

THE FUTURE CIO

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OVERVIEW

At the beating heart of digital shift

Chief information officers have a pivotal role to play in a digital data-driven era when their performance can make or break an organisation

NICK EASEN

There's a shift going on in businesses across the globe. Bricks and mortar are being replaced by pixelated inventory, paper trails become e-mail audits and assets sit in a data centre rather than a warehouse. Increasingly corporations are spearheading a digital-first strategy. Pivotal to this is the CIO or chief information officer.

"This is the most exhilarating time to be a CIO," says Mark Lillie, global CIO programme leader at Deloitte. "It is the most exciting position in the boardroom right now. The whole of the organisation needs to understand this because the most innovative in the boardroom already do."

That's because businesses are increasingly battling it out on a digital playing field, no matter which sector they're in. As Vijay Gurbaxani, professor of IT at the University of California, points out you're now competing with the likes of Airbnb in hospitality, LinkedIn in recruiting, Uber in transportation, Google in automotive and Netflix in television. All of which are data driven with little in the way of physical assets.

"Every aspect of the CIO's environment has moved on considerably. Data is now required behind seemingly every decision. We have vastly more data, more intimate data that we get far faster, which we can process more meaningfully and more quickly," explains Tom Goodwin, head of innovation at Zenith USA.

In this data-fuelled era, the CIO has a fundamental role in determining how organisations thrive, especially in sectors disrupted by digitisation. Increasingly, IT isn't just tinkering at the edges of corporations or acting in silos, but upending whole business models and transforming the core.

"Every CIO's dilemma should be that their overall goal is first to champion change from the side, then become the heart of the company, then become a spirit and way of working in everyone, and then to make themselves redundant," says Mr Goodwin.

Technology solutions now permeate every element of business from the delivery of goods and services to customer experience, human resources and finance. Data can be used quickly, end to end, to make better-informed business



IR Stone / Shutterstock

"Many businesses were configured 30 years ago, in a time when analogue was king. It's an issue," says Mr Lillie. "Yet the number-one reason CIOs lose their jobs is because they just aren't digital enough. The best CIOs get it. In this role you need to communicate the transformational process that needs to happen and the benefits a digital-first campaign can bring. One problem with CIOs is that they tend to come from a technology background, who have historically done geek speak."

Traditionally, CIOs have grown vertically through organisations, mainly through IT departments, with a focus on tech. These CIOs tend to struggle more than those who've had a varied background in terms of industry exposure.

The fact is the skills the future CIO needs are very different to those required just five or ten years ago. CIOs now need to speak the language of business and position IT in a way that all executives can act on. They also need to preach about the benefits of a data-driven business model that workers can understand, but also have a good chief technology officer (CTO) to implement it.

"The CIO should have the creativity skills of a marketer, the oratory skills of a professional speaker, the persuasion skills of a change manager, the commercial awareness of a sales manager, as well as all the skills required to deliver upwards," says Antoine Boatwright, CTO at Hillgate Travel.

It's a big ask, yet there are tools that help CIOs achieve their goal. One is reverse mentoring, which Deloitte encourages, where younger digital natives mentor older, senior executives in a bid to show them the possibilities that data-driven strategies can bring. Or mash-up days where teams from across a company think of how they can innovate in a digital-first environment.

But there are warnings in this data-driven age. Mr Goodwin cautions: "No data suggests Red Bull would thrive or that Innocent smoothies would create a breakthrough category. We need to get to a point where every department is flushed with data, but not obsessed with it. It's like oxygen, it's both the central point to everything, but also invisible and pervasive. It becomes the background element, but a supporting role. The future of the CIO is to ensure that data has this role." ●

decisions. However, the adoption of a digital-first strategy is still patchy across industries, businesses and countries.

"Previously it was expensive, there were barriers, but not any more. The issue is getting people to realise how they can achieve it. If you embrace the digitisation of your business, you can win," says Mark Lavelle, chief executive of Magento.

This new elevated role represents a serious challenge. Expectations to deliver are huge. There are still many constrained cultures, as well as legacy systems to tackle, which are the bane of the CIO's life. Executives also have new problems, such as how to cleanse and access data, as well as manage it across systems. Not to mention dealing with the Luddite class of pre-digital, middle managers.



88%

of global CIOs said their jobs are increasingly more challenging



84%

agreed that the role is becoming more important to their business



68%

said they would be focused on growth-oriented activities within three to five years

Thinking of Digital Transformation?

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AUTOMOTIVE INDUSTRY

Carmakers put CIOs in driving seat

Chief information officers in the car industry must change up a gear and become innovators or be left in the slow lane

CHARLES ORTON-JONES

Tesla recently became more valuable than Ford. It's a meteoric rise for a company which launched the Tesla Roadster electric sports car as recently as 2008. And how did Tesla soar so fast? The whole automotive industry is obsessed by the question. Yes, the electric car is terrific. But it's more than that. After all, Tesla lost \$680 million in 2016, whereas Ford posted a \$10-billion profit.

The valuation is about culture. Tesla has the ability to rethink every aspect of what a car can be. Driverless cars are Tesla's forte, but the radicalism manifests itself across the car. Look at the wind-shield - the Model X has the largest panoramic glass fitted to a production vehicle. Or upgrades - Tesla does over-the-air software updates, like the 2015 improvement which told drivers the car now does 0 to 60mph 0.1 seconds faster.

Tesla owners go giddy pointing out all the brilliant features - ludicrous mode, the 17-inch touch-screen dashboard panel and so on. The car is merely an extension of Tesla as a company. It's more like a Silicon Valley software firm than a carmaker. When Tesla needed enterprise resource planning (ERP) software, it built some from scratch in four months. Most companies take a year to install an off-the-shelf ERP. Tesla sells direct to consumers - no dealers - to ensure it has a direct connection to its audience to gather data on their habits.

Rival car companies are looking at Tesla and accelerating their transformation into similar enterprises. Every department is now told to be digital-first. All of which is undermining the old monopolist on digital - the chief information officer or CIO.

Axel Schmidt is managing director of Accenture's automotive practice and from his viewpoint, in the

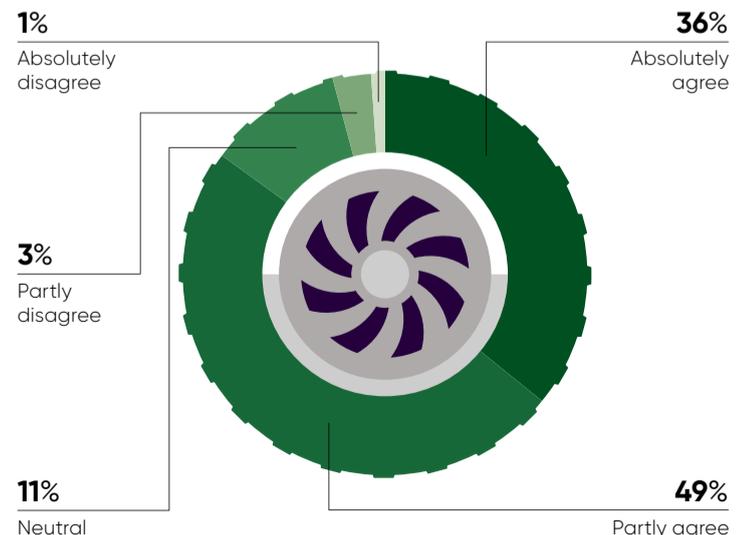
heart of the European car industry in southern Germany, he sees the CIO as in danger of becoming obsolete. "Already 40 per cent of IT decisions are made across the business and not by the CIO," says Mr Schmidt. "They also do not have the budget for innovation."

He explains that the new leaders are research and development, marketing and finance that are dealing with mouthwatering new ideas such as virtual reality showrooms, the internet of things and the connected car, and self-driving. The CIO used to have a monopoly on software. Now? "The CIO has for a long time not been at the forefront of innovation," warns Mr Schmidt.

Insulting to CIOs? Not at all, says Nissan Europe's CIO Stephen Kneebone. "It's provocative, yes, but not the first time I've heard that view," Mr Kneebone says. "As the role of CIO is conceived and understood, I absolutely agree. Does that mean the role itself will disappear? I'm not so sure."

DIGITAL DRIVING GROWTH

AUTOMOTIVE EXECUTIVE OPINION ON WHETHER THE DIGITAL ECOSYSTEM WILL GENERATE HIGHER REVENUE THAN THE HARDWARE OF THE CAR



Alexis Georgeson



The CIO must be the strategic enabler for all aspects of the business

He says much of the problem stems from an outdated conception of CIOs. "Traditional CIOs were order takers," says Mr Kneebone. "They'd say tell me what you want in terms of provision. There are too many CIOs who have that mandate and continue to deliver nothing more." For these CIOs, there is one fate: "They will be left behind."

If the old CIO is on the way out, what is the replacement? Here Mr Kneebone has a razor-sharp vision. "The CIO must be the strategic enabler for all aspects of the business. They must catalyse the transformations to move the business and operations forward."



Tesla is more like a Silicon Valley software firm than a carmaker

Less chief information officer, more chief innovation officer. This is what Mr Kneebone has done at Nissan – re-invented his role. He has decided his department will be in the vanguard of the move to digital.

Take marketing. “Eight years ago customers would come into our showroom five or six times before buying. Now it’s once. If their interaction online is not engaging, they’ll move on to another retailer,” he says. “We need to know what vehicles they are looking at. What colours? What specifications? That

data gives us insights and intelligence for the guys in manufacturing to do their planning. It requires end-to-end co-ordination.” Thus the CIO and his team are in marketing, helping to distribute customer data to all departments.

Or there’s the connected car concept. Again, Mr Kneebone is in the thick of it. “I have responsibility for cyber and information security,” he says. And electric vehicles? His team work in partnership with all R&D personnel as a sort of mobile tech consultancy.

Ultimately, Mr Kneebone is helping Nissan reinvent its self-conception. “Moving forward, Nissan will be a technology company which happens to design vehicles. We will become more known for the technology and services we provide than the vehicles,” he says. Results suggest his team are on the right path: profits rose 36 per cent in the last financial year to \$6.6 billion. Mr Kneebone’s own rewriting of his job description won him CIO of the Year in 2014.

