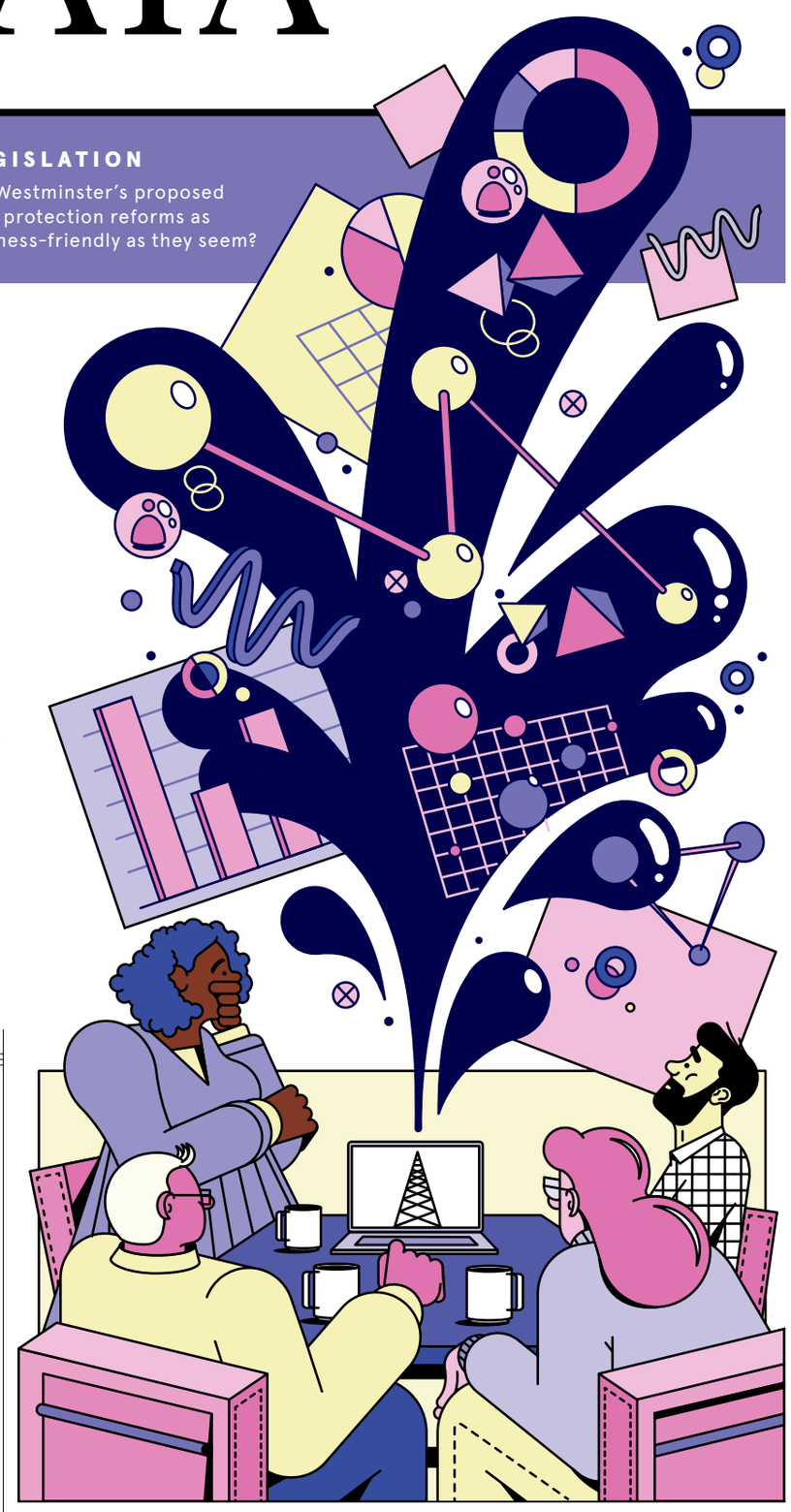
FUTURE OF DATA



DATA-LED TRANSFORMATION

Drilling downer: why C suites can't extract enough actionable data

By virtue of their digital transformations, many firms have struck a gusher of data. But how do they refine all this new material so that it can fuel enterprise-wide decision-making?

Nick Easen

Data has often been likened to oil, but this well-used analogy does have its limitations, given that data is a resource that will never run dry. Indeed, many organisations are drowning in the stuff, having been forced by the Covid crisis to start or accelerate their digital transformations. The volume of crude data pouring into their systems from various sources, particularly consumers, is increasing exponentially.

What they are lacking is the refined material: actionable data – the rocket fuel of commerce.

This is still difficult to come by. Many business leaders who authorised the digitalisation of their firms – ploughing vast sums into new IT infrastructure, breaking down silos and creating data lakes – are eager to see the fruits of their investment. The digital transformation of business has done only so much for them. Now they want to see a data-led transformation.

Achieving data-powered decision-making across all parts of a business is a lofty goal, but it's necessary for two reasons. First, many supply chains and markets are heading in this direction. Second, the number of data-related critical business risks is growing. Yet actionable data is hard to find in so many firms that have seemingly achieved digital transformations. Why is that?

"There's so much data in an organisation that it can be hard to know where to start," says Darren Mitchell, former global COO at law firm Hogan Lovells. "Many businesses favour the approach of putting a robust data architecture and governance system in place first. In my experience, such initiatives lose, as they can all too easily get bogged down in processes and policy-making."

It's likely that companies in many industries, in their rush to transform their operations, didn't think deeply enough about how they would use all the extra material that would be coming their way. They employed IT professionals who obsessed about how an array of costly new systems should be implemented without first defining what real-world business problems these all-singing, all-dancing tech stacks were meant to address.

> **Data has meaning only in a specific business context. You cannot outsource its interpretation to technical people alone**

"Data needs to be treated like any other critical asset: it must be discussed at the top of the company, both at C level and in the boardroom," says Theos Evgeniou, professor of decision sciences and technology management at Insead. "This is about leaders understanding the 'art of the possible' with data – and about having data leaders at C level. It all starts from the business problems that need to be solved. You work backwards from there. Identify your top business goals and then ask what data you require to best achieve them."

Mitchell stresses that data needs to be accessible, comprehensible and usable by non-technical strategists in the business if it's to have value. This is not always the case, of course.

"The data is often sitting there and waiting to be used, but business leaders simply aren't asking the right questions that help us to structure it in such a way that we can deliver answers," he says. "Senior executives should really be engaging to define which measures, metrics and data points would really help them to make actionable decisions and then work from there."

The case for such an approach is strong. More than half (52%) of the 1,700 European business decision-makers surveyed by Dun & Bradstreet in December 2021 said they doubted that their firms could survive without having relevant, up-to-date and compliant business data to hand, for instance. Actionable data is not merely nice to have; it's essential.

"It is vital that every CEO, CFO and COO is on board when it comes to embracing a data-driven approach. More than a quarter of the respondents we polled were looking to improve their data literacy," says Dun & Bradstreet's chief data scientist and senior vice-president, Anthony Scriffignano. "Data forms the bedrock of business processes. There is no doubt that we are living in a data-led economy. So, if businesses want to thrive, it is imperative that their leaders focus on data and the critical insights that can be derived from it."

But business leaders can't expect their firms to be transformed by actionable data overnight, of course. The exponential growth in data, the increased complexity of operations and the continual digital transformation of businesses all mean that there are many moving parts. Choosing the right data is a challenge in itself. This is why starting with a use case or a real commercial problem that needs solving with data can be the most fruitful approach.

"Remember that data has meaning only in a specific business context," Evgeniou stresses. "You canot outsource its interpretation to technical people alone. Business leaders need to ensure that they are closely involved in using the data and guiding people across their organisation to understand it, interpret it and make the best use of it."

Case studies that most impress board members tend to be those that are easy to understand and show what cost savings can be achieved when data insights are used. If the project is repeatable and scalable across the organisation, and its return on investment is high and rapid, so much the better. Spreading the word about such data-led projects inside the organisation will then help to build momentum.

> **Any data-led transformation project, no matter what size it is, doesn't exist in a vacuum**

"Any data-led transformation project, no matter what size it is, doesn't exist in a vacuum," notes Ravi Mayuram, chief technology officer and senior vice-president of engineering at Couchbase. "Even if, at first glance, it affects only one part of the business, its impact will ripple beyond this and require every member of the C suite to pay attention. For instance, Tesco implemented a data-based project in 2020 to optimise its delivery scheme. This enabled a faster service to customers and created priority slots for the most vulnerable. It gave them significant value."

Implementing data-driven projects will never be straightforward. Companies have to create 'data ecosystems' that make sense of information in context. No single source of data will drive action. Information silos and territorial disputes concerning which department owns what material can be a limiting factor. Without all of its functions acting in unison with interoperable data, an organisation risks missing a crucial part of the data puzzle.

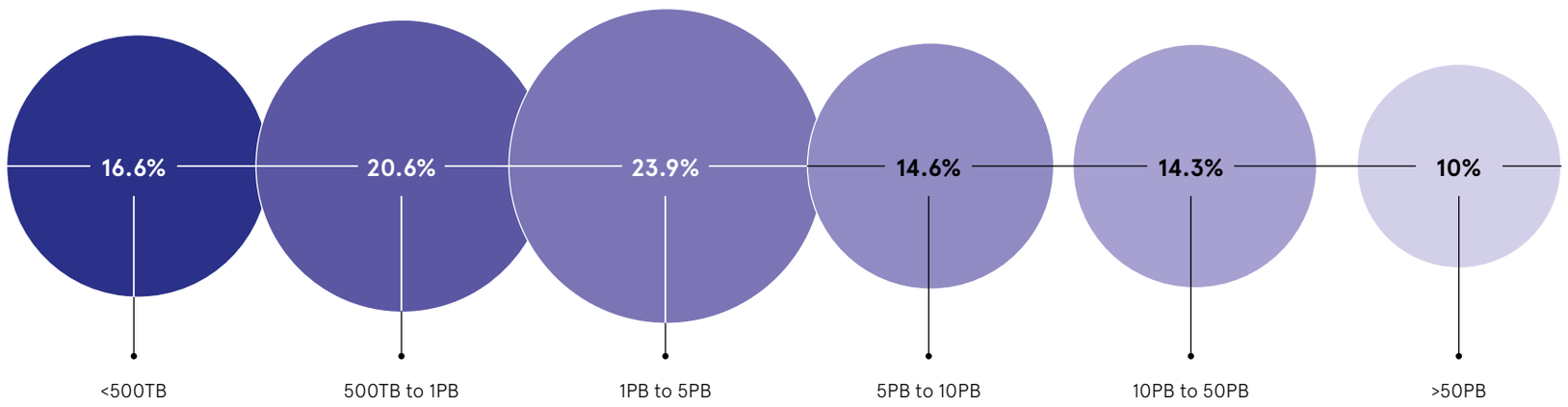
Any data-led transformation therefore calls for a scientific approach. Data fluency shouldn't be the preserve of analytics teams; it needs to exist across the whole organisation and be especially prevalent at C level. As with a digital transformation, it isn't just the domain of the CIO or the IT function. It should be embedded in everyone's remit, from the most junior member of staff all the way up to the chairman.

"You need empirical rigour around your data," Scriffignano says. "You must also be able to replicate methods. This enhances the analysis process and addresses potential biases. The strongest leaders in this field have noted the importance of ➔

WHAT TO DO WITH ALL THE DATA?

Komprise, 2021

Amount of data managed by organisations in the US and the UK (1PB = 1,000TB)



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Contributors

Tim Cooper
An award-winning financial journalist who has written for publications including *The Spectator* and *The Weekly Telegraph*.

MaryLou Costa
A business writer covering topics including sustainability, innovation, technology and the future of work.

Nick Easen
An award-winning writer and broadcaster, covering science, technology, economics and business.

Christine Horton
A long-term contributor to specialist IT publications, including *Microscope* and *Channel Pro*.

Ed Jefferson
A data journalist and digital creative who has written for the *The Guardian*, citymonitor.ai and the *New Statesman*.

Nicola Laver
A dual-qualified journalist and solicitor who has written about the law and business for more than 20 years.

Tamlin Magee
A freelance journalist who specialises in technology and culture.

Charles Orton-Jones
An award-winning business journalist and former editor of *EuroBusiness*, who specialises in covering fintech and high-growth startups,

Chris Stokel-Walker
A writer specialising in technology and culture, with bylines in *The New York Times*, *The Guardian* and *Wired*.

Mark Taylor
A freelance business journalist and editor who specialises in covering compliance in highly regulated sectors.

Sally Whittle
An experienced business and technology writer for national newspapers and business-to-business magazines in the UK and the US.

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Sean Wyatt-Livesley

Illustration
Sara Gelfgren

Design director
Tim Whitlock

/raconteur.net
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@raconteur_london

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specific epistemologies, belief systems and best practices. It means that they have a holistic view of the data ecosystem, including what they believe and why they believe it. Such rigour allows them to challenge beliefs as the commercial environment changes. If employees are to use data, this grounding needs to be in place from the C suite, so that staff have clear guidance on how data can be used."

Although compartmentalisation is not often the best strategy, some organisations have gone down the easier route of centralising many of these decisions under one central authority, the chief data officer. If it can get this right, the enterprise should then be able to obtain the maximum return on its data investment.

Other approaches are just as feasible. Adopting a 'data fabric architecture' is also one step closer to achieving a data-led transformation, for instance. This is a powerful way to standardise data management practices. It is also designed specifically to help organisations solve complex data problems, although boards may baulk at the further IT costs that the approach typically entails.

"A data fabric architecture will seamlessly connect every source of data and make these accessible to everyone in the organisation," explains Ebru Binboga, director of data AI and automation at IBM UK and Ireland. "It is the foundational layer for an agile digital business that can seize on market opportunities by harnessing insights from data."

A new culture governing the use of data will certainly be needed. Very few organisations can yet say that they are truly data-driven businesses. But the speed at which market conditions are changing has never been greater, as is an organisation's need for agility and operational resilience.

"The huge driver of change is customers' expectations," notes Mark Woods, chief technical adviser for US software company Splunk in EMEA. "People want businesses to react instantly, with their performance in this respect measured in milliseconds. The cloud-first world and the digitalisation of businesses means that individual employees are no longer able to come to the boardroom and brief their leaders about everything that's going on. This simply isn't practical anymore. What businesses need are data-led analytics and data-led decision-making maturity."

Whether this is coming soon depends on the investments that businesses make beyond their digital transformation programmes. New ways of thinking about how data is valued also matter. If it is treated like a critical asset, this could shift the dial. 'Data mesh', 'data as a service' or 'data as a product' are ways that organisations are starting to reframe the issue. Sugar-coating data with AI can also help.

Most companies have come to think of data as an asset, but few have yet come to view it as an economic asset that could appreciate in value if they could do more with it. There is little incentive, therefore, for them to package and refine it as if it were a product or a service.

Yet forward-looking organisations are starting to apply 'product thinking' to data. If an enterprise were to start treating data with the same care and attention as the process of selling a product to a customer, it could be a game-changing move. This approach, which would entail investing in product development and quality assurance, puts much more emphasis on the value of data and the problems it solves. For that reason alone, it's a space very much worth watching. ●

> **Data needs to be treated like any other critical asset: it must be discussed at the top of the company**

181 zettabytes

Projected amount of data created, captured, copied and consumed by 2025 (1 zettabyte = 1 billion TB)

IDC, 2021

48%

of data and analytics leaders are "heavily involved" in digital transformation initiatives

Gartner, 2020

$68bn

Projected annual revenue of the big-data analytics market by 2025

Frost & Sullivan, 2020

DATA LAKEHOUSES

Des reservoir – big data locates its dream home

Welcome to the data lakehouse. Combining the flexibility of a data lake and the management features of a data warehouse, it offers all mod cons. Will every business come to need one?

Chris Stokel-Walker

The inexorable rise of data has changed our world and the way we do business. Data-driven insights, enabled by the sheer volume of information generated by everyday users, are revolutionising corporate decision-making. But working out how best to handle all this material remains a challenge for senior executives.

The latest term to have become a buzzword for business leaders is the so-called data lakehouse. But what does it mean, exactly, and how can a company determine whether it needs one?

The emergence of the data lakehouse is the result of numerous developments. As organisations used more and more data in their everyday operations, they started placing it into data warehouses – centralised management systems that store the material in such a way that makes it easy to interrogate. But using thee soon became too restrictive for some companies, which instead pooled their data into lakes: vast, unorganised gatherings of material in its native format, waiting to be analysed.

"These approaches have been used for years, driven by organisations' increasing reliance on data insights to uncover new opportunities, detect issues and increase their profitability," explains Jitesh Ghai, chief product officer at US software company Informatica.

Yet both approaches have encountered a problem of scalability. The increasing volume of data sources that fed into the smooth running of a business began to test the limits of firms' technical capabilities. The weakness of data lakes became so significant that they were rechristened data swamps by some in the industry – a testament to the muddy challenge of dredging up the insights lurking within them

The data lakehouse is the logical solution to this problem. Ghai views it as an attempt to gain control of free data, enabling users to dump unstructured material into their systems. It's an advancement on warehouses, which require the data put into them to be carefully processed and structured beforehand.

"The lakehouse model merges elements of data warehouses and lakes in one platform," he says. "It promises the best of both worlds by blending technologies for analytics and decision-making with those for data science and exploration."

Leila Seith Hassan, head of data science and analytics at Digitas UK, observes that a lakehouse combines the high-speed performance of a warehouse on a scale that's enabled by lake technology. "If you think about how the world has evolved in the past 20 years and the explosion in the volume of data that has become available, data warehouses have had some limitations about what you could do with them at speed," she says.

> **The lakehouse model promises the best of both worlds by blending technologies for analytics and decision-making with those for data science and exploration**

A lakehouse enables unstructured data to be analysed more quickly – potentially creating linkages that would previously not have been seen. It not only provides a performance improvement; it also avoids some of the data management pitfalls that have blighted businesses' ways of working in the past.

One of the key problems facing companies in the pre-lakehouse world was that their data was often contained in several differently structured systems. In order to analyse this material, they would first need to transfer it into a single location and restructure it – processes that could make the underlying data unreliable.

"In a lakehouse, processing becomes much faster, as the system helps to organise big data more effectively," Ghai says. "It also unifies data, bringing it all under one system, which eliminates redundancies and allows for better data management."

A lakehouse contains some structure, but not so much that makes it impossible for users to glean new insights from organic happenstance, Seith Hassan adds. "It gives analysts and non-technical data practitioners the ability to access data and do things such as using it for decision-making without having to extract it and put it somewhere else first."

Has a lakehouse become a business essential and, if so, is there an ideal time to install such a system? Companies need to conduct a cost-benefit analysis of what implementing a data lakehouse could do for their operations and decide carefully whether it's worth their while.

"The good thing is that the way to answer such questions isn't new: work out what your requirements and use cases are for it," says Seith Hassan, who can foresee a world in which most organisations would benefit from using a lakehouse. But she acknowledges that "the technology will cost quite a lot of money and resources to get it up and running. If it won't do something for you now and, potentially, in the future, you shouldn't move forward with it."

James Corcoran is senior vice-president of engineering at streaming analytics platform KX. His company opted for a lakehouse after recognising that shoehorning different data from a multitude of sources into a single model wasn't working.

He suggests that businesses consider investing in a lakehouse as soon as they start experiencing intractable problems with organisational silos that prevent data from being joined together logically.

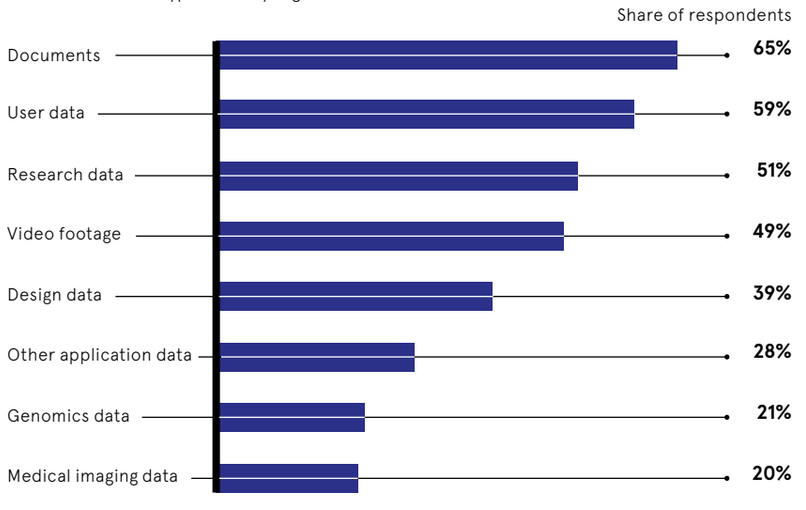
But Corcoran recommends holding back until the ultimate goal of such an investment is clear. "Maybe you're developing or launching a new product, or you're struggling to get the insights you need to be competitive with an existing one," he says. "Tying it to some sort of business outcome is really, really key."

