don't have to compete on technology spend around the stuff that isn't a differentiator for you," he says. "The cloud is really helping small companies act big and be big where necessary. That's a dramatic shift."

Cloud-native businesses can also be much more fleet of foot when it comes to international expansion. Rae adds: "We now have projects in India, Australia and South Africa, despite putting no focus on these areas. We've not done any marketing there, but the inbound interest has happened because we're available and visible. We couldn't do what we're doing without it being cloud based."

In his former role as head of innovation, digital labour and cognitive transformation at big four accountancy firm KPMG, Rae occasionally encountered business owners still grappling with the security implications of not managing their own IT infrastructure, particularly in new international markets. He would be at pains to allay their concerns.

"There's a perception, but it's not a reality. The security issue and protection of data issue is solved. If you look at the large cloud providers, their technology around security is immense," he says. "The biggest issue in data security is someone in your office accidentally pushing a button on a phishing email. There is no issue in terms of cloud security of data." ●

85%

of small businesses using AWS say it has made it easier to flex their IT to meet their business needs, saving exra costs

Driving higher safety standards on the roads

The cloud not only helps level the playing field for public sector procurement, but also enables government departments to buy with more transparency

The Driver and Vehicle Standards Agency (DVSA) has used artificial intelligence to improve its vehicle-testing services, helping to make UK roads safer. The organisation has been on a seven-year journey to digitally transform the way it works, improving its services one by one.

The DVSA's main role is to oversee MOT tests, testers and garages. Initially, it had been seeking a partner to replace a mainframe-based MOT system with a faster, more intuitive cloud-based alternative. It opted for Kainos, a digital services provider, and AWS Partner.

"The vast majority of our business over the last five years has been in cloud services, partly because our customers are demanding cloud solutions, but also because the solutions we can offer can be more flexible than any of the alternatives to the demands of the customers. Cloud can scale up and down more quickly and be more cost effective for customers," says Peter Campbell, chief technology officer at Kainos Digital Services division.

Kainos Digital Services division has won a huge amount of business across the UK government's G-Cloud and Digital Outcomes and Specialists frameworks. The former is aimed at easing procurement by public sector bodies of IT services that use cloud computing, while the latter is a framework for selling digital outcomes, specialists and research services.

Campbell explains that the inception of cloud, coupled with the service capabilities that cloud partners have, has levelled the playing field in terms of who public sector customers are procuring services from.

"The digital marketplace frameworks have been transformational for governments. Both allow government departments to buy against the market with a lot more transparency, but also [give] an opportunity for smaller businesses to market and sell cloud services. It has been a big part of Kainos's ability to deliver and secure cloud work," he says.

The new, faster, more intuitive MOT service is hosted on AWS and provides the foundation for DVSA to work on a number of other projects, including the Check MOT History and Get MOT Reminders service, which uses AWS technology to send test date reminders to motorists.

It was while Kainos was helping DVSA with the modernisation of IT infrastructure that the joint team spotted an opportunity to improve vehicle-testing services.
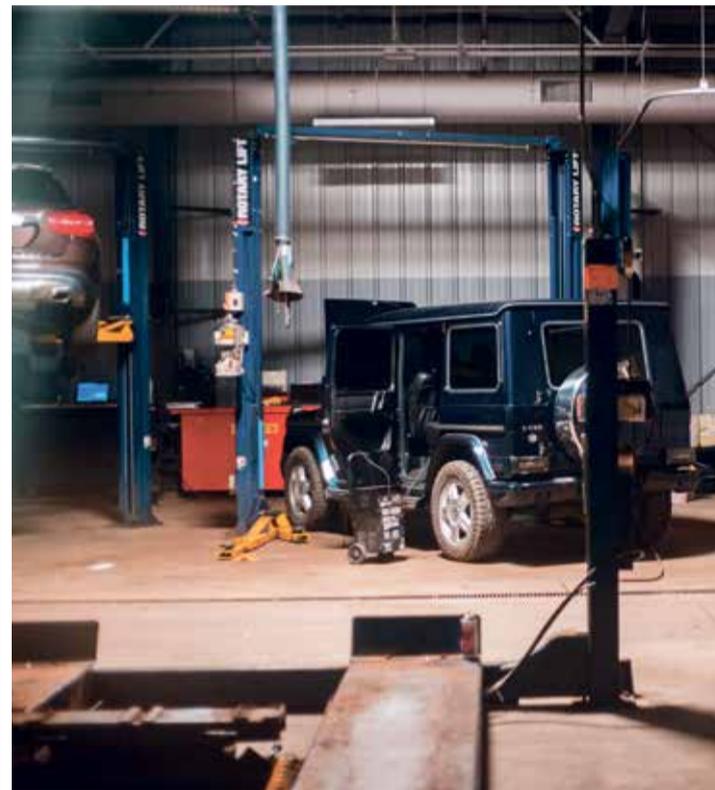
The DVSA carries out inspections to help ensure MOT tests on cars and motorcycles are conducted properly at garages. With 260 vehicle examiners carrying out unannounced spot-checks and 24,000 garages nationwide, effective targeting of garages is critical.