His belief that the CIO can be relevant in the era of Industry 4.0 resonates with the likes of Axel Schmidt at Accenture, who concludes: “We should not be too pessimistic around the role of the CIO. Definitely not. But the CIO needs to free up budget not to be the administrator of IT services, but also to drive innovation of their own – on cloud, security or wherever. They need to sit in the front seat, not the back seat. This needs a change of mindset among CIOs.”

He’s right. And CIOs in other sectors should take heed too. ●

INSIGHT
OVERTAKING CIO ROLE

Developing a hydrogen fuel cell car ought to cost billions. So how can a small startup based in Llandrindod Wells in Wales challenge the major players?

“Disruptive technologies always unseat the market leaders,” says Hugo Spowers, founder and chief executive of hydrogen car brand Riversimple. “In the end, it’s easier to design a business model for the 21st century from scratch than tweak what you’ve got.”

The company’s first model car is the Rasa, rather fittingly named after the Latin term for blank slate, *tabula rasa*. The truly innovative thing isn’t the technology – the fuel cell and parts are industry standard kit – but the way of billing users. “Customers sign a one, two or three-year contract for the car and for that they get everything. The fuel, the servicing, insurance, the lot. Normal car companies only get a part of the revenue from the life of the car. We get it all.”

The cars are only being marketed locally in Wales. This means filling stations can be placed near users, with no need for a national roll-out.

Modern digital technologies mean development needn’t cost an arm and a leg. Riversimple’s designer is Chris Reitz, who was design director at Alfa Romeo. Backers include Sebastian Piëch, grandson of Ferdinand Porsche, and a member of the family which still owns Volkswagen and Porsche.

Riversimple is emblematic of the new era facing chief information officers, in which a disruptor can materialise out of nowhere, armed with a new way of seeing the market. Uber rocked the industry with that mindset. Riversimple is still testing the Rasa pre-launch. But the vision is to rock other manufacturers too slow to follow its lead in supplying cars as a service, not a product.

Data is the new oil, but only if it’s clean

Some say data is the new oil, not just fuelling how organisations work, but lubricating the wheels of commerce and communication – it’s a valuable commodity



Chief information officers regale how they’re going to harness data, wrangle it, apply machine-learning and make a difference to their bottom line.

“Yet most organisations are plagued with inaccurate data and poor contact details,” says Barley Laing, managing director of Melissa Global Intelligence, a company with more than 30 years’ experience and over 10,000 customers relying on its data-quality solutions.

“There’s a lot of hype around big data. Yet the quality of any set of information is crucial. With clean, verified data you can make informed decisions; with poor data that’s not verified you make ill-advised ones.”

Expectations around data quality have risen dramatically since the financial crisis. Static, raw data is no longer viable; corporations must now be able to clean, aggregate and perform advanced analyses on dynamic data. This creates actionable intelligence that informs boardroom decisions. This only comes from trusted data assets.

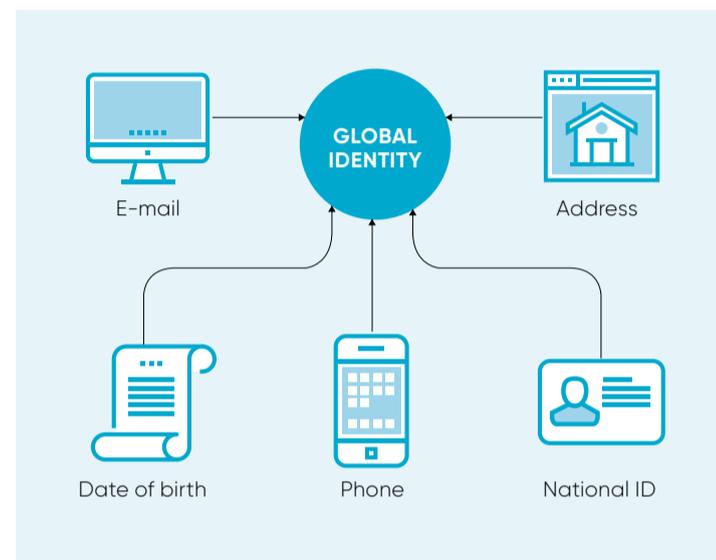
“Regulatory reporting and risk analytics are now imperative in this economic climate. There is a much greater duty of care. Having more timely and accurate data is essential for making risk and return trade-off decisions. It’s about maximising corporate resilience, shareholder returns and accountability,” says Mr Laing, whose clients include central and local government, BAE Systems, Visa, Citi and Nestlé.

“If you have reliable data, you own the customer; if you own the customer, you own the future

New figures show that identity fraud has hit the highest levels ever recorded, according to Cifas, the UK fraud prevention service. Nearly 173,000 identity frauds were recorded in 2016 of which 88 per cent were perpetrated online.

“It’s increasingly vital for all organisations to be able to properly verify and format as many data points as possible, whether it’s personal ID, postal addresses, e-mails or mobile phone numbers. Fraudulent, duplicate and incorrect contact data is an expensive loss,” explains Mr Laing.

Melissa Global Intelligence has been a pioneer in data-quality man-



agement since 1985. This has enabled the company to build technologies that address the data challenge and to establish trusted data sources in the process, scaled up across the world, creating a gold standard in global ID verification.

“We are the identity piece in the data puzzle. We can check your individual data to see if you’re real. We can verify an individual’s name, address, phone, e-mail, date of birth and national ID against trusted multi-sourced reference data. There are few firms that have the global footprint that Melissa has,” says Mr Laing.

“The issue is that CIOs think data verification involves huge costs. The fact is it doesn’t. Then again can companies afford not to do it? The amount of time and effort that’s wasted with wrong mailings and marketing is vast. Clean, accurate data translates to the bottom line. If you have reliable data, you own the customer; if you own the customer, you own the future.”

Many CIOs do understand the need to have clean, less vulnerable data, but they struggle to implement a solution. Other organisations don’t have the skillsets to implement it. Also no one likes to admit they have data quality issues.

However, new legislation will change the data security landscape next year, when companies can be fined tens of millions of pounds or 4 per cent of global annual turnover for data breaches under the new EU General Data Protection Regulation.

“It’s not going to be a matter of choice. It’ll be law. We’re reaching the tipping point. The fact is data is too vulnerable.



\$3.5trn
in revenue lost yearly to financial crimes



15.4m
consumers were victims of identity theft and fraud in 2016 – up 16% from 2015



40%
increase in card-not-present fraud



21%
rise in account-takeover fraud



\$16bn
stolen by thieves in 2016 – \$1 billion more than 2015

Few people run into a bank now and steal by the back door. Instead they sit in their attic and use identity fraud,” warns Mr Laing.

For more information please visit www.melissadata.co.uk

THE FREELANCE CIO

Going it alone can be win-win adventure

An experienced chief information officer who goes freelance has much to offer, particularly to enterprising startups, and can reap worthwhile rewards

MARK SAMUELS

Nascent firms often need the expertise of a digital leader, but do not have the cash to appoint a full-time chief information officer (CIO). Hope, however, is at hand. Smart IT leaders are aware of the skills challenges facing startups and smaller firms, and are using their industry experience to support innovation outside the traditional enterprise sector.

One such executive is digital adviser Ian Cohen, who left his role as CIO with insurance broking firm Jardine Lloyd Thompson Group at the end of 2014. Mr Cohen now spends his time advising blue-chip firms how to work with startups, while also advising these new firms on effective growth strategies.

He has been described as a “digital marriage broker”. His new role represents a radical shift from working for a finance firm in the City of London. Yet Mr Cohen believes CIOs who make this transition can create big benefits for themselves and the firms they help.

“If my journey is typical, CIOs can walk out of corporate life



and into a range of interesting opportunities,” he says. “So why aren’t more IT leaders doing that? CIOs must get outside the traditional enterprise and invest their time and experience in this new, interesting and entrepreneurial culture.”

IT leaders who do venture out-

side will find a receptive audience. Recruiter Harvey Nash says one in ten executives at small firms rely on contingent staff for more than three quarters of their IT team. Experienced technology professionals can help fill this knowledge gap and find new opportunities in the process.

Andrew Abboud has more than 25 years’ IT management experience. He left his role as CIO at Laureate Education in late-2015 and, after three months away from work to clear his mind, Mr Abboud established his own CIO consultancy service. Like Mr Cohen, he has thrived in the

freelance market.

“It’s interesting, challenging and different,” he says, talking about his broad spectrum of clients, from public-sector bodies in London to European business schools. “There is something rewarding about creating a portfolio career and building trusted relationships with a few great clients.”

It is a sentiment that chimes with Omid Shiraji, who is interim CIO at Camden Council. As well as helping the public-sector organisation transform through digital IT, Mr Shiraji has acted as a business coach and non-executive support to startups in recruitment, retail and technology.

“There’s a big opportunity for information leaders to help small firms think through their business models,” he says, before suggesting the plus-points of working with nascent firms work both ways.

“The benefit for me as a CIO is that I have my finger on the pulse of what’s happening in the local economy. It allows me tap into innovation. It’s always great to know well-skilled individuals and the talent in the startup community can be strong.”

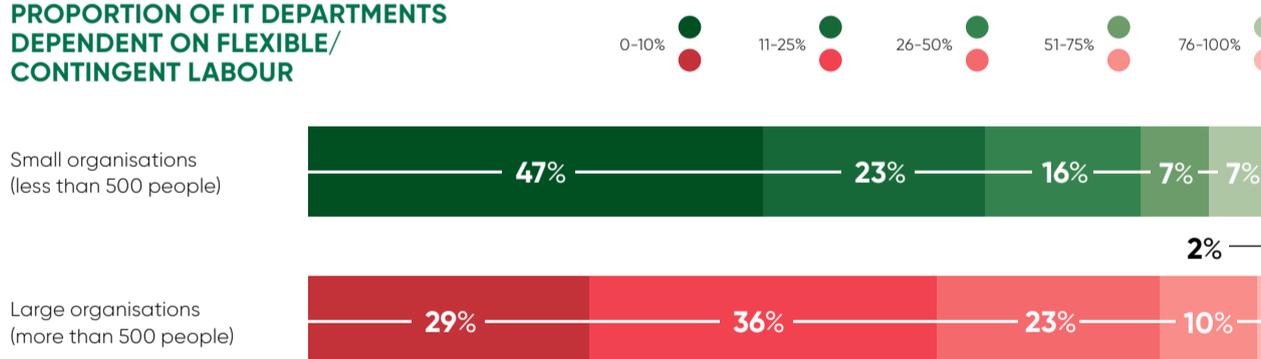
So while constant change in the IT labour market presents challenges, it also creates a wealth of opportunities for experienced CIOs. The demand for knowledge is promoting new ways of working for both the receptive small business and the experienced IT leader.