The processes of planning, developing and deploying a data lakehouse are neither straightforward nor cheap, then, but the potential rewards are great. Lakehouses can unlock huge promise for the future, according to Corcoran.

They will enable any organisation to "update the heart of its strategy, its data and its decision-making process", he predicts. "It will be able to move a lot faster than its competitors." ●

CHAOS COMES IN DIFFERENT FORMS

Unstructured data types held by organisations in the US and the UK



Komprise, 2021

Unblocking the supply chain to make data useful

The ability to put data to work for your business is the difference between success and failure, but primitive ways of unlocking data value are holding organisations back

Data's common description as the 'new oil' was initially meant to accentuate its value as a new commodity, but it now risks underestimating its importance in every aspect of how we work and live. Unlike oil, data is constantly replenished and amid the slow but inevitable decline of the petroleum economy, every successful organisation is now a data company. It's impossible to be a modern enterprise without data-driven operations and culture.

Data helps streamline business processes, making organisations work better and helping companies understand and therefore serve customers better. And with artificial intelligence and machine learning, they can make better decisions more efficiently. But data doesn't just bring value in a core business sense. From developing drugs to irrigating farmland or accelerating innovation in health, science and energy, it is advancing society.

Many of these advances can be attributed to the cloud, which is not only where new innovation is happening but also why it's possible. The cloud provides, for the first time in the history of business and technology, a limitlessly powerful, easy to stand up and scale, and cost effective way of capturing, storing, processing and getting value from data.

A clog in the system

There is a problem, however. Every analytics, AI or machine learning use case relies on a supply chain; a pipeline of useful analytics-ready data. And the pipeline is very clogged up.

"We have more data than ever and it's growing logarithmically, but it doesn't start off in a state that's useful for analytics, AI and machine learning," says Matthew Scullion, CEO and founder of Matillion, a cloud-native data integration company.

"Data is like iron ore and steel. Just like you need steel to make a bridge, factory or car, to gain analytical insight you need analytics-ready data. Data starts off like ore and needs refining into steel by joining it together, cleaning it up, making sure it's the right data and then embellishing it with metrics.

"That refinement process needs to happen before we can make every aspect of how we work, live and play better. But today the world's ability to make data useful is constrained because the refinement process is done in a primitive way: by people who write code. Writing code is the slowest and hardest to maintain way of doing it, but most crucially it relies on a small number of highly skilled people, which the world doesn't have enough of."

A perfect storm

The problem is felt by every company trying to innovate with data, but it is most acute in large organisations, which have the biggest piles of data. A study of Matillion's 200 largest customers – billion-dollar revenue and above companies – found they had, on average, more than 1,000 different computer systems from which they were extracting data to put to work in analytics, AI and machine learning. Some systems date back to the 70s and 80s, while some are contemporary SaaS and cloud-based systems. Some are commercial off-the-shelf systems bought from well-known vendors, others are built bespoke.

Enterprises have the most to win or lose by getting this right. If a large company improves a business process, understands the customer better and enhances a product – or fails to do any of these things – there are tens of millions of pounds at stake. Yet large enterprises also suffer from the limited pool of highly skilled engineers in the most pronounced way. It is not uncommon for more than half of the employees in a tech startup to have the coding skills to make data useful. But in a large bank or manufacturing firm, it's more like 0.5% of the workforce.

"Large organisations have the biggest pile of heterogeneous data and the most to win or lose, but the least capability per head of capita in their workforce," says Scullion. "We felt this problem personally because we used to build finished analytics solutions for these companies, and the biggest part of the job in any analytics, AI or machine learning use case - probably 70% of the work - is in making the data useful. So we developed a solution to solve it."

The hard work of making data useful

Enterprise data teams spend the majority of their time preparing data and maintaining the data stack... and it's burning them out

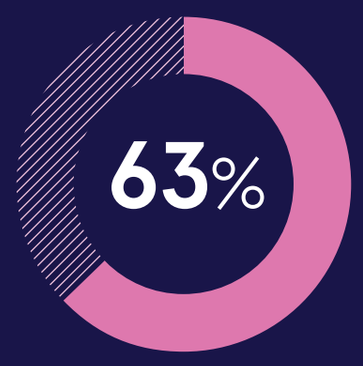
DATA ENGINEERS ARE SPENDING TOO MUCH TIME ON DATA MAINTENANCE

Survey of 450 enterprise data professionals

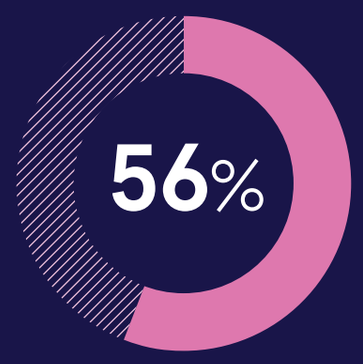
57% the amount of time data engineers spend on data migration and maintenance

DATA ENGINEERS SAY THE FOLLOWING TASKS REQUIRE THE HIGHEST LEVEL OF EFFORT

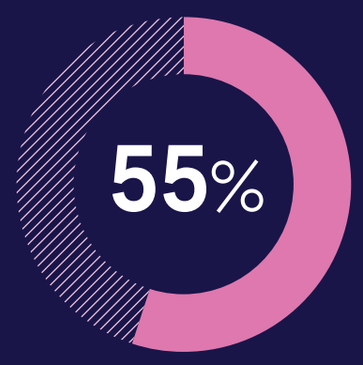
% of data engineers



63% Bringing in data from disparate sources



56% Preparing data for analysis



55% Exporting/delivering data back into a software-as-a-service system

DATA ENGINEERS INCREASINGLY SAY THEY ARE FEELING BURNT OUT

67% of data engineers are considering leaving their job in the next two years

29% say they are 'seriously' considering leaving their job in the next two years

Vanson Bourne, Matillion, 2021

> **We have more data than ever and it's growing logarithmically, but it doesn't start off in a state that's useful for analytics, AI and machine learning**

Setting the pipeline free

By refining data in a way that doesn't require skilled engineers to write code, Matillion enables organisations to make data useful more quickly and in greater quantities. It also means the task of making data useful is no longer the purview of a small number of costly people doing it in a primitive way. It can be done by far more people on the data engineering team and in other data disciplines like data science, which allows companies to unblock the pipeline of analytics-ready data and accelerate analytics, AI and machine learning projects.

"The end of the arc is getting to a point where all aspects of making data useful – how you load, transform, synchronise and then orchestrate that process at enterprise scale – are delivered for you in a single place - a data operating system - that doesn't require high-end coding skills to use and works across clouds and cloud data platforms," Scullion adds.

"A company's ability to make data useful is directly correlated to its core outcomes. Being able to innovate with data at an accelerated rate is a competitive imperative. You either get good at this stuff, and real quick, or you're not going to survive much longer. Matillion is building a platform to enable that, but it's up to businesses to use that technology to become a data business and put data to work faster than their competition."

Learn more about Matillion at matillion.com/demo

MATILLION

Q&A

It's time to level the data playing field

Maximising value from big data relies on scalable tools that are built to be used by the masses, not hobbyist programmers, says **Ciaran Dynes**, chief product officer at Matillion

Q From a technical sense, what has enabled the big data movement to infiltrate companies so quickly?

A When we think about the technology advancements that coalesce in the big data movement, the biggest one is cloud. It's the most advanced way we've come up with to-date to provide really strong and innovative technology that the vast majority of companies couldn't have afforded to purchase, build or administer themselves. Without open-source software, there would be no Google, as there would not have been a licensing contract struck with Windows to fund something like Google. It needed Linux and it needed open source. Cloud is not dissimilar. It has provided a different and critically important way of approaching data by enabling a small number of very large and sophisticated companies to provide a commodity that you can sign up to with a credit card and access amazing things.

Q Technology is only part of the puzzle in unlocking data value. How have historically rigid corporation structures become more open to change?

A Traditionally, innovation has been very slow in some large organisations because of a culture of blocking things from being done differently. But when people saw these multi-trillion-dollar enterprises like Google and Facebook emerging, they wanted to jump on the big data bandwagon. Sectors such as retail had little choice because of the threat posed by Amazon, and it cascaded across other industries too. Embracing big data in a meaningful way required cultural change and that came from a board and executive level mandate to do what's necessary to bring data together. Without that mandate we'd still have these massive silos and fictitious excuses to avoid doing what was necessary to make data useful. Big data forced everybody to change their behaviour and how they managed data.

Q These are fundamental changes, but what's still missing in many companies are the skills to do better analytics. How do we overcome this challenge?

A If you reflect back on software operating systems in the early 80s, you'll see the original Silicon Valley CEOs were basically hobbyists. They ordered chips online and built themselves computers. That's how things got started, but it was never going to be scalable. Then the likes of IBM and Apple came along to build off-the-shelf PCs and democratise access to computing. We now need to see the same happen in how we put together data. It has been a hobbyist's journey led by people who understand certain programming languages, and we've been crying out for technology to advance in a way that democratises the ability of all organisations to make data useful. That's what we're building at Matillion: a data operating system that levels the playing field. We're developing tools for use not only by skilled and hobbyist programmers but by the great masses of people out there. We exploit cloud, AI and all these powerful technologies, but we wrap them in a beautiful, simple user interface that lets every organisation become a successful data company.

Q How is Matillion's platform realising the data operating system?

A The Matillion platform solves a major problem: it's really hard to connect all your data; stitching it all together is immensely complicated. We have a unique capability that lets either ourselves, partners or end users – in a no code, drag-and-drop interface – connect to anything. And then the fun begins because you can begin to refine the data, get insights and enrich those insights over time. All those capabilities get you to a point where you have something, visualised simply in an analytics dashboard, that you can truly make use of. Some businesses might be able to build and deploy that once, but how do you maintain it and make sure if it breaks at 3am it can be fixed? The intelligence of a data operating system is such that if any pipelines fail, it can recover, alert or offer an alternative. That's what takes it from just being a standard solution to something intelligent and self-correcting.

> **Embracing big data in a meaningful way required cultural change and that came from a board and executive level mandate to do what's necessary to bring data together**

Q What is the future of data in the enterprise?

A We know the value you provide to your customer is everything. In the enterprise of the future, acquiring a customer and retaining a customer are vastly different things. The intersection of data and innovation is critical to fostering better customer relationships. But there's a step further. The really great companies today take their data and share it with their partners because they recognise they're not just standalone businesses. They've got to combine with an ecosystem of partners to provide a modern digital experience. Amazon does this really effectively, sharing insights and data about customers and buying behaviour, and that's why they have an unparalleled service and their partners come back for more. So if you're going to provide amazing first-class customer experiences, it's the intersection of data, innovation and partners. That's what the modern enterprise is about.

BIG DATA'S BIG TRUST ISSUES

Consumers have grown both weary and wary of sharing their personal information with businesses. They're tired of getting bombarded with spam, concerned that their data could be misappropriated and doubtful of the motives of firms that want to know every detail about them. But reform is always possible. Here are the main concerns of British consumers about data collection, some key statistics about the data industry – and even some insight into how confidence might be restored.

I

45% of UK organisations are collaborating with a third party to share first-party data — InfoSum, 2021

35% of internet users in the UK regularly delete their browser cookies to protect their privacy — Statista, 2021

51% of senior marketing professionals in the US say that third-party cookies make up most of the data their companies use — MarketingCharts, 2021

I	They sell personal data to third parties
	They share personal data with third parties without consent
II	Data hacking
	Data leaks / breaches
	Concerns about security
III	Concerns about misuse / not sure what they do with my data
IV	Spam
V	They are profit-driven / they use my data for their own interests
VI	Marketing / advertising concerns
VII	They're not trustworthy
–	Other
–	Don't know

II

34% of UK adults have been negatively affected by a breach of data privacy — Measure Protocol, 2021

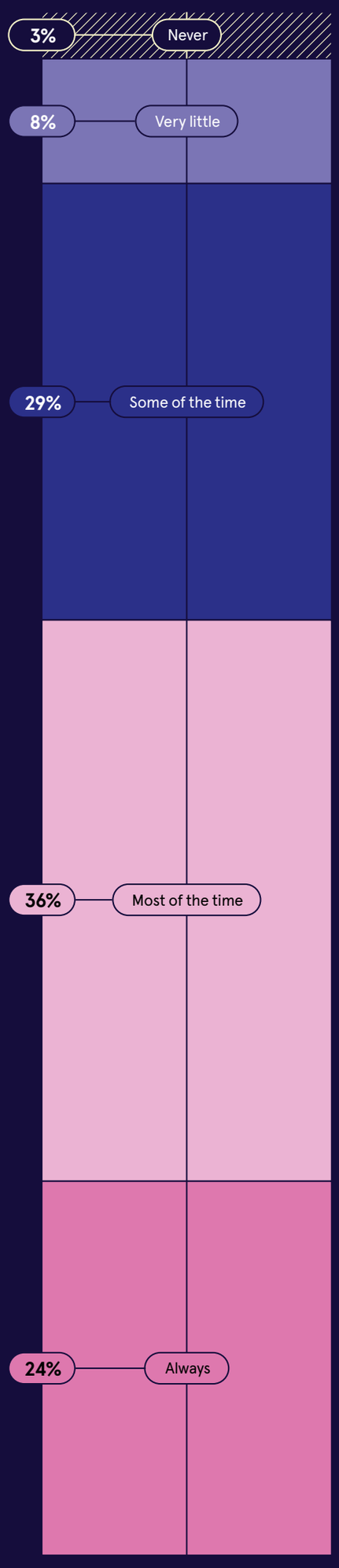
47% of UK firms underwent a cyber attack at least once a month throughout 2020 — Ipsos, 2021

32% of UK adults considered it likely that their online accounts would be hacked in 2021 — Ipsos, 2020

VI MARKETERS ARE HEAVILY RELIANT ON CUSTOMER DATA

Share of marketers using customer data in their decision-making worldwide

MarketingCharts, 2021



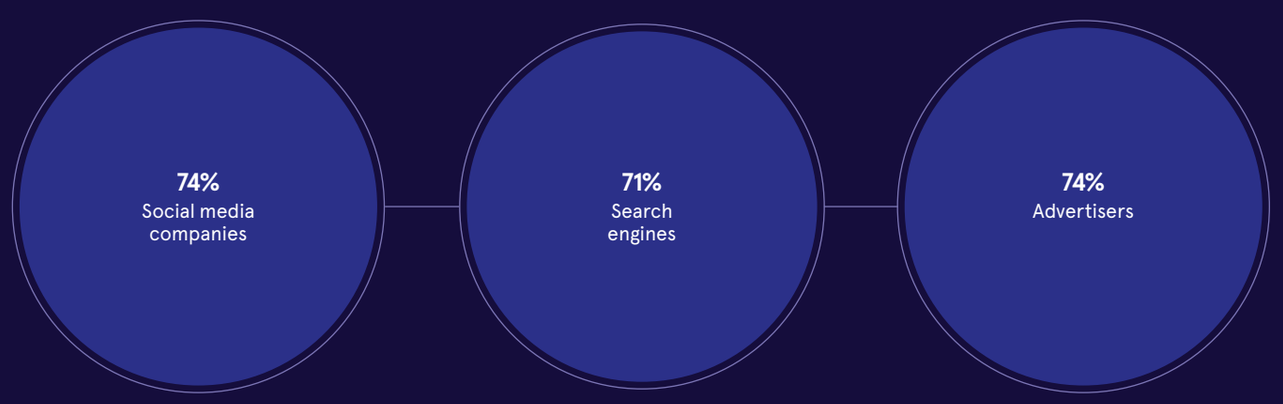
WHY UK CONSUMERS ARE MISTRUSTFUL

Share of respondents citing reasons for their lack of confidence in how companies handle their personal data

Harris Interactive, Information Commissioner's Office, 2021

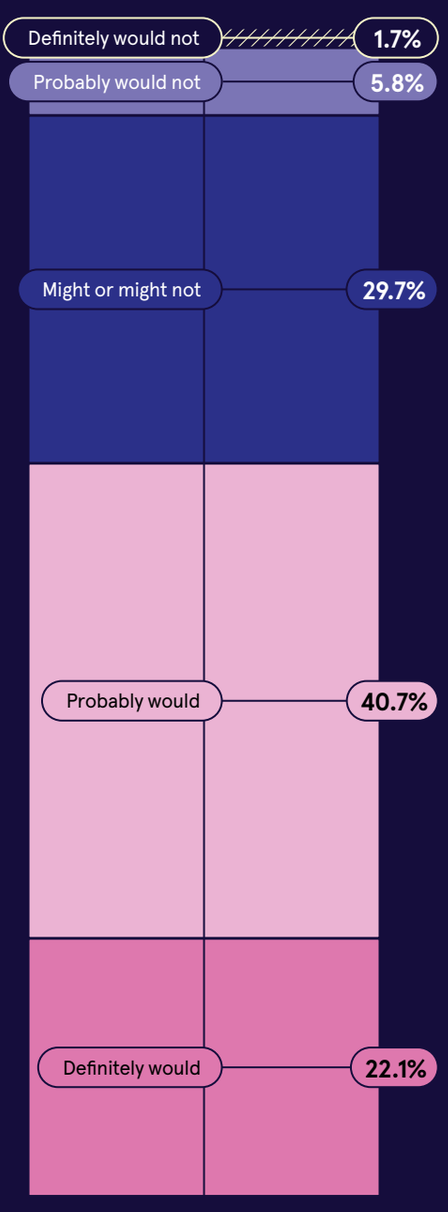
VII A MATTER OF TRUST

Share of UK respondents who distrust the following organisations for the purpose of data collection — Juniper Research, 2020



III WHAT IF COMPANIES WERE CLEARER ON THEIR DATA USE?

Would you be inclined to share more data with a firm if it were more explicit about how it would use the material? Measure Protocol, 2021



IV

122.3billion spam messages are emailed daily worldwide. Put another way...

85% of the world's daily email traffic is spam — DataProt, 2021

V

80% of Alphabet's revenue comes from Google ads. That amounted to...

$147bn in revenue from ads in 2020 — CNBC, 2021

Commercial feature

Hybrid working ushers a new approach to data security

With cybercriminals pouncing on vulnerabilities created by the shift to hybrid working, companies must build unobtrusive yet robust security into systems from the ground up

Following two years of the pandemic and organisations adapting to work from home mandates, hybrid working is here to stay. The living and work environment changes we've experienced over the last two years have induced a permanent shift in work-life balance. Over that period, enterprises have been forced to adapt to hybrid work patterns, and with 85% of desk workers currently working from home wanting a mix of both home and office working in the future, businesses are now seeking to meet this demand and embed a permanent hybrid model.

While hybrid working is undoubtedly bringing great value to organisations and their employees, cybercriminals are exploiting this shift in work patterns and environments to target endpoints more aggressively. Since the start of the pandemic, the volume of corporate data being accessed from home has risen substantially, including sensitive financial information. Spotting the various vulnerabilities in a dramatically widened attack surface, cybercriminals are now targeting home workers through dedicated malware campaigns that exploit social engineering.

As the lines between work and home have blurred, security risks have soared and everyday actions such as opening an attachment can have serious consequences. Without all of the pre-pandemic sources of visibility of devices, and how they are being used and by who, IT and security teams are working with a clouded vision. A study by analyst house KuppingerCole noted a mammoth 238% increase in global cyber attack volume during the pandemic, and ransomware remains the cybercriminal's tool of choice to monetise their access to networks.

"With a more dispersed workforce and a rise in the use of software-as-a-service (SaaS) applications, critical data is being hosted outside the enterprise firewall, causing cybercriminals to exploit a perimeter-less organisation," says Dave Prezzano, managing director, UK & Ireland at HP. "This has exposed the limitations of the current endpoint security approach, which is based on assumptions about trust inherited from the era of perimeter security. Hybrid working has eroded the network perimeter of firewalls, intrusion detection systems (IDS), web proxies and other security controls traditionally used to defend networks and the devices which sit within them.

