

# THE FUTURE CIO

**05** AUTOMATION

The role human workers play in companies turning to automation

**06** TRANSFORMATION

How CIOs can ensure they avoid the common pitfalls and deliver clear business benefits

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As workforces become more remote, CIOs and CHROs are working more closely than ever

**12** STRATEGY

Trends accelerated by the pandemic present challenges and opportunities

## LEADERSHIP

## How CIOs can build on the momentum from the pandemic

The past 12 months have shown how crucial the chief information officer is; now the focus is on building seamless customer journeys and delivering growth

Sean Hargrave

The chief information officer (CIO) has previously been seen by too many companies as the person in charge of making sure the computers keep working. The pandemic has changed that.

After a year in which working from home has become the norm, the CIO and a company's IT team have been the cavalry charging over the hill to ensure businesses can operate. The task for CIOs now is to keep up that momentum and not go back to being the person who makes sure laptops can "talk" to printers.

Robert Teagle, CIO at car auction firm BCA, which also operates WeBuyAnyCar and Cinch, believes this is best achieved by harnessing the positive new light the role is seen in and aligning the department with future growth plans.

"It's been like a snowball; the shift to digital was always moving along slowly and then the pandemic meant it suddenly raced down the hill," he says. "We can't keep it going at that pace for much longer, but we do need to keep it going. We do need to help companies digitally transform, so the CIO role, and the team they lead, has to show it is absolutely crucial to growth."

Teagle talks about pace from a qualified vantage point. A year ago the split between digital and face-to-face auction sales was 70-30, in favour of auctions. Within a year, this had to shift to 100 per cent digital. When lockdown is finished, Teagle sees a clear role in keeping the digital process moving at pace by removing remaining barriers. At the moment, he has ensured the BCA part of the process is digital, the next

**“The trick for CIOs is to get in front of the chief executive and see what they want to achieve to grow the business. They have to be entrepreneurial and see how they can fit in and deliver that growth**

project is to make sure the paperwork on the selling and the buying side follows suit so the entire process can run more smoothly.

### Offering a seamless customer experience

Removing these barriers in the customer journey is where CIOs should be looking very closely to make a difference, according to Louise Bunting, CIO at datacentre operator Yondr Group. In her experience, even when systems are digitalised, too many companies have invested in applications that are suited to a particular task, but are not integrated within the wider business. While they might work, they do so in isolation, rather than as a seamless journey for customers.

To show the true worth of the role, she believes CIOs need to stop thinking about an application for every process they need to facilitate. Instead, they need to consider how they can remove a series of internal operational steps and offer a smooth customer journey.

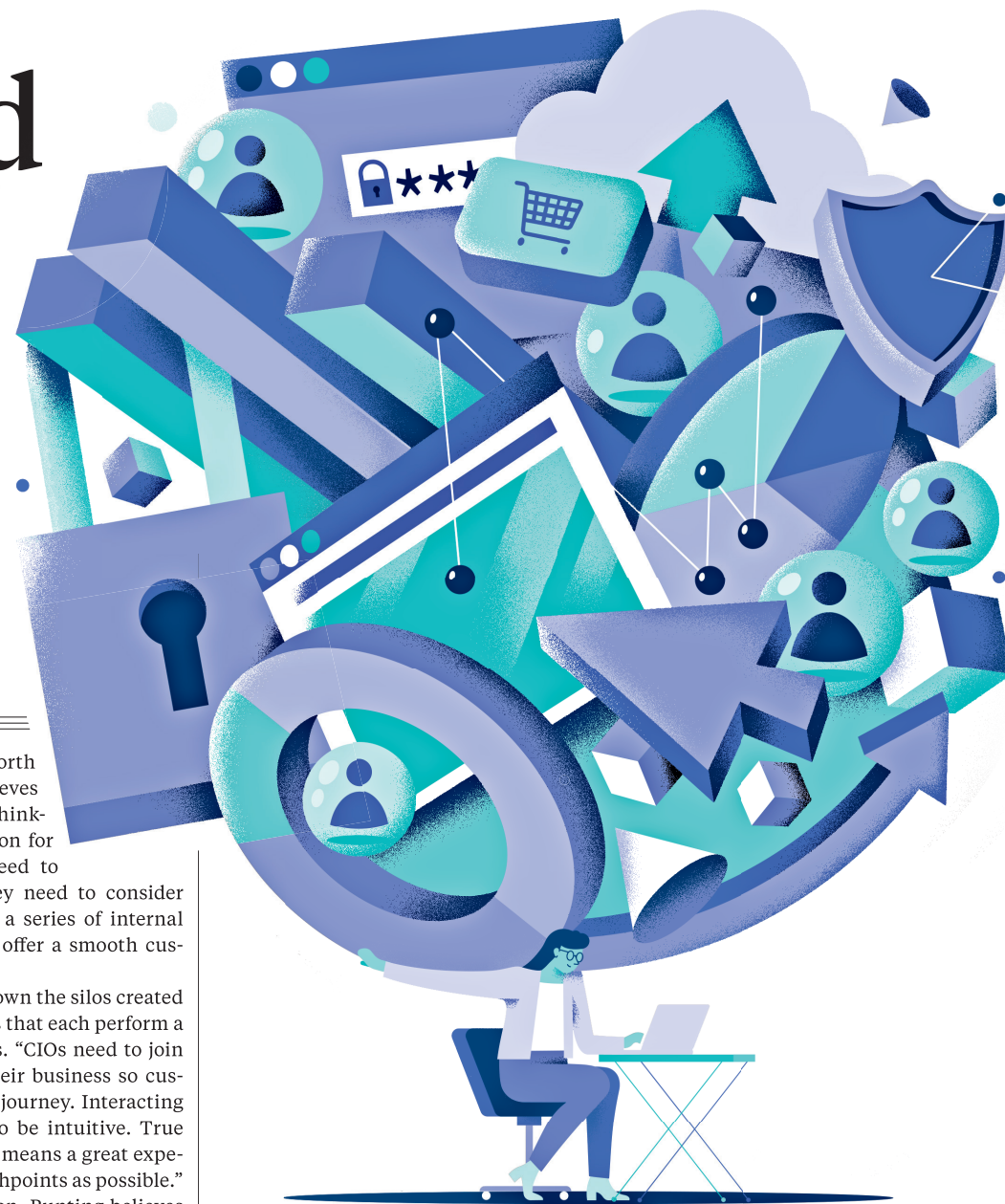
"We have to break down the silos created by rows of applications that each perform a specific task," she says. "CIOs need to join up the processes at their business so customers get a seamless journey. Interacting with companies has to be intuitive. True digital transformation means a great experience with as few touchpoints as possible."

To get to this position, Bunting believes CIOs need to change how they are perceived in their organisation and to do that they need to change their own attitudes first.

"We have to stop being seen as the department that says 'no' too often or 'that's too difficult'," she suggests. "We have to build trust by saying something's challenging, but we'll get it cracked if we work with the owner of the issue and the operation teams. It's a two-way process. We have to be proactive and build that trust if we're to raise the profile of the CIO."

### Aligning with growth plans

For CIOs looking to retain their status, the pandemic has done more than show the value of digital transformation in keeping companies operational. It has also offered up some warning signs for companies as they build for a future when lockdown rules are removed.



Those pushing for change now have examples of what happens to businesses that are not ready to trade digitally and Lyn Grobler, CIO at insurance company Howden Group, believes they should not be afraid to reference them.

"If you need an example of how important digital transformation is, you just need to think how Topshop didn't want to put the necessary investment into digital to 'do an ASOS' and then think about who ended up being in a position to buy them," she says.

Her advice is for CIOs to tap into this concern of what happens to businesses that do not commit to transformation and then work through the chief executive, wherever possible, to align their vision of growth with what digital can offer. This gets round the age-old problem of the role being defined more by whom it reports to than what it can achieve.

"If you're a CIO reporting to the chief operating officer, you'll only have conversations about operations and if you're reporting to the chief financial officer, you're only ever going to be asked to reduce costs," she says. "The trick is to get in front of the chief executive and see what they want to achieve to grow the business. You have to be entrepreneurial and see how you can proactively fit in and deliver that growth."

### Going beyond a digital coat of paint

This tactic of being proactive rather than reactive, looking for ways to make a company more agile and customer journeys smoother is how Arthur Hu, CIO of tech company Lenovo, believes the role will rise in prominence.

He predicts many organisations are going to be more receptive to digital transformation proposals as markets emerge from lockdown. This is rooted, he believes, in too many businesses realising the "we still have more time, we still have more runway" attitude did not work out well when the pandemic struck.

The good news for any CIO is many C-suites will now realise their culture has to change to embrace digital because, as they have found out, it is the best way to prepare for an uncertain future. The positive developments come with a warning, though, for any executives not committed to going "all in" on fundamental change.

"You can't slap a coat of paint on something and call it transformation," he says. "The CIO has to be the integrator for customer experience; you need to use data across the whole experience to make it seamless and interactive. You also have to build an architecture that can adapt because, as we've seen this past year, huge change can happen at any time and you need to be able to adapt."

### Building teams around the CIO

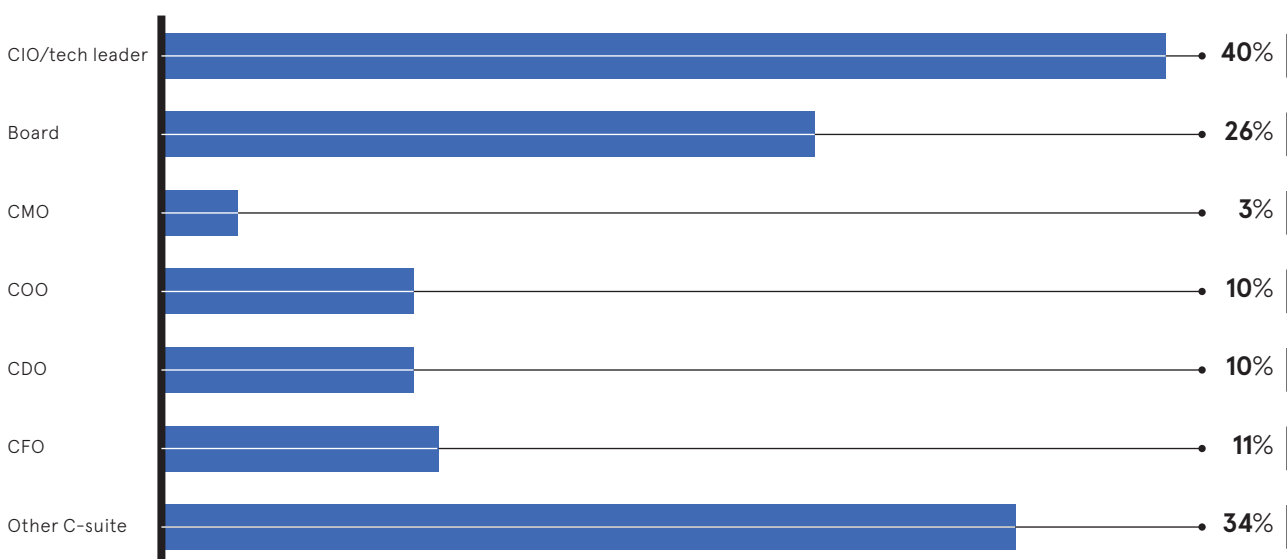
For companies that want to streamline their customer experience, the advice from BCA's Teagle is that a successful CIO needs to build the right team around them. For him, this does not mean looking to recruit solely from people already in the sector, but to bring in new ideas from other industries.