Take Mark Foulsham, who was appointed chief digital officer (CDO) at Scope last September, after 12 years as group CIO at insurance specialist esure. He has combined the shift from CIO to CDO with a new working model, where he explores a portfolio of opportunities outside Scope.

“This is about me moving from a unitary role to a plural model,” says Mr Foulsham, who is building cross-sector interactions between executives at Scope and C-suite bosses at other firms. He is also working on consulting projects and CIO coaching, and is writing a book on cyber security and the impact of the General Data Protection Regulation.

“Scope recognises the things I do outside the business can feed back into the organisation through my role as CDO,” he says. “With a portfolio career model, you must take a holistic approach. You must think of yourself as self-employed and available seven days a week. Being your own boss is tough, but it’s also very interesting.” ●

PROPORTION OF IT DEPARTMENTS DEPENDENT ON FLEXIBLE/CONTINGENT LABOUR



Harvey Nash/KPMG 2016

CASE STUDY

IAN COHEN



Former chief information officer (CIO) turned digital adviser Ian Cohen has used his IT leadership experience to help a broad range of fast-emerging organisations.

He points to his work with insurance startup Neos. The firm went through a rapid development cycle, launching its first product just nine months after its creative founders had their first conversation in a pub. Mr Cohen has provided expert guidance for Neos for the past 18 months.

“Startups can really benefit from having a recognisable domain expert during their growth phase,” he says. “There’s something important about the practical experience a CIO can bring. Investors often like to look at

the board and see there’s a grown-up there and a strong CIO brings credibility.”

Mr Cohen also works as a corporate adviser with technical consultancy Amido. The firm had already added an ex-entrepreneur to their board. This individual has a great deal of experience in how to run a consultancy business. What Amido lacked was an executive who could represent the mind of the customer and Mr Cohen stepped forward.

“Consultancy services can be a tough sell into what is often a reticent buyer,” says Mr

Cohen, who as a former CIO is more than aware of the issues of selling to senior executives. “Having someone from the C-suite, who understands the buy side, is a big advantage.”

The basic message, he says, is that smaller, innovative businesses can benefit from the input of a freelance CIO. “Startups are full of bright people doing great things, but they sometimes lack contextual customer awareness,” Mr Cohen concludes. “Bringing in a C-suite executive, who has heavyweight industrial experience, can really help.”

“There’s a big opportunity for information leaders to help small firms think through their business models

Seeing clearly in the cloud

Moving to the cloud can be a dizzying experience without the right partner to guide the way



More and more companies are seeing the adoption of cloud technology as critical to their long-term success. Within this trend, hybrid cloud, the combination of private cloud to retain data control and public cloud with its agility and cost-model advantages, is emerging as the environment of choice.

Data from IDG Research Services has shown that the delivery of IT services via hybrid cloud is expected to triple over the next three years. Across Europe, hybrid cloud adoption is already gaining ground.

Research carried out by multinational data management specialist NetApp found that 69 per cent of chief information officers (CIOs) and IT managers in Germany, 61 per cent in France and 58 per cent in the UK are using a combination of private and public cloud.

While moving to the cloud can deliver significant business benefits, it

is a journey fraught with challenges. In terms of data management, for example, companies need to think about how they will manage and secure their data as they move back and forward between various on-premise systems and cloud environments. This becomes even more challenging when the data is transactional and the data set changes frequently.

For many cloud-bound companies the solution to overcoming these challenges is to partner with an IT organisation with a breadth of expertise in cloud adoption and migration to steer them successfully across a hybrid landscape.

CDW is an IT solutions, managed and cloud services provider delivering modern seamless infrastructure that is aligned with business demand. NetApp enables agile and seamless data management across the hybrid cloud, complementing CDW's end-to-end IT solutions.

Working together, the two companies present a strong partnership with a formidable range of solutions and strategies: a shared strategy of providing flexible services and efficient cloud architectures. As enablers of cloud solutions they guide and support companies through their journey to the cloud and beyond, with CDW orchestrating technology solutions for companies across the UK and internationally.

Grant Caley, UK and Ireland chief technologist at NetApp, says: "We have seen companies transition from having on-premise data centres where they've previously held all their IT, to using software as a service (SaaS) and, more recently, to looking for platform or infrastructure as a service, for example. That transition momentum is relentless."

But as Jonathan Eyton-Williams, head of solutions at CDW points out, the scale and complexity of such a transition means many companies will only make it with the help and support of a trusted partner.

He says: "Over the past couple of years our customer conversations have changed from 'we might want to look at cloud' to 'we know that our direction of travel is cloud, but we need a significant amount of support in making sure we get there and we need a partner to guide us on the journey.'"

The tangible business benefits of hybrid cloud adoption have been well documented. It creates an environment that enables organisations to



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scale up and down, using only the resources that are required at any given time, increasing efficiencies and, in some cases, lowering cost.

The NetApp study found that more than half (56 per cent) of surveyed CIOs and IT managers from Germany, France and the UK named security as a primary motivation for cloud adoption. The CIOs and managers from all three countries also put flexibility (55 per cent) and cost-savings (54 per cent) high on the list.

One of the biggest drivers of cloud adoption by businesses, says Mr Caley, is the need for agility to deliver services that a company's on-premise systems could not deliver. He says: "The compute element tends to be the easiest to move to the cloud because it can be rented on demand. Data is more of a challenge, because data has gravity, and you need to be much more focused on data management and the mobility of moving it into or near the cloud."

Within the organisation, it is the C-level executives, the CIO and chief executive, who are driving the cloud strategy, with the knowledge that the market is moving that way, but not always with the depth of understanding of what that strategy will be.

Mr Eyton-Williams explains: "C-suite executives often want to move to a cloud-first strategy, but don't have the knowledge of how it is done operationally. CDW can offer services such as CloudPlan and CloudCare designed to take a customer through a journey that involves more than

simply understanding where their data is and how it is accessed and being used. It also involves stakeholder interviews and establishing where they want their applications to reside, and what the restrictions are around moving some of this data.

"We find that customers want us to help them with that engagement. Companies face huge challenges in connecting and managing data across on-premise and cloud environments, while ensuring their data is well governed and protected. As trusted advisers in this field, we can ensure they are getting the best out of their adoption of cloud technology."

Having completed the initial cloud migration and integration, compa-

nies must keep pace with new developments to take full advantage of cloud, something that many simply have neither the skills nor the resource to do.

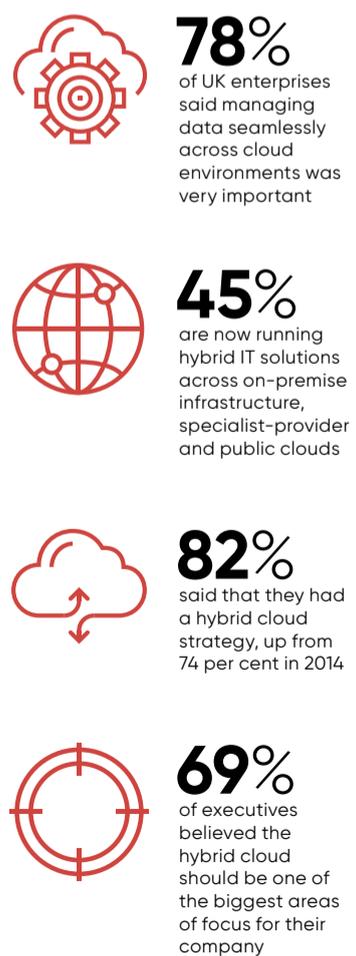
"You only have to look at the new releases that come out of Amazon, for example, 20 to 30 new products in the cloud every launch," says Mr Caley. "Trying to keep abreast of that rapid pace of development is extremely complex. Rarely do you see that customer capability to track that level of new technology and new services. CDW can add value because they are constantly looking at and assessing new technology as it appears. Equally, just because there is a new product doesn't mean it will be right for your company. Maintaining cloud data neutrality is one of the core benefits NetApp's Data Fabric can also bring to the equation."

Understanding the costs associated with cloud adoption presents another challenge for companies. Mr Eyton-Williams says: "Within that multi-cloud journey, spanning on-premise, hybrid and public clouds, customers have difficulty defining the cost of their current service and the cost of moving. There are cloud calculators that will tell you what it might cost if you move your workloads as they are or optimised in some way to run them on Azure, for example. What's less easy to define is what you will get back by doing it. It's not as simple as saying 'I don't need to run data centres in-house any more'.

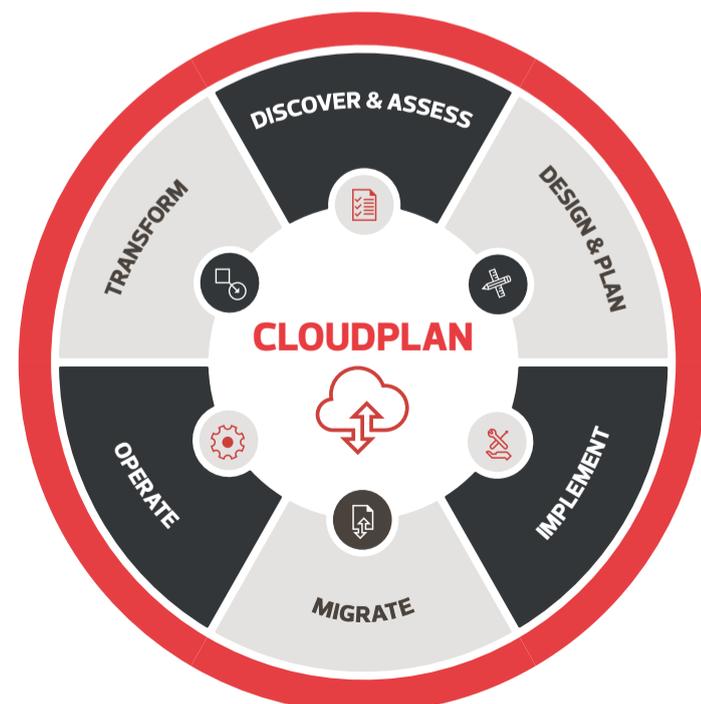
"You need to factor in things like what service contracts are associated with the fact that you can relinquish doing that today and what connectivity changes you will have to make to enable it. It is often difficult for our customers to gain clarity in this area, but again it is something that we can help them with.