"Hybrid work models can also slow the time it takes to deploy patches, causing devices to remain vulnerable for longer. And they can lead to poorer security visibility because there may be delays in logs being sent to a central security information and event management system. Such a delay can be the difference between responding after an attacker has compromised a single endpoint and after they have deployed ransomware across the entire network. Human operated ransomware attacks escalate from initial access to full network compromise in hours."

Circumventing behaviour

Employee behaviour can create further challenges in the hybrid working age. Many workers are using their work devices for non-work-related tasks like checking personal email, according to the HP Wolf Security Blurred Lines and Blindspots report. Yet because personal webmail services aren't protected by corporate email gateway scanners, they are inadvertently exposing work devices to emails containing malware that might otherwise be blocked. Email is the top malware delivery vector, with 77% of malware isolated by HP Sure Click in Q4 2021 delivered in this way.

Meanwhile, HP Wolf Security's Rebellions & Rejections report found 31% of office workers aged between 18 to 24 had tried to circumvent security measures, which is concerning for all organisations. Ultimately, if security policies and measures are too cumbersome and block people from doing what they need to do, employees will try to find ways around them that could put the business at serious risk. If left unchecked, this kind of friction and risk could escalate.

Employees are craving user-friendly security tools and eased restrictions, but cybersecurity teams need to find a way to reduce the burden of security and improve visibility into threats. Security should fit as much as possible into existing working patterns and flows, utilising seamless technologies that are secure by design and user intuitive. This involves seeking out new levels of endpoint protection rooted in zero trust principles that are as unobtrusive as possible to avoid end-user circumvention. Embedding non-intrusive security technology into the endpoint will go a long way to improving the user experience while also protecting the business.

"We need to make it as easy to work securely as it is to work insecurely, and we can do this by building security into systems from the ground up," says Prezzano. "More than ever, there's a need for resilient endpoints that are secure by design and protect themselves without relying on knowing what is good or bad. Over-burdened security teams and users can't be relied on to catch everything, so enterprises should focus on ground zero for most attacks, which is users and their endpoints. The endpoint is the intersection of flawed humans, unsecured technology and untrusted interactions that keeps cyber attackers coming back time and again."

Zero trust

Endpoint security strategies must be rooted in zero trust principles. Access to services should be controlled on a case-by-case basis, after verifying a set of controls that might include the user, the device and its security posture. This helps to contain failure, meaning a compromise of a less important service doesn't necessarily lead to a major breach. Zero trust principles should be embedded into the endpoint, including device firmware, the operating system and applications.

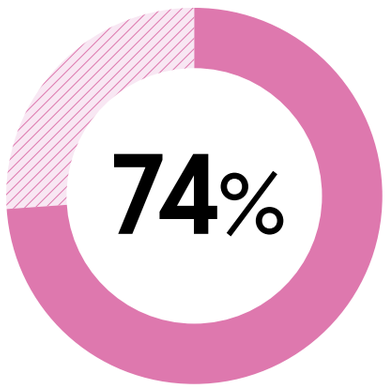
"Laptops, PCs and printers that have security built in rather than bolted on can provide a much more seamless and less restrictive end-user experience," Prezzano adds. "From here, organisations can layer security services on top, such as those that can contain and isolate critical threats before they have a chance to do any damage. Other tools can offer remote management for IT teams and the ability to self-monitor and self-heal without user interaction.

"HP Wolf Security can help organisations defend against the plethora of new attacks and risks facing them. By combining hardware-enforced software and security features with industry-leading endpoint security services, HP Wolf Security implements layered security and enables seamless integrations with the wider security stack. As such, customers benefit from robust, built-in protection from the silicon to the cloud, from the BIOS to the browser. Embracing a new architectural approach to security that mitigates risk and enables resilience, by applying the principles of zero trust, will allow companies to reduce the attack surface in the future of work."

For more information, visit hp.com/wolf

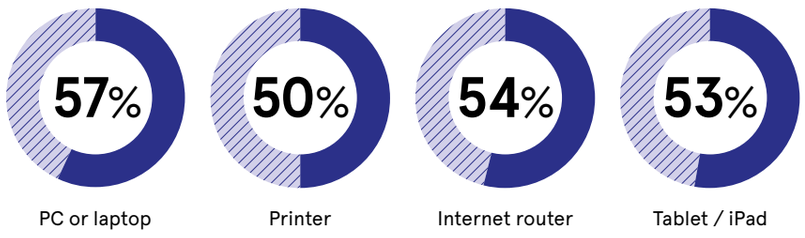
HP WOLF SECURITY

OUT OF SIGHT, OUT OF MIND



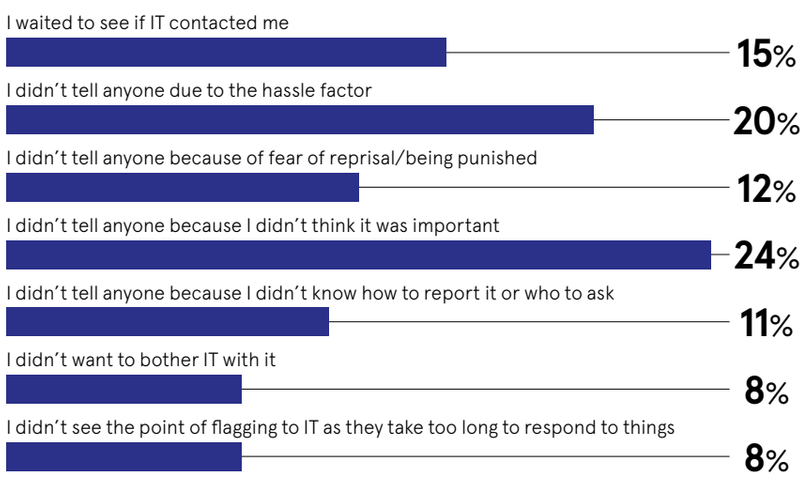
of IT teams have seen a rise in employees opening malicious links or attachments

Office workers whose new home working equipment was checked or installed by IT:



30% of employees have clicked on more malicious links since working from home

70% of remote workers who clicked on suspicious links didn't report it to IT, citing the following reasons:



HP Wolf Security *Out of Sight & Out of Mind*, 2021

> **We need to make it as easy to work securely as it is to work insecurely, and we can do this by building security into systems from the ground up**

Q&A

Less detection, more prevention

> **Data democratisation can bring enormous value to companies in the hybrid working age, but you can only enable it safely by ensuring the systems that stakeholders use to access data are secure**

Dr Ian Pratt, global head of security for personal systems at HP, says data security is too focused on detection and not enough on prevention and isolation. A better balance is needed

Q Despite large investments in data security, why are so many cyber attacks still succeeding?

A Enterprise security systems still focus far too much on detection and not enough on prevention and containment, leaving companies exposed. Many enterprises rely on detection controls like anti-virus software and endpoint detection and response (EDR), but these fail to detect more sophisticated threats, thus allowing attackers to gain a foothold inside victims' networks.

Instead, organisations should shift their approach by putting a virtual fence around risky activities so in the event of their compromise, malware can't spread or persist. Similarly, the highest-value activities can be isolated from others to provide additional layers of security. To secure the huge amount of data that is being accessed from home, including sensitive financial information, architecturally robust prevention and recovery are vital.

Q Why does measuring endpoint security by how quickly a security team can detect and respond to a threat no longer make sense?

A For a long time now security operation centres (SOCs) have used metrics like 'mean time to detect' and 'mean time to respond' to measure their performance. The theory is the quicker the detection and response, the lower the impact of the compromise or intrusion. Having made the initial compromise, however, attacks can move extremely quickly today, using automation to spread across systems in an instant. Segmenting systems and networks to contain the intrusion before it's spotted is the most effective way to limit impact.

This has become even more important as the hybrid working age has reduced visibility further, as well as control over endpoint devices.

Q How can organisations strike a better balance in their endpoint security strategy?

A Data democratisation can bring enormous value to companies in the hybrid working age, but you can only enable it safely by ensuring the systems that stakeholders use to access data are secure. That means equipping employees with systems that are secure by design and don't get in the way of workflows, enabling users to work confidently without fear of being tricked into clicking on something that compromises their system. Investing in technologies like micro-virtualisation can isolate threats delivered by the most common threat vectors – email, browser and downloads – to reduce the attack surface without impacting user experience.

When a task is closed, the micro-VM and any threat it contains is disposed of safely, so even if a user does click on something bad, the attacker has nowhere to go and nothing to steal. Remote workers can use their PCs normally, but the CPU virtualisation hardware isolates and contains attacks even the most sophisticated and novel threats, eliminating that threat vector and causing attackers to have to look elsewhere.

Q How is HP supporting organisations to bolster endpoint protection?

A Unlike traditional endpoint security solutions, HP Wolf Security doesn't rely just on detection to provide security. Instead, it protects systems by isolating risky user tasks, such as clicking on links, opening email attachments, and downloading files from the web. The information recorded by HP Wolf Security also provides insights into how users interact with threats, such as uncovering which email lures are convincing enough to trick users into opening malicious attachments. These insights empower security teams to craft policy changes to defeat other similar attacks.

With HP Wolf Security, the malware is run inside a micro-VM where all activity is recorded in a 'black box' flight recorder, thus capturing what the attacker is doing and what they hope to achieve, giving rich threat telemetry.

CLOUD COMPUTING

Migration nation

The Covid crisis has prompted a slew of businesses to entrust public cloud providers with their data. Any firm thinking of following suit would be well advised to tread very carefully

Christine Horton

Public cloud computing was poised on the edge of the mainstream for several years before the world was locked down in early 2020. Since then, companies' pandemic-driven digital transformation efforts have made these services widely popular.

Gartner has estimated that global end-user expenditure on public cloud services rose from $243bn (£180bn) in 2019 to $396bn in 2021. It notes that the Covid crisis has helped many chief information officers to overcome resistance in their organisations to removing mission-critical IT resources from their premises and entrusting a third-party provider to host and manage them.

Partly because of this shift, there has been a marked increase in the amount of data that's being collected and stored. Although using a public cloud offers several benefits, there are also some potential pitfalls to avoid. Particularly when moving their data to the cloud, organisations need to take these risks into account.

Before it even starts down this road, a company will need to work out whether a public cloud is going to be a suitable repository for all workloads – it's not a one-size-fits-all option. When assessing potential providers, a business must understand how data will be generated, used and, sometimes, transferred back to its own systems from the cloud. This is because the process of repatriating material can be expensive for clients. So-called data-egress fees are arguably some of the most unexpected (and therefore unbudgeted) costs of cloud usage. The existence of these well-hidden charges means that moving to the cloud won't necessarily be cheaper than keeping everything in house. Companies should therefore ensure that they fully understand the potential costs and complexities associated with putting their data back on the premises if they should choose to do so in the future.

Once a provider has been chosen and the migration is under way, "the biggest risk is not having an accurate picture of what data is held, where it is held and what access and security measures the data needs to have". So says Tony Lock, director of engagement and distinguished analyst at IT research firm Freeform Dynamics.

Given the rapid growth in the volume of material being generated and stored in the cloud, firms need the ability to efficiently discover and classify all their data. This means that they should seek to automate as many processes as possible, Lock advises. At the same time, they need to establish policies designed to ensure that this data is adequately protected with measures that conform to regulatory requirements.

When it comes to entrusting the storage of business-critical data to a third party, how should companies balance the convenience of public cloud computing with the need to maintain the integrity and security of highly sensitive material?

"This is a matter for each organisation to decide independently, based on its risk profile and the extent to which it wants to feel in control," observes Jaco Vermeulen, chief technology officer at IT consultancy BML Digital.

Vermeulen, who has overseen cloud migrations for companies including the Post Office and Park Holidays UK, advises businesses dealing with such questions to "define security policies and structures, and monitor and automate scalability rules. They should also select the appropriate public cloud provider, relevant components and service levels."

Nick Heudecker, senior director of market strategy and competitive intelligence at data specialist Cribl, stresses that organisations should not treat cloud migrations as a purely technical task to tackle.

"Moving applications or reliably deploying new ones in a public cloud environment will certainly present such challenges to firms – there are many technical hurdles to overcome," he acknowledges. "But, to gain the full advantage of on-demand, abundant scale and flexibility, a company will have to rethink how it works. The challenges it faces are therefore just as much social and organisational ones."

Heudecker adds that, while business leaders may well be champing at the bit to switch off their companies' on-site data centres in their eagerness to get into the cloud, the migration could potentially take years.

"For the things you can move, think about how you'll monitor and observe these systems as they move between environments," he recommends, noting that many of Cribl's clients use a technology known as an observability pipeline to aid their migrations.

Lock advises organisations to identify all their data, classify it and determine their options from there. "You may even find that some of your on-site data requires different security and access requirements from those actually in place, especially if these haven't been reviewed and/or updated in a long time," he says. "This is really all about data governance – an issue that can be overlooked, especially as there may be requests to bring data together from various sources for a given project. Combining data from different sources, in the cloud or on your premises, can create different protection and usage requirements, especially with regard to privacy."

> **Don't rush into the cloud because it's the hot thing to do**

Bruce Edwards is director of technology at Stage11, a virtual entertainment platform. As an engineer who's helped companies such as the Sony Pictures Entertainment, Walt Disney Studios and Dine Brands Global to migrate to public clouds, he is well placed to advise firms considering similar moves.

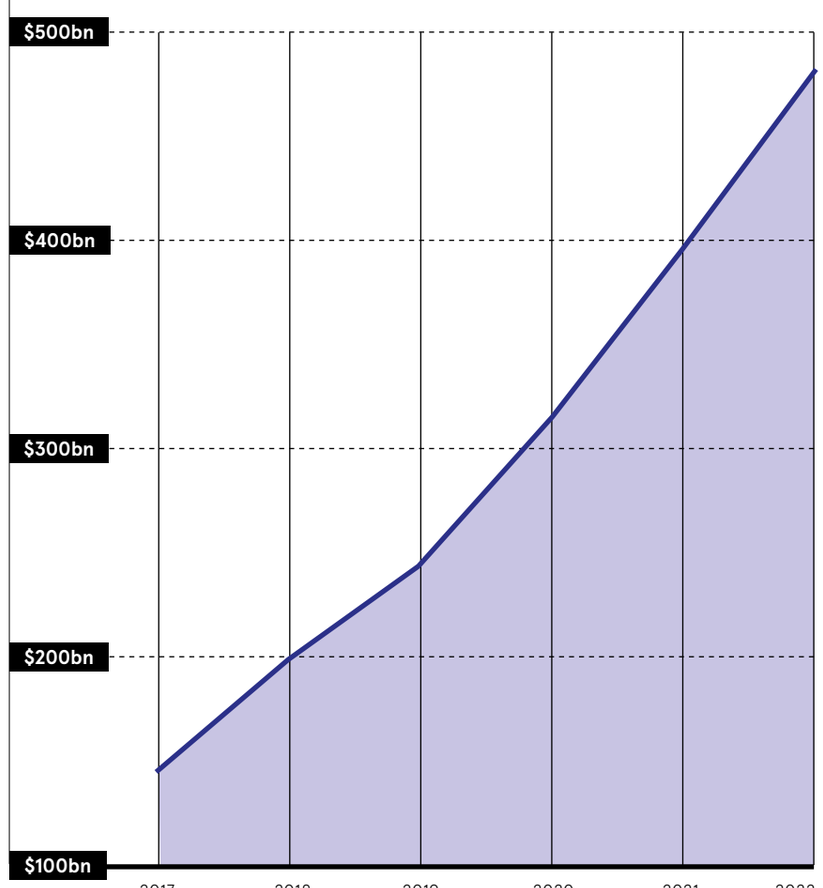
"Don't rush into the cloud because it's the hot thing to do," he warns. "Approach it with a plan and consider carefully what you're looking to accomplish. This is a huge undertaking. If you do it right, it can transform a company of any size for the better. If you rush it, you'll end up with a cost-ineffective mess on your hands. My strongest advice is to first consider one simple question: what's best for the business? Then do your research and plan for the road far ahead."

Edwards continues: "Explore the various types of providers at your disposal to find the one that best suits your needs. Weigh the benefits of each for both your company as it is now and the business you want it to become. Work with cloud experts who specialise in your firm's area, preferably with experience in your industry. Together, you can map out your journey to the cloud. Keep in mind that not everything has to be moved at once. Give yourself the freedom to be patient – and learn as you go." ●

HOW CLOUDS ARE ACCUMULATING

Gartner, 2021

Global end-user spending on public cloud services



Commercial feature

Why collaboration is driving the future of transport sustainability

Data is the key to fleet sustainability but unlocking that value can only come via cooperation between different data businesses, says **David Savage**, vice-president UK and Ireland at Geotab

Q The past decade has seen the rapid growth of data. What are the implications in the transport industry?

A The information a vehicle or fleet holds has drastically accelerated data-driven decision-making throughout the transport industry. Depreciation modelling, route optimisation and use calculations are now more accurate than ever. All of these areas have a direct effect on a business's bottom line, sharpening the need to comprehend what data is available and how to use it.

As an example, connected vehicles are becoming somewhat standard practice in the OEM [original equipment manufacturer] space, gathering their own telematics and feeding it back to a data pool. By 2030, 88% of cars sold worldwide will be pre-connected to networks via embedded devices and nearly all vehicles in the EU and US will be connected, according to a study by Ptolemus Consulting.

Q How has this impacted how fleet managers and operators approach data?

A With the increasing focus on sustainability and fleet transition from internal combustion engines (ICE) to electric vehicles (EVs), they've come to realise two critical points. First, data is core to a successful EV transition strategy. Fleet managers must first understand how their existing vehicles are used and then what they can transition to. As a pioneer in EV fleet transition, Geotab has supported countless fleets on this journey through the use of our electric vehicle suitability assessment platform.

Second, data is needed to efficiently operate an electric fleet and, in many cases, a mixed fleet of EVs and ICE vehicles. While there may be overlap in many data points, there are also new ones to get to grips with, such as state of charge.

Q How important is it that large dataset businesses collaborate and share data?

A Data democratisation maximises value to businesses and end users, which has implications not just for commercial fleets but also local and national government initiatives such as charging infrastructure planning. It means every individual benefits indirectly from shared data practices.

From an organisation standpoint, this requires looking at data from a product management perspective, not just a data science perspective, to truly understand the solution and benefits that a dataset can provide. Also, you can't forget that data sharing agreements have privacy implications, which can be a barrier if not defined clearly and transparently from the beginning.

Q What role is Geotab playing in bringing data points together?

A Processing billions of data points every day, our open platform allows fleet businesses of all sizes to automate operations by integrating and aggregating vehicle data with their other data assets. Geotab does the heavy lifting on behalf of businesses to contextualise and present data in a meaningful way and scale in line with growing fleet sizes. MyGeotab is the front-end that delivers all this information in an easy-to-understand format, while our recently added 'Active Insights' feature takes the leg work out of analysing tables and charts by identifying areas that may be of concern or require attention, further enhancing overall fleet management efficiency.

Q What is the ultimate value for fleet organisations that pull in multifaceted data insights?

A The ultimate value is in providing diagnosis rather than hypothesis. The ability to generate insights combining both frequency of data and 'labelled data', such as engine error codes and OEM part numbers, drives direct bottom-line improvements. For example, historic telematics data, vehicle error codes and SMR records can combine to provide predictive maintenance analytics, flagging when vehicle underperformance might become an issue in the future.

Ingesting data from consumer vehicle providers, as well as other streams such as hyper-local weather data and camera footage, also helps paint a contextual picture of current and future fleet sustainability. When we conducted an EV suitability assessment of Enterprise Fleet Management's 91,000-strong fleet, we found that 13% could be economically replaced by EVs. This represents a potential saving of $33m and 194,000 tons of CO2 over four years.

For more information, visit geotab.com/uk

GEOTAB

SUSTAINABILITY

Paradise postponed

With better data at their fingertips, firms can make more environmentally sustainable decisions. But comprehensive and fully comprehensible ESG metrics are unlikely to be developed through technological advances alone

Tim Cooper

The year is 2025. Environmental, social and governance (ESG) data is informing corporate decision-making around the globe. The recently formed International Sustainability Standards Board (ISSB) has given companies a standardised ESG reporting framework to work to, making their disclosures far more useful and comparable than ever before.