Kainos worked with the DVSA to create a machine-learning tool that continually identifies abnormal behavioural patterns in MOT testing and assigns risk ratings to individuals as well as garages. The algorithm builds a picture of performance over time, detecting garages with poor practices. The tool uses AWS to run applications and to securely hold large amounts of data, including test volumes, frequencies, pass rates and disciplinary histories.

The results have been remarkable. Better targeting meant the proportion of garage visits leading to an "unsatisfactory" or "needs improvement" verdict rose from 28 per cent in March 2018 to 77 per cent a year later. The proportion of visits resulting in disciplinary action or warning letters more than doubled.

Furthermore, the time taken by DVSA staff to complete pre-visit data analysis has halved and garages have welcomed the system's more objective methodology and removal of rogue traders. Ultimately, the new vehicle-testing services tool is helping to make roads safer.

"Through our work with Kainos and moving the MOT testing service onto AWS, we have transformed the way DVSA detects poorly performing MOT garages," says Alex Fiddes, DVSA's head of digital operations. "Our priority is to help protect everyone from dangerous drivers and vehicles, and this technology is helping improve the standards of MOTs across Britain as we are better able to target dangerous practices."

Cloud projects have enabled DVSA to keep improving its services. "We help our customers to develop their own skills and capabilities," says Campbell. "We work closely with DVSA to build out their data science team, so they could start to innovate and do experiments in the cloud themselves. They're using the machine-learning prototype as a template to work on their own machine-learning and artificial intelligence projects."

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The inception of cloud has levelled the playing field in terms of public sector procurement