"It isn't just about the technology; it is about understanding the business case for a cloud-based journey, getting the best out of it financially, and creating opportunities for business expansion and innovation."

Let our experts orchestrate your move to the cloud. Contact CDW via 020 7791 6000 or uk.cdw.com



“ C-suite executives often want to move to a cloud-first strategy, but don't have the knowledge of how it is done operationally

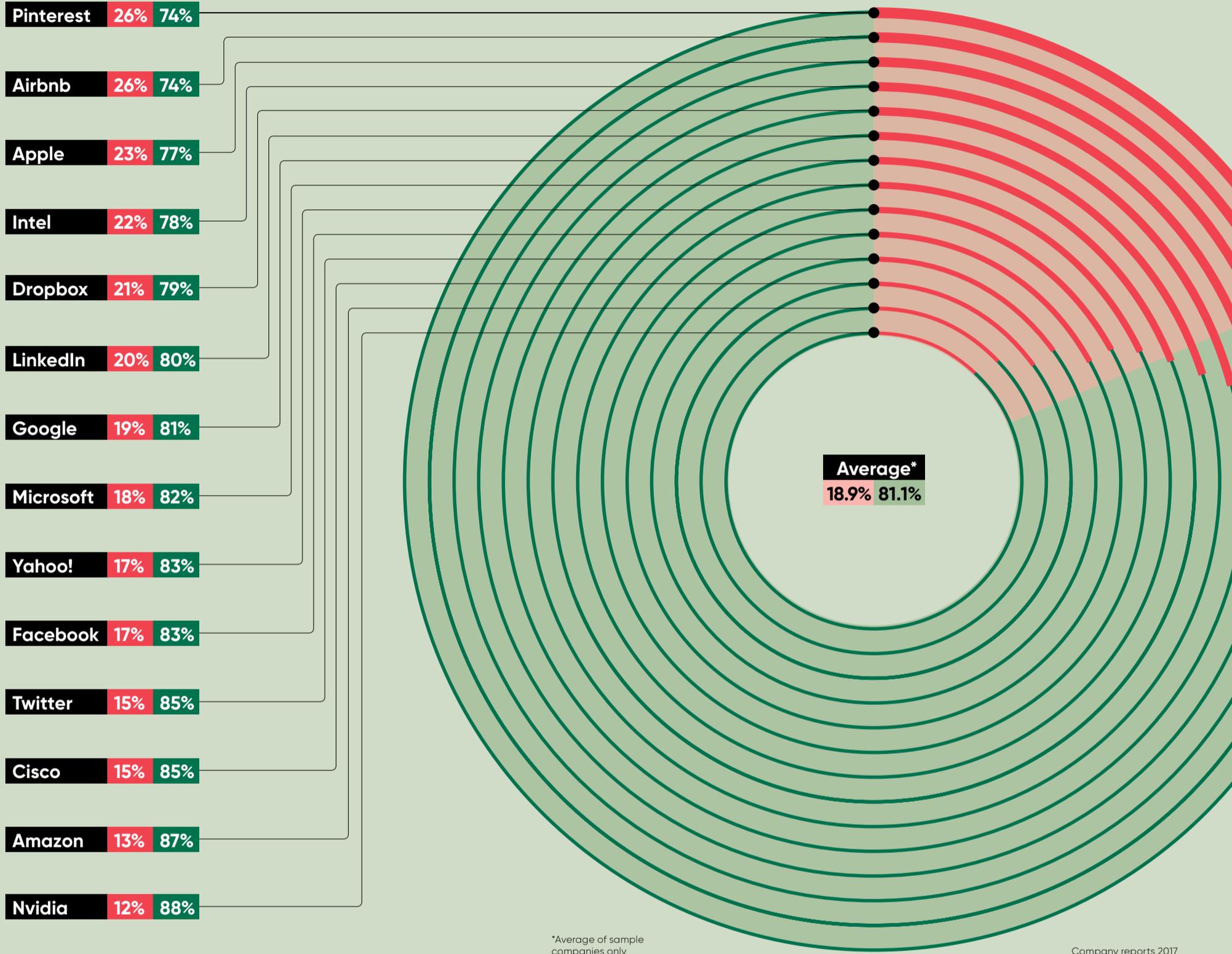


TECH GENDER GAP

GENDER REPRESENTATION OF TECHNOLOGY WORKFORCES

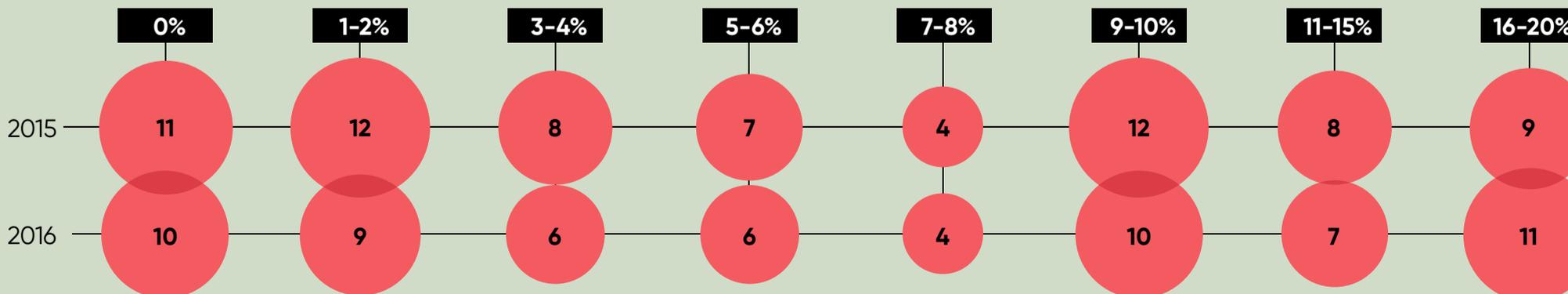
SELF-REPORTED GENDER DIVERSITY OF TECHNICAL STAFF AT SELECTED TECHNOLOGY FIRMS

● Women
● Men



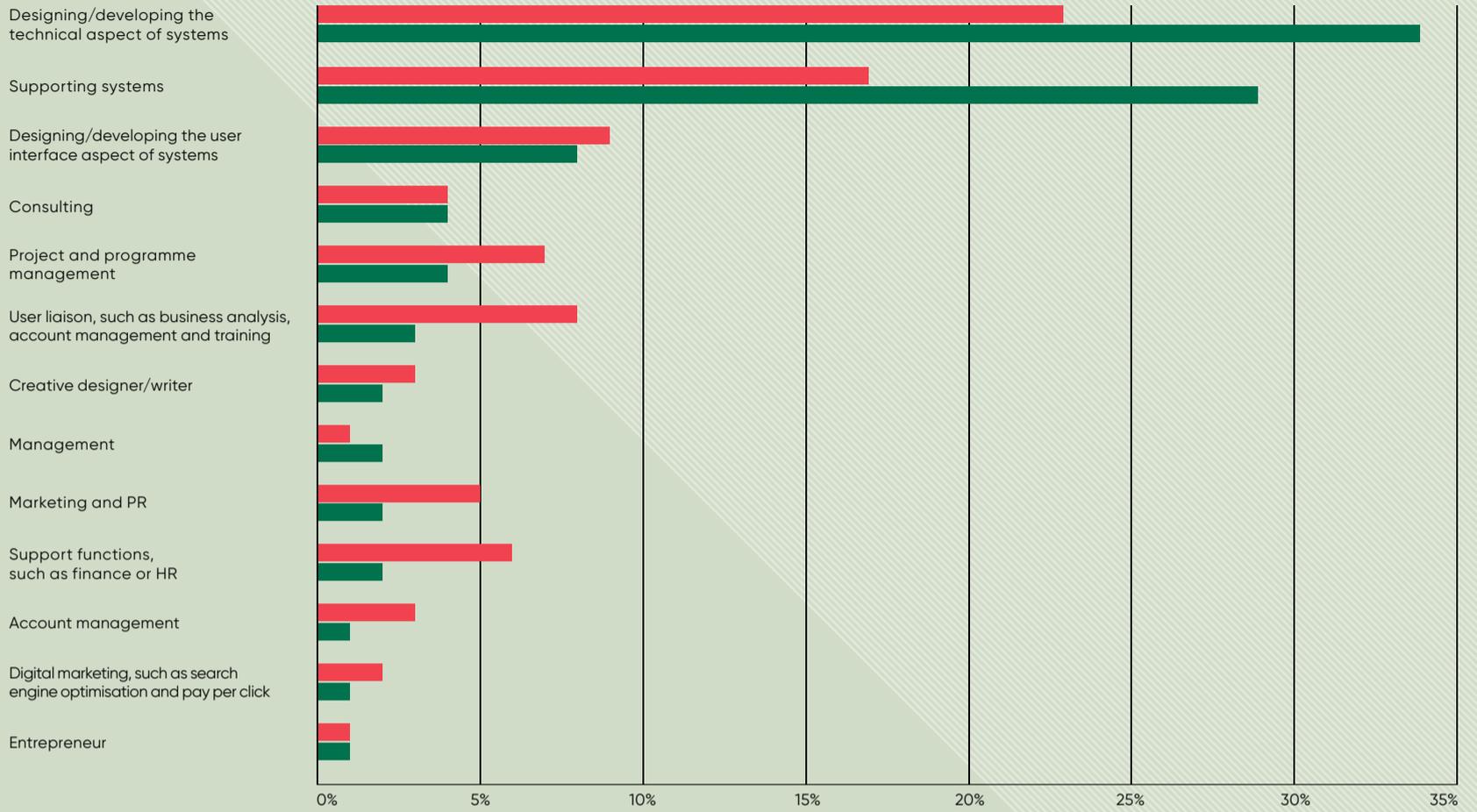
WHAT PERCENTAGE OF YOUR TECHNOLOGY DEPARTMENT IS FEMALE?