Advances in digital technology have also made ESG data more actionable. Every product is having its greenhouse gas emissions tracked with the aid of AI-assisted satellite imagery and smart sensors as it traverses the global supply chain.

Business leaders have become knowledgeable about this field. ESG metrics have been embedded in corporate strategy and are being widely used to set performance targets and executive rewards.

Is such a utopia likely in the next three years? No chance. But will companies and their stakeholders advance towards this state of affairs? Much is happening that offers hope.

At present, companies must wrestle with a chaotic tangle of ESG standards, with some having to submit 20 reports a year to keep their investors, regulators and customers happy.

And they're struggling to obtain the required information. Few firms are collecting actionable data on greenhouse gas emissions in the supply chain, for instance, even though it's responsible for about 80% of all consumer goods companies' carbon footprints, according to McKinsey.

But technologies that will help businesses to achieve this are evolving, as is a standardised reporting system. There are high hopes that the newly established ISSB will come up with a de facto framework that most countries will adopt.

In addition, ESG Book – an open-source digital platform designed to make firms' data more accessible – started offering its services in December 2021. ESG experts hope that both developments will help the private sector move towards publishing coherent, comparable information

"They will change the ESG reporting game over the next two years," predicts Jill Klindt, chief financial officer at Workiva, a provider of compliance software. "The ISSB will align standards and metrics across companies, so that investors and the public can compare apples and apples, which will help them to hold businesses accountable."

Meanwhile, companies are developing smart sensors and other connected devices to measure the carbon emissions of individual products as they move along the supply chain. Some large brands are already using tech that can track billions of items and put a realistic figure on their total footprint. PepsiCo Europe, for instance, has created a digital model of its supply chain that has helped it to identify where it can work with suppliers to achieve significant emission reductions and efficiency savings.

Firms are also investing in AI fields such as natural language processing to connect ESG and financial information, reports Charles Sincock, managing principal and ESG lead at consultancy Capco.

"AI's ability to scan vast data records and interpret the results is a key advancement," he says. "Scanning public and private sources – from TikTok posts to Nasa images – can surface new and alternative data to fill knowledge gaps. One example is so-called thermosphere data, which analyses changes in vegetation to show the impact of tree-planting initiatives. Another is satellite imaging that assesses environmental effects of mining and community development programmes around mines."

Anne Ascharsobi, director of social and environmental impact at Xero, agrees. "Big-data analytics and AI have changed the game," she says. "They have led to a growing number of platforms that enable the consolidation of reliable ESG data in one place, inter-company comparisons and real-time monitoring."

Pioneering companies are also using AI to scan hundreds of risks and opportunities in this field. The technology can monitor developments in ESG reporting, policy-making and regulation, as well as related media and NGO activities around the globe.

"Much AI is trained in English, but natural language processing tools now enable firms to tap into foreign media and social networks," says Louisiana Salge, senior sustainability specialist at EQ Investors. "It means that they could find out about a factory fire in Bangladesh, say, which would otherwise fall through the grid."

> **The advance of the internet of things and smart cities can make a lot of ESG data more real and forward-looking, but we're far from that point**

Another cause for optimism is that business leaders are trying to improve their ESG data literacy, according to Ascharsobi.

"Several providers have started offering education to help them understand how to achieve actionable results from this data," she reports. "Members of Xero's leadership team are showing interest in deepening their understanding of the data we use."

But not all companies are taking advantage of such developments, of course. For one thing, much of the technology is so new that the early adopters are still working out how to make the most of it. For another, it's a big investment.

"It's wishful thinking to hope that tech will solve all our problems in this field," argues Daria Goncharova, chief sustainability officer at mining firm Polymetal International. "We rely on many scientists to help us understand sustainability data holistically and in context. For example, satellite imagery has proved a powerful tool in tracking deforestation, along with the heat-mapping of forest fires. Has all the data that these have generated changed how we act? Not enough yet."

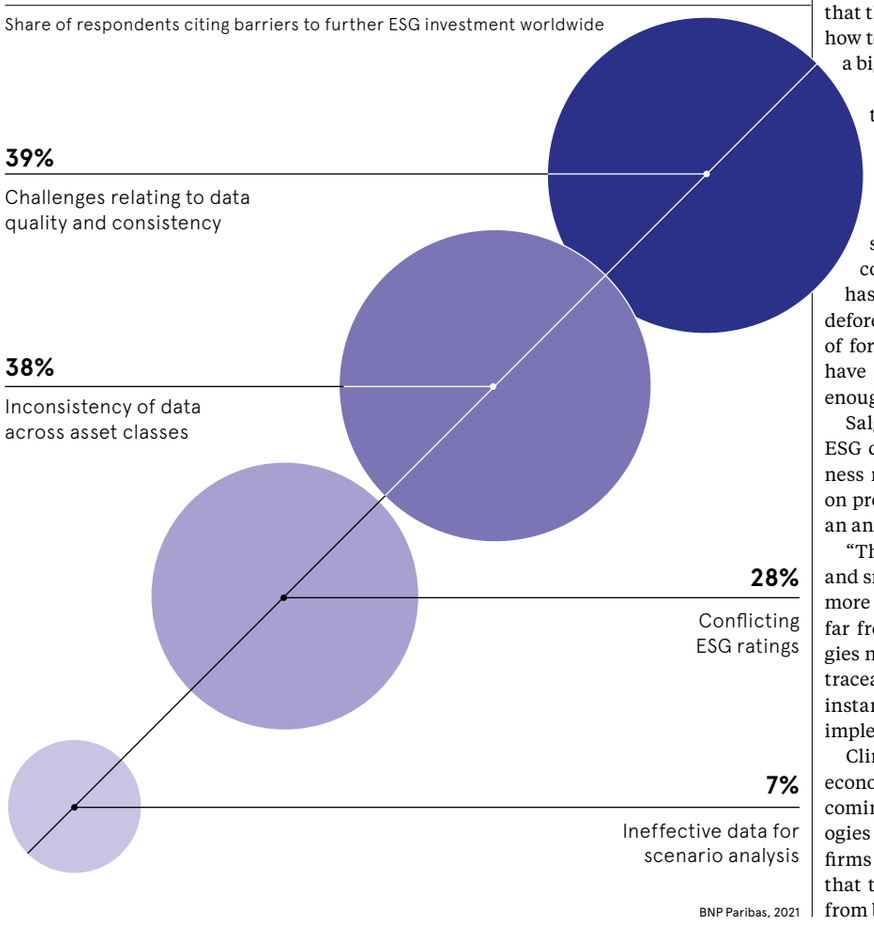
Salge notes that many firms are using old ESG data that's not material to their business models and are focusing erroneously on proxies, such as energy consumption as an analogue for actual carbon emissions.

"The advance of the internet of things and smart cities can make a lot of ESG data more real and forward-looking, but we're far from that point," she says. "Technologies need to become cheaper. Supply chain traceability tech has great potential, for instance, but businesses are struggling to implement it because it's so expensive."

Climate change could cost the global economy many trillions of pounds over the coming years. The development of technologies and reporting standards is helping firms to tackle the problem, but it's clear that the business world is still a long way from becoming an ESG data utopia. ●

BETTER DATA IS A BRIDGE TO ESG

Share of respondents citing barriers to further ESG investment worldwide

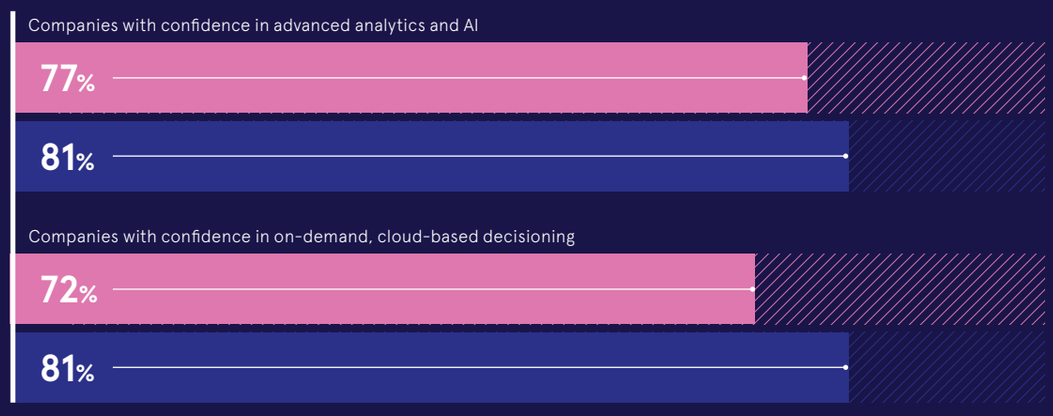


BNP Paribas, 2021

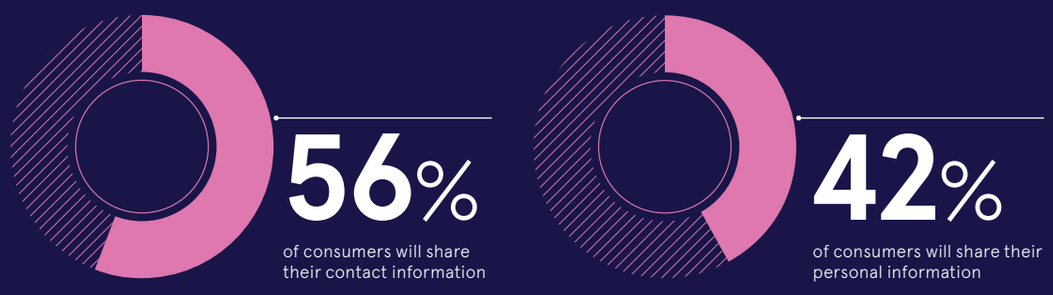
BUSINESS CONFIDENCE IN AI AND CLOUD-BASED CREDIT RISK DECISIONING IS TRENDING UP

Percentage of companies 2020 2021

Experian, 2021



CONSUMERS ARE MORE LIKELY TO SHARE THEIR PERSONAL DATA IF IT IMPROVES THEIR EXPERIENCE



Redesigning the future of consumer lending with data and analytics

Companies that can tailor the digital customer journey to improve the consumer experience will win in a more digital world

It is well documented that the pandemic has sped up the digital transformation of the economy - both in the UK and globally. Many more economic sectors are digitising and the amount of data being integrated into the building blocks of business is the highest it has been. The digital customer experience, enabled by both data and analytics, is therefore the new battleground for many industries.

This has been fuelled by the rise in online activity among global consumers, with consumers reporting they were online 25% more in 2021 compared to a year ago, according to Experian, and this number holding up in 2022. At the same time there are heightened expectations not just around security, privacy and convenience, but also personalised services. Digital natives are raising the bar in this regard with a zero tolerance for poor service. Today, revenue growth depends on companies delivering on consumer expectations.

"The good thing is that technology and data now allow businesses to put the customer journey at the heart of what they're doing. With the advanced technologies available today, businesses can access relevant data and deliver on customer expectations in their moment of need. Whether it's access to a loan or mortgage, or to consolidate debts, a real-time view of the consumer is possible," says Steve Wagner, global managing director for decision analytics at information services company Experian.

> **The application of advanced analytics, artificial intelligence and machine learning is allowing businesses to tailor their services to an audience of one at scale**

"The market is driven by consumer demand for digital services. Those companies that are able to tailor the digital customer journey so it reflects the best-in-class consumer experience are the ones that will win."

The application of advanced analytics, artificial intelligence and machine learning is allowing businesses to tailor their services to an audience of one at scale. This is particularly prevalent in financial services. Underwriting processes and accurate fraud detection can all be accessed in real time, while the customer experience and credit risk analyses coexist seamlessly.

This is essential since the global pandemic has eliminated large swathes of physical cash transactions. Research from Experian found that online retail sales saw four years of growth in just 12 months during the Covid pandemic. This has dialled up the need for businesses to improve how they recognise their customers and provide secure digital transactions.

"The future involves asking customers to do less without sacrificing the security, convenience and privacy of their online experience. Reliance on physical forms of ID to access services has been replaced by the demand to identify online for a frictionless journey. Whether that's through biometrics or multimodal authentication, customers can see the value exchange in sharing personal data," says Wagner.

Behavioural biometrics is the next frontier in tackling fraud and providing a seamless customer journey. Rather than relying on the initial customer authentication, the behaviour of the user is tracked for suspicious activity. Passive, continuous activity monitoring can flag if it isn't the customer due to abnormal behaviour.

"The way in which a person types a password is unique, so is the way they press on a mobile screen. By monitoring those behaviours using advanced analytics, businesses can verify customers without disrupting the experience and therefore keep fraudsters at bay," says Wagner.

"Technology is allowing us to analyse far more data sources in real time, providing a comprehensive picture of an individual. Therefore, every business model should be focused on customer-centricity, with a better understanding of customer needs and experiences."

Open Banking in the UK, which involves the democratisation of data, is assisting in this process. Customer data is key, yet its value lies in being able to extract the insight lenders and fintech providers need to implement the best customer journey and make the best decisions, often in seconds.

Consumers are more likely to share their personal data if it improves their experience. Open-source data can empower businesses and consumers alike. Smaller businesses with historically limited data can now build a view of potential customers, expanding portfolios and minimising credit risk, bringing more people into mainstream financial services with products that are suitable for their circumstances.

"The future is where customers are more in charge of their own data. This is why we launched Experian Boost globally and then Experian Go in the US. This allows consumers with limited credit histories to build out their credit report, using transactions not typically included, from rent payments to streaming subscriptions," says Wagner.

Most businesses already collect data in some way but just storing it is not enough. The data must be classified, analysed and processed to produce real insight.

"It's this insight and increased understanding of customers and opportunities that will lead to better decision making within businesses," says Jonathan Westley, chief data officer for the UK and EMEA at Experian.

7in10

businesses say they're frequently discussing the use of advanced analytics and AI, to better determine consumer credit risk and collections

76%

of businesses are improving or rebuilding their analytics models

50%

of businesses are exploring new data sources

Experian, 2021

Businesses can do this by making credit-risk decisions using automation and advanced analytics. This will lead to more opportunities for credit and thus better financial inclusion, particularly for low-income and marginalised communities. The cost-of-living crisis in the UK is likely to highlight the need for more financial inclusion. Data and analytics are at the heart of this process.

"Another frontier is a term called 'insight everywhere.' We live in an omnichannel world where customers interact with chatbots, virtual assistants, call centres or in a physical store. Businesses want access to that knowledge about a customer to provide them with a better service," says Wagner.

"This is where we will continue to innovate. Experian is in a unique position because we empower companies with data, analytics and technology, help them calculate risk and empower them to make the right decisions for their business and their customers. The broader market pays a price if it makes the wrong decisions. With the right decisions, business wins, the market wins and the consumer wins. This is what matters."

For more on unlocking the power of data visit, experian.com/globalInsights

experian

Commercial feature

Q&A

How data management can become a critical business differentiator

Seagate CEO, Ph.D., **Dave Mosley** explains why organisations need to change their approach to data management to ensure they are unlocking the full value of their data

Q Why do organisations need to improve the way they manage data?

A We live in a data economy and as both consumers and businesses we're all active participants. In the data economy, data is the currency. We exchange it, we transact with it almost every day. It's dynamic and in the enterprise it flows in and out of our organisations, between departments and cross-functional teams who are tasked with creating value from it. The data economy is about to undergo explosive growth. By 2025, humans will have created almost 180 zettabytes (ZB) of data — that's up from 18ZB in 2015.

Organisations are in a race to leverage that data to gain a competitive advantage. The winners in this data arms race will be the ones that understand that they need to think about data differently and apply new skill sets and practices to the way data is managed and ultimately monetised. In our recent Rethink Data report, IDC estimates that less than a third (32%) of data being generated is actually being used — meaning more than two-thirds of it is going to waste. That's a huge untapped opportunity.

Q What is spurring this growth in data?

A Over the past decade, we've witnessed the third major IT revolution since the invention of the computer — the emergence of cloud computing, where data is created and captured on billions of endpoint devices and then uploaded to centralised IT infrastructure. This era has been dominated by hyperscale public cloud companies who were able to both help create and capitalise on the growth of the data economy. One of the primary drivers for how these companies were able to do this is the data itself. They figured out the direct correlation between the accuracy of AI and machine learning training models and the size of the datasets with which they are trained.

More data generated means better analytics, which in turn means better business insights and better products for customers. As Google's research director Peter Norvig once said: "We don't have better algorithms — we just have more data." How do younger customers want to interact with their wealth managers?

180 zettabytes

the projected amount of data created by humans by the year 2025, up from 18 zettabytes in 2015

Seagate, 2020

Q What will be the next key data trend that organisations need to focus on?

A The next step is IT4.0 — the fourth major IT revolution — and the rise of the edge. This is where data is processed and stored as close to the data source as possible and is being driven by the proliferation of internet of things devices and 5G connectivity. No longer does data have to be sent back to a monolithic, centralised storage centre, organisations can process data where it is being generated: in cell phone towers, on roofs of buildings, in autonomous vehicles. This means organisations will have access to new data sources and new, highly complex and unstructured data types to manage. At the same time, new hybrid architectures incorporating multiple public, private and geo-distributed edge clouds are emerging in order to capture the data opportunity as storage shifts to a decentralised model.

> **In our recent Rethink Data report, IDC estimates that less than a third of data being generated is actually being used**

Q What are the main challenges organisations face when storing data?

A As the wealth of data grows, it will continue to be evenly distributed across multiple data centre-, edge- and cloud-storage environments. Data growth and data sprawl are just two of the data management challenges that organisations must grapple with as they adjust their businesses to a world of IT4.0.

One of the main reasons data is being underutilised today is that the cost of enterprise storage is prohibitively expensive. More efficient, scalable and affordable solutions are needed for organisations who are being asked to do more and store more with less. Another reason is that most of the 180ZB of data that will have been created by 2025 will be machine-generated, unstructured and geographically dispersed.

Management of data across various locations and multiple clouds and platforms is prohibitively complex, especially for IT organisations whose resources are already constrained. Therefore data risks becoming siloed, stranded and unusable.

Q How can organisations best solve these issues?

A To overcome this complexity, organisations need open architectures and new approaches to data management, and simple, easy-to-deploy solutions so they can mobilise, consolidate and analyse data at their required volume and speed.

With the relentless growth of data and the 24/7 cost implications of storing it, today's multi-cloud solutions and configurations — where each cloud vendor has its own unique tools, policies, cost models and desire to retain customer data within their own ecosystems — are not the answer to the storage cost and complexity challenges. Organisations are forced to compromise in the data economics equation where the cost of storing more data can seem like it outweighs the value that can be derived from it. To address this issue, we believe there needs to be a shift both in paradigm and operational approach.

Instead of a world where we only store what we can afford and manage, we want to create a world where we can store as much data as we want. In this world, closed-off, proprietary architectures are replaced with open, hybrid architectures where data moves freely and efficiently across an organisation, no longer trapped in silos.