"We want to get away from a standard 'vanilla' experience to offer something with the convenience and fun of buying something on Amazon or booking a holiday online," he says. "We have retail and travel IT experts onboard because they're going to help us think differently. When you think about it, picking up a car is just like click and collect at a shop, so we're building a team with expertise in these areas."

It is clear that keeping up the momentum for the CIO is not just about technology. It will start with aligning the role with a company's growth plans, while offering seamless journeys to the customers it aims to attract. It also involves getting the right people in place who can bring new ideas to help support the CIO role and maintain its current high-profile status.

### CEOs SEE CIOs AS KEY DRIVERS OF BUSINESS STRATEGY

% of CEOs on who will be or needs to be the key driver of business strategy over the next three to five years



Deloitte/WSJ Intelligence 2020

Distributed in

Published in association with



## Contributors

**Sean Hargrave**  
Former innovation editor of *The Sunday Times*, now working as a freelance journalist specialising in technology and digital marketing.

**Maria Highland**  
Journalist covering logistics, robotics, energy and smart cities/transport.

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

**James Lawrence**  
Freelance journalist specialising in business and technology. Senior contributing editor for *I-Global Intelligence for Digital Leaders*.

**Oliver Pickup**  
Award-winning journalist, specialising in technology, business and sport, and contributing to a wide range of publications.

**Chris Stokel-Walker**  
Technology and culture journalist and author, with bylines in *The New York Times*, *The Guardian* and *Wired*.

**Jonathan Weinberg**  
Journalist, writer and media consultant specialising in technology, business, social impact and the future of work and society.

Publishing manager

Oly Eyre

Managing editor

Sarah Vizard

Deputy editor

Francesca Cassidy

Associate editor

Peter Archer

Digital content executive

Taryn Brickner

Head of production

Hannah Smallman

Design

Kellie Jerrard

Colm McDermott

Samuele Motta

Nita Saroglou

Jack Woolrich

Sean Wyatt-Livesley

Illustration

Sara Gelfgren

Art director

Joanna Bird

Design director

Tim Whitlock

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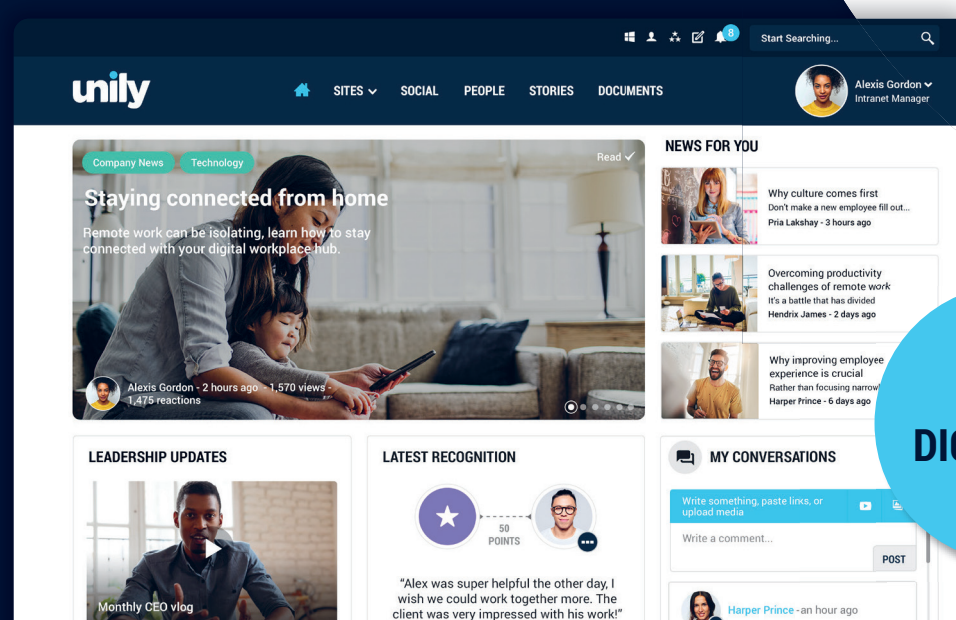
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# Rebuilding the foundations for an anywhere workforce

Organisations adapted rapidly to distributed working, but inevitably there were holes in their approach. Building for the future will require them to revisit security and increase visibility

A year on from when organisations were catapulted, practically overnight, into a world of distributed working, many are realising there can be no return to pre-pandemic workforce models. Workplace practices deemed normal just 12 months ago now appear archaic and non-sensical. The future of work is already here.

Research from enterprise software firm VMware, *The New Remote Work Era: Trends in the Distributed Workforce*, published in October 2020, revealed a 128 per cent increase in the proportion of UK employees who see remote working as a prerequisite rather than a perk. For Generation X workers in Europe, the Middle East and Africa, this is the view of 53 per cent. Having realised the benefits of distributed work, seven in ten employees said their company cannot return to its old ways.

Since working remotely, 73 per cent of workers said personal connection with colleagues has improved, 62 per cent felt more empowered to speak up in video-conference meetings and 60 per cent had seen their stress levels decrease. Distributed working can also help deliver environmental, social and governance goals, with 63 per cent of companies finding it easier to recruit talent from minority communities and 79 per cent disabled candidates. Three quarters of respondents agreed innovation now comes from more places within the organisation than it did before.

The research also exposed concern, however, that management teams aren't adapting sufficiently to offer workers greater choice and flexibility. Though the pandemic forced them to adapt quickly and accept remote working, many overlooked the strong culture and leadership required to really execute the workforce

model successfully over the long term. "For organisations to truly embrace the 'work from anywhere' model, managers will have to move away from monitoring inputs to focusing on output, all from within an environment of mutual trust," says Dr Carl Benedikt Frey, director of the Future of Work Programme at Oxford University. "Striking the right balance will be key to ensure employees are motivated and while being in an environment where creativity can flourish."

Véronique Karcenty, digital workspace director at Orange Group, France, adds: "The unprecedented shift we've seen in the last year undoubtedly offers many advantages to employers and employees alike. However, we should not underestimate the required change in people management strategies to keep employees engaged and productive. While executive leadership is important for setting the tone, it's middle management that needs to constantly demonstrate trust, energise the team and build a sense of shared purpose."

The challenges don't stop at people and culture, either. More than a third of those surveyed by VMware also said IT is not equipped to manage a remote workforce. The scale of today's distributed workforce has proliferated the number of digital technologies and platforms in use, but the whole experience is fraught with challenges ranging from remote employee onboarding and visibility through to compliance, security and employee safety.

Driven by their desire to remain operational and productive, organisations are moving additional applications to the cloud and adopting more flexible bring your own device (BYOD) arrangements, which are creating new information silos.

**“The reality is security was not being designed into the distributed working model**

Every new device connected to an enterprise network represents a possible attack vector for would-be hackers. All these factors have broken down the enterprise security perimeter, amplifying the need for zero-trust security models.

"It was great companies were, by and large, able to get their people up and running quite quickly and easily when we first went into lockdown, but the reality is security was not being designed into the distributed working model," says Spencer Pitts, digital workspace chief technologist at VMware. "An enterprise network was always linked to a physical workplace. A lot of companies gave up some

security controls to adapt to remote working and when revisiting them they're finding many are not designed to work outside the office."

While most organisations have largely been in a light-on scenario for the last 12 months, vaccination programmes are presenting a way out of the pandemic and so it's crucial companies are now thinking about their optimum workforce model in the new normal. Whatever balance of physical and virtual working they land on, a modernised application approach will be essential to continuing to deliver distributed working well in the future. The

challenge will be scaling that up and down, with minimum cost and maximum agility. "When we think about what happens next, it's about flexibility, choice, reducing technical debt and regaining visibility, though not necessarily control," says Kyle Davies, practice lead of integrated technology architecture at IT service and solutions provider CDW. "IT has always had a fixation with control, but that's not the way tech needs to be delivered today. We need visibility for compliance and maybe a bit of control, but it shouldn't be a control-first methodology. Security is a big play in reducing technical debt and gaining visibility is the foundation."

resources, but in a distributed workforce they rely on technology. Lines of business also now rely on digital applications more than ever to perform their duties, and the CIO's presence at board-level has been elevated because technology is so integral to running the entire business.

**KD** It has to start at the top. If your leaders are not going to lead by example, from a key stakeholder point of view, then your IT consumers aren't going to adopt it either. Have you engaged with your users? Do you know what processes they need to follow? Will technology save them time doing this or is it going to make their life harder? The new digital workforce experience has to be a very collaborative engagement and it has to start with the top and then filter down from there. Without proper collaboration and communication, it falls every single time. Think people, process and then finally the technology.

**SP** If you took a step back and removed everything about how we used to work from your memory, how would you design workplaces today? You certainly wouldn't have your people commuting into a massive office every day. I think most people would envision the office as a collaborative community, a place they visit to get the best engagement out of their precious time. You would design for a distributed working methodology with modern, secure applications and you'd make sure everybody had what they need to get their job done effectively. By not viewing work as a rigid nine-to-five, time-based concept, but rather based on outcomes, you can also extend your talent pool around the world. Companies are faced with a unique opportunity to redesign their workplaces just like this. We work with CDW to help take organisations through all the practice steps from where they are now to that ultimate nirvana.

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# Q&A Put people first in the new world of work

**Spencer Pitts**, VMware's digital workspace chief technologist, and **Kyle Davies**, practice lead of integrated technology architecture at CDW, share their vision of IT in the world of distributed working, where people, culture and collaboration define the digital experience

**Q** Many companies have found productivity has risen, or at least stayed the same, during the pandemic. Will distributed working be a permanent shift?

**KD** There have been significant productivity benefits from distributed working, though there have been drawbacks too. In VMware's study, 59 per cent of employees said they feel more pressure to be online than ever before. We might think presenteeism has been eliminated in the traditional sense, but people still feel the need to overcompensate by attending more virtual meetings, being online more and sending emails late at night. Equally, as soon as they're allowed to get back to their usual activities, hobbies, sports and so on, they will return to the lifestyle habits they had before the pandemic, which means the extra hours of work they've been putting in, potentially, will not continue. Distributed working is here to stay, but the future of work is more likely to balance old and new in a hybrid way.