GLOBAL SURVEY OF TECHNOLOGY PROFESSIONALS



WHAT CATEGORY DID YOUR FIRST TECH JOB FALL INTO?

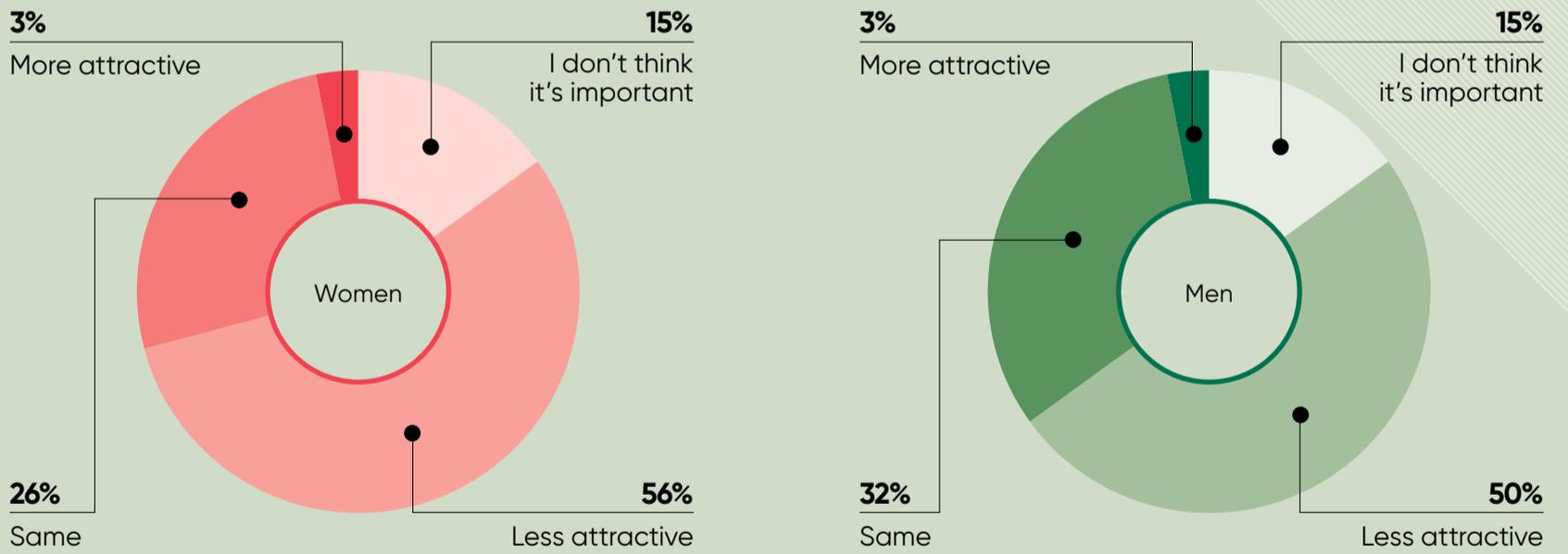
GLOBAL SURVEY OF TECHNOLOGY PROFESSIONALS



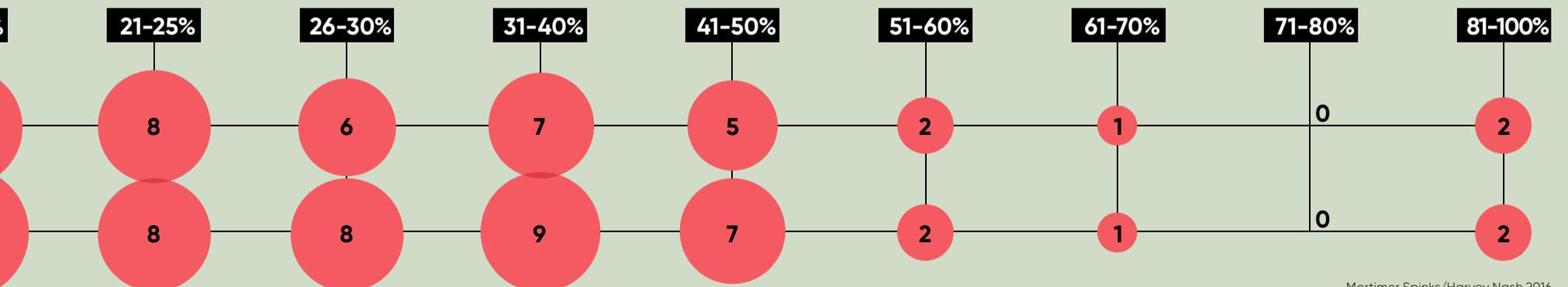
Mortimer Spinks/Harvey Nash 2016

DO YOU BELIEVE WOMEN FIND WORKING IN TECHNOLOGY JOBS MORE OR LESS ATTRACTIVE THAN MEN DO?

GLOBAL SURVEY OF TECHNOLOGY PROFESSIONALS



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Mortimer Spinks/Harvey Nash 2016

TOPIC TITLE

Magnificent seven are UK's IT hotshots

Meet the industry trailblazers transforming their sectors. From the British Army's first chief information officer to cracking the role of newspapers in the digital age, here are seven pioneers redefining the job

CHARLES ORTON-JONES



HEALTHCARE HOTSHOT

The NHS badly needs chief information officers (CIOs) with the drive and ambition to turn it into a digital-first organisation. **Rachel Dunscombe** fits the bill perfectly. As CIO of Salford Royal NHS Foundation Trust she is leading a rapid transformation into a sleek digital enterprise. Salford Royal was named Digital NHS Trust of the Year, described by judges as "the most digitally mature organisation in the NHS". Her secret? She's talked of the need to get the board on-side, of getting all departments to share their views on how digital structures can promote better patient experiences and working hand in hand with her chief executive. NHS England is so impressed it's given Ms Dunscombe the cash to build a digital academy to run programmes to educate staff from teenage apprentices through to healthcare veterans.

1

CREATIVE

The best CIOs know how to inspire their co-workers. **James Robbins** has a long track record of coming up with something out of the ordinary to get everyone buzzing. At Northumbrian Water he published a twice-weekly blog. He developed an app to reward employees who generated ideas with prizes. Best of all was his use of data: by connecting real-time performance with weather forecasts he enabled Northumbrian to deliver early warnings for engineers. Northumbrian improved reliability to four minutes unavailability a year per property for five million customers, 50 per cent better than the industry average. This year he started a new job with Drax, which produces 7 per cent of the UK's energy. A man at the top of his game.

2



CHARITY STAR

If you ever wonder which good cause to give your money to have a good look at Save the Children. In the world's worst crisis zones you'll find its workers on the front line, from South Sudan to Syria. CIO **Karl Hoods** is the man giving them the tools they need to make a difference. This includes a robust financial platform: Save the Children runs a budget of \$2.1 billion. He's tackled stuff like e-mail campaign optimisation and ensures workers overseas have full access to all the applications they need. The result is a charity which at the last count helped train 216,000 health workers, leading to 8.4 million life-saving interventions for children under five in 36 countries.

3



MEDIA MOGUL

Most newspapers are struggling to make money, from *The New York Times* to *The Guardian*. An exception is the *Financial Times*, which is thriving with rising profits based on a rock-solid reader base of paying business customers both online and offline. No doubt the Japanese owner Nikkei, which paid £844 million for the FT Group in 2015, is delighted. **Cait O'Riordan** was recruited to ensure the success continues. She made her name at the BBC and music app Shazam, valued at \$1 billion-plus, and arrived at the FT last year. Her role reflects her abilities as she's both CIO and chief product officer. Her technology team won Best DevOps Transformation at the Computing DevOps Excellence Awards and an award for Best Use of Tech at the Digiday Awards. Ms O'Riordan is surely one the FT Group will be desperate to hang on to.

4

MANUFACTURER

Is there a better run company in the UK right now than Dyson? Founded on Sir James Dyson's bagless vacuum design the Malmsbury-based company has retained the creative zeal of a startup, while cracking overseas markets in quick succession. The latest is China. Recent annual results saw sales rise 45 per cent to £2.5 billion and profits up 41 per cent to £631 million. Four in five models sold are battery-powered cordless machines – stunning since they only appeared two years ago. CIO **Adrian Thompson** is one of Sir James' lieutenants. The company has been digital-first for years, but Mr Thompson brings something new to the mix having masterminded bookmaker Coral Racing's transformation to digital enterprise during his time there. Next up for Dyson is selling its new hairdryer to markets across the world. Mr Thompson aims to ensure the roll-out goes without a hitch.

5

dyson



ARMY

MILITARY MAN

War has changed. The front line now exists wherever there is a computer terminal. Nation states wage cyber war on each other. It's thus odd that the British Army took until 2015 to establish the post of CIO. Major General **Richard Semple** filled the post, having served with distinction as the director general of logistics. He's since spoken eloquently about the need for the Army to integrate with allies abroad and put in place an open service architecture to allow the military to co-ordinate activities with partners. Real-time intelligence is vital. His next goal will be to shape information systems for the Army post-Brexit. The integration achieved thus far with European Union partners may be pulled back as a new relationship emerges.