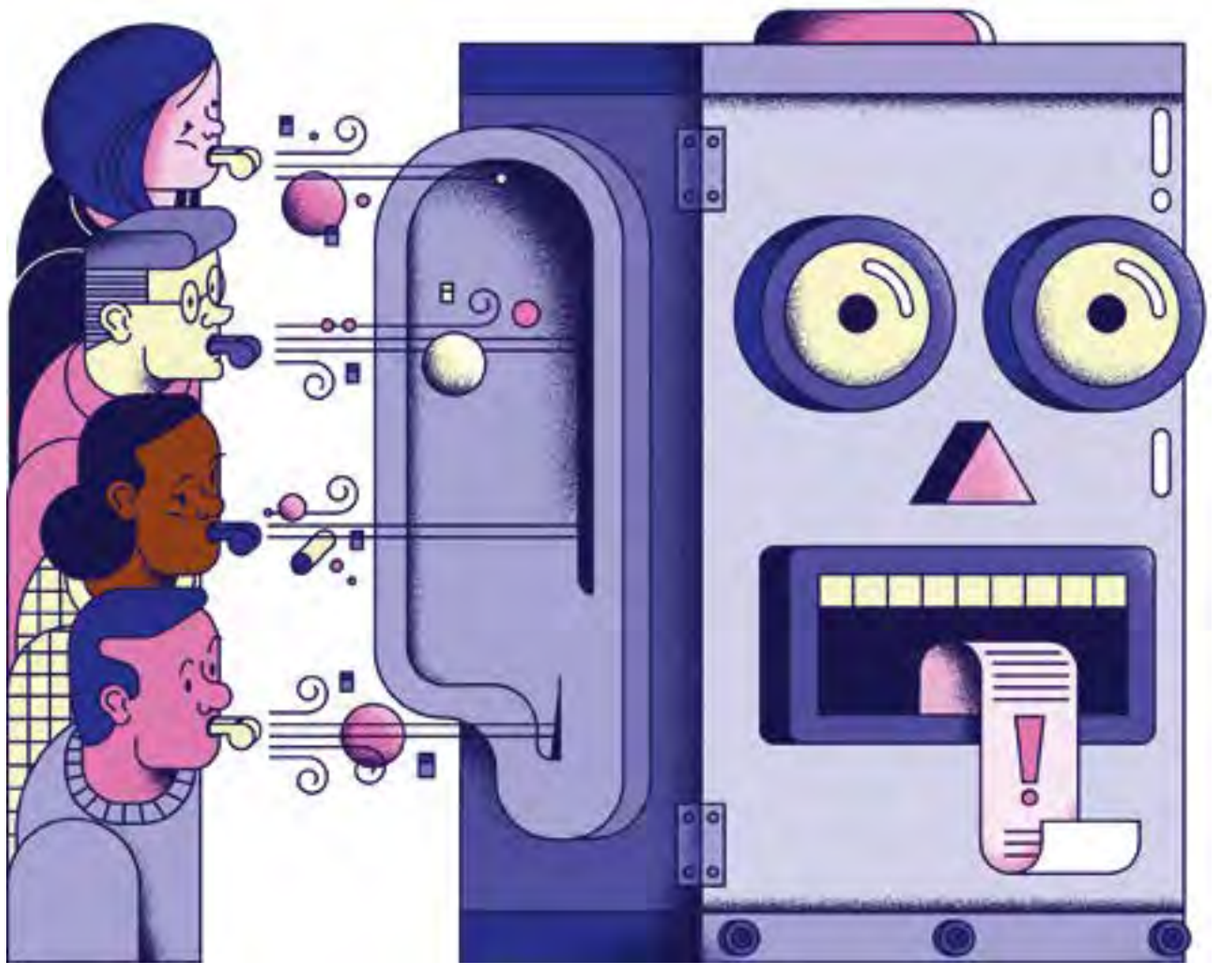
Q What will this ultimately help organisations to achieve?

A In this new world of open, hybrid architectures, data stewardship is not constrained within the boundaries of the IT function but instead democratised across interdepartmental teams. This is enabled by a DataOps model which allows full access to disparate datasets, and an environment for AI-powered innovation, paving the way for predictive insights that drive digital transformation and competitive advantage.

Seagate is uniquely positioned to help solve these operational and architectural data management challenges. We have been a technology company innovation leader for more than four decades. Our entire product roadmap is based around the vision of building a frictionless future for the world's data through open, edge-to-cloud data management solutions. Partnering with our customers to reduce the cost and complexity of their infrastructure, we enable them to store more data, create more value from it and ultimately win in the data economy.

For more information please visit seagate.com

SEAGATE



WHISTLEBLOWING

Toot suite: tech to keep whistleblowing an internal affair

Several startups are offering companies more effective methods of handling employees' allegations of malpractice – and reassuring complainants that they'll receive fair treatment and won't need to go public

MaryLou Costa

The spectacular fall from grace of Californian healthtech company Theranos and its CEO, Elizabeth Holmes, which began when three employees contacted state regulators about the firm's misleading claims, highlights the vital role that whistleblowers continue to play in business.

But what if firms could better manage the reporting of misconduct internally and convert employees' complaints into data that would enable them to detect patterns of harm, thereby enabling them to solve a problem before it enters the public domain.

That's what several growing tech companies, including Vault, Navex, SpeakUp and Telli are offering their customers, through platforms that allow employees to report wrongdoing anonymously. In Vault's case, for instance, complaints are directed to a named manager, who can message the employee, still anonymously, to request more information if needed, before a resolution is reached and the complainant is notified of the result. The system also gives users the option to disclose their concerns only once similar complaints have been made.

According to Vault's co-founder and CEO, Neta Meidav, adopters of her firm's tech are reporting a 70% average increase in the number of internal complaints received, while the time taken to resolve them has fallen by half. This, she says, points to a new era in employee-generated data that, when acted on correctly, can not only save companies the costs of litigation and all the associated reputational damage; it can also prompt them to engineer turnarounds in problematic areas.

"There's a lot of data flowing through our application, but we're not sitting between employees and employers, collecting data on their behalf and passing it forward. We don't believe that trust can be outsourced – it needs to be built or rebuilt," Meidav stresses. "We provide companies with the technology, which then they can run autonomously to create that trust."

Vault and its counterparts can process evidence submitted in various formats, including emails, texts, chat messages, voicemails and screenshots, generating reports for investigations that can be circulated to the relevant stakeholders. Their technology can also connect the dots on reports of a similar nature to alert companies to recurrent patterns of bullying, say. This gives them the hard data required to address systemic problems that are spreading beyond one individual or team.

Armed with the ability to create regular high-level reports about misconduct across the organisation, a company can take a more strategic, data-driven approach to improving its culture. Meidav cites the case of a US tech firm at which complaints submitted through Vault exposed racist bullying, tying it to a single person. The company swiftly dismissed the perpetrator and implemented an anti-bullying programme in the department affected.

Introduced late last year, the EU whistleblower directive (which covers UK-based firms with operations in the EU) obliges companies with more than 250 employees to introduce internal misconduct reporting systems, but Meidav thinks that the tide has turned already: CEOs have been convinced that they do "need to know" about impropriety in their organisations – and they accept that it's important to invest in technology that makes data about such matters manageable.

She is also expecting an upsurge in the reporting of environmental issues, particularly given that ESG disclosures will become mandatory from next year for UK companies with more than 500 employees.

A systematic, data-driven approach could have created a completely different experience for Giovanni (not his real name), a sales director. He and a colleague blew the whistle on what they believed were unlawful data-scraping practices by their company, which culminated in an employment tribunal hearing last year after he left the firm in 2020, disillusioned by its handling of their complaint.

Giovanni believes that an effective internal reporting platform would have given the complaints process more structure and, potentially, provided greater support for him and his fellow whistleblower.

"It definitely would have helped," he says. "Many of the challenges I faced were because there was no process to follow in the right way. Nothing was written down that could guide us on how to make a protected disclosure. So having such guidance through the implementation of a system, combined with a government function that's truly invested in the fair treatment of whistleblowers and the investigation of wrongdoing, would help complainants and also make companies more accountable."

Georgina Halford-Hall is the CEO of WhistleblowersUK, a not-for-profit body that provides support both for people who have blown the whistle and for those thinking about acting on their conscience. She sees the new misconduct reporting platforms as "the bedrock of the infrastructure that revolutionises whistleblowing and drives cultural change". Nonetheless, she is concerned that, while these systems claim to ensure anonymity, it's possible for data-scraping tools to identify complainants and so put them at risk of reprisals.

> **We regularly hear from people whose confidence in an employer's internal reporting system has been demolished because they have become targets after that system's failure**

"We regularly hear from people whose confidence in their employer's internal reporting system has been demolished because they have become targets after that system's failure. Too many organisations see a whistleblower as a problem to be rid of, rather than a valued asset," Halford-Hall says. "Reporting platforms aren't a silver bullet. They cannot solve the legacy issues [affecting how complainants are treated] on their own."

But she adds that they do "have an important role in the future of whistleblowing" in concert with other measures, noting that her organisation has called on the government to create an independent body to ensure the fair treatment of complainants. The House of Lords is set to debate this recommendation after a private member's bill sponsored by Baroness Susan Kramer in 2020 proposed the formation of an Office of the Whistleblower.

31% of UK workers know how to raise a whistleblowing concern at work

46% of UK employees don't know whether their employer has a whistleblowing policy or not

Protect, 2021

Andrew Pepper-Parsons, head of policy at whistleblower support charity Protect, agrees with Halford-Hall that an internal reporting system will only be as effective as the culture of support for complainants that the employer fosters.

"These reporting apps do have a place," he says. "But, if implementing them is merely fulfilling a requirement, that isn't going to work. This is not only about whether your company enables its employees to raise concerns. It's also about how you train managers to deal with those concerns, especially any that aren't raised through closed systems."

While Meidav acknowledges that technology and culture must work in harmony for reporting platforms to have the most beneficial effect, she adds that the ability to receive complaint data in black and white gives companies a solid foundation.

She cites the case of former Facebook employee Frances Haugen, who felt she had no option but to take her complaints about the company's practices to the US Securities and Exchange Commission and *The Wall Street Journal* last year.

"If Facebook could have said: 'We have given our people the best tool out there to report any concerns to us,' it would have put the company on a different standing," Meidav argues. "We've dealt with so many examples where that would have been the case. So companies are almost taking out a platform like ours as an insurance policy for themselves."

CYBERSECURITY

Snooper highway – the digital watch for rogues on the payroll

AI-based surveillance systems offer employers a quantum leap in observational power when it comes to monitoring their staff. The technology has never been more necessary

Mark Taylor

If people are their businesses' greatest asset, they're also their greatest liability. The cost of poor data management is colossal: human error in this respect knocks an estimated $3.1tn (£2.3tn) annually off the US economy alone, according to IBM.

Fat fingers aside, malicious acts by employees also cost businesses hundreds of billions of pounds a year. Exploiting the increasing dependence of business on online operations since the pandemic started, cybercriminals have been "developing and boosting their attacks at an alarming pace", reports Interpol's secretary-general Jürgen Stock. In a significant proportion of cases, rogue employees at the organisations being targeted are committing or abetting acts such as fraud, intellectual property theft and corporate espionage.

The smart thing for a company to do when faced with such a potentially costly risk is to interpret the data. But when that data is, in essence, people and the choices they make, the issue becomes even thornier. Sales of AI-based surveillance systems have boomed during the pandemic, but employee monitoring still carries a stigma that gathering information about customers, say, does not.

"Many technologies are immensely useful for collecting employee data, aggregating it and providing a handy overview of team performance," says Ashish Gupta, senior lecturer in HR management at the University of Law Business School. "But their application by organisations is more likely to create anxiety and conflict."

Corporate interest in surveillance tech was strong even before the Covid crisis. For instance, when Accenture polled 1,400 business leaders in 13 industries in 2018, 62% of respondents said that their firms were using new technologies to collect data on workers' activities. But the pandemic has weakened companies' efforts to combat malfeasance, according to Fahreen Kurji, chief customer intelligence officer at risk and compliance specialist Behavox.

"Businesses that were quick to adopt remote working without fully comprehending the associated risks have sleepwalked into trouble," she reports. "We have seen a huge rise in the number of bad actors simply because HQs have become digital and there is less oversight."

Teams in thousands of British companies have become dispersed as a result of the government's work-at-home guidance, often without a risk assessment of which controls still apply to them. Old-fashioned supervisory methods such as in-person observations and impromptu chats are becoming things of the past in this new era of videoconferencing. The tracking of employees' data footprints seems to have become the preferred alternative.

Banks, which by law must record the communications of certain employees, have been among the earliest adopters of AI-based surveillance, given its usefulness as a compliance tool. The benchmark-rigging scandals of the late noughties revealed the limitations of the previous monitoring tech, which simply scanned emails for telltale words and phrases. It's being replaced by intuitive analytics platforms that cover a far broader area.

Machine learning algorithms can be trained on GPS data, swipe-card usage and various chat and video formats, for instance, to build a detailed picture of any employee's behaviour. Someone who's working excessive hours, say, or sending emails with attachments or even passwords outside the business may be showing signs of going off the rails.

"Insider dangers, such as intellectual property theft and corporate espionage, are the kinds of problems where it pays to be ahead of the curve rather than running an investigation after the fact, as we have seen historically with various insider-trading scandals," Kurji says.

Late last year, a New York hedge fund called the Jordan Company installed AI-powered software that can monitor individuals' emails, videoconferences and other data. This will build a far more nuanced picture of how each person operates than was possible when the firm used older surveillance methods.

The company's general counsel and chief compliance officer, Ugo Ude, reports that the new system is continually learning and "gets better and more accurate every time I log in". Previously, he would simply pick random emails or phone calls to monitor before judging whether any wrongdoing might have occurred. Now that this task has been automated, he can devote his time to more value-adding work.

The use of AI-based employee surveillance systems will only increase as firms face greater regulatory pressures and the potentially ruinous threat of reputational damage. So says Paul Hodge, co-founder of risk and control specialist 1LoD and a former head of first-line supervision for Barclays in EMEA.

The systems take an "employee-focused approach to identifying potential market abuses, poor cultural indicators and examples of conduct risk, linking an individual's communications across multiple channels with their trading activities", Hodge says. They can also monitor "personal employee data such as credit scores and time in and out of the office. In some cases, they will even analyse communication metadata, which can bring to light hidden relationships in a department."

AI can also root out negative subcultures in ways that human reviewers cannot, he notes. "This behavioural lens is one of the many ways in which the larger, more sophisticated compliance functions are trying to increase the efficiency of their surveillance functions while at the same time improving their ability to detect risk."

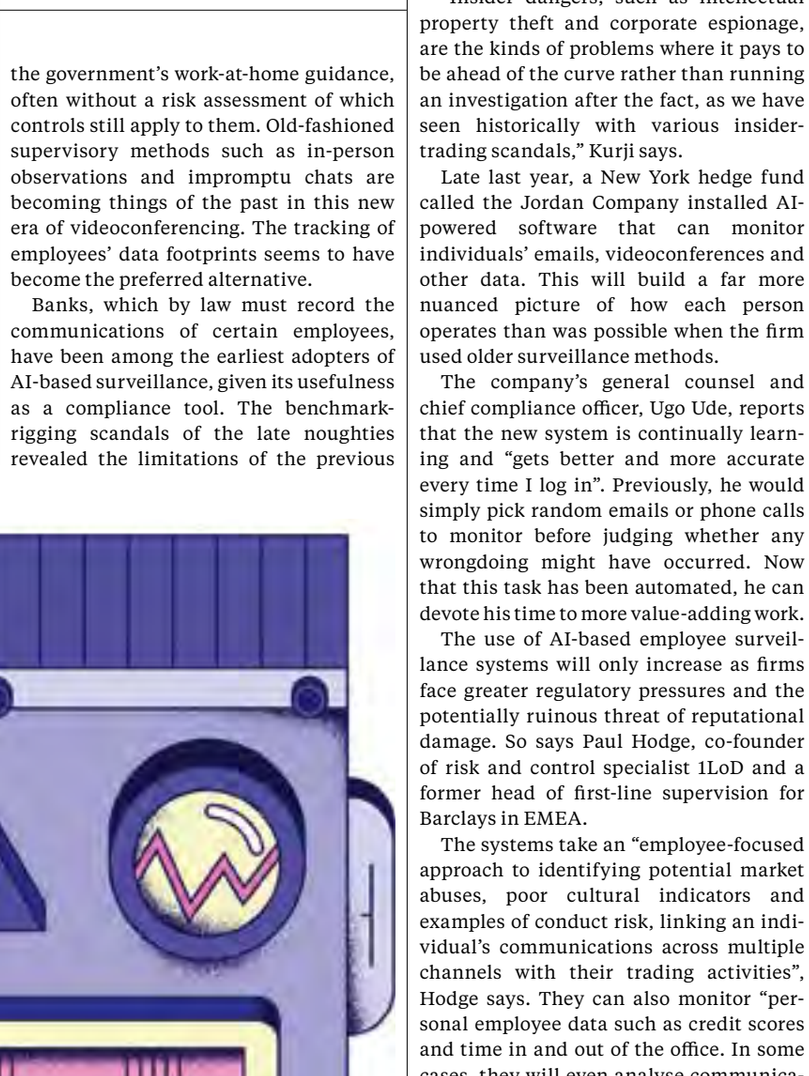
Employee-generated data represents a complex issue for some multinational companies, Hodge adds, particularly where certain jurisdictions have laws against recording and analysing people's conversations. Despite this, ever more ingenious ways of obtaining data are emerging – and the uptake of AI-based surveillance tools seems unlikely to level off any time soon.

For firms that do want more workforce insights but expect resistance to broader monitoring, the best policy is to be honest about their intentions, says Rachel Tozer, employment partner at Keystone Law.

"Employers should communicate clearly to their staff how they are being monitored, why this is justified and how the information that's gathered will be stored and used," she advises. "Employees should then be mindful that any data gathered from lawful monitoring may be used in disciplinary or capability procedures."

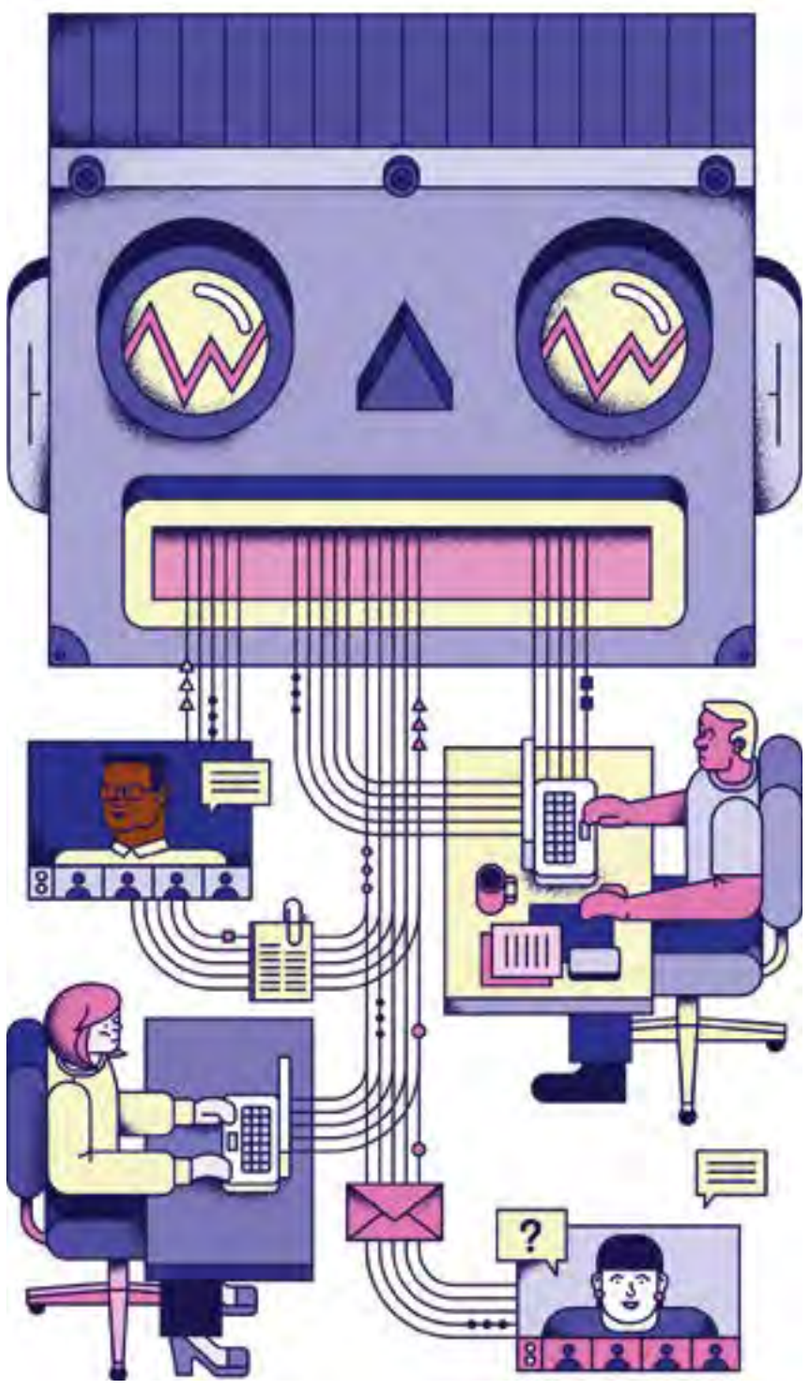
WORKING UNDER A WATCHFUL EYE

Share of employers worldwide confirming that they use the following staff surveillance methods



Express VPN, 2021

> **Insider dangers, such as intellectual property theft and corporate espionage, are the kinds of problems where it pays to be ahead of the curve**



How CXOs are empowering the entire organisation to be data literate

Data – power for the many equals real business change

Data has become central to organisational growth strategies. To ensure data drives that growth, organisations will have to develop a data-led culture across the business. Culture relies on high-quality conversations at all levels of the organisation and therefore CXOs are increasingly focused on using data to inform quality communications and deepen cultural change.