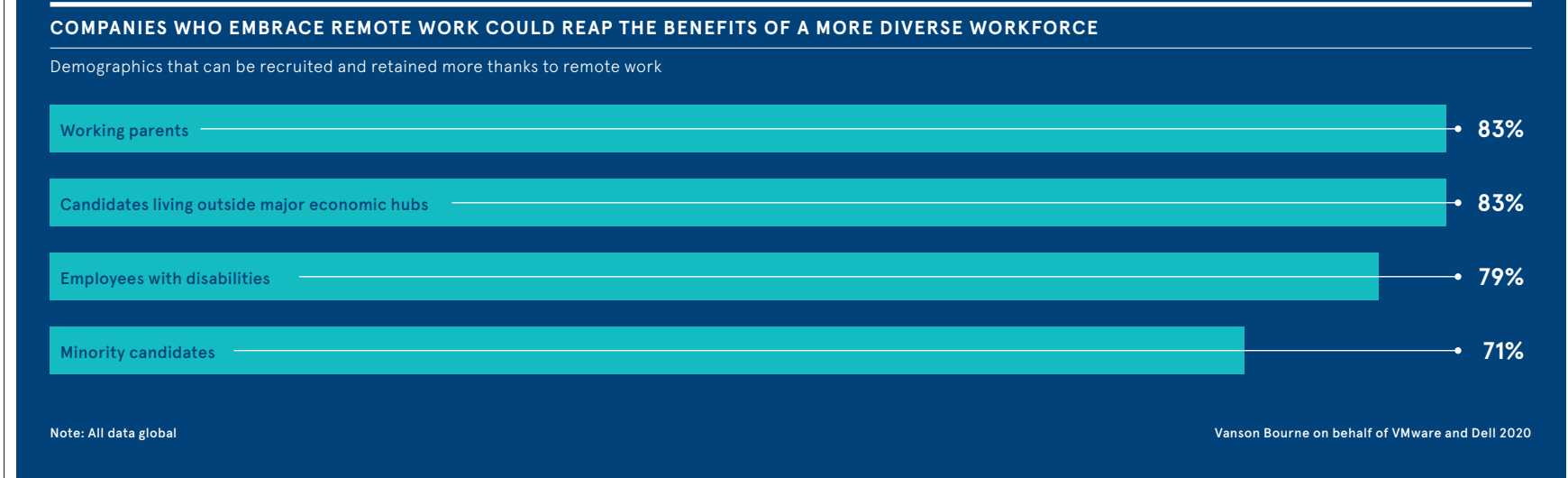
**SP** In the early days of lockdown, I did unfortunately get calls from people asking "can your software show if people are in front of the machine and doing what they're supposed to?" A lot of that comes down to the fact organisations mostly pay people for their time which is rooted deep back in history. That's one of the big changes from the pandemic: people now realise we need to move more to an outcome-based way of working, measuring output and not just time. The problem was they didn't fully understand how to measure productivity from different perspectives. You need to be able to quantify digital employee experience, which basically means, can I measure if you are OK at home, or your workplace, and do you have what you need to get your job done effectively? If you can't quantify



and understand employee experience in a distributed workforce, how can you see if there are problems and make changes? Agility has to be at the heart of everything.

**Q** Who should be leading the charge with reimagining workforce models?

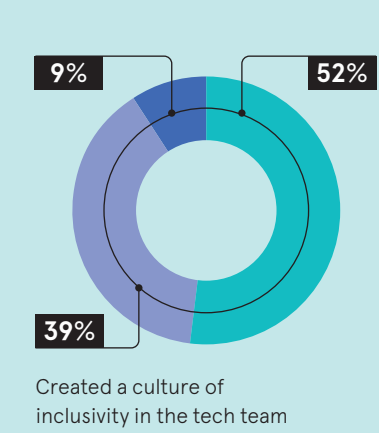
**SP** There are many different stakeholders, but ultimately the chief information officer (CIO) has to play a huge role and that means evolving IT as we know it. The traditional IT department's job was to provide devices with some collaboration and office productivity tools on them and then make sure users could access them on any device, within reason. But they can't just sit in that mode of providing basic services anymore, they need to be working with other stakeholders. Onboarding is now on their list, for example, and understanding if employees are happy. Originally these tasks would have sat solely with human



# THE SKILLS OF THE FUTURE CIO

## THE PANDEMIC IS PERMANENTLY CHANGING THE NATURE OF THE CIO ROLE

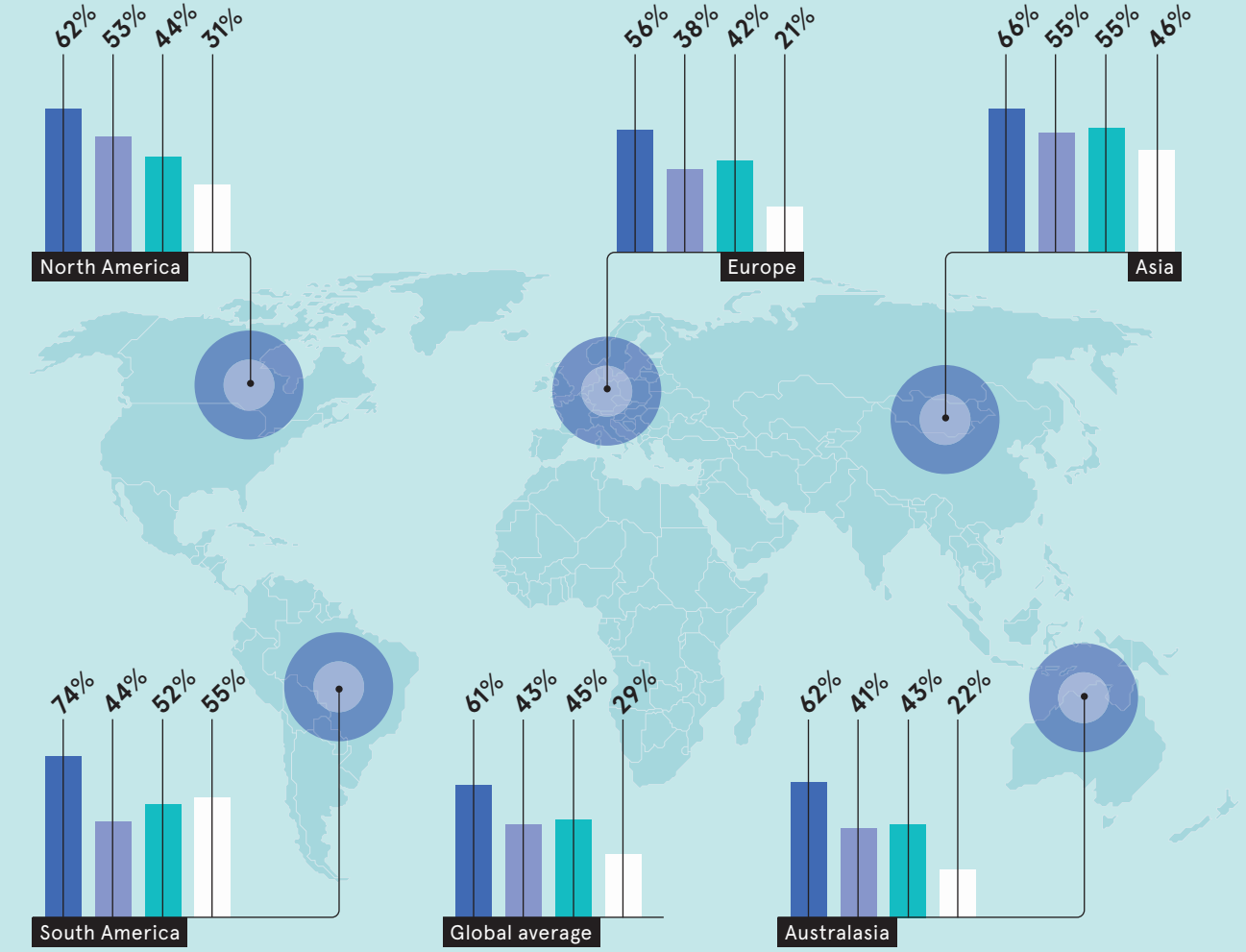
% extent to which CIOs agree with the following statement



## CIOs AROUND THE WORLD

What IT leaders are expecting to change due to Covid 19

Legend: Increased influence of the CIO (Green), Expecting a budget increase (Purple), Expecting an increase in headcount (Blue), Increased investment in business-managed IT (White)