6



RETAILER

Is Domino's Pizza a food outlet or a technology business? It's a tricky question. The pizzas don't change much, but the competition for orders is all-consuming in the fast food sector. The focus is on apps, ultra-rapid courier delivery and big data analysis of consumer behaviour. **Colin Rees** is the CIO in the UK and he's grappling with revolutionary things such as Apple Pay and Deliveroo. Above all he needs to ensure that franchisees are able to use the best technology to compete. For example, an auto-complete function fills out orders before the consumer has typed it. He brings insights, such as a consumer putting more than two items in an online basket is 90 per cent likely to finish the order. Fast food is a cut-throat business. Anyone can make a pizza. But no one is close to Domino's dominance of the market. That's due in large part to the CIO. ●

7

Digitise to the core or die

The global marketplace is increasingly littered with the carcasses of corporate extinction as the digital revolution accelerates. To thrive and survive, businesses must go digital, starting with the basics

The over-used term “digital transformation” trips off the tongues of chief information officers across the globe. They grasp the concept, yet lie awake at night worrying about it. They see the rise in disruptive, digital startups from Uber to Netflix and have nightmares about their own sector, while realising half the firms in 2000’s Fortune 500 have now disappeared from the index.

“There are many companies still operating outdated analogue business models. If you aren’t digital-first today, you may not be around tomorrow,” explains Eric Johnson, CIO of DocuSign, a global digital transaction management company with more than a quarter of a million business customers and 100 million users in 188 countries.

“Companies are already looking to artificial intelligence in a bid to be at the forefront of this digital revolution. Yet at the same time they’ve forgotten about digitising the real basics. Some companies are still operating off paper and manual processes.”

Those CIOs worth their salt realise that a digital-first strategy means more than just having a consumer-friendly website or an automated payment system bolted on to a creaking legacy system. Digital transformation requires profound and deep-seated change at the core if corporations are to make the most of new opportunities and keep ahead of disruptors.

“Get it right and a myriad of opportunities will open up to you. People want simplification, they want standardisation and a seamless digital experience that works across the globe,” explains Mr Johnson.

“If you don’t go digital, rest assured your competitors will and pass you by. It’s true in any sector from legal to finance, telecoms to insurance.”

At the heart of any digital transformation must be a technology-led overhaul of operating systems. One of those elements is digital transaction management or how you come to agreement with multiple stakeholders inside and outside your business. Globally there has been an explosion in demand for digital transaction management as organisations seek to replace reams of paper agreements with more secure, auditable and integrated, electronic ones.

“CIOs may have this on their list, but they aren’t doing enough. If you aren’t going digital now how are you going to cope with the next wave of data-heavy technology that’s right around the corner? It is hard to implement new exponentially evolving tech if your core business processes, such as selling to a new customer, hiring employees, or agreeing to purchasing or legal terms, are done with paper and a pen,” says Mr Johnson.

In the UK, 88 per cent of the public now expect to complete agreements digitally with companies they deal with on a daily basis, while 85 per cent of corporate leaders are making digital transformation a top priority at the same time 95 per cent plan to adopt new digital tools, according to a recent survey of 1,000 employed consumers and 263 senior business decision-makers.

“We all want a consumer-grade digital experience and that’s moving now from B2C [business to consumer] to B2B [business to business]. And

it’s not that top management don’t understand what needs to be done. What they don’t always understand is how to tackle this issue,” says Mr Johnson, whose company works with AstraZeneca, Microsoft and Virgin Holidays among others.

“I spend much of my time educating CIOs, giving them examples of how to use digital tools, and how to approach the issues and implement change.”

The fact is many British companies still needlessly rely on pen and paper to do transactions. This slows down business, delays results and creates a negative experience. With DocuSign you can eliminate paper transactions as part of the digital transformation process.

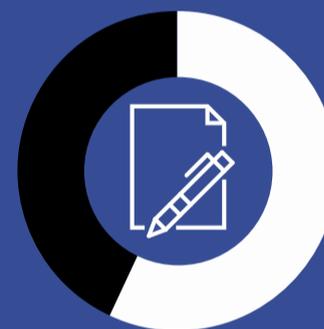
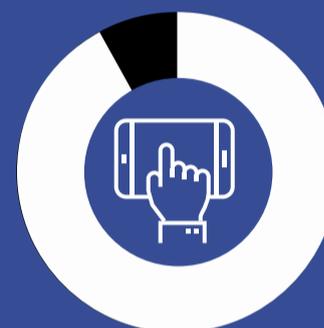
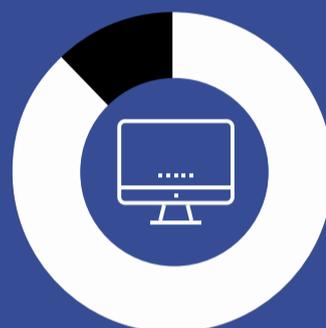
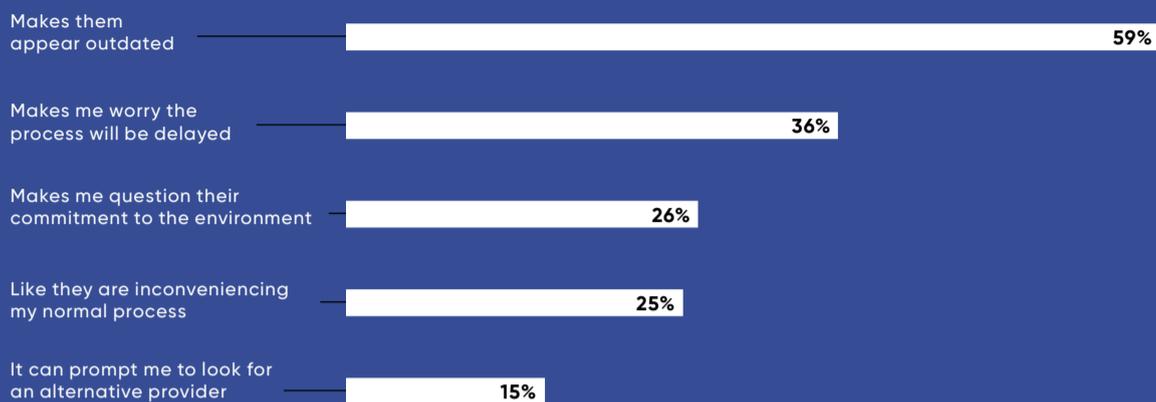
The physical signature isn’t just replaced with an electronic equivalent, instead you can send, sign and manage agreements, as well as collect payment 100 per cent digitally on any device. The average value delivered per document is now

“With DocuSign you can eliminate paper transactions as part of the digital transformation process

THE DIGITAL BUSINESS



HOW FILLING IN PAPER FORMS MAKES PEOPLE FEEL ABOUT AN ORGANISATION



Sapio Research and DocuSign, *The digital business*

DOCUSIGN IN NUMBERS



Aragon Research/EDF/EPA/Forrester/ IDC/Intellipap

nearly £30. And when time is money, more than 62 per cent of documents completed through DocuSign are done in under an hour.

“Law firms have really taken it on board in the UK. And another sector investing heavily in digital transaction management is financial services and banking. Telecoms are also ahead of the curve in Europe. To be honest if you are a CIO in any industry and you don’t have a plan to execute, you are dangerously behind,” says Mr Johnson.

There has been strong demand in recent months due at least in part to the arrival of an EU regulation called eIDAS, which became effective last July. This created a common framework for what a digital contract and a digital signature constitutes. To ensure compliance, CIOs need to work with a platform, such as DocuSign, which offers a full range of electronic and digital signatures that comply with eIDAS and meet regional requirements.

“Any solution needs to work with eIDAS. Compliance is important for any company working with or within the EU today, or in the future, even post-Brexit,” explains Mr Johnson. DocuSign is now looking to the

future, expanding globally so that it offers companies an e-signature and digital transaction management platform that works in Japan as it would do in Brazil or Birmingham – a global standard. It also has the clout to do so as the unicorn is valued in excess of \$3 billion and is backed by more than half a billion dollars in venture funding.

The company is looking to add smart functionality to contracts, turning them from passive ledgers of record to something which is more active, linking such things as leases or payments. For instance, a customer event occurs, such as an expiry, and the contract knows what to do and automatically triggers it into action. There is no doubt that the digital transformation of businesses is still ongoing.

“The future CIO is someone who can’t be static either. They have to be thinking about the future. You cannot be focused on today or even twelve months ahead. You should be a technology fortune teller. If you don’t, you and your company won’t succeed,” Mr Johnson concludes.

For more information please visit docusign.com



CIO: the new corporate agent of change

When globalisation kicked in, the C-suite turned to the chief executive as the agent of change; come the financial crisis it was the chief financial officer. Now, as we enter this digitally driven era, all eyes are on the chief information officer to generate competitive advantage

The CIO has technology to thank for his or her meteoric rise in business. At one point in the not too distant past, these executives spent most of their time just keeping the corporate lights on, managing data, servers and IT infrastructure.

Advances in tech mean they now spend less time on these tasks and more on high-level, strategic activities. New and affordable tools across a spectrum of business processes ensure the CIO can elevate their position, establish themselves as digital pioneers and business enablers.

"The CIO now has a critical role assisting the CEO to drive commerce forward. They have the potential to reimagine business through digital disruption. Therefore, they are now the new agents of change," says Jon Wrennall, chief technology officer at Advanced, the UK's third largest software and services company.

By the end of 2017, two thirds of the chief executives of Global 2000 companies will be placing digital transformation at the centre of their corporate strategy, according to research firm IDC. At the same time, research from the Global Centre for Digital Business shows digital disruption is still not viewed as a board-level matter by 45 per cent of companies.

"Many organisations are only in the early stages of digital transformation, but the savvy CIO can seize the opportunity to drive real change and be seen as a C-suite leader. Businesses are crying out for that joined-up, end-to-end view of data across

departments and CIOs are in the best position to deliver this," explains Mr Wrennall, whose company services more than 20,000 customers.

"Adapting to the technological evolution that's occurring is one of the biggest issues. The challenge is when there's so much exponential change going on, how do you then be an agent of change?"

Expectations are also extremely high. They're being set by employees' personal digital experiences outside work. Fast connections to the internet and the use of the latest devices are now the norm. Great expectations are filtering through into people's work life.

“ We help organisations up their digital game, transform businesses and create strong digital DNA

"Digital transformation is also about holistic business change," says Rob Bruce, head of technology at PRS. "Every senior stakeholder must be on board and they need to understand that evolution must take place."

According to Advanced's *Trends Report* of 1,000 business professionals in the UK, 55 per cent believe their IT infrastructure limits their ability to respond quickly to customers' issues, while 70 per cent think automation of manual tasks

advanced

would free up valuable time to focus on value-added services.