Insight derived from high-quality data has increased in importance, as organisations look for ways to out-innovate startups that challenge key areas of profit margin, meet new regulatory demands and, of course, pilot their businesses forward following more than two years of global disruption. Analyst house Gartner's annual survey of CEOs found in 2021 that 60% believe there will be an economic boom, driven by technology, following the pandemic.

Management consultancy McKinsey reports that those firms which deliver the highest increases in revenue and earnings do so thanks to their data and analytics. High-performing organisations are three times more likely to state that their data strategies contribute 20% to earnings.

Richard Williams is CIO for the European Bank of Reconstruction and Development (EBRD). He believes data is driving the way organisations digitally transform; advanced organisations that understand the value of data are moving away from using traditional, static reporting towards visual, interactive analytics.

> **Building a truly data-first organisation requires unlocking the power of data and using it to fuel quality conversations with as many people as possible in your organisation**

"Based on reliable sources, visual analytics gives data richness so that it tells some stories," he says. But this is only achieved if the entire organisation moves away from the spreadsheets Williams describes and makes full use of advanced data analytics technology. Therefore, data-driven businesses are putting advanced data analytics platforms that were once the preserve of the few into the hands of all employees.

"No matter your responsibilities, team members need to interrogate data and uncover the sources of opportunities and challenges the business faces," says Simon Quinton, UK and Ireland country manager at Tableau. "This is increasing the abilities of the workforce and making jobs more interesting."

Organisations that don't recognise the powerful role data plays in meeting the needs of the customer risk falling behind. McKinsey found that 47% of organisations believe data and analytics have fundamentally changed the nature of competition in their vertical market in the last three years.

"This is an acknowledgement that data-driven decision-making is no longer a competitive advantage; it has become critical to the health and survival of an organisation, no matter the sector, and is critical to engage with employees," Quinton adds.

A YouGov survey of 1,900 senior business leaders found that 92% believe it is important that the entire organisation has access to data.

Providing data and analytics technology to team members is only part of the solution. If organisations are to compete in the data-driven economy, then it is crucial to grow a sustainable data-centric culture across the business. Research by McKinsey finds that organisations that invest in educating their team members on the power and importance of data quickly develop a habit of data-driven decision-making. This behaviour increases the accuracy of business decisions and the organisation's performance.

McKinsey also finds that organisations with a C-Level data leader can best develop a data-led culture that accepts failures and can rapidly iterate new outcomes.

Technology analyst house IDC believes that the future culture of organisations will not only be data-centric but also continue to grow the leadership skills of empathy, empowerment and innovation that saw organisations through the pandemic.

This business agility is a result of an organisational ability to have better conversations with data. As the YouGov study found, 73% of respondents said trust improved in conversations and decision-making. Across Europe, YouGov found that 47% of business leaders said data positively impacted business conversations during the pandemic.

"With remote working, data levels the playing field. It's easier for more people to join in with the conversation when they have a point of view based on data. This means more voices, more diversity and therefore less bias being used in decision-making," says Quinton.

He adds: "Building a truly data-first organisation requires unlocking the power of data and using it to fuel quality conversations with as many people as possible in your organisation."

Organisations looking to reach the right level of conversation and data maturity require a data strategy that encourages openness and transparency, and the tools to ensure everyone has equal access to the data to contribute to the debate. Initially, organisations may face resistance to a new data strategy and its tools.

"You cannot blame your colleagues for their scepticism towards internal data, as it is often in such a mess and there are hundreds of different reports," says Anna Barsby, former CIO and CTO with retailers Halfords and Morrisons.

Dan Peacock, CIO at Utmost Groups, agrees with Barsby: "Times when the organisation cannot find the data to justify a decision, those are not a comfortable place for the business."

> **Data-driven decision-making is no longer a competitive advantage; it has become critical to the health and survival of an organisation**

The first stage of a data strategy is to ensure there is a single version of the truth, which leads to the organisation trusting the data. "Everybody uses data in different ways, so again it is important to make sure that they are using trusted data," says Subramaniam Iyer, director of the business intelligence and data visualisation competency centre at Credit Suisse.

A 2021 study of CXOs by IDC finds that many organisations are struggling to provide that single version of the truth, with 65% of the survey sample reporting that leveraging data and software to generate new revenue was extremely challenging. These CXOs state using data is the number one priority for their digital transformation plans, ahead of the skills shortage and new ways of working.

"Working with data has switched from being a job for a few highly specialist people to a skill that everyone in the organisation can gain," Quinton of Tableau says of how the technology now exists to enable all members of the organisation to use data to inform business discussion and decision-making. Supplied with the right platform, educated on best practice, and empowered to discuss and take action, organisations will find their most valuable asset - their people - can use data to powerful effect.

CUSTOMER CARE

Sensors and sensibility

Under regulatory pressure, financial services providers in the UK are adopting new technology to identify and support vulnerable customers. These automated systems are enabling lenders to show a more human side

Sally Whittle

If you've received a text from your credit card provider recently, you may have noticed that the tone of it seemed a little friendlier than that of previous messages.

The way in which financial institutions are communicating with customers has changed, driven in part by the Financial Conduct Authority (FCA), which has urged them to do more to support the many consumers whom it deems vulnerable. Research by the FCA has classified 27.7 million adults in the UK as having some "characteristics of vulnerability, including poor health, experience of negative life events, low financial resilience and low capability".

Addressing this issue is about more than making text messages to customers sound more cordial, of course. Companies are using sophisticated technology to gather and analyse data about customers, so that their staff can offer tailored advice and support. Debt-collection company Lantern uses tools supplied by MaxContact, for example. These can draw information about any given customer's history from numerous systems and present it to the firm's call-centre agents while they're conversing with that person.

"All this data gives us a picture of the customer. It answers questions such as: have they defaulted before? How often? Do we have details of their income and expenditure? From there, we can offer a better service," says Lantern's CEO, Denise Crossley. "For instance, there would be no point in getting someone to agree to something they couldn't afford, because they would simply end up in default. This is all about establishing the sort of relationship in which customers will call if something goes wrong, because they know that we are here to help them."

In some cases, companies can integrate their own information on a customer with third-party data for further insights into an individual's potential vulnerability. For instance, REaD Group offers a system, which is used widely in the utilities industry, that bases its measures of vulnerability on average data in a particular postcode covering factors such as age, income, socio-economic status, employment and long-term illness rates.

Going one step further, some lenders are using a form of AI called natural language processing to predict a customer's vulnerability based on their calls, emails and webchats. This software tracks words and phrases along with audio cues such as the pitch, tone and pace of a conversation. It can then crunch thousands of pieces of data to alert users at the first sign that a customer is starting to become distressed and/or confused.

At Lantern, the MaxContact system scans conversations for particular 'language triggers' from customers that can prompt an agent to react in a specific way or share certain information. Crossley cites an extreme example: "If someone were to mention suicide, that call might be flagged to a senior manager, who could offer support."

This approach helps to reassure customers, but it also makes business sense for lenders, she adds. "In our market, what happens in the relationship between the company and the customer ultimately affects the pricing of our debt purchases. If we provide a better customer experience, we see lower default rates and higher recovery rates. This in turn enables us to price more competitively in the future."

The Key Group is a provider of equity-release mortgages to over-50s. Anyone seeking such a loan is required to meet one of the company's approved independent advisers to check that the product is suitable for them. The company recently invested in a speech analysis tool from Aveni, which scans audio recordings of these meetings to identify any potential vulnerability issues.

"These meetings can last anything up to 90 minutes, so it would be a huge task for someone to listen to all of those recordings," observes Key's CEO, Will Hale.

The Aveni system considers factors such as the language, pace and clarity of conversations. It then generates a report that will identify anything of potential concern. While age isn't considered a vulnerability factor, the software does look for signs that a customer may not understand what's being explained. If that happens, the adviser can arrange to speak to the customer again with a relative present, or refer them to one of Key's so-called vulnerability champions – agents with advanced-level training in how to deal with customers who may need extra support.

Over the next six months, Key will be rolling out a new customer relationship management (CRM) system in its contact centre. Then it will use Aveni on calls to provide instant support to its front-line staff.

> **This is about establishing the sort of relationship in which customers will call if something goes wrong, because they know that we are here to help them**

"Ultimately, we want to get to the point at which we have a full account history integrated with our CRM and telephony systems, so that we have full AI support of all communications," Hale says. "It's very much a tool that supports agents and it helps to ensure that we aren't approaching conversations with the wrong preconceptions."

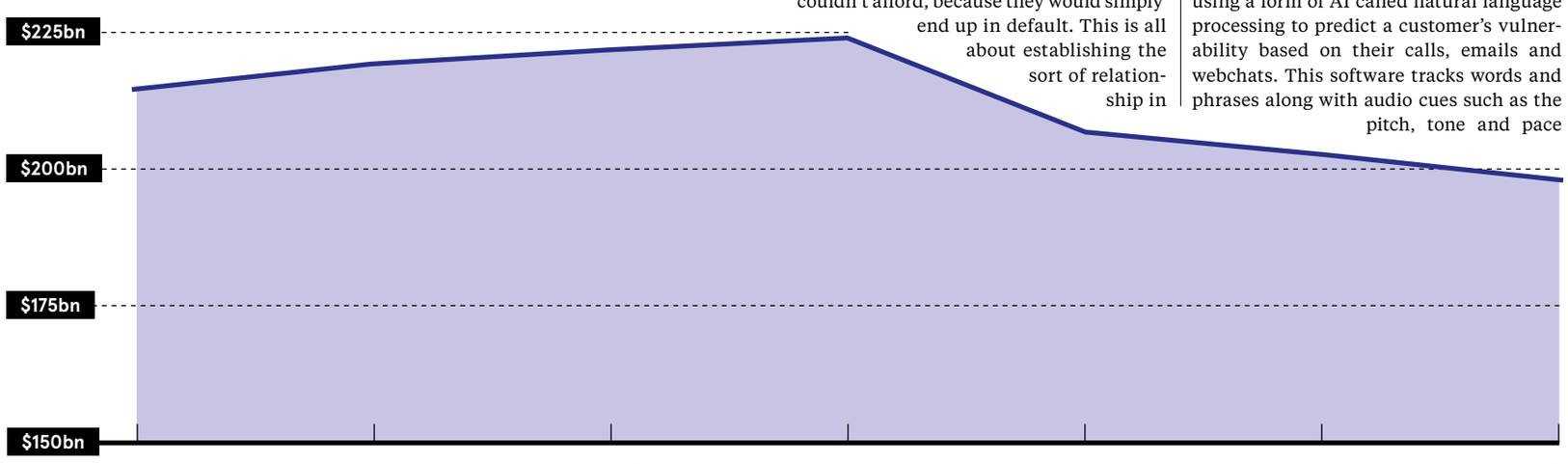
Although the systematic detection of vulnerable customers can be helpful to those individuals if it means that they obtain more support, people are entitled to privacy, stresses Simon Thompson, head of data science at IT consultancy GFT.

Financial institutions that use this type of analysis in contact centres need to establish proper procedures specifying how the results will be used, he argues. "You can't just stir this data into the mix and hope for reliably positive results. You must monitor and review both the interests of the customers and how well this technology serves them."

It's vital that people are aware that their conversations are being analysed and the extent to which the analysis affects the provider's decision-making, Thompson adds. "Ultimately, technology can tell you only so much. Does a customer sound distressed on the phone because of the way their query is being treated, or because a toddler is jumping on their feet? We all need to remember that there is no such thing as an ethical machine. The ethics always rest with the people and the organisation. It's a responsibility that cannot be outsourced." ●

COVID'S DAMPENING EFFECT ON UNSECURED BORROWING Bank of England, 2021

Amounts outstanding from lending to UK consumers (excluding mortgages and student loans)



Commercial feature

Keeping data safe in the cloud

The shift to remote working means companies increasingly use cloud-based platforms to connect staff. Proofpoint senior director **Dr Michael McGrath** outlines the risks and how to safeguard against them

Remote working is likely to persist for many organisations after the pandemic. In an environment where workers are no longer bound to an office, organisations are increasingly relying on digital tools, collaboration platforms and cloud technologies to enable remote access for their employees.

Against this backdrop, organisations are generating and moving more data than ever – with substantial amounts of sensitive material being stored in the cloud. This is creating new security risks for organisations because the more cloud-based platforms they use, the greater their attack surface becomes.

This matters because cloud account compromises can be costly. Almost nine in every 10 companies say the annual cost of such breaches is more than $500,000, according to a 2021 Ponemon survey. On average, companies experienced 64 cloud account compromises a year, with almost a third of those exposing sensitive data.

"What we see today is much more sophisticated cybercriminal activity than anything that we would have seen in the past," says Michael McGrath, senior director for compliance and digital risk at Proofpoint. "It used to be that attacks were very brute force, but now attacks are becoming much more targeted at specific individuals or organisations, perhaps because an individual has access to valuable data – so they might not be attempting to defraud you, they want to access something you have."

Insider threats are also seen as an increased risk, with 37% of chief information security officers flagging insider threats as the biggest security risk they face, according to Proofpoint's Voice of the CISO 2021 report. In addition, phishing attacks are becoming more sophisticated.

"It's not always that a link in an email is harmful, instead the hacker may look to bring you on a journey and then two or three links later you are doing what they want you to do," says McGrath. "Given that the cloud environment is remote, hackers will more often want your login credentials because if they can emulate how you log in, they have access to everything you do."

It is not just cybersecurity risks organisations face when migrating data to the cloud. There is also a risk that legacy data could be lost or destroyed when it is uploaded. Compliance is another concern. The General Data Protection Regulation (GDPR), for example, requires organisations to have policies in place to ensure personal data is properly safeguarded and not misused. Organisations need to protect themselves, their customers and employees from a whole range of risks relating to conduct, such as fraud, misselling and abuse. There is also a potential financial risk from opportunities missed if organisations aren't effectively leveraging the value of their data, says McGrath.

> **Given that the cloud environment is remote, hackers will more often want your login credentials because if they can emulate how you log in, they have access to everything you do**

To help mitigate all these risks, organisations need to change their mindset by accepting that work-from-anywhere is here to stay and that data security risks are more elevated as a result.

"What organisations need to do is to look at the problem from end-to-end – all data has a life cycle, from the instant it's created through to its usage, its storage, and then when it gets disposed of. So organisations need to think about how to protect data at each phase of the life cycle," says McGrath.

But organisations still must keep a broad view of cyber threats. That means they should be adopting a security solution that works across that whole data life cycle and in whatever cloud environment that data is stored. By having a holistic view of an organisation's data, companies can start to generate predictive insights that can potentially flag high-risk targets – for instance, an employee who has access to sensitive data and has a propensity to click on links.

Cloud-based security systems also have advantages over traditional on-premise data security. First, organisations benefit from having a larger team of dedicated security experts guarding their data. Second, cloud security systems can monitor risks across multiple organisations. If one company is subject to an attack, the system can adjust in real time to ensure all the other organisations are shielded from the same attack.

"This means companies have better data protection and a better overall security posture," says McGrath.

For more information please visit proofpoint.com

proofpoint

REVERSE ETL

What reverse ETL can do for data pros going forward

This emergent data-syncing method is increasing in popularity, but what exactly does it entail – and what's so attractive about it when comparable processes are already available?

Charles Orton-Jones

Data professionals are perhaps rivalled only by members of the armed forces in their fondness for acronym-laced jargon. The industry is swimming in an alphabet soup of TLAs (three-letter abbreviations) that serve to baffle outsiders. And now there's a new term to add to the lexicon: reverse ETL (extract, transform, load).

In a nutshell, it describes the process of transferring data back to the systems from which it originated.

In the long-established traditional ETL process, a company will gather data from across the enterprise and store it all together in a data warehouse. Having everything collated in a central repository is great for analytics purposes, but there is a disadvantage: the material is stuck in one place. The various applications from which the data was obtained, such as customer relationship management (CRM) systems, are likely to be out of sync with each other. They may well contain obsolete and/or incomplete information, which makes life difficult for the front-line users of those systems.

In this way, the data warehouse – created to prevent silos – becomes the biggest silo of all. It means that the ELT process, which helped to move data generated by several applications to the warehouse, needs to be reversed to return material to those applications.

"Reverse ETL means using your data warehouse as a hub," says Rob Jones, CEO at data services provider Qbase. "This allows you to combine all your incoming data feeds into a single version of the truth, apply enhancements and share these 'golden' records back to the original data sources. This will make the data in all your applications more accurate and complete. This synchronisation is a key principle in master data management."

Sales and marketing applications – for instance, Salesforce, HubSpot and Tableau – are the most cited examples of reverse ETL destinations.

Jones explains that one of the main reasons for engaging in reverse ETL is to provide front-line staff with enriched data. "For example, a salesperson using a CRM application will be able to offer a given customer far better service if they can see not only the data in the CRM, but also information about the customer that has been generated elsewhere – that person's browsing behaviour on the company's website, say. This insight helps them to form a better understanding of what the customer is really interested in, enabling them to have a more tailored and effective conversation with them during their next call," he says.

Why don't these applications simply access data from the warehouse whenever it's needed? Darren Timmins, chief technology officer of analytics provider Intuita, says there are four main reasons why it's worth going to the trouble of using reverse ETL. The first concerns the prevention of bottlenecks. Source applications are built to handle many simultaneous enquiries on small data sets – examples include sales reps running CRM requests. Data warehouses, by contrast, are built to run large-scale enquiries submitted by a smaller number of users. Reverse ETL enables each system to play to its strength.

The second reason centres on resilience. Relying on a central repository to answer all queries would render the system vulnerable to total failure in the event of an outage at the warehouse. Pushing data back to the applications enables them to operate autonomously even if the warehouse is down.

Third is the matter of cost control. Data warehouse technologies are powerful, but they come with big overheads. Reverse ETL allows data to be queried on local, nimble and low-cost infrastructure.

And last, but not least, comes network security. Timmins observes that "pushing only the minimal amount of data required to a system reduces the footprint of data that could be viewed by a third party if part of the system were to be compromised".

> **Why companies are adding another layer of complexity and tooling to interface with systems of execution is beyond me**

Executing a reverse ETL is made easier by the existence of specialist tools. Among the most popular of these are Census, Hightouch, Grouparoo and Seekwell.

But is it the best approach? There are sceptics. Mark Sheldon, chief technology officer at Sidetrade, an artificial intelligence platform designed for finance teams, believes that the whole concept can be made redundant by syncing data in a more obvious way.

"Reverse ETL was dead before it was born," he argues. "Why companies are adding another layer of complexity and tooling to interface with systems of execution is beyond me."

The application programming interface (API) is usually sufficient, he explains, adding: "With reverse ETL, in essence all we want to do is push insights to their final destination – and this process should be as simple as possible. Every front-line system on the planet has an API designed for exactly this purpose, yet we seem reluctant to use them. My advice to any chief technology officer is: don't concentrate too much on reverse ETL. Keep integrations simple, but focus everything on the execution by tracking a success metric and improving iteratively over time."

Other critics note that a data warehouse can be optimised to run operational analytics without pushing the data back to applications. But advocates of reverse ETL argue that is a 'cleaner' approach because the material is kept in a single location, thereby reducing the risk that errors will creep in. Moreover, it can even be made cheaper, by using open-source distributed SQL databases rather than expensive legacy providers.

In any case, such esoteric arguments are likely to be of limited interest outside the profession. End users simply want the most current and complete set of records they can lay their hands on. To them, questions about whether they should obtain this material through API access, reverse ETL or querying the warehouse each time are irrelevant.

Nonetheless, reverse ETL is a nice option to have. It means that data can be collated and crunched in one place using heavy-duty analytics and also fed back into front-line applications to equip sales staff with all the information they need. For many organisations, the process may be the best, and maybe the only, way to achieve this. ●

35%

of data and analytics professionals identified organisational silos as a major barrier to using data to add value to a business

Alation, 2021

1 in 4

marketers said that a major obstacle to using data effectively worldwide was the fact that the technologies they were using operated in silos

World Federation of Advertisers, 2020

OPINION

'The future of technology must be inclusive and accessible, with everybody benefiting'

When we make technology decisions, purpose matters – and the idea of 'tech for good' is a trend that is gathering momentum. As a result, the demand from employees, consumers and other stakeholders that businesses act sustainably will continue to grow, as the outcomes of tech for good affect the environment, community health, education and more.