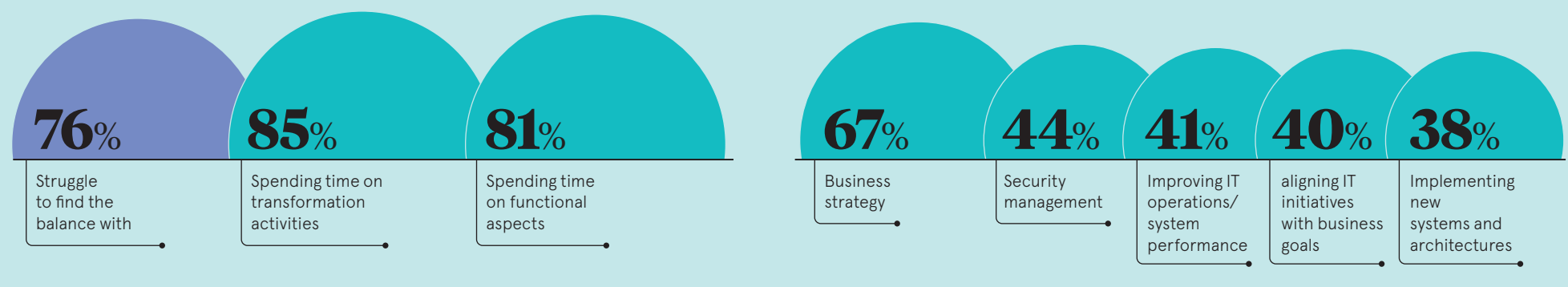


Source: Harvey Nash / KPMG 2020

## CIOs ARE STRUGGLING TO STRIKE THE RIGHT BALANCE BETWEEN BUSINESS INNOVATION AND OPERATIONAL EXCELLENCE

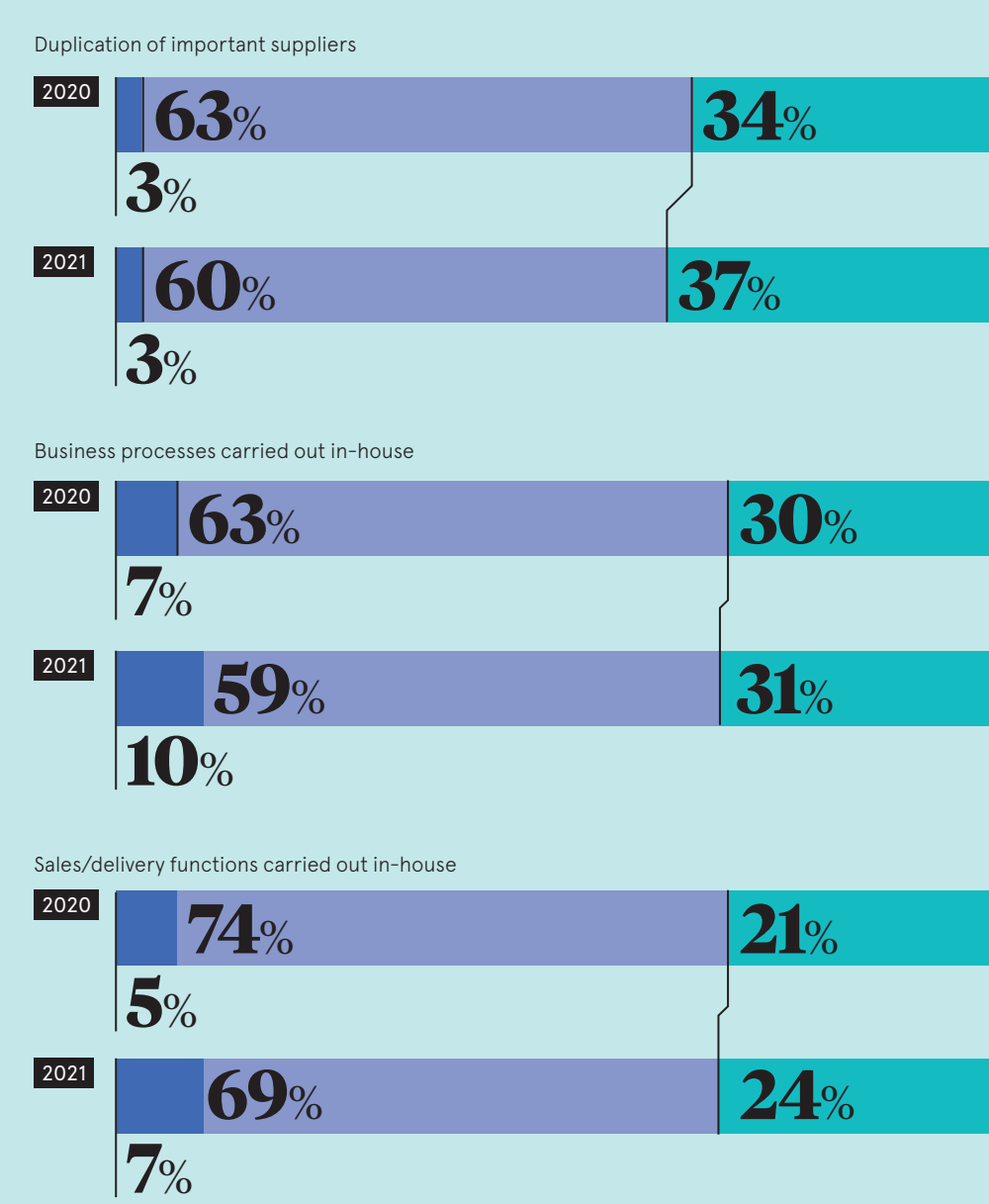
Transformation is taking precedence but there is a pressure on functional tasks

The activities CIOs are currently focusing on



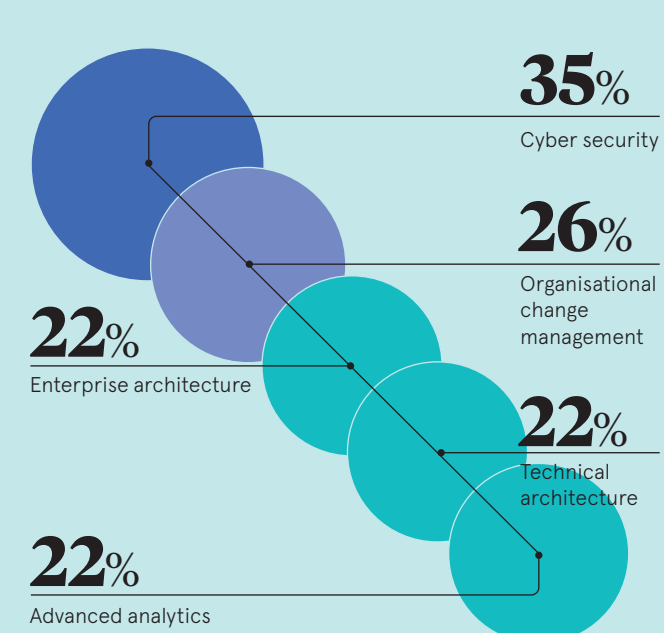
## TECH TEAMS NEED MORE SKILLS AS FUNCTIONS ARE BROUGHT IN-HOUSE

Shifts in supply due to Covid-19, % of respondents

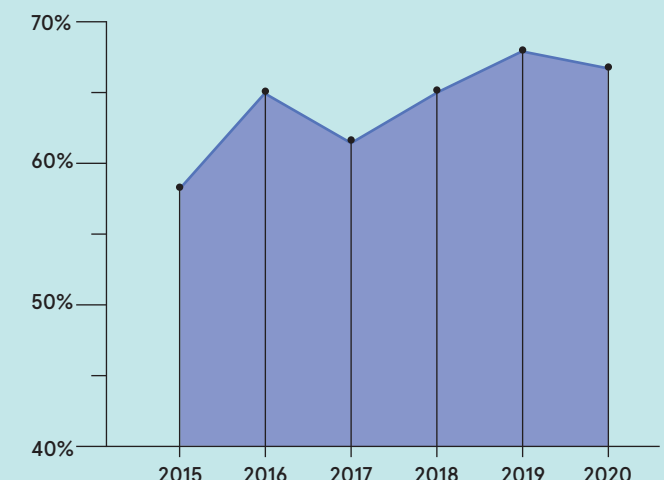


## THERE IS A GROWING SKILLS GAP IN THE IT TEAM

Top five skills shortages highlighted by Covid-19



Organisations where a skills shortage is holding them back

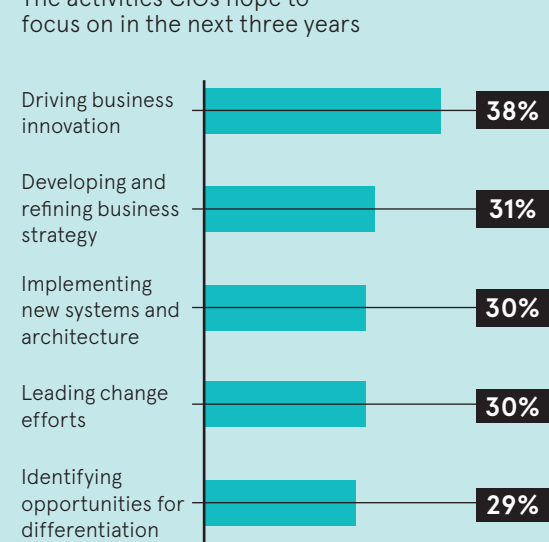


Source: Harvey Nash / KPMG 2020

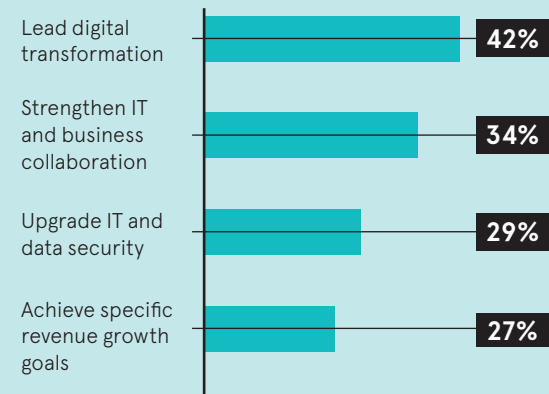
As CIOs take on a broader role across business driving strategy and transformation, the skills they and their team need are changing too. Alongside a growing requirement for knowledge of newer areas of technology such as AI and cybersecurity, CIOs also need softer skills associated with business leadership, from understanding how to influence others and foster collaboration, to creating a culture of inclusivity.

## BUSINESSES WANT CIOs TO TAKE A MORE STRATEGIC OUTLOOK

The activities CIOs hope to focus on in the next three years

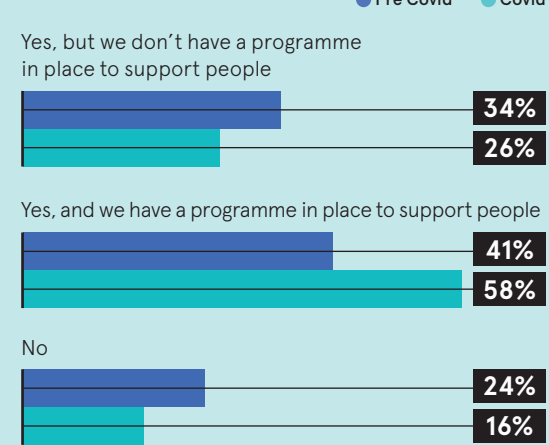


What CEOs want CIOs to focus on



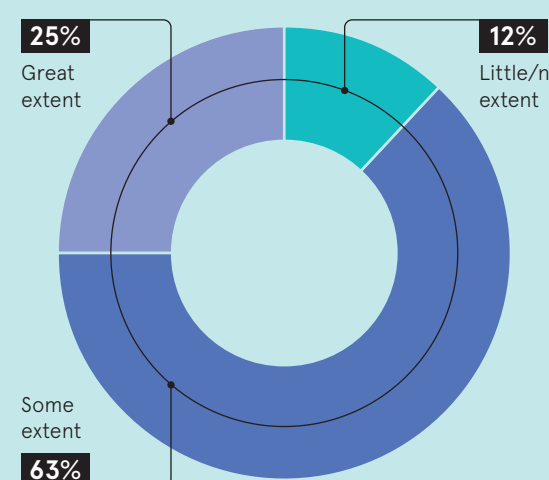
## CIOs ALSO NEED TO CONSIDER SOFTER SKILLS AND TAKE CARE OF THEIR TEAM

% concerned with the mental health of their team



## CIOs ARE RETHINKING WHAT IS IMPORTANT

The extent to which current ways of working promote a healthy and sustainable work environment



Commercial feature



# ROUNDTABLE

## The open path to digital transformation

Success in the digital age requires open culture, processes and technology. Experts at a virtual roundtable discuss how these interact to accelerate change. To watch the full roundtable on demand, please visit [raconteur.net/topic/sponsored/redhat-transformation](https://raconteur.net/topic/sponsored/redhat-transformation)

Gran Manuel

**C** Let's start by talking about open culture. For organisations undergoing transformation, what does an open culture really mean?

**BF** For me, an open culture is all about authenticity and being able to bring your true self to work. It is also very important to have authentic leaders who let people be accountable. You need a high degree of trust and to embrace failure as part of the learning and development process.