To read the full report into how AWS is driving value for UK businesses, visit awsimpactreport.publicfirst.co.uk
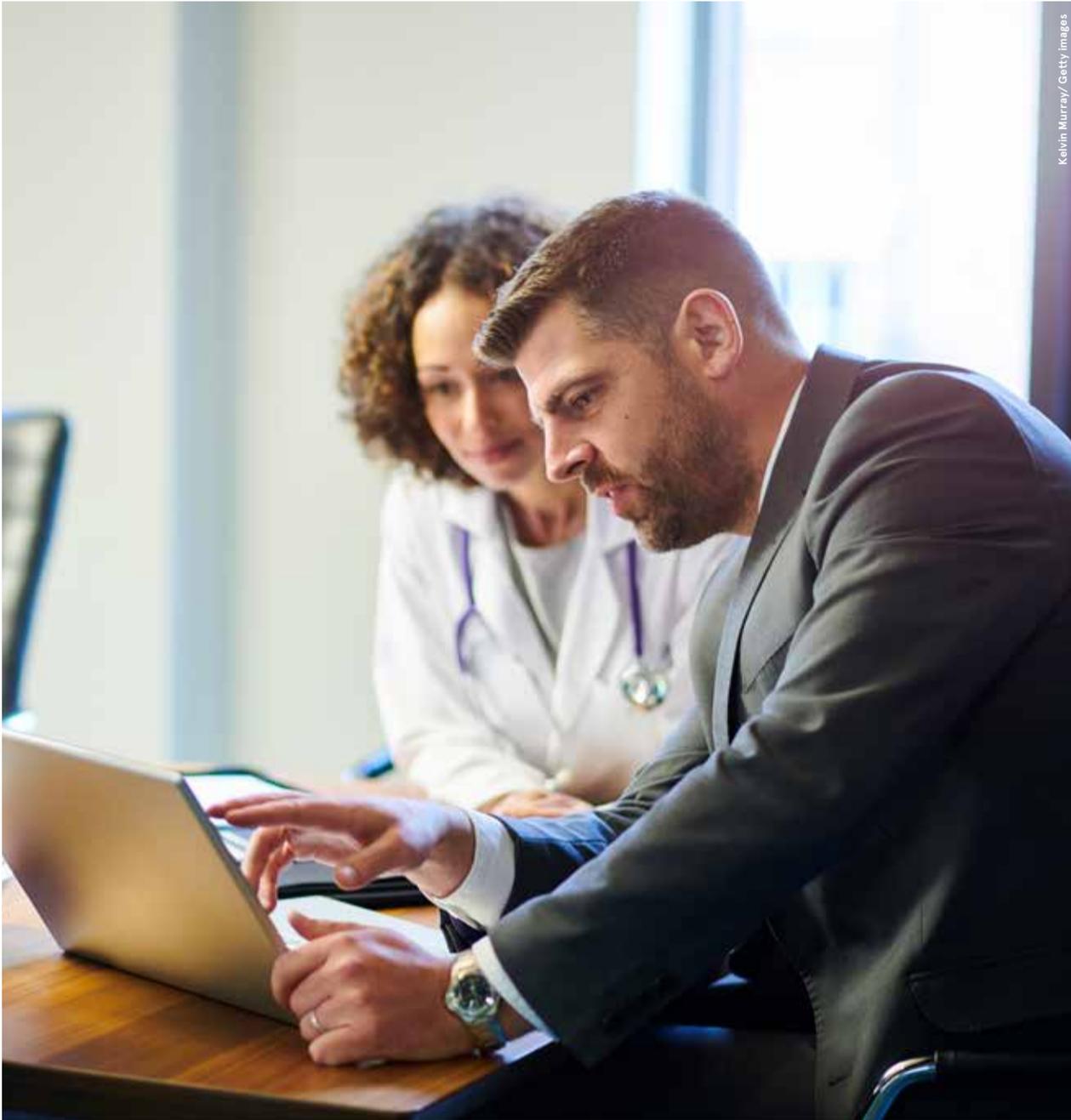
Kelvin Murray/ Getty Images

Opening the door to the public sector

In the past, contracts for important public sector projects were awarded only to big, established firms. Now cloud computing is democratising the system, paving the way for nimble, specialised smaller companies

Sooraj Shah

Once upon a time, it was difficult for smaller businesses to win public sector contracts to provide IT services, particularly for central government.

The biggest challenge was that many procurement officials believed getting volume discounts in one transaction was the best way to deliver value for taxpayers' money. This may sound logical, but once supply is aggregating to a high-enough level, there are only a few suppliers that can come close to satisfying demand.

There have since been some major changes. Firstly, there has been a renewed focus from the government to work with small and medium-sized enterprises (SMEs) with more specialist knowledge to provide better value. Secondly, the government introduced its G-Cloud framework, an initiative aimed at changing the way suppliers and buyers of ICT services do business in the public sector.

About 90 per cent of suppliers on G-Cloud are SMEs, with a cumulative spend of £2 billion since G-Cloud's launch in 2012, or two fifths of the total G-Cloud spend to date.

Simultaneously, the development of cloud computing has been embraced within government,

enabling departments not only to benefit from products available from major companies, but also low-cost, niche products from cloud-supported SMEs that can provide support and solutions.

"Unlike the traditional outsourcers, Amazon Web Services (AWS) and cloud computing companies are creating opportunities for SMEs through their advanced and trusted partner networks," says Denis Kaminskiy, co-founder and director of Arcus Global, which builds cloud-based products for the public sector.

Arcus Global is one of the more than 150 companies that have used AWS to help them deliver services, worth more than £1.3 billion, to the government, with over half of these companies categorised as SMEs at the time of delivery.

