THE MAGAZINE FOR ENTERPRISE APPLICATIONS AND ASSOCIATED TECHNOLOGIES

ERP TODAY

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Editor's Words

Don't bring a hammer to an automation fight

In the very first issue of ERP Today, back in April 2019, I wrote that *"AI and automation will be the most transformative technologies that we ever invent".* A little over three years later we are starting to see the realisation of that prediction as point solution RPA matures into enterprise-wide hyperautomation.

The rate of evolution has been stunning: from a misunderstood technology that conjured images of terminator-style robots tapping on a keyboard, to a coherent enterprise imperative in less than five years. Any business that still harbours doubts about the importance of automation is at risk of the same fate as those which failed to respond to the first digital revolution in the late 90s.

Like many emerging technologies, its first incarnation was a pale comparison to the sophisticated and intelligent tools we have today. Small wins are still possible with isolated RPA but the real opportunity lies within an automation platform that seeks out, identifies, tests and executes automations across the enterprise.

For several years, the phrase 'digital transformation' has been incorrectly attributed to virtually all efforts to modernise IT systems. The term is grossly overused and confounded by many who believe moving applications to the cloud or implementing a new CRM constitutes transformation. It doesn't. That's just a slightly better way of doing the same thing you have been doing for the last 50 years.

To truly change and extract the maximum value from your IT investments, there must be a fundamental shift in the underlying operating model which is digitally optimised at every level. Modern automation platforms provide this opportunity and they represent the final piece of the jigsaw for any digitally ambitious organisation.

The impact that automation will have in the next five years will be seismic. Whilst the internet and cloud revolutionised shopping, watching a film and calling a taxi, automation will disrupt every conceivable type of business within virtually every vertical. Professional service firms, manufacturers, banks and retailers – the next phase of change brought on by automation will be more radical than anything we have witnessed before and only those that grasp the opportunity now will be here in a decade to tell the story.

The internet gave birth to companies like **Amazon** but it hasn't killed every retailer. **Uber** was possible because of the cloud but there are still plenty of black cabs in London. Whereas previous disruptive technologies gave rise to a few superpowers in isolated industries, automation will quickly become a prerequisite for any company that simply wants to stay in business. It will be impossible for companies to compete if one adopts automation and the other doesn't. For that reason, understanding how automation works and starting your automation journey should be the number one priority for every enterprise on the planet.

To put some context around these bold statements, consider a previous revolution in automation from 60 years ago: imagine two volume car manufacturers, one using human panel beaters to build its vehicles and the other using advanced robotics on a modern assembly line. That is the kind of comparison we will see very quickly between contemporary businesses that automate and those that don't.

No matter which industry you are in, if you don't develop an automation strategy you will be the company holding a hammer while your competitors execute an optimised digital experience for employees and customers alike. ■

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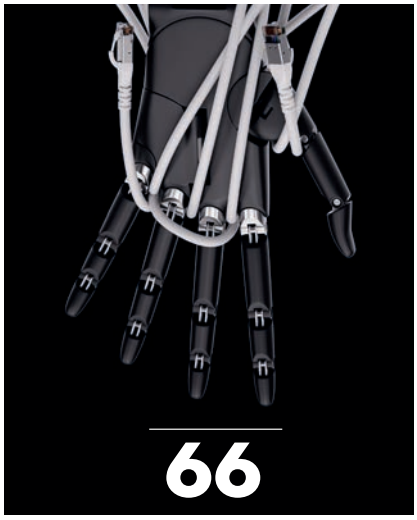

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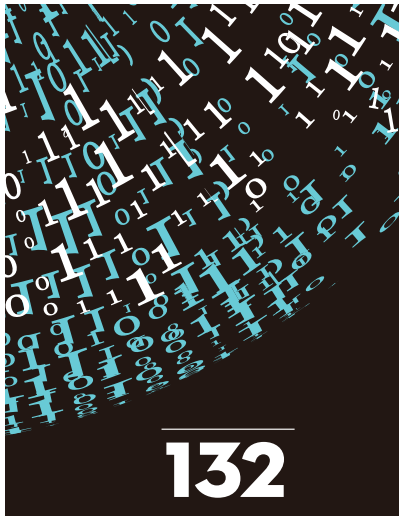

Articles

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