**HH** I'd add that it's predominantly about building on each other's ideas, ensuring people are willing to share in building a really great product. You need joint purpose, values and priorities that can guide people to really collaborate.

**CL** Building on that, we encourage people not only to develop code, but also to publish it, going out to the community with something of value, sharing what they have. Yes, it is about getting something, but it is also about giving, and both are important.

**AS** At Colt we do a lot of work building trust around communities of interest and people within structures. But I

agree inclusion and diversity are important as well; they make sure everyone has the time and purpose to contribute their ideas and participate.

**TC-S** There's something counterintuitive here. Sometimes the best way to have everybody bringing their best self to work is to have an organisation with a really strong overarching identity. Provided you have that overarching theme in place, it allows everyone to be themselves within that wider purpose.

**C** Have the changes to working practices over the last year made it harder to create an open culture?

**BF** I think it's easier because everyone's more authentic; they're at home, you see the backgrounds, kids flying in, cats on keyboards. And it breaks down barriers; we're all in the same boat and it puts you at ease, even if you're talking to the CEO. You feel you can challenge more than when you were in an office and had to knock on the big office door.

**TC-S** There's something interesting in there about vulnerability. When I was a kid, leaders had to be perfect, to know all the answers. Now I think leadership is more about asking questions and getting good answers from people much more junior to yourself. I think this is something we're just starting to lift the lid on.

**C** What is the culture of winners in the digital space? And what is the culture of those who are losing?

**WK** The key thing is every culture has its reason; they are optimised for certain things. A top-down structure is optimised for efficiency, but not optimised for dealing with an uncertain kind of future.

An open organisation is much more kind of optimised for this and for speed. Also there is the principle of meritocracy of ideas where the best idea wins. It's a principle that grew up in the open source community and one we apply to our entire organisational model.

**C** Which is more important, culture, process or technology?

**HH** Culture, absolutely. Management writer Peter Drucker said culture eats strategy for breakfast; this means you won't succeed unless you get culture right, regardless of how good you make your strategy and tools.

**CL** I agree, but also from a management point of view, it's hardest to change. We are in the insurance industry, which is becoming more digital and building a meritocracy culture. Where competence matters and not hierarchy is a key challenge.

**AS** But you can never have a single culture, especially in a global organisation. You have different offices, perhaps a different culture in headquarters versus business units, and various lines of business. We can align values and behaviours, and I think that then drives a set of cultural principles, which gives direction. But you have also to accept there will be different cultures within the business and then you have to play to the strengths of that as well.

**WK** I think the key thing is you have core values, a wide statement about what you are as a company. Obviously, this would get interpreted a little bit differently in Sweden or Russia or France; you still have a role for local cultures, different interpretations. But I think it's important to have certain clear values and a purpose everybody can get behind.

**HH** You have to be careful about imposing culture to a certain degree. For example, if you're acquiring a startup, you need to be careful not to absorb or overwhelm them with a large-company culture. Also you have to look at the project: is it a major infrastructure programme where the priority is safety and security? Or a digital transformation that needs speed? We have to allow for different cultures within a joint purpose.

**C** Does dealing with multiple cultures create a management challenge?

**AS** At Colt we operate from 21 different countries, but I think you have to think not at the team level but know people as individuals, what motivates them, and understand the kind of values and behaviours that are dear to them. You can't have a cookie-cutter process saying this is your culture and this is the box you fit in.

**TC-S** It's also about resilience. If you have a monolithic culture, you probably appear quite strong, but you won't be very resilient. Ashish was talking earlier about multiple cultures within an overarching set of values and I think that breeds resilience, especially in times of crisis. That's something we get out of open culture as well.

**C** Let's talk about open processes. Have we reached the perfect model with agile/DevOps/DevSecOps or is this a simplification?

**AS** From my perspective, we are still on a journey. We have half the organisation using the waterfall model (traditional linear software development), because we run a very physical business, and the other half in transition. I think there's still innovation to be done in terms of consolidation of tooling languages, how we use data, how we use artificial intelligence and machine learning to help us in these agile methodologies as well.

**TC-S** We absolutely need to move to agile, but I don't think waterfall is going out of business any time soon, especially for those who build big platforms

— for us that is really big ships, fast planes and some big armoured vehicles — as well as the software to go with them. You need both, but when you are using edgy, startup type processes, there is a challenge in scaling them up.

**WK** It's also important that in your first agile incubation teams, you have volunteers who are wanting to do something different and are motivated. It leads to higher success rates.

**C** What's the best way to connect open processes to the rest of the business?

**BF** We are trying to set up teams led by "product owners", multi-skilled individuals who naturally know agile methodology and run multidisciplinary teams. They understand the business but also deeply understand technology, bridging the gap. One way of finding these people is our new graduate scheme that brings people into technology and trains them in the commercial side of the business, so they can grow up in the organisation and fully understand both sides.

**CL** In insurance, traditionally, we were organised with the business developing new products, processes, whatever, and then throwing them over to the other silo that was a separate IT company. But when I joined Talanx eight months ago, I found something very interesting, the management board in charge of IT was at the same time in charge of the business and the same was true for their direct reports all the way down to the team level. When I did some meet and greets with the agile delivery units, I couldn't tell who your business and who was IT. And in the end, it didn't matter because they were fighting for a common cause.

**HH** It's also about providing the right tools to the people in the business so they can do it themselves, things like low code or no code. It's a democratisation. To me, IT in the future is not behind walls or a black box, but very open, providing integration at the back end.

**C** Moving onto open technology, what is the connection between open culture and open processes?

**HH** For me, open culture, open source and open technology go hand in hand. And in the future, I believe all companies will decide to go this way because if you don't embrace this technology, you're limiting yourself from setting up a true platform business, where everyone builds on each other's ideas and enjoys network effects.

**CL** Whenever we buy software, we challenge a proprietary solution against open source solutions. We need to assess risks and costs, all that we have already discussed, including the cultural aspects

and the impact on attracting talent. It ends in a case-by-case decision.

**TC-S** We're moving from a need-to-know to a need-to-share mentality; open standards are the key. We have just launched our first "bug bounty", paying ethical hackers to find vulnerabilities in our systems so we can fix them.

**HH** This is a marathon and not a sprint, and again it depends on the industry. If your competitive advantage in the past was your intellectual property, patents and so on, you will not be prepared to give that all away immediately by fully opening up.

**CL** It's difficult to imagine moving into open technology without an open culture. But there's another direct link between culture and open technology, and that is talent. Yes, open technology lowers costs and brings speed to market. But it also attracts the people we want to work with.

**WK** Developers build their CV on GitHub (an open source software repository) now. Open source not only motivates staff, though; it also helps drive technology forward in a way you can later consume. Plus, what you need to understand is open source is now the real technology innovation engine. When you think about cloud, containers, machine learning... it is all coming out of open source communities, partly because the big web 2.0 companies like Google and Facebook are all contributing to open source communities.

For more information please visit [red.ht/transformation](https://red.ht/transformation)



TECHNOLOGY

## The role of humans in automation

What if there's a power cut? It seems like a silly question, but it's a reflection of deeper issues surrounding the role human workers play in companies turning to automation

Maria Highland

Often talk of automation is met with some sideways glances and whispers of jobs being made redundant. However, if the past few years have shown us anything, it is that someone needs to be there to fix the self-checkout in the local supermarket.

Essentially, automation helps to relieve the pressure on workers during a labour shortage or at peak times, or remove the need to manually perform repetitive jobs. This results in streamlined operations and enhanced efficiency, which helps generate more profit across the entire business.

The importance of automation has grown in the face of Brexit and coronavirus, both of which promise continued disruption, labour shortages and fluctuating consumer demand. This, coupled with changing customer expectations and a shift online, means chief information officers (CIOs) need to reassess their automation offering.

According to Kofax vice president of brand and corporate marketing John Lipsey: "As organisations continue to embrace digital workflow transformation, automation becomes increasingly important. In fact, full-scale end-to-end automation has become a matter of survival in the wake of the pandemic. More and more customers demand frictionless experiences and businesses that don't provide them may not be able to survive."

**Human touch** Despite mention of full-scale automation, this does not mean "no humans allowed". Automation technologies work best when used alongside humans and they should be a key factor for CIOs during the implementation process.

"When applied smartly, technology can help provide relief for human workers by facilitating repetitive jobs. This can generate leeway and the potential for more throughput," says ProGlove chief executive Andreas Koenig. "The main benefit of this is that workers can then focus on the tasks they do better than machines."

However, when it comes to implementing automation, it is crucial to know where it is going to be best placed. "CIOs need to keep in mind that automation has its limits," says Koenig. "Some processes just cannot be automated for a number of reasons, including too many product variants during many manufacturing processes."

This is the case in the e-commerce market, which was seeing double-digit growth even before the pandemic. "Increased e-commerce transactions impact the fulfilment process as they come with drastically different delivery times and formats that will need to be handled. One customer may order a toothbrush, another a TV set. These two orders cannot be delivered through the same lines," says Koenig.

At the core of automation technologies lies a vast amount of data, collected by internet of things devices. How well you can process all the data gathered will govern the quality of business insights that are generated.

According to Kofax and Qlik's white paper *Using data for insights is still critical for business operations*: "As the world evolves and more operations continue to be digitalised, business insights from data continue to be one of the fastest and most effective ways to derive value, from short-term actions to long-term investments." Once the data has been captured, "complexity and errors can

repetitive or mundane jobs. In short, it will need to serve human needs, so any decision to automate needs to be driven by and rely on valuable data."

**First comes data, then comes automation** If businesses are going to start automating, they should start with their data, says Koenig. "Businesses, even though they need to be compliant with privacy regulations, definitely need to work more with the data they capture. Data refinement is a key concern here. It is critical to invest in technology that goes beyond simply collecting information by contextualising it so you can deduce actionable insights," he says.

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be removed from this resource-intensive, manual process through automation".

Further benefits can be derived by leveraging automation to combine "business data with data from other disparate sources and channels – customer data, customer feedback, operational data and processing data – and provide simpler, smarter ways to visualise business intelligence". But the real trick, according to Kofax and Qlik, "is taking all the data acquired through intelligent automation and turning it into actionable information".

The white paper continues: "Most businesses have become adept at collecting lots of data. However, finding the most efficient and effective means of understanding and democratising the data, and using it to make informed business decisions, is more difficult for organisations."

Creating more transparency around the availability of data and making it more accessible can help solve this. "Organisations and users need self-service, interactive web-based dashboards that provide process and business insights, without the need to involve IT to build new reports or adjust database queries. It's key to create custom dashboards or modify existing ones, or to filter and aggregate data for displaying content in a variety of views," it says.

**Powerful trio** COVID-19 has accelerated the use of automation within procurement and supply chains due to its potential for improved cost efficiency and productivity, according to GEP's 2021 Supply Chain and Procurement Outlook Report. Automation will help streamline processes and allow smarter collaboration in core procurement and supply chain activities.