In fact, cloud computing has been essential for many of these businesses. According to a Public First survey, 70 per cent of companies using AWS to sell to the public sector said their business or operating model would not be possible without cloud platforms.

"Before cloud technology became mainstream, it would be difficult to tender for larger public sector contracts for a variety of reasons. Without the economies of scale available to larger firms, and fewer personnel to assist, it becomes a difficult task to acquire, set up and maintain the variety and depth of hardware required to support the needs of government business," says Marc Whittingham, technical director of Blue Frontier.

According to Whittingham, the public cloud has changed this perception, providing a level playing field for all businesses to be able to access a huge variety of resources to cater for just about any requirement.

"As a result, smaller businesses are able to propose for larger contracts as a large portion of the underlying 'leg work' has been taken care of by the cloud vendor. This in turn allows businesses to focus on adding value to their offering by utilising their current expertise without having to focus on babysitting a vast array of physical infrastructure," he says.

Whittingham says there are added benefits for a supplier being on G-Cloud and using cloud computing. G-Cloud acts as a badge of credibility so when public sector bodies shop around for IT companies, smaller firms can benefit as they may not need to pitch for contracts and have been approached by local government because of their inclusion on the framework.

Cloud computing provides a clear

separation of roles and responsibilities when it comes to security, which is an important part of public sector procurement.

"By following best practice and utilising pre-hardened environments, smaller firms can pitch for work where previously they may have been frozen out due to a lack of internal security knowledge or the ability to provide resources dedicated to security and monitoring environments," says Whittingham.

Crucially, public sector bodies will learn to trust SMEs more as they see results. Elena White, business systems manager at the Isle of Anglesey County Council, says using Arcus Global's cloud-based planning and building control system has reduced administrative efforts and enabled her team to share, digest and use data more easily. Restrictions on daily work because of the pandemic have been a good test of the system.

"We've been working from home for the past 18 weeks and our platforms have been working perfectly, showing our employees they can carry on as normal without being in the office. It just goes to show what a difference being cloud based makes," White concludes. ●

> " Before cloud technology became mainstream, it would be difficult to tender for larger public sector contracts

70%
of companies using AWS to sell to the public sector said their business or operating model would not be possible without cloud platforms

Public First 2020

90%
of suppliers on G-Cloud are SMEs

Crown Commercial Service 2019

2/5
of total G-Cloud spend is by SMEs

Crown Commercial Service 2019

£1.3BN
of services delivered to the government by companies using AWS

Public First 2020

Embracing a greener future

With stricter regulations and increasing consumer demands, businesses must become greener and technology may be the answer

Christine Horton

F or many organisations, environmental sustainability has shifted from being a nice to have to a non-negotiable necessity.

There are several reasons for this, not least the urgent debate over climate change that dominates the world stage. In many cases, organisations will be looking to comply with legislation; the UK, for example, has set a net-zero carbon emissions target by 2050. For others, it is a case of reputational risk management and pressures from consumers, shareholders and employees.

Also, a changing demographic – millennials already make up around 50 per cent of UK employees, with Generation Z (those born between 1997 and 2012) beginning to enter the workforce – sees business tech buyers now choosing brands that align with their personal values.

A recent survey by IDC found that six out of ten European businesses cited sustainability as a very or extremely important business priority for 2020. This means that the environmental impact of their IT is now as important as traditional factors such as pricing.

"Technology is and will be the means to achieve sustainability key performance indicators," says Margaret Adam, associate vice president, IDC Europe. "Over 50 per cent of European companies state explicitly that they are currently investing in technologies to improve sustainability performance. Our research also showed us that there is a causal relationship between sustainability-targeted governance and investments, and strong financial performance."

One often-cited way to be greener is to move legacy IT infrastructure and services from on-premises servers to the cloud. The cloud is considered inherently more sustainable than traditional approaches to consuming IT. New research points to significant efficiency improvements in cloud datacentres that have enabled computing output to increase while energy consumption remains low.

"The adoption of cloud models and services presents organisations with an opportunity to demonstrate a relatively 'quick win' for cutting down emissions related to their operations," according to techUK's *Cloud 2020 & Beyond* report.