Tech has been changing the world for the better for many years, but recently there has been more focus on purpose – the 'why' in addition to the 'how'. Employees seek meaning beyond output and profit, while consumers express the same sentiment through their purchasing decisions.

There's an expectation that brands should reflect the values of the communities they affect. This isn't unique to tech, but the tech industry is particularly well placed to emphasise its credentials as a powerful positive force, because the concept of tech for good is so visible.

Organisations in this space are establishing a clear identity and showing extreme growth. Take, for instance, Aza Raskin, co-founder of the Earth Species Project. A mathematician, inventor and entrepreneur, Raskin has created a non-profit organisation that uses open-source AI to decode non-human language, enabling us to bridge the gap between animal minds and our own. This tech is finally enabling us to see inside the world of animals, proving they are complex sentient beings that deserve our understanding and respect. Just maybe, it will even result in a shift in how we treat our environment.

All eyes are on climate-tech solutions too, as we battle to save our planet. There were some pivotal moments for the tech for good movement last year, with the COP26 summit reinvigorating efforts to address the climate emergency. The UK is the first big economy to set a net-zero target for 2050. Tech solutions are the key to reaching that ambitious goal.

A startup called Sylvera offers a great example of what tech can do. It uses machine-learning tech to analyse visual data ranging from satellite imagery to lidar, with the goal of boosting the accountability and credibility of carbon-offsetting projects. Having just raised more than £23m to build further trust in offset ratings, it will give policy-makers, corporate sustainability leaders and carbon traders clarity, confidence and choice when evaluating projects.

It's not only climate-tech that's seeing accelerated growth. The pandemic has thrust healthcare to the fore, creating significant growth opportunities. Health-tech companies raised a record-breaking amount of investment last year. A total of £37.6bn was pumped into global health-tech startups last year alone. Data from London & Partners and Dealroom suggests that the UK and the US are the driving forces in this sector. Some of the biggest investments were in monitoring and wearables firms, such as Huma and Elvie.

Digital inclusion and accessibility are also hot areas in the movement. There is a strong focus on giving people the digital skills necessary to participate in the digital economy. Tech for social good will continue to grow in strength this year, but there are challenges. Diversity, equity and inclusivity must be improved to ensure that tech is accessible to all. Without this assurance, the success of initiatives will be limited.

Public policy also must stay ahead of the emerging technologies. This will require government, business and academia to cooperate closely.

Tech that produces a deliberate social benefit is the key to our future. With the innovative technologies available today, it's vital that we use them in the right way – to make the world a better place. This means improving access to education; empowering patients to actively participate in their own healthcare; and helping to save the planet by tackling the climate emergency.

The future of technology must be inclusive and accessible, with everybody benefiting from the transformative potential of tech. Tech for good will be a reality only when no one is left behind. ●

London Tech Week will take place on 13-17 June at the Queen Elizabeth II Centre. Visit londontechweek.com to register for the event

Tom Cuthell
Senior director,
London Tech Week

Commercial feature

We need to increase public trust in data

Data is a huge force for societal good, but to maximise its potential the data industry must first tackle the deficit in public trust around its use, writes **Or Lenchner**, CEO of Bright Data

Data has the power to unlock enormous, unprecedented value across the public, private and third sectors. Aware of the vast opportunities, and keen to ensure the UK is a world leader in this new 'commodity', the government has set out an ambitious agenda, published in a National Data Strategy, to maximise its ultimate value and potential.

We're already seeing that value begin to surface in several important areas. Data-driven businesses are more innovative, efficient and customer-centric. Data has been at the heart of pandemic response plans and was utilised by scientists to develop vaccines at record speed. And data has also been identified as an essential ingredient in meeting net-zero carbon targets, reducing crime, informing policy and creating a fairer and more inclusive society.

Hearing these examples, it's easy to see why data is the most valuable resource in the world today, and central to advancing all parts of society for the better. Yet many people don't understand data's potential because public opinion is too often informed by negative stories about data breaches and misuse of personal information. Crucially, the ultimate value of data cannot be exploited unless people trust how it is used.

> **All of us who believe in the power of data have a responsibility to tackle the public trust deficit by increasing understanding of its many positive uses**

A study by the Information Commissioner's Office last year highlighted the extent to which the British public distrust how organisations use their personal data. While trust in the NHS was rated at 75%, this dropped to 55% for national government organisations, 34% for broadband and utility providers and 15% for social media platforms.

All of us who believe in the power of data have a responsibility to tackle the public trust deficit by increasing understanding of its many positive uses. That's why we created the Bright Initiative, a charitable organisation that supports data education and provides social impact organisations with free access to tools that gather unstructured public web data.

The Bright Initiative has given abuse.ch – a non-profit project fighting malware and botnets – access to critical public web data to track bad actors and share insights with the wider security community, making the internet a safer place. We also joined forces with the creator of FindAShot.org to help Americans access and book Covid-19 jabs with ease and simplicity.

The list continues: we helped Humans Against Trafficking create a mobile app to identify at-risk children before attackers do, worked with educational charities like UpReach to give undergraduates from less-advantaged backgrounds better access to graduate jobs, and supported diversity hiring activities.

These are just a few societal benefits from using alternative data sources.

In an ideal world, all public data would be open and accessible by design, reducing the human time needed to gather and analyse it. But IDC estimates that 80% of data worldwide will be unstructured by 2025, flowing from the likes of social media, streaming services and sensors. This type of data isn't neat and ordered – it's sprawling and unruly – and the only way to get value from it is with automated tools and platforms, like Bright Data.

Of course, alternative data is not a panacea. It should be used responsibly and carefully in conjunction with more traditional sources. It must be transparent, open and responsible, ensuring the whole of society benefits from fast-moving advances in data. If all parts of the data industry commit to this approach, public trust will quickly grow.

We must take the opportunity to harness data to go further and faster. Greater familiarity with data will be critical, moving it away from being abstract and technical to something everyone understands. Education is essential to building a more data literate population where people feel not only more trusting of data but also more able to contribute to the economy it shapes.

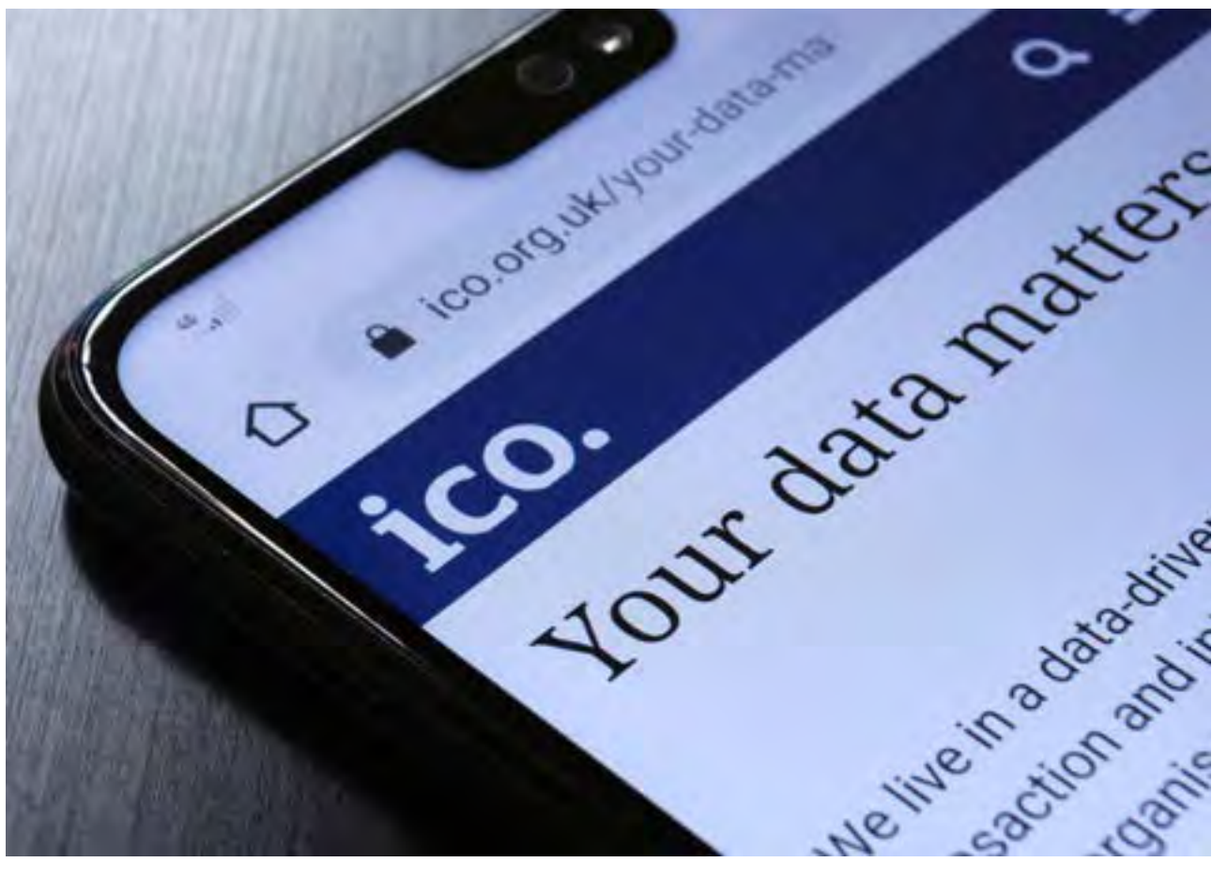
For more information, visit brightdata.com

bright data

LEGISLATION

The jury's out on Westminster's data law plans

At first sight, the proposed regulatory reforms represent a business-friendly upgrade by the government. Do they stand up to a closer cross-examination from experts in the field?



Nicola Laver

The prudent stewardship of personal data can be a delicate and onerous task for businesses in the UK, but less red tape and greater flexibility in managing this material could soon be within their sight.

Freed from the EU's legislative shackles, the Department for Digital, Culture, Media and Sport (DCMS) is seeking to modernise the nation's bureaucratic data protection regime by creating a "bold" new system, all in the name of aiding economic growth. And, at first glance, the wide-ranging proposals published in its September 2021 consultation document, *Data: a new direction*, seem distinctly pro-business, signalling a shift from hidebound processes to greater accountability.

It's hard to imagine how the government's commitment towards "unleashing data's power... for the benefit of British businesses" could enhance consumers' rights at the same time. It is often said that privacy is a right, not a privilege, but there is a balance to be struck.

DCMS is proposing to move from the current prescriptive approach to what it calls an "outcomes-focused" system. If that sounds vague, it's because it is.

"It's difficult to say whether this represents a genuine change in favour of business or not, since the devil will be in the detail," says James Castro-Edwards, data protection specialist at Arnold & Porter. He adds that Westminster's intention to create a pro-growth and pro-innovation data regime is "hard to interpret as anything other than a relaxation of the rules".

> **It's difficult to say whether this represents a genuine change in favour of business or not, since the devil will be in the detail**

It's been almost four years since the introduction of the Data Protection Act 2018, which is a very long time in technology. Whether this legislation remains fit for purpose is debatable. But it is clear that, if businesses are to have enough flexibility to use big data effectively, regulatory changes are needed.

The DCMS proposals are underpinned by both the online safety bill and the digital regulation plan, published in July 2021, which has innovation at its heart. DCMS wants to reduce barriers to "responsible innovation" by businesses and lighten their compliance burden. Most notably, the so-called legitimate-interest balancing test for certain activities (such as using personal data for internal R&D) will be disapplied; a new legal basis for research will be introduced (with safeguards); and the legal bases and conditions for processing personal data will be clarified.

"This is about changing the emphasis from restricting data uses to making companies subject to greater accountability, but in a pragmatic and sensible way," says Eduardo Ustaran, co-head of the global privacy and cybersecurity practice at Hogan Lovells.

It does look good for businesses at first blush, particularly companies seeking to conduct scientific research but hesitating to do so because of a lack of clarity. But a shift to an outcomes-focused regime may not be the significant change that some people might expect.

Jonathan Kirsop, partner in the data protection team at Pinsent Masons, points out that the General Data Protection Regulation (GDPR) is "largely principles-based anyway... The proposed reforms would remove some of the more prescriptive elements of the legislation – for instance, its requirements for data protection officers and privacy impact assessments – but they don't otherwise depart significantly from this principles-based approach."

Some lawyers believe that small and medium-sized enterprises would be the main beneficiaries of the reforms, given the likely reduction of red tape in certain circumstances. As for big multinational businesses, Kirsop's view is that any significant easing of the processes they must follow would be less likely, given the scale and geographical spread of their operations. Consider subject-access requests (SARs) – the bane of many businesses: organisations can't refuse an SAR on the grounds that it's onerous to deal with, but the government has proposed to discard some record-keeping requirements imposed by the GDPR, which would enable firms to respond to SARs more effectively.

But this leaves complex questions unaddressed, according to Katie Hewson, a partner in Stephenson Harwood's data protection practice. "For example, the extent of the duty to be transparent about (and to give access to) data that is inferred about a subject is likely to become increasingly relevant, as more firms use automated processes to make assumptions about individuals' preferences."

The Information Commissioner's Office, which receives more complaints from the public about SARs than anything else, is also concerned about this and wants to see appropriate safeguards.

A significant worry is that consumers' privacy rights will be compromised if the DCMS proposals are enacted. The Law Society has warned that any perception of the scales tipping in favour of businesses using personal data for wider reasons at the expense of people's privacy would jeopardise the UK's reputation as a global leader in data protection.

Such concerns are valid, but they have been exaggerated, according to Kirsop, who believes that the reforms per se would not push things that far. His view is that the biggest risk concerns 'EU adequacy' – the European Commission's rating of the effectiveness of a non-member's data protection measures.

"There is speculation that, if the UK diverges too far from the GDPR norm, that could threaten the UK's adequacy decision from the European Commission," Kirsop explains.

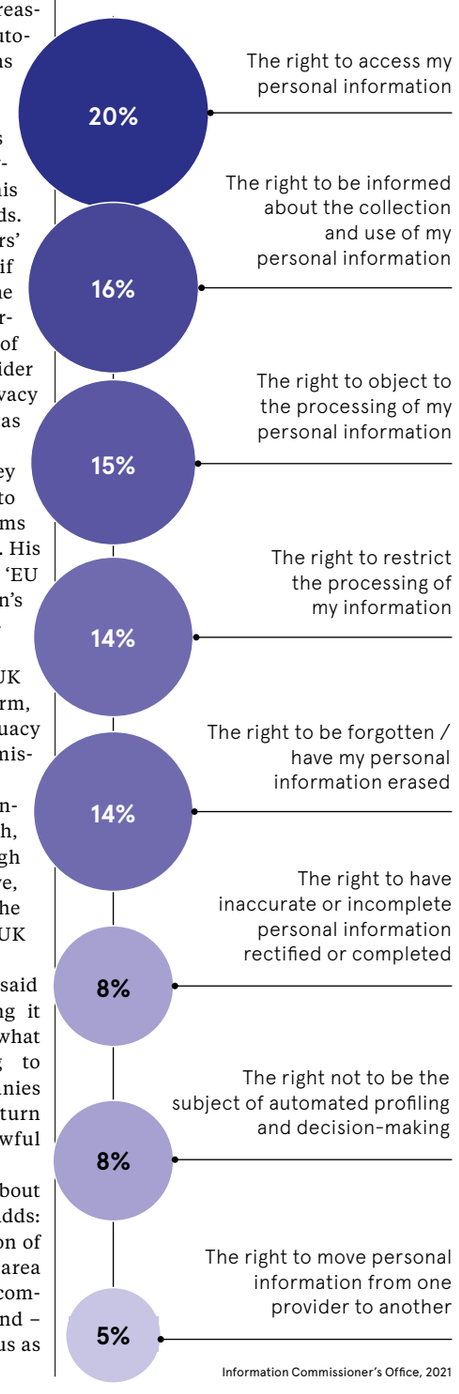
So it could turn out that the government's proposed shift to a pro-growth, pro-innovation data regime, although intended as a business-friendly move, "would have the opposite effect if the result were to be a loss of trust in UK businesses", warns Castro-Edwards.

But, all in all, there is much to be said for simplifying the law and making it easier for businesses to understand what compliance looks like, according to Ustaran. This will benefit both companies and consumers – and it should in turn reduce the risk of litigation for unlawful uses of data, he argues.

Ustaran, who's broadly optimistic about the likely effects of the DCMS plan, adds: "Reforms consistent with the direction of travel the UK has maintained in this area – making the law easier for firms to comply with and for citizens to understand – are compatible with the nation's status as a global leader in data protection." ●

BRITISH CONSUMERS' MOST CHERISHED DATA RIGHTS

Share of respondents citing rights as important to them in relation to personal information held by UK companies



Information Commissioner's Office, 2021

DATA GOVERNANCE

More input required: why AI users have to get smarter

Well-considered data governance is the best way to mitigate the risk of machine-learning errors. Businesses that take the trouble to put good in should end up getting good out

Ed Jefferson

Artificial intelligence is everywhere. If a business isn't using AI, then it's either claiming to use it or claiming that it's about to start any day now. Whatever problem your company is having, it seems that a solution powered by decision intelligence, machine learning or some other form of AI is available. Yet, beneath the marketing hype, the truth is that many businesses can indeed benefit from this technology – if they take the time to learn what it can (and can't) do for them and understand the potential pitfalls.

In essence, AI enables its users to do useful things with a large pool of data – for instance, fish out insights without tying up the time of data scientists. Data is therefore fundamental to AI. There is a direct relationship between the quality (and quantity) of what's fed into a machine-learning application and the accuracy of its output.

Data governance has traditionally been viewed in terms of complying with regulations that stipulate how data must be collected, stored and processed. But AI has introduced new challenges and risks to be managed. It's not enough to obtain a vast amount of data; you also need to consider its characteristics. Where is it coming from? What does it actually represent? Is there anything you need to account for before feeding this data into the algorithm? Will it train the algorithm in the right things?

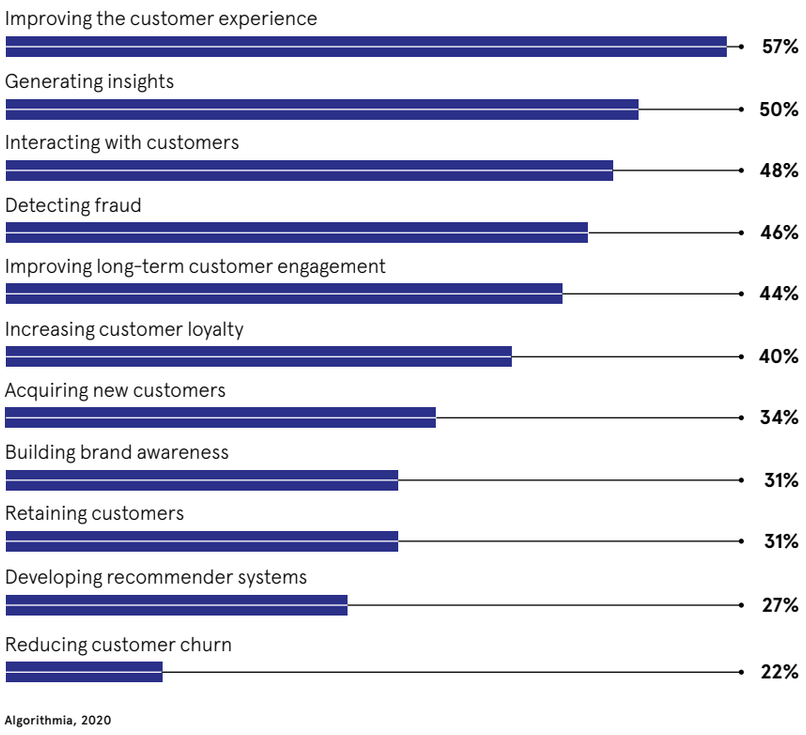
"We can use AI to identify unusual patterns of behaviour in a business... or we can see a business changing how it earns money from contracts in real time," says Franki Hackett, head of audit and ethics at data analytics firm Engine B. "To do this, you obviously need a clear idea of what is relevant, along with high-quality governance processes over your AI. Otherwise, you find either that there are far too many 'risky' items to consider or that the AI points you in the wrong direction."