"Automation boosts output and affords employees more time to focus on strategic work, allowing companies to do more with less," the report says. "Platforms with built-in forecasting and supply network capabilities will leverage artificial intelligence (AI), machine learning and robotic process automation to reduce their reliance on individual spreadsheets and boost shared, real-time data and demand models."

In another white paper, *Artificial Intelligence and its impact on procurement and supply chain*, GEP says: "Applying machine learning to the discovery of patterns in supply chain data – the painpoints and most crucial factors for smooth, successful management of a network – can be revolutionary."

"As the data is interrogated under constraint-based modelling, the machine can extract the most influential criteria that impact inventory, demand, production planning, risk and logistics management, and supply chain optimisation."

Many of the insights generated may not have been previously understood or even known due to the sheer volume of data available. Access to such insights enables smarter planning decisions and introduces new levels of network agility and responsiveness, helping businesses stay ahead of the curve.

**Is AI a cure-all?** However, the GEP 2021 outlook report also emphasises that automation is not a panacea: "It must be coupled with human insight into category demand and the impact of a lingering recession, and continue to manage fluctuations in safety for employees and partner suppliers."

"In atypical situations, though, algorithms alone can fall short. Early on in the pandemic when customers were suddenly requesting toilet paper instead of Lego, Amazon's algorithms were perplexed. The situation demonstrates that bulk ordering and extreme demand surges need human intervention to revise fulfilment and inventory replenishment."

"Businesses that combine human adaptability with machine-learning models will better withstand the shock of unforeseen disruptions. Algorithms still need a daily real-world context."

Likewise, when it comes to implementing AI, it helps to start small and specific. GEP suggests CIOs look to target specific problems. This allows teams to build confidence and by taking the time to understand where the biggest value can be extracted, and then delivering a shorter project with well-defined objectives, this acts as a good stepping ground before expanding the AI reach. ●

OPINION

## 'Companies that have enabled technology skills and ways of working across the wider organisation will sustain progress'

The future chief information officer (CIO) is a business strategist, a digital, data and technology visionary, a global thought leader, a chief customer officer and a talent manager. The role is to enlighten, to delight, to share and enable through influence. This individual is no longer the human interface to the back-office function. Their job is to lead people through change as an enabler for growth.

Core to this is a demand for CIOs to develop leadership capabilities across people, process and technology, themes that will enable them to future-proof their organisations and equip them for resilience. To build that innovative stretch across their organisation, CIOs need to address the natural fear that accompanies change. This requires a range of qualities: enhanced emotional intelligence that allows them to implement timely technical decisions while also being tactful, supportive and transparent; and a marketing mindset that can harness to ensure authentic communication and collaboration.

In many businesses this is set against a backdrop of limited budgets and headcount, user needs that are increasingly diverse, and the challenge of ever-evolving technology and cyber posture. The future CIO must be aware of, and able to connect to, opportunities that fill gaps in the market and do it at pace. Meeting and exceeding these user needs requires teams and networks that are representative of the market they serve: demographically representative, culturally diverse, inclusive and always listening. Diversity enables innovation in thinking and delivery to enable solutions that

provide advantage tomorrow. Future CIOs must collectively address different approaches to attract, grow and retain talent, including those who are digitally excluded and lack the skills required for work. After a year where work-life balance has been a focus, levers for team health are increasingly important. Future CIOs are humble, authentic and receptive, open to collaboration and co-creation across departments, traditional boundaries and sectors.

How can this be achieved? Through thoughtful collaboration. We must continue both to uphold our responsibility to securely manage organisational and personal data, and also find ways to share information to reduce friction. These approaches will increase pace, agility and flexibility for all.

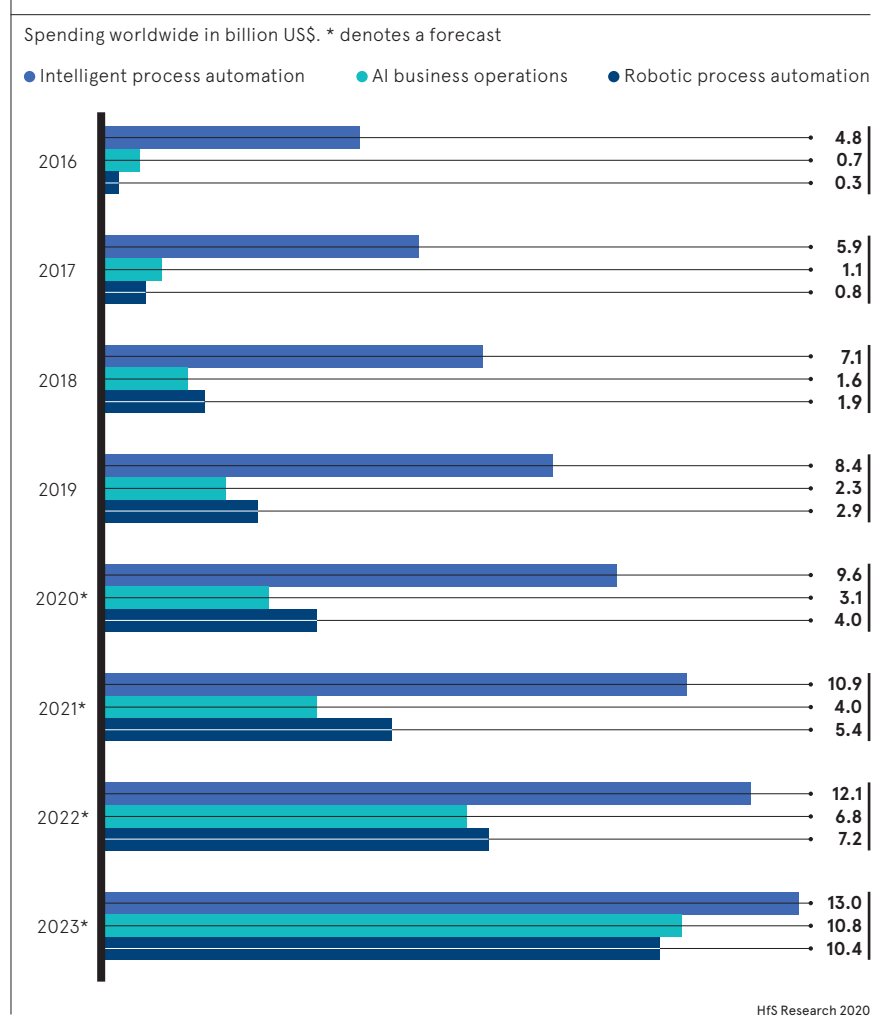
The future CIO will constantly be evaluating new technologies, threats and opportunities. These leaders will seamlessly translate this to business impact with metrics, so the right organisational decisions can be made. Organisations that have grown over the past 12 months have delivered services and products at the right time, in the right place, using the right technology. These organisations treated CIOs as experts who are listened to and trusted to create value.

There are no longer technology companies. Every company is a technology company. Companies that have enabled technology skills and ways of working across the wider organisation will sustain progress. What is needed is agile decision-making across organisation-wide multi-disciplinary teams, rethinking governance to focus on processes that matter and adapting investment approaches.



Roxane Heaton  
Director, Government Digital Service  
Advisory Board member  
Digital Leaders

### INVESTING IN AUTOMATION IS SOARING









# Why CIOs should be thinking about clean rooms

A “clean room” in which two businesses can share data will help both gain new insights, but could raise serious legal and security questions

Sean Hargrave

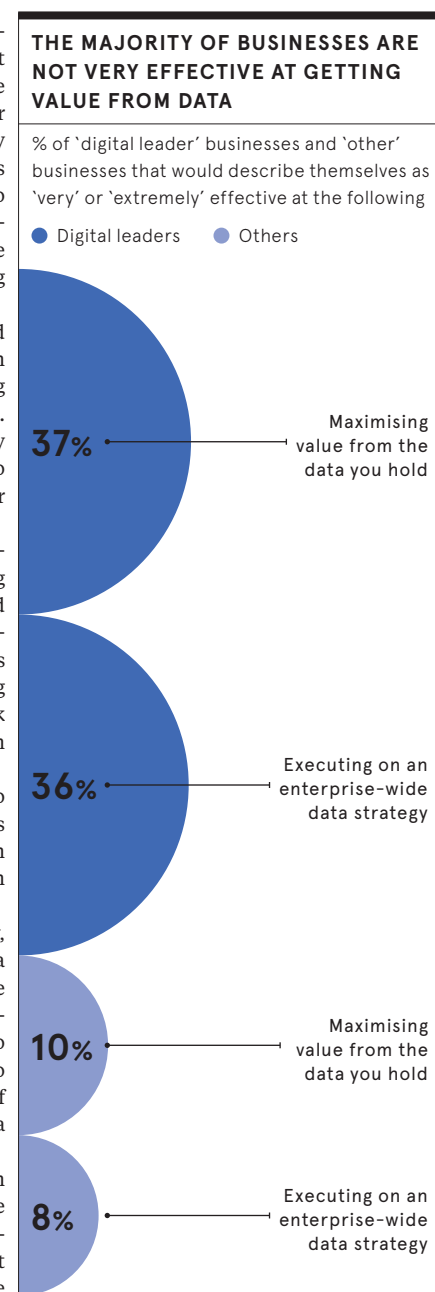
If there is one area of IT that chief information officers (CIOs) will need to master this year, it is so-called clean rooms. These have been used for some time, most notably in digital marketing. The likes of Facebook, Google and Amazon have offered them to some of their largest advertisers in the past few years, but their use was relatively limited, in part due to cost. This is going to change in the year ahead as companies adjust digital marketing plans to cope with the loss of third-party tracking cookies. Businesses realise they need to be more reliant on their own first-party data, but they also need to be able to combine data insights to understand an industry better and improve their marketing performance. Sharing personally identifiable information with another business would mean breaking the General Data Protection Regulation (GDPR), unless the consumer has expressly given permission for their details to be shared. So the race is on to develop a means of allowing two parties to interrogate

one another's data without revealing personal information. Use of clean rooms is likely to be led by advertisers and publishers. Brands have databases of customers and their target audience, while media companies have information on who visits their sites. Combine the two and, without revealing identities, a site would be able to confirm the type of people reached by a campaign and compare it with the brand's desired audience. A case in point comes from the Financial Times, which is actively investigating how it could use clean rooms to build a deeper relationship with brands that goes further than advertising, but would not require personal data to be shared beyond the organisation. Anthony Hinchings, digital advertising operations director at FT.com, says it is early days, but that the company is investigating clean rooms as a means to discover if someone who saw an advert, read a sponsored article or registered for an event fits within an advertiser's target audience list. “We want to build deeper relationships

with partner brands with an offering that includes partner content, webinars, roundtables and events,” he explains. “It will be interesting to understand how the technology progresses and whether clean rooms can be explained to users in such a way that they understand and consent to. Our approach is typically conservative when it comes to user privacy. For that reason, we are digging deeper to understand the technology and implications.” Clean rooms are also likely to gain traction towards the end of the year by helping to get the events industry back up on its feet, according to Chris Sainsbury, founder and managing director of digital marketing agency UX Connections. He is investigating the technology as a means to enable event operators to work with publishers to reach their target audience. Whether it is a new conference with no database to work from or an established event whose data needs refreshing, clean rooms will enable an events business to know where it can find its target market.