"Cloud and datacentres play a crucial role in corporate progress on environmental sustainability initiatives and cloud players have made significant progress on reducing PUE [power-usage efficiency] in the last ten or so years," says Forrester researcher Salvatore Schiano.

"But as companies continue to rely on these services and scrutiny on corporate climate action accelerates, requests for improved efficiency, resiliency and reduced overall environmental impact have accelerated."

Indeed, the major public cloud companies have all announced ambitious plans to achieve net-zero carbon emissions and use of renewable energy. Last year, Amazon and Global Optimism co-founded the Climate Pledge, a commitment to reach the Paris Agreement ten years early and be net-zero carbon by 2040.

"Cloud computing brings economies of scale efficiency by operating hyperscale, modern, homogenous, purpose-built compute facilities. These facilities are designed to be efficient to cool, in locations that offer free air cooling such as Northern Europe, connected by planet scale privately owned data networks. Investment in these facilities runs into the hundreds of billions of dollars a year, with most of the largest facilities opened in the last ten years," says James Breeze, principal and cloud lead at technology consultancy DMW.

"The sheer scale of these facilities across the four major global hyperscale providers means it's worthwhile for them to employ full-time teams to research and develop the best technology for efficient and sustainable operations. Even a marginal improvement, deployed at global scale, can represent a significant saving."

Cloud consulting and managed service provider Xtravirt says it has helped navigate dozens of enterprise-scale customers to a more sustainable future with the

> ❝
> **Technology is and will be the means to achieve sustainability key performance indicators**

cloud. Strategic services director Robin Gardner argues that sustainability isn't just about eco-credentials; it can also apply to organisational capability.

"Xtravirt is increasingly moving customers to cloud-based services so that investment in skills within IT functions can be focused on the delivery of business differentiation rather than the maintenance of datacentre infrastructure," he says.

Moreover, it is also important to note that cloud providers are extending their commitment to cutting carbon emissions to helping customers with their own sustainability objectives.

One example of this is Octopus Energy, which leverages the benefits that come with being in the cloud to provide consumers with incentives to move their energy usage outside expensive and carbon-intensive peak hours to be more sustainable. Using Amazon Web Services, the company can calculate when the wholesale cost of energy and carbon intensity is at its lowest and alert customers of the best time to plug in.

"We're trying to demonstrate that actually investing in cloud-native technologies enables you to deliver exceptional customer service and lower costs to customers, and the kinds of products and data management which enable people to act more sustainably," says Octopus Energy's chief technology officer James Eddison.

"We've proven in multiple ways that price is a powerful tool to help ask customers to change behaviour. And we're providing ways to make that transparent for them, and all of this is because we have the scalability and the services online in the cloud."

Sustainability has become a deciding factor when it comes to purchasing technology. This extends to the cloud as it is increasingly viewed as a means of helping both organisations and end-users become more sustainable, hit their business objectives and, of course, better care for the planet.●

60%

of European businesses cite sustainability as a very or extremely important business priority

IDC 2020

100%

of Amazon's operations will be powered with renewable energy by 2025

Public First 2020

Daniel Larsson/Eolus

Narrowing the tech skills gap

The coronavirus pandemic has made it clear that UK businesses are desperately in need of tech skills in workers of all ages. Now innovative new organisations are springing up to meet the need

Christine Horton

Marvin Meyer / Unsplash

> **Many businesses are trying to undergo digital transformation and innovate, but lack enough top talent**

The pandemic turned millions of office-based businesses into virtual companies overnight, inevitably resulting in a greater reliance on technology.

This means it is arguably more important than ever to invest in employee development and tech skills. Even pre-pandemic, government figures showed eight out of ten advertised openings required some level of digital skills.

Organisations should be seeking opportunities to reskill and upskill people from all backgrounds, and develop careers in the high-growth, high-demand tech sector. This is particularly relevant given the well-publicised shortage of tech skills in the UK.

But the skills gap also means businesses will need more flexible ways of mobilising talent, says Mo Isap, founder and chief executive of training, consultancy and digital transformation services provider IN4.0 Group.

The firm experienced more than 80 per cent growth during the COVID-19 lockdown, compared to the same period last year. It has seen specific demand for data analysts and internet of things engineers, with companies needing to ensure their data is accessible in the cloud.