One way of approaching data governance is to use a tool known as an observability pipeline. This ensures that every process is visible, collecting data that is then unified and cleaned up to create a more consumable final data set. An example would be the conversion of raw website logs to an analytics platform. The original data and its point of consumption are 'buffered' by the pipeline: the raw data enters it and is processed before being sent out to where it needs to be consumed. The method of consumption can easily be altered because the underlying data is unaffected – that is, you can change how the data is presented without changing the collection process.

> **We can use AI to identify unusual patterns of behaviour in a business**

BUSINESSES ARE MAKING EXTENSIVE USE OF ARTIFICIAL INTELLIGENCE

Share of respondents citing planned AI and machine-learning use cases worldwide



Algorithmia, 2020

AI can both benefit from this process and become part of it. The pipeline itself may feed an algorithm, but machine learning can be used to detect anomalous data (based on past trends) before it gets too far. This can save people the time and effort they would otherwise need to spend on checking and cleaning data and, once it's been processed, investigating any irregularities. But it can also ensure that business-critical algorithms aren't being fed data that will lead them to draw the wrong conclusions and, potentially, nullify any benefits gained from introducing AI in the first place.

Ensuring observability has plenty of benefits for data flows that don't involve AI, but the sheer volume of material involved and the complexity of machine-learning processes mean that it's vital to know what's happening to the data being processed. Checking that the number of visitors in your web analytics matches what your logs tell you is trivial compared with understanding the output of a complex algorithm that's being trained and tuned over time. This is because a system that might have started by providing the insights you were seeking could be drifting ever further away from generating anything useful. The better your view of what's happening to the data, the easier it is for you to prevent this outcome.

The risks in this respect can be more serious than, say, the potential overstatement of a set of projected sales figures. Dr Leslie Kanthan, co-founder and CEO of AI firm TurinTech, offers an example of where the stakes are much higher: "If AI is applied to a hospital's magnetic resonance imaging scans and it misdiagnoses a serious disease such as pulmonary fibrosis as bronchitis, causing the patient to take incorrect medication and experience adverse side effects, who is to be held legally accountable?"

He continues: "Similarly, if a data set and model is considered too accurate in its score, it could lead to over-representation, making things go horribly wrong. For example, an AI model that's used to predict criminal behaviour could overfit data and incorrectly come up with a bias against ethnic minorities."

> **If a data set and model is considered too accurate in its score, it could lead to over-representation, making things go horribly wrong**

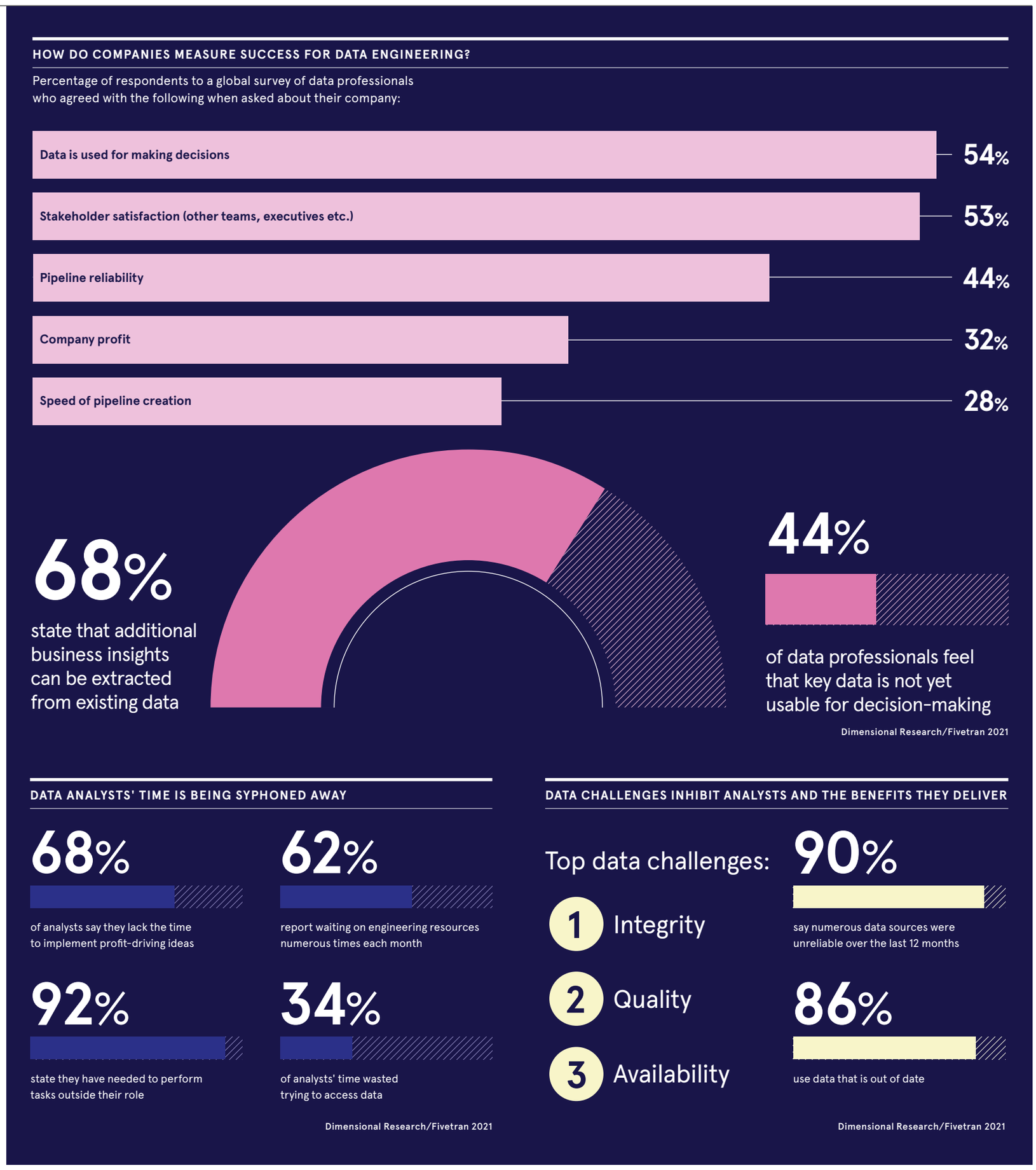
Data governance is key to ensuring that AI produces useful results. It incorporates an understanding of not only ethical and legal issues but also the implications these have for what material must be collected and its potential limitations.

The organisations that will benefit the most from AI will be those that take the time to build a framework that ensures they're targeting the right data; collecting enough of it; checking and cleaning it to ensure its quality; and then using it appropriately.

With the right data governance in place, these enterprises can maximise the benefits and minimise the risks of using AI to deliver insights that will streamline their processes, inform their decision-making and create powerful new products and services. There is a lot more than hype behind what AI can do for your business – as long as you lay the right foundations for it. ●

Your data investment: are you failing to maximise ROI?

Organisations are spending millions to become data-driven, but many are failing to see the value of their investments



Many organisations claim to be data-driven but the truth is that most are failing to maximise their return on investment on data. Indeed, Gartner estimates that 97% of data sits unused by organisations.

This is clearly at odds with the huge investments in data teams and processes that organisations are making to secure an advantage in an increasingly competitive landscape. Research by Fivetran found that 98% of companies are using business intelligence (BI) and 71% plan to hire more data analysts based on growing BI teams over the next 12 months.

Guro Bergan, vice-president and general manager for EMEA at Fivetran believes the gap is down to a failure to extract value from an asset – in this case, the data. "Data teams are seeing a lot of investment. But are companies challenging themselves to ask, 'what decisions is that actually helping us make?'"

This gap between intent and reality eventually could lead to conflict within the C-suite, says Bergan.

"In a few years' time the CFO might turn to the chief data officer and ask, 'What's going on here? I've spent millions of dollars with your data team, your infrastructure, your architecture – but all you're doing is reporting or data visualisation.' The ROI simply isn't there," they explain.

"There's so much data out there about customers, employees, the companies you work with, vendors – all of that data is wonderful, but only if you get value out of it."

The power of data democratisation

Key to maximising ROI is empowering employees through data democratisation, argues Bergan. This means recognising that the power of data analytics is often best placed in the hands of those closest to the data.

"You're not getting ROI if it's only a small subset of people doing data visualisation. But if you open it up to allow other decision makers to use the data, you will start moving closer to a positive ROI," they say.

"Organisations unlock their purpose when they have better access to data. It means they can do better, grow faster. It enables them to achieve all the key priorities they need to move forward."

As a result, organisations should be providing data fluency training: teaching employees how to pull, manipulate and visualise data themselves, rather than relying on the data team.

There are also tools that make it user-friendly for all business functions to tap into the power of data.

Make data 'as simple as electricity'

Another problem organisations face is how to harvest the enormous business value of all the various types of data siloed across the organisation. This, in many cases, is stopping companies fulfilling their purpose; they simply can't get to the core intelligence they need to help them achieve their goals.

Fivetran says its mission is to make data as simple and reliable as electricity. The company will pull all data sources into one central location to provide customers with the ability to analyse it.

"It's about trying to remove those silos because you can't get anything done when the data is in lots of different locations," says Bergan.

"It's making it simple and easy to get to that intelligence, to get the information you need. And also making it reliable so you know that the data is always up-to-date, accurate and consistent."

This is hugely important when you consider that only 9% of execs actually trust the data they have in their organisation, according to data from IBM.

"Think about the value you could unlock if you move the dial from only 3% of data in use to 15% or 20% or 25%. There's a huge amount of value that sits in that," says Bergan.

Nandos is one company that was able to unlock the value of its data. Together with Fivetran, it reduced the time spent moving data over to build campaigns from 80% to 20%. This freed up the data team to work on higher value tasks, while the integration of data sources delivered profitable new insights to the company.

Elsewhere, publisher Condé Nast was able to improve its data workflows so it can now pull data from pretty much anywhere and put it anywhere, providing a 360-degree view of its customers and gaining valuable insights into its audiences.

Don't reinvent the wheel

Another reason why companies often don't extract true value from their data is that their data teams try too hard to 'reinvent the wheel'. For example, Fivetran research shows data analysts can spend up to a third of every workday just trying to access data.

> **Being able to access, operationalise and act on their data in a timely manner is key to fulfilling the company's purpose and potential**

Ninety percent said their work was slowed by numerous unreliable data sources.

The problem is data professionals often focus their efforts on recreating solutions that already exist instead of focusing on the problems that are unique to their business, says Bergan.

"That's the top 20% of value; that's where business leaders will start to buy into what you're doing in your data team because it's customised and relevant to what they're doing," he adds. " They don't want their data teams spending time getting all of their marketing data into one place. They want them focused on whatever they want to know about their business."

Ultimately, organisations need to embrace a culture of using and interpreting data, otherwise they will struggle to achieve the highest possible ROI on their data investment.

"It's a data democratisation journey, not a data democratisation day trip. It's not something that you do in a few minutes or a few days," says Bergan. "This is a one- or two-year programme of work."

Not just for enterprise

Solutions like Fivetran's also lead to democratisation of the data itself. In the past, building data pipelines would have required a huge amount of investment and tended to be very customised. This meant they required a lot of time and effort just to maintain them.

"Having access to all this data used to be something that only really large corporations with a lot of cash flow were able to invest in," says Bergan. "Now it is so much faster and easier – we're actually democratising it for companies. That means smaller companies which don't have access to that same investment are able to access the data, become more agile and see the same advantages as the enterprise."

For more information please visit www.fivetran.com

Fivetran

Q&A

How data empowers companies to fulfil their purpose

Q&A with **Guro Bergan**, vice-president and general manager, EMEA for Fivetran

Q One of your mission statements is that you believe 'data empowers companies to fulfil their purpose'. What does this mean?

A We all know data is key to unlocking enormous value for businesses. Yet when it's siloed across the organisation, it becomes tricky to capitalise on the resource. If business leaders and analysts are unable to access data in its entirety, they will continuously fall short of reaching that core intelligence they need to achieve their company purpose.

To give you an example, customer retention is usually a top priority for any business. One indicator of this, the risk of customer churn, reveals itself in diverse ways for different departments – be that sales, marketing or finance – and if not seen in a holistic light, often goes unnoticed. Being able to access, operationalise and act on this data in a timely manner is key to fulfilling the company's purpose and potential.

Q What's stopping organisations from leveraging the value of their data?

A The main obstacles organisations come to us to solve are dismantling data silos and centralising data. This means moving data from disparate sources – think email marketing software, ecommerce sites and social media – to a central location where it can be analysed. This process can require dozens, if not hundreds, of data pipelines to be built. At the start, companies will often employ data engineers to create bespoke pipelines, but as they grow they find manual build and maintenance becomes a futile endeavour in the face of rising data volumes.

Wasting valuable time on just getting the data, rather than analysing it for its intended purpose, is demonstrably eating into companies' competitiveness and bottom line. In fact, companies spend, on average, half a million dollars every year on this ineffective process. Conversely, when organisations have the right data integration processes in place, they can reposition data engineers and analysts into the roles they applied for, transforming data into the intelligence it has the potential to be.

Q How can Fivetran help solve this problem?

A Fivetran provides an automated data integration service designed to make access to data as simple and reliable as electricity. Imagine if you had to 'configure' a new phone charger or lamp before plugging it into the mains – this is sadly the reality of most businesses when it comes to data and this is where we come in. Fivetran's pre-built data pipelines help businesses connect new data sources to the organisation without skipping a beat. Our technical engineers also take care of maintenance 24/7, enabling your data team to focus on value-added tasks such as analysis, reporting and building machine learning models.

The results our customers see are nothing short of brilliant. Having eliminated the burden of data centralisation, they can scale rapidly, democratise the access to data within the organisation and trust that any decision, made anywhere in the businesses, is backed by up-to-date, accurate and reliable data.

Q Can you provide any advice or best practice for a chief data officer looking to get more value from their data?

A If data leaders take one piece of advice home from this, it should be: invest in your knowledge workers and in data governance.

The responsibility to investigate data doesn't just lie with one team. It's important that all stakeholders have access to the data that's relevant to them and that they know how to get the insight they need themselves. Marketing, finance and customer success managers may leave valuable data on the table on a daily basis due to a lack of understanding. It's the chief data officer's responsibility to enable all relevant personnel to drive innovation.

Connected to this is the need for strong data governance, which is the process of assigning decision rights and accountability in order to properly manage and control how data is created and used. A successful chief data officer will work with their data governor to select the best tools that will help the organisation maximise the value of data, while ensuring compliance with ever-more stringent regulations. Focusing on these two areas will ensure that data democratisation and data literacy initiatives can go hand-in-hand.

> **Wasting valuable time on just getting the data, rather than analysing it for its intended purpose, is demonstrably eating into companies' competitiveness and bottom line**

INTERVIEW

‘We’ve avoided the term “data literacy”– it can be contentious’

Since becoming ITV’s chief data officer in 2020, **Sanjeevan Bala** has introduced several ambitious initiatives. The key to winning support for these, he says, is not to mention the technology involved

Tamlin Magee

Machine learning and *Coronation Street* – it’s a combination that could be straight out of a hare-brained money-making scheme you might overhear Steve McDonald, Weatherfield’s resident dodgy dealer, discussing over a pint in the Rovers Return. But not only is it real; it’s a pointer to the future of broadcasting – and we can probably expect contextual advertising to find its way into the ad breaks served up by any commercial television channel.

Having started in 1960, *Corrie* is the world’s longest-running TV soap, so the prospect of an AI-driven Weatherfield represents a curious juxtaposition of tradition and modernity. Cynics might suggest – not without reason – that such a model would herald a marketing-driven era in which computers are in creative control and on a singular mission to monetise at all costs.

But, according to ITV’s group chief data and AI officer, Sanjeevan Bala, that won’t be the case – on his network, at least. He acknowledges that there is a debate about “whether machine algorithms are going to decide what we watch or not. Speaking from ITV’s perspective, I can say that it definitely isn’t the direction we’re taking.”

Having worked as a consultant and strategist across a range of industries, including a four-year stint in marketing with Tesco Clubcard pioneer Dunnhumby, Bala eventually settled into broadcasting in 2011, becoming head of planning and analytics at Channel 4. He was responsible for a huge growth in the amount of first-party data received by the network through viewer registrations.

He joined ITV in May 2020 – and not a moment too soon, as the UK’s first Covid lockdown was spurring a huge surge in TV watching. He has since overseen a range of data-led pilot projects, including a drive to obtain more information on viewers via registrations, just as he had managed at Channel 4. This first-party data is set to be crucial in bringing contextual advertising to life in a way that’s effective but subtle enough to avoid sullying the character of some of the UK’s best-loved shows.

> **Organisations occasionally concentrate too closely on achieving data literacy as opposed to building business literacy**

Bala recalls that ITV understood “very quickly” that it had to retain the strongest elements of its programming – the character of the shows, the creative components and the human stories – and combine these with the latest tech. While art and science can seem polar opposites (as was the case in his previous job when he arranged a disastrous meeting between a TV programmer and a data scientist who didn’t see eye to eye), it doesn’t have to be that way.

“We often talk about this augmented world where it’s the best of both,” Bala says. “This is about how we create tools and understanding, and combine these with editorial, commercial and distribution.”

Here’s how it all works in the case of *Coronation Street*: the internal commercial team that was created in 2021, ITV AdLabs, has built machine-learning systems that, in effect, watch and listen to the show. Their algorithms will recognise contextually relevant moments on screen. So if, say, food features prominently in a particular episode, then relevant commercials could more easily be served up – by a food-box subscription service, perhaps.

“From an advertising perspective, the metrics are really strong,” says Bala, who holds AdLabs’ work as a “great example” of where ITV is combining art, science and creative storytelling. “The thing that grates with consumers the most is when advertising isn’t relevant.”

This is just one example, of course. Under Bala’s guidance, ITV is taking an “iterative” approach in which it demonstrates the value of data to one organisational function and then uses its successes as a way to make other departments more receptive to the concept. For instance, soon after he joined, his team started targeting new viewers on social media with promos for shows – people who may not traditionally have tuned into ITV at all – and then showed the results of this initiative to other teams.

The trick to gaining their support for the new approach, Bala reckons, is to avoid talking about tech wherever possible. Businesses that focus too much on technology risk falling into a trap where they “end up with a faster horse” but fail to secure “real transformation”, he says.

When Bala joined ITV, for instance, the broadcaster already had in place technology components such as Crocus, an analytics tool developed in association with Google Cloud Platform. But what it still needed, he felt, was an articulation of the group-wide mission, which required him to explain the desired outcomes in the language of the people he was addressing.

“At our core, we broadcasters are creative producer-distributors,” Bala explains. “Our value chain is about commissioning, acquiring and distributing content. It’s then about promoting that content through marketing and, lastly, monetising that content through advertising. When we talk to business leaders in each of those areas, we start to have conversations about how data might inform what we commission or acquire, or start to ask ourselves: ‘What if we could use data to think about how to distribute content in a different way?’”

Over the coming year to 18 months, ITV hopes to expand data initiatives into its marketing, product and commercial teams, including the wider roll-out of contextual advertising.

With this transformation already under way, the network has some bold ideas for what’s next. Last year, it invested £2.5m in Metavision, enabling it to expand its intellectual property into the metaverse. In July, it made its first foray into this virtual world by launching a version of its game-show *The Void* in the *Fortnite Creative* sandbox video game, for instance.

To realise such ideas, Bala’s team has focused on “fixing the last mile first”. This means ensuring that both business leaders and end users understand the value in any projects, then connecting everything up to the outcome, rather than worrying about all the technical details from the get-go.

Similarly, he feels that organisations sometimes focus too closely on achieving data literacy as opposed to building business literacy. “We’ve avoided the term ‘data literacy’, because I think it can be slightly contentious, with its implication of illiteracy,” Bala says. “We do talk a lot about how we can upskill our colleagues and improve their capabilities. And we’re making sure that we do it one team at a time.”

> **The thing that grates with consumers the most is when advertising isn’t relevant**

This needs to be a two-way process, he stresses. Data professionals have to understand how an organisation operates, what its culture is, how information is used and what choices can be made. “It’s about how you mesh all those things together to roll out a more relevant programme.”

WHAT COMPANIES ARE AIMING TO GAIN FROM THE DATA THEY’RE HARVESTING

Share of organisations in Europe and the US citing key business priorities for their data and analytics functions

Wakefield Research, Alation, 2021