“We're working with a new luxury yachting event that has a very specific, affluent target audience, but has no database,” he says. “We're going to be looking at whether a clean room will allow us to ensure we only work with yachting publishers and perhaps other event organisers who have access to that audience. Without this technology sitting between companies, it's going to be hard for companies without a pre-existing list of contacts to build up a new event.”

It is likely the publishing, advertising and events industries will lead the way on clean rooms in 2021 because digital marketing has traditionally relied on third-party data. When walls are erected around first-party data, publishers will need to find a way to show advertisers they are opening up their desired audience. However, in the longer term, any businesses that could benefit from comparing data with others are likely to join the trend towards clean rooms. Mike Reid, chief technology officer of Clir Renewables, explains the technology he is developing is starting to allow energy companies to benchmark their performance so they can learn from one another. “Renewable energy companies need to know if their installations are producing as much energy as they should be and when maintenance is likely to be due so they can plan ahead,” he says. “They are reluctant to share data directly, but by pooling it they can find out if, say, a turbine isn't producing the industry average for wind conditions, perhaps because a sensor is faulty and it isn't being directed into the wind properly. The companies are also able to see the mechanical performance of similar turbines so they can get a good idea when maintenance is going to be required.” If this trend is ringing security alarm bells for CIOs, it is for good reason. There are potential legal problems but, according to data privacy lawyer and partner at Linklaters, Georgina Kon, the key is in the technology. There are several options, but she believes the best way to avoid GDPR infringements is to allow computer databases to interrogate one another, possibly by artificial intelligence, but only take away “high-level” learnings that do not reveal any identifiable information. She also cautions that CIOs need to think beyond privacy laws to ensure clean rooms are only built with reputable partners. “Our clients will look much more widely than just the GDPR,” she explains. “They will also be



thinking about issues such as control of the underlying data, confidentiality and professional secrecy.” This need to protect data beyond GDPR and ensure both sets of data are legally compiled and strongly protected is going to be vital, according to Andrew Barratt, managing director of data security business Coalfire. He is actively investigating building clean rooms for clients, but advises businesses to proceed with caution. “Put two sets of data in the same place and you have a potential treasure trove for an intruder to plunder,” he warns. “Then there's the issue of how clean the clean room can actually be. There may not be a problem with your own database. The real issue is who you're going to let into a clean room. You just don't know where someone else has got their data from. It's a little like having a sparkling kitchen floor you let someone else walk on without knowing whether or not their boots are muddy.”

“There's the issue of how clean the clean room can actually be and who you let in



## Getting more Black women into IT roles

Race and gender bias, as well as a lack of representation, are among the obstacles Black women face when pursuing a career in IT

Christine Horton

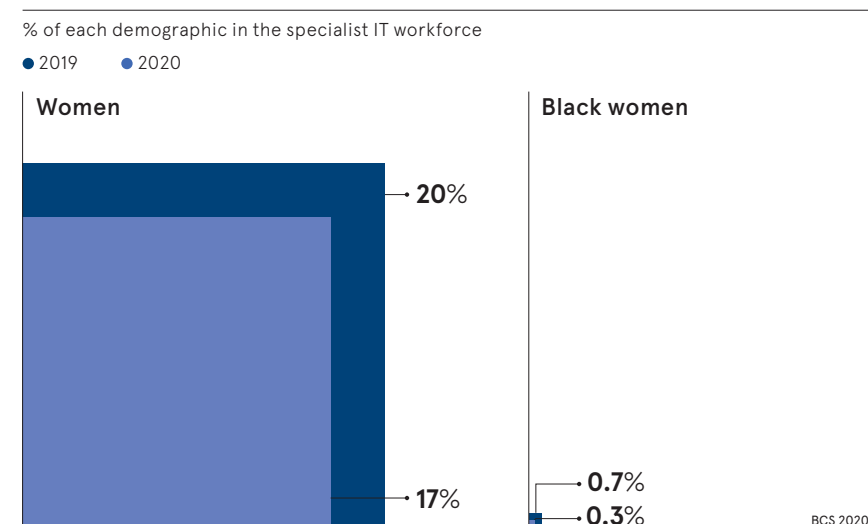
Women, and in particular Black women, are hugely under-represented in the IT industry. Research from the British Computer Society (BCS) shows Black women account for just 0.7 per cent of IT roles, 2.5 times below the level of other professions. Black British Business Awards released a report with J.P. Morgan in January that identifies “the gross failings of businesses to collectively address and act upon racial disparity in the workplace”. Afyia Chohollo, director of technical programme management at digital identity firm Onfido, says: “For companies with big pockets and all the ideas to solve the world's big challenges, it's not an acceptable excuse to not have Black people and women in your teams, particularly in major cities like London. It's lazy and negligent and bad for the bottom line.” “Important, life-impacting applications should not be built by teams that do not represent society.” One of the key issues is the absence of Black female leaders in the IT sector, which then discourages Black women from pursuing a career in the industry. “Role models are important. It is always affirming to see someone like you when you walk into a room because dealing with micro-aggressions is more challenging than anything,” says Chohollo. Dinah Cobbinah is the first Black female partner in KPMG UK's history. She recognises there are few women in similar positions. “There aren't many Black women in senior roles, let alone within IT. But when you start to funnel down in terms of ratios of women in IT roles, there are even fewer Black women within that,” she says. “If organisations are serious about turning the dial and increasing opportunities

for under-represented groups, things need to be done differently. Change cannot happen overnight, but we all need to build a sustainable pipeline of talent, rethink how and where we source talent, provide the career path and have visible role models. You need to see it to be it.” The problem starts with recruitment, says Chinonso Izugbokwe, managing director of Get2Talent, a recruitment agency committed to promoting and driving diversity in the hiring process. Izugbokwe believes racism and gender recruitment stereotypes remain a significant barrier to Black women's career entry into IT. However, it is also difficult to identify and prevent. “Recruitment processes and practices can be designed to reduce the role of gender recruitment discrimination, such as making the recruitment process gender neutral, promoting female candidates in their selection or anonymising CVs. The hiring managers and talent acquisition team alike can avoid the negative outcomes associated with gender recruitment stereotypes,” he says. Izugbokwe adds that lack of recruitment guidance promoting career progression opportunities poses another problem. This puts off Black female candidates as they cannot see future opportunities for development. There are, however, several initiatives currently underway to encourage more Black women into tech. Coding Black Females has joined forces with the BCS to offer 50 women membership of the BCS. At the same time, Niyo Enterprise and Coding Black Females have partnered to put on a six-month Coding Bootcamp programme for UK Black women aged over 18 who are unemployed or employed with a salary of less than £25,000. HOST, the Home of Skills & Technology at MediaCityUK, has just launched Skills

“Important, life-impacting applications should not be built by teams that do not represent society

City in Salford. Offering technology bootcamp academies, it says it is committed to fast-tracking 450 technology career starts for women and the Black, Asian and minority ethnic community in the North. Additionally, the Tech4Women training programme recently took 100 women from the Midlands and North of England from under-represented communities, with degrees or experience in any subject area, and retrained them in technology. It then gave them the opportunity to interview with a company for an internship, apprenticeship or job. “There are lots of great initiatives helping to not only upskill women in tech, but also work to change the narrative and dispel industry myths,” says Dr Rashada Harry, enterprise account manager at Amazon Web Services, and founder of Your Future, Your Ambition, which encourages young people to pursue careers in science, technology, engineering and maths. “This work is critical as organisations and leaders recognise the importance that culturally diverse perspectives bring to businesses, especially in fostering innovation on behalf of customers and ultimately advancing the wider industry.” The IT skills gap continues to cause problems for organisations, especially with the pandemic forcing organisations to accelerate their cloud migrations faster and digitalise their business processes. But there is now an opportunity for organisations to fill that skills gap, while diversifying their workforce. Organisations must start by examining how accessible their employment practices are and what barriers to entry exist to candidates of all genders and ethnicities. “Being a woman comes with its fair share of challenges, often facing gender discrimination and bias in the workplace,” says Izugbokwe at Get2Talent. “But, if you are a woman of colour, these gender-based challenges are often compounded by obstacles of racism, making it even harder for Black professionals to navigate their way to the top. “Organisations need to evaluate their work performance strategy to see if they have barriers in place stopping Black women from reaching roles that are more senior.”