"The uncomfortable truth is that although many businesses are trying to undergo digital transformation and innovate in the face of a global crisis, they lack enough top talent to get them there," says Isap.

"And while there are plenty of graduates emerging from our world-class university system, they aren't necessarily 'work ready' with the right blend of technical expertise and soft skills. It's not like businesses can wait either. This is an acute problem that needs to be solved right now."

The organisation has, therefore, launched the IN4.0 Talent Academy, a skills training programme designed to address the digital skills gaps across Greater Manchester and Lancashire.

"It has been designed to act as a bridge connecting talent from diverse backgrounds with businesses in the North West that need to drive digital transformation," says Isap. "We run a 12-week programme, which acts like a bonus term for graduates to build on their academic achievements."

The course comprises a blend of soft skills and technical know-how, including accreditations from Amazon Web Services (AWS) and the Institution of Engineering and Technology, plus a work placement.

However, it's not just young people who benefit from skills training. There have been several IT vendor-led initiatives focused on providing often-overlooked candidates, such as the long-term unemployed, refugees, asylum seekers, older people and veterans, with the skills to enter or re-enter the workforce.
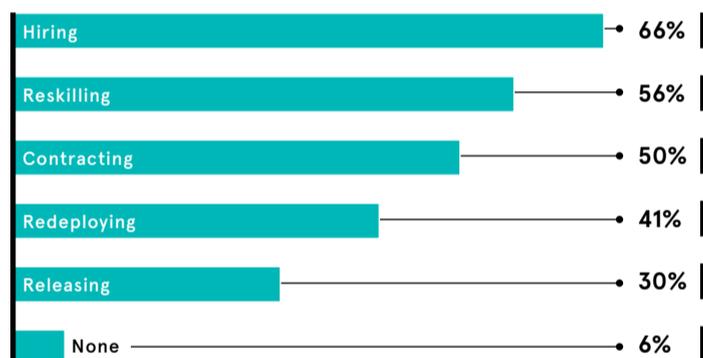
AWS re/Start is a skills development and training programme that prepares individuals for careers in cloud computing and connects them with potential employers. The programme is focused on reskilling the unemployed and underemployed, such as young people with little or no technology experience and ex-military personnel and their families.

Technology and engineering consultancy BJSS has opened its doors to several ex-military AWS re/Start graduates. They have been so successful that BJSS has now built its own version of the programme to fast track successful participants into full-time roles.

"While we can recruit highly technical and capable graduates from university, there is a lot to say for people who have experienced life, travelled the world, developed a range of skills and worked under pressure," says Michael Fordham, cloud consultant for BJSS. "Our ex-military recruits tend to be pragmatic, strategic and focused on collaboration."

According to government data, more than eleven million people in the UK lack basic digital skills, while four million working adults are without any digital skills. One of the biggest challenges will be reskilling those people who may need to transition from less-skilled, manual roles to work with digital platforms for the first time.

"Reskilling them to become digital operatives will be an undertaking and business will have responsibility to help make it possible, alongside effective regional economic policy," says Phil Jones, managing director at business technology solutions provider Brother UK.

At the other end of the skills spectrum are the digital specialists, who work in the technology sector – coders, analysts and systems architects – and above them, in the top 1 per cent of the digital hierarchy, the digital scientists.

However, Jones notes that while a relatively high proportion of UK GDP comes from the digital economy, a third of its employees are non-UK nationals, so there is a shortfall at all levels which needs to be addressed.

"We shouldn't need to rely on overseas talent, although it's always healthy to have the brightest and smartest brains, and the obvious uncertainty of what our post-Brexit immigration policy looks like makes this an issue we can't afford to ignore," he says.

The pandemic has highlighted our dependence on technology. As businesses look to embrace this new reality, they must prioritise investment in ensuring employees are proficient in the latest digital technologies or they risk being left behind.●

ADDRESSING THE SKILLS GAP

Actions taken by global executives to address the skills gap over the past five years

Action	Percentage
Hiring	66%
Reskilling	56%
Contracting	50%
Redeploying	41%
Releasing	30%
None	6%

McKinsey 2020