"IT legacy systems are a big issue. Yes, you need to keep the lights on and the IT engine running, but you can't do the exciting stuff and reimagine your business if you're just fire-fighting. This is where we come in," says Mr Wrennall.

"We help organisations up their digital game, transform businesses and create strong digital DNA. It's about championing connected IT infrastructure, joining up existing silos, and employing the right tool-kits for each sector and company we work with."

If CIOs get the digital transformation process right then business leaders can achieve incredible results. They will have access to real-time information across their company, with up-to-date business forecasts mapped against sales, marketing, human resources and operations, as well as increasing use of powerful cloud services. Organisations can in turn become more integrated, efficient, innovative and agile.

"It's about gaining control and acting on data-driven insights in real time. Digital transformation today also allows you to bring on board new tech tomorrow. It's therefore high time CIOs stepped up and became the catalyst that ensures their organisation stays relevant, valued and strategic," Mr Wrennall concludes.

Advanced is focused on making a difference to your business. To find out more please visit www.oneadvanced.com/CIO

Developing talent for leadership

Securing succession in IT leadership with professionals who can take digital technology forward hinges on providing the right training and career path

MARK SAMUELS

Too many businesses fail to prioritise next-generation IT leadership. Just 5 per cent of companies have a strong digital leadership development programme, according to consultant Deloitte. Some 65 per cent have no significant development programme.

Camden Council interim chief information officer (CIO) Omid Shiraji recognises there is a significant gap in terms of IT leadership development. Chief executives and chief financial officers can benefit from taking an MBA, and human resources professionals can become chartered specialists. CIOs, however, do not have an IT-focused equivalent.

Mr Shiraji took the now defunct masters in information leadership at City University, London. He said the course proved invaluable in terms of his own personal development. Executives looking to create similar benefits in their own organisations should promote the importance of digital leadership training.

"CIOs looking to get backing for any schemes to train and improve their staff must focus on value because courses are not cheap," he says. "It makes sense to get professionalism on the agenda because it will take time for senior people outside the technology department to take an interest."

Evidence from Robert Half Technology suggests the skills shortage is being exacerbated by the speed of change and the demand for digital evolution in modern business. The firm's research shows that 74 per cent of UK CIOs and IT directors encounter candidates who cannot meet the technical skills required.

Business leaders, therefore, must wake up to the fast-changing requirements for training and development. The good news is that change is in the air, says Adam Thilthorpe, director of policy, professionalism and public affairs at BCS, the Chartered Institute for IT.

He says all executives, from the chief executive down, understand the transformative potential of digital. The board expects the CIO and his or her technology team to deliver radical change, and a focus on next-generation talent development is crucial to success.

"It's becoming the case that you need a new and different skillset to work at board level in IT," says Mr Thilthorpe. "People recognise that digital is all about the art of the possible. If you want to change things, then you must be involved in technology."

The most successful businesses match this digital recognition with a commitment to development. Dave Smoley, CIO at AstraZeneca, says his firm benefits from a strong global presence and the flexibility to get the best people wherever they're located, be that in India, Mexico, China or the UK. The firm also boasts a strong talent development process.

"We're able to assess our workers and then create an inventory of their skills and their career interests, before making sure we have regular discussions around where it is they want to go, so they can be placed into the right development roles as they move along their career path," says Mr Smoley.

He says certain personality types, such as super-smart, high-energy and highly inquisitive, are the people who tend to do well in the firm's technology department. These capable individuals also tend to network well within the business.

"When I build teams, I look for people who enjoy doing this kind of work," he says. "There's lots of fun to be had in taking on new challenges. As an IT leader, you've got to ensure your new way of operating continues, but you've got to look forwards at the same time."

Paul Chapman, CIO at Box, also says modern firms need digitally engaged staff. IT leadership is no longer about skills development in the traditional sense of training and education. Great digital leadership is increasingly about an entirely different way of operating and thinking.

Box looks to help its next-generation IT leaders manage the constant demand for skills reinvention in the digital age. Traditional technical competencies must be matched with skills that support the digital business, such as devops, analytics, cloud and data science.

"Modern IT is about focusing on differentiating value, business enablement and outcomes," says Mr Chapman. ●

DIVERSITY IN IT

Time to bridge the gender gap in IT

When it comes to the most senior ranks of the IT profession, it's still very much a man's world

ALISON COLEMAN

The 2016 CIO 100 report by CIO UK found that only 16 of the top 100 chief information officers in the UK are women, a move in the right direction from the 12 listed in the previous year's report, but a figure that remains stubbornly low.

The outlook is made even bleaker by UCAS figures showing the number of women studying computer science at UK universities has been falling.

There are many reasons for this lack of diversity, ranging from poor perceptions of IT as a career choice among young women and girls – a new Accenture study found that girls are more likely to view STEM subjects, which include technology, as academic and

boring – to a lack of female role models in the sector.

In addition, as managing director of Hays IT James Milligan points out, many of the women who do decide to pursue a career in the sector are often guided towards client-facing roles.

He says: "This is thanks to the myth that women have better soft skills and also because a lack of flexible working becomes a barrier to those with family commitments. And yet around the world, employers are searching for people with IT skills."

Others cite the gender pay gap as a barrier to women progressing into senior roles, not only in the IT sector, but across the board.

Julie Chakraverty, founder of advice sharing app Rungway, says: "Studies show many companies are far from gender pay parity. But when queried, many companies say they

do pay equally for equal roles, and it's just that women are over-represented in lower paying roles and under-represented in the highest. This thinking misses the point. We are in a candidate-led job market, so why would women choose to work for a firm with a structure like this? It's time companies adapted themselves for greater equality."

Many believe that the only way to increase the number of women in senior IT roles is to look at the CIO pipeline and understand the root causes of losing women at early, mid and late-career stages, and create proactive programmes to address these issues.

Sarah Andresen, head of people science at global human resources software company Fairsail, says: "Two key factors impacting women's career progression are uncon-

scious biases and the current lack of women in leadership positions. For example, with few women in leadership positions there is a scarcity of mentoring and networking opportunities for them in the earlier career stages, so women have limited options to build relationships with today's leaders to enable their careers to progress."

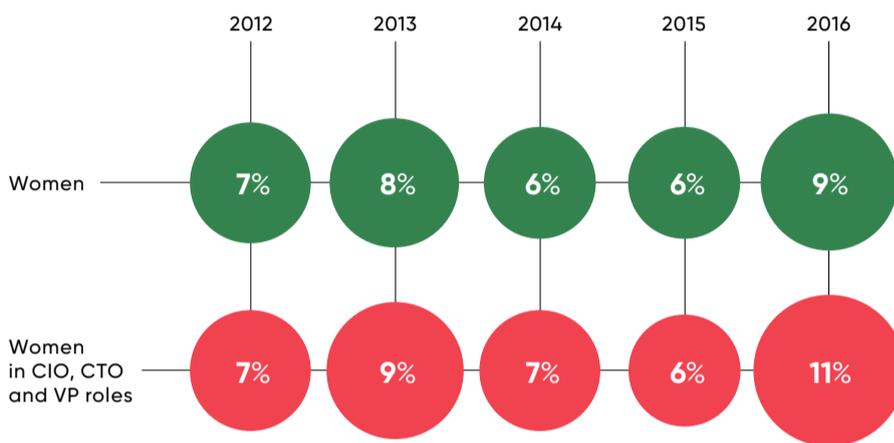
Ultimately, responsibility for improving gender diversity in the sector falls to everyone, from government, businesses and the wider

technology industry, to parents and peer groups, says Geoff Smith, managing director at Experis, UK and Ireland.

"Traditional perceptions need challenging, starting in early education and continuing throughout our careers," he says. "The tech industry is innovative, fast paced, exciting and stimulating, and this needs to be better communicated to women and girls from a young age, so they aren't routed down career paths that are less tech focused." ●

GLOBAL PERCENTAGE OF WOMEN IN THE CIO ROLE

FEMALE REPRESENTATION IS GROWING, BUT STILL WELL BELOW WHERE IT SHOULD BE



Harvey Nash/KPMG 2016

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GDPR: a business-critical enabler for CIOs

Chief information officers have been trying to sell the idea of good information governance to the board and corporate decision-makers for years – now they'll have to listen



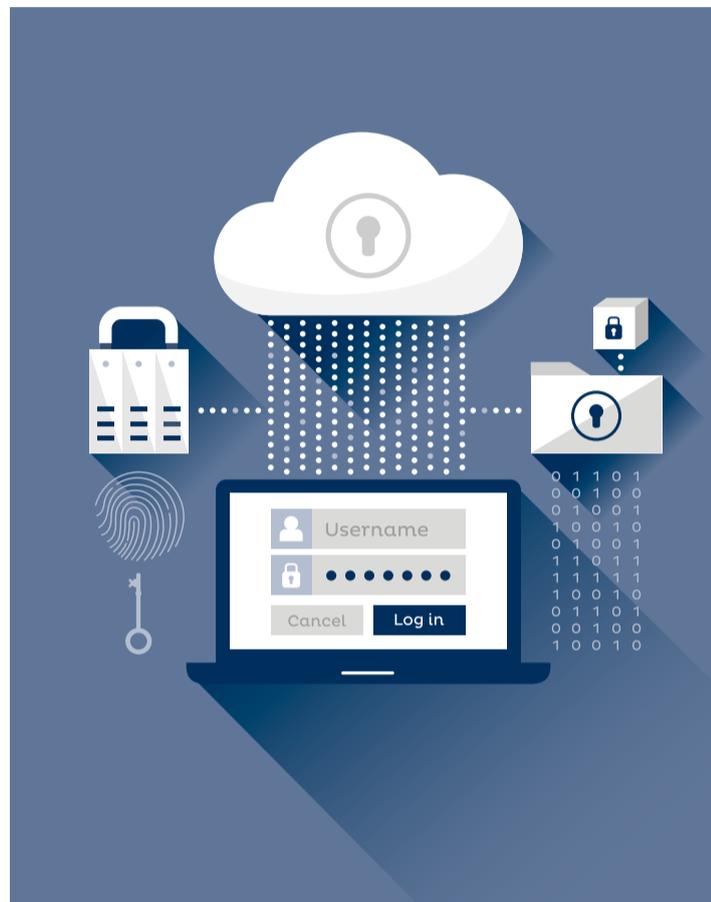
There's one date that sticks in the mind of most CIOs and that's May 25 next year. Less than 13 months away, a momentous European Union regulation, the General Data Protection Regulation (GDPR), will be applicable in the UK, despite Brexit, and it's poised to redefine data privacy.