### BLACK WOMEN ARE UNDER-REPRESENTED IN IT ROLES



## Print media can't generate leads. Wrong.

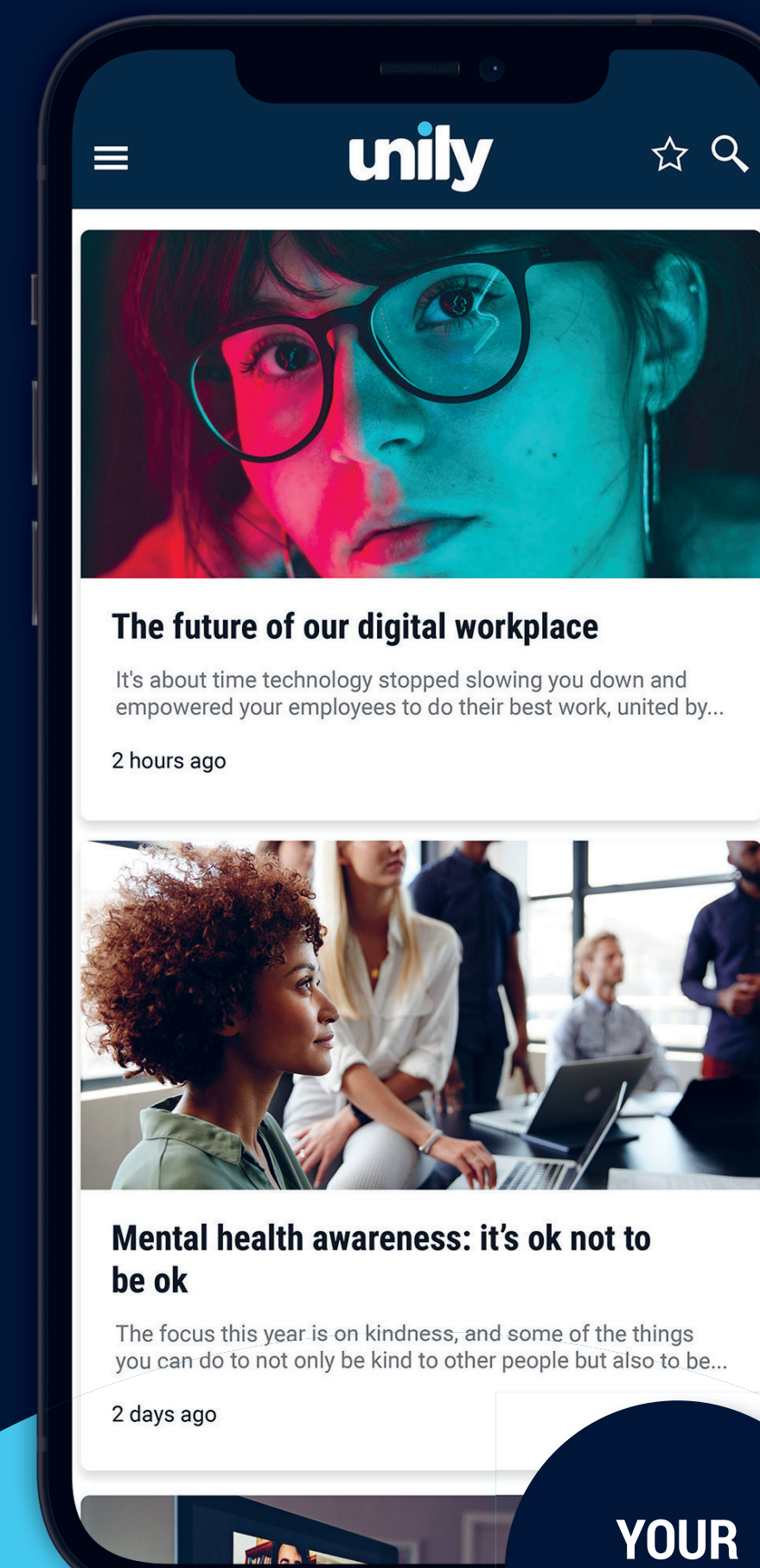
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## STRATEGY

# Five priorities for CIOs

Trends accelerated by the coronavirus crisis present challenges and opportunities; dealing with both has increased the workload for chief information officers

Oliver Pickup



## Regulatory compliance and security

The entry might have been number one in the charts for the past few years, but the mass jump to working away from the office catalysed by lockdown has meant chief information officers (CIOs) must be on top of data management, security and compliance.

"The shift towards remote work and digital operations has meant the information security posture of many businesses, faced with an increasing amount of threats, has had to improve," says Federico Baldo, CIO at Eurotech, a multinational company supplying internet of things solutions.

"Security starts at the top of an organisation and, while chief executives do not need to be security experts,

they do benefit from an accurate understanding of the relevance of security to their organisation. And for many smaller businesses, in particular, it is the CIO's job to lead the internal security programmes."

Caroline Carruthers, chief executive of data strategists Carruthers and Jackson and former chief data officer at Network Rail, says a mindset transformation is required. "My biggest piece of advice for CIOs when it comes to regulatory compliance is they need to stop thinking about security and privacy as a tick-box exercise," she says. "It's essential they see this as a positive opportunity rather than a hurdle to overcome."

There are enormous advantages for the organisations that get compliance right, she insists, from increased customer trust to more secure intellectual property.

## Modernise IT infrastructure and systems

COVID has tested the robustness of supply chains, business models and information technology systems alike. In many cases, it exposed worrying vulnerabilities.

"After the immediate response to the pandemic, it allowed the time to look at IT systems and assess whether they remained fit for purpose," says Jean-Sébastien Pelland, deputy managing director of Eland Cables, a global supplier of cables and cable accessories.

"Businesses constantly evolve, requiring IT systems to adapt rather than making wholesale changes, simply due to the pace and perhaps uncertainty of the new avenues. Now is the time to make sure the systems match the business as it stands today."

This chimes with Sharon Mandell, CIO of Juniper Networks, a multinational cybersecurity company. "As we 'cloudify' and 'SaaSify' our entire product line, Juniper also needs to update its IT architecture. We need one that's more nimble, that brings new capabilities and that's more user aware to enable the experience our customers and partners desire throughout their journey with us," she says.

Like many organisations, Juniper has pivoted its offering, in part because



of the pandemic fallout. "Modernising IT is a priority now as many of our systems were built around a business model that delivered hardware, with embedded software only, and traditional technical support and services," adds Mandell.



## Ensure real-time visibility of critical data

"The world we're living in is moving faster than ever and organisations relying on data even one week old are behind the curve," warns data strategist Carruthers. "The nature and speed of change in 2021 will make real-time visibility of critical data the single biggest factor in winning new business across almost all industries this year."

She advises that "CIOs need to make sure they have insight into what is going on in their industries in real time" to make accurate predictions.

Rich Murr, CIO at Epicor, a global provider of enterprise resource planning software for the manufacturing, distribution, retail and service industries, agrees. He calls actionable data "the holy grail" of IT. "And sometimes it's seemingly just as difficult to obtain," he says. "The challenge is less about systems and more about the business processes that produce and consume the data."

"CIOs need to educate their business peers, not to sit back and expect clean data to appear magically in their systems, but instead to take strong ownership and execute the hard business process improvement work necessary to create actionable data."



## Engage and educate the workforce

On Murr's point of driving education and training, so employees can use all IT systems capabilities and have a good handle on data management, this is another important CIO task. "IT needs to work for the worker," says Tim Christensen, chief technology officer at workforce communications platform SocialChorus.

Football Association CIO Craig Donald says: "Facilitating tech literacy will be central to my role in boosting enjoyment and attainment as the football community comes back to life in 2021. Particularly in non-tech

organisations, CIOs shouldn't just go in there being the mystical gurus of technology. Get a dialogue going and show how tech can directly impact relationships."

Educating staff is particularly challenging for Jo Drake, CIO of The Hut Group, the retail and property company that in September attracted the largest initial public offering on the London Stock Exchange since 2013. "As part of a global business that is expanding at a rapid rate, it's important to have the best team possible and the right talent to grow with us," she says, pointing to several schemes that attract and nurture tech talent.

## Make full use of cloud computing

Eurotech CIO Baldo urges businesses to "go full-on cloud". He says: "If the business gross margin is not sensitive to slightly higher costs, there are many more advanced and integrated security capabilities that smaller businesses can leverage through the use of cloud services from AWS, Azure, Google or IBM than could be achieved on-premise, within the same budget." It is the CIO's responsibility to manage the move to the cloud and beyond.

Dr Anjali Subburaj, chief architect of digital commerce at multinational manufacturer Mars, believes businesses can move up a level in this area. "Adoption of cloud computing allows IT teams to focus exclusively on driving business outcomes via their endeavours instead of grappling with IT infrastructure issues," she says.

Once the cloud is embraced, more tech opportunities become accessible. "CIOs should also be prioritising the introduction of an artificial intelligence-embedded approach," Subburaj adds. "This will improve the accuracy and relevancy of outputs, such as supply and demand, and personalised product recommendations to consumers." ●



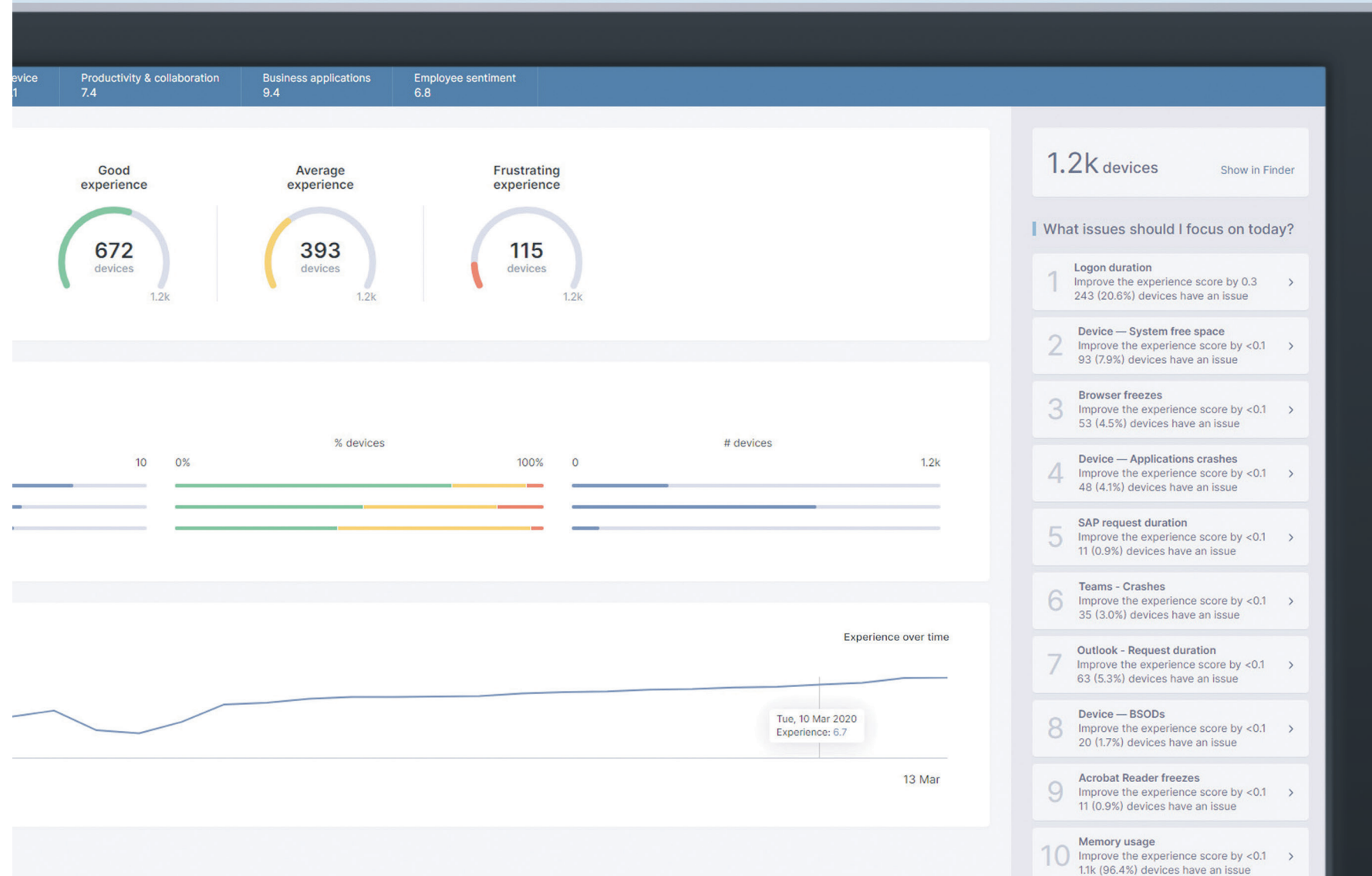
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