This piece of legislation requires corporations to protect the personal data of all EU citizens. Additionally, GDPR imposes requirements for all data controllers and processors established in the EU, as well as any organisation that targets or markets to EU citizens. If they don't, firms could face fines of up to €20 million or 4 per cent of global turnover, whichever's greater. With the annual turnover for some of the world's biggest tech companies reaching into the billions, this could result in some eye-watering penalties usually reserved for antitrust violations.

"The media is full of stories about how CIOs are full of fear and dread. Yes, it's a compliance challenge. But it can also be a catalyst for businesses to turn personal data into a valuable asset, improve security and gain competitive advantage," says Paul Prior, managing director in the performance analytics practice at FTI Consulting, a global business advisory firm.

GDPR will mark a momentous change in the way data is handled. All executives need to understand this law, since responsibility sits squarely on the shoulders of company directors. There will also be greater pressure on corporations to handle effectively any information they capture.

"This legislation requires executive-level buy-in and goes beyond



the CIO to the board because implementing GDPR requires funding. This is not a box-ticking exercise. You need to demonstrate compliance, tools, as well as auditable, documented processes and policies for managing data," says Mr Prior, whose company advises the top ten global financial services firms.

The clock is ticking. Various surveys show companies are in a kaleidoscopic state of preparedness depending on the sector, size and state of their digital maturity. Some have their heads stuck in the sand with little awareness, others are busy putting detailed systems in place.

"There's an incredible amount of confusion out there. Amid the panic and the rush to do something, one critical element that's often forgotten is considering the cultural transformation and awareness in how a company manages and deals with personal data," says Sonia Cheng, head of FTI Consulting's European information governance practice.

"Some companies are having to wait because the funding isn't in place until next year. Many executives think because it's in 2018 that they have a year, but in reality they don't. Depending on the industry, size and the scale of personal data processing, there is a great deal of planning, awareness and co-ordination beforehand involving a

lot of stakeholders to make this happen. It isn't just a plug-and-play solution."

FTI Consulting has deep expertise in this area and has worked with a number of firms to help build cross-stakeholder awareness, as well as advise organisations with a tailored pragmatic approach for their GDPR compliance journey.

One of the key themes, recurrent in organisations, that exacerbates the challenges of complying with GDPR is information governance. Many corporations increasingly understand the concept of information governance, but in practice struggle with the cross-stakeholder nature of the problem and how to deal with fragmented information and its accountability.

"Approaching complex data problems in a pragmatic nature is key. We often advise clients to risk prioritise their remediation efforts and help accelerate the process with our expertise and technology," explains Ms Cheng.

Yet FTI Consulting sees this new legislation as a significant opportunity to take a radical approach and rethink how businesses manage data throughout its life cycle.

"GDPR has the potential to spark off innovation, since it's a real accelerator. Yes, it's forcing the issue and there are costs, but this legislation will help companies manage



GDPR Awareness Coalition



€20m

or 4 per cent of annual turnover in potential fines for non-compliance



72hr

cross-industry breach reporting to regulators introduced



25th

May 2018 – when GDPR will be immediately applicable

FTI Consulting

information more effectively and help clean up legacy or orphan data. There has also been a lot of technological innovation that has long been used in the fields of information governance and e-discovery. This can help address aspects of the regulation," says Ms Cheng.

"It is a major catalyst for change. The GDPR makes you ask questions such as what kind of data do you have, why do you have it and where does it flow? It will also provide the foundation for other services, including revenue generation and better customer service, as well as dealing with security breaches and preparing for cyber attacks."

This legislation specifically states that organisations need automatically to report the loss of any personal data within 72 hours. They will also be obliged to respond to requests to erase data when a data subject exercises their "right to be forgotten". Consumers can also withdraw their consent to organisations storing or using personal data. Companies and organisations that process signifi-

“You need to build a remediation roadmap for GDPR compliance with an action plan that is realistic for your specific industry

cant amounts of sensitive data will also have to appoint a data protection officer.

Another related aspect to consider is the e-Privacy Directive. This overlays the GDPR with a tighter focus on communications and internet services from which many of the EU cookie laws are derived.

"Changes to the e-Privacy Directive could take reform to the next level. These include changes to rules regarding direct digital marketing, the way location data is processed and the use of cookies. You need to understand how far you've got to travel to get your data house in order now. As the requirements are constantly evolving, it's important to build flexibility into your approach to help future-proof your compliance efforts," says Mr Prior.

"It is crucial that privacy and security requirements are addressed holistically. You need to build a remediation roadmap for GDPR compliance with an action plan that is realistic for your specific industry and your corporate appetite for change," Ms Cheng concludes. "Stay calm, get the facts about your situation and get started."

Find out more about how FTI Consulting can help your organisation understand and prepare for GDPR at www.ftitechnology.com/GDPR

CYBER SECURITY

Yahoo! is nothing to cheer about

What lessons can the chief information officer of tomorrow learn from the Yahoo! mega-breaches of yesteryear?



DAVEY WINDER

Yahoo! was once best known for being the search engine that lost out to Google in the nineties, but went on to become an internet giant acquiring blogging platform Tumblr in 2013 for \$1 billion in cash. Today it's better known for falling victim to the biggest cyber-security breach in history, also occurring in 2013 and involving a billion user accounts.

In addition, it fell victim to attackers in 2014 with a breach that impacted more than 500 million user accounts, the second largest in internet history. It hardly seems fair to mention the most recent disclosure from Yahoo! that revealed hackers accessed a further 32 million accounts using a forged cookie attack, stretching back two years.

This followed a statement in December 2016 confirming data associated with more than one billion accounts, dating back to August 2013, had been stolen. To compound how bad things have been for the company, just three months earlier it had disclosed an attack involving 500 million compromised accounts from 2014.

That Yahoo! is facing several lawsuits in the United States and abroad, as well as investigation by members of the US Congress, could explain why requests for comments go unanswered by its press office.

In fairness if, as Yahoo! chief information security officer (CISO) Bob Lord claims, state-sponsored actors were behind both the 32 and 500-million account breaches, it's hard to be too critical. Four people have now been indicted by a US grand jury over the latter attack, two of them officers in the Russian Federal Security Service (FSB) so it looks like Mr Lord was right. And if a state-sponsored attacker wants your data, they are likely to get your data.

But that doesn't mean you should make it easy for them. Among the account data stolen were hashed passwords, yet Yahoo! could have made things harder for the attackers by not using an outdated algorithm called MD5. Hashing is a one-way function, a mathematical operation that is easy to perform but hard to reverse, used to enable verification of passwords without having to store the password itself.

While most stolen passwords used the well-respected bcrypt algorithm, many used the easy-to-crack MD5 algorithm, despite the weakness of this being common security industry knowledge for at least a decade. It was a mistake for Yahoo! not to replace this fully long before the attacks took place, as was being aware of the 2014 attack at the time, but failing to comprehend the seriousness or adequately investigate it.

Although Yahoo! has said that it has "revised" procedures for responding to cyber-security incidents, it is not clear currently what else has been done to beef up the security posture. We know it forced password resets for some, but not all, users. We know it required new security question responses for all one billion accounts caught up in the 2013 breach. We know all the cookies involved in the 32-million account compromise were revoked to prevent that access route. Beyond that we know very little.

So what does the cyber-security industry make of it all? Simon Edwards, European cyber-security architect at Trend Micro, says: "The first lesson to learn is that compa-

nies must invest more in technology and staff training, which allows them to find the breach when it happens, ideally stop it before it causes damage and not months later."

Nigel Hawthorn, chief European spokesman at Skyhigh Networks, reminds us that data loss has a very long tail. "The company's value has dropped by around \$350 million," he says, "and that's ignoring the regulatory fines, and the fact that the CEO will step down upon completion of the Verizon takeover."

“I'm hoping Yahoo! is the catalyst that will exact some meaningful change

But what should the chief information officer (CIO) of tomorrow take away from the mistakes of yesterday as shown so clearly in the Yahoo! breaches? Chris Pogue, cyber-security instructor to the US Secret Service Electronic Crimes Task Force

as well as the CISO at Nuix, says: "Listen to your security teams. They were hired for a reason. In the case of Yahoo!, it appears senior executives did not properly comprehend or investigate what the information security team knew and they failed to act sufficiently upon it."

To stand the best chance of protecting data, CIOs must harness and grow what they know by adopting a consistent framework for sharing and using intelligence. "I'm hoping Yahoo! is the catalyst that will exact some meaningful change," Mr Pogue says.

The CIO is a critical cog in the security machinery, and must pull in all relevant resources to prepare for and oversee breach response. Oliver Pinson-Roxburgh, Europe, Middle East and Africa director at Alert Logic, says the worse media coverage he has seen is when the CIO isn't close enough to the response teams so has no clarity regarding a remediation plan for the incident, the impact and the effect on customers. "Lose confidence early," Mr Pinson-Roxburgh warns, "and you will find it really hard to recover." It's a lesson that Yahoo! is learning the hard way. ●

LARGEST DATA BREACHES IN HISTORY

BY MILLIONS OF COMPROMISED RECORDS, JANUARY 2017

COMPANY	HEARTLAND	LINKEDIN	YAHOO!	ADOBE	YAHOO!	EBAY	US VOTER DATABASE	MYSPACE	FRIEND FINDER NETWORK	VK
YEAR	2009	2012 (REVEALED 2016)	2013 (REVEALED 2016)	2013	2014 (REVEALED 2016)	2014	2015	2016*	2016	2016
RECORDS	130	117	1,000	142	500	145	191	427	412	100

*Accounts with multiple passwords were included more than once

DataBreaches.net/idTheftCentre/Information is Beautiful/Press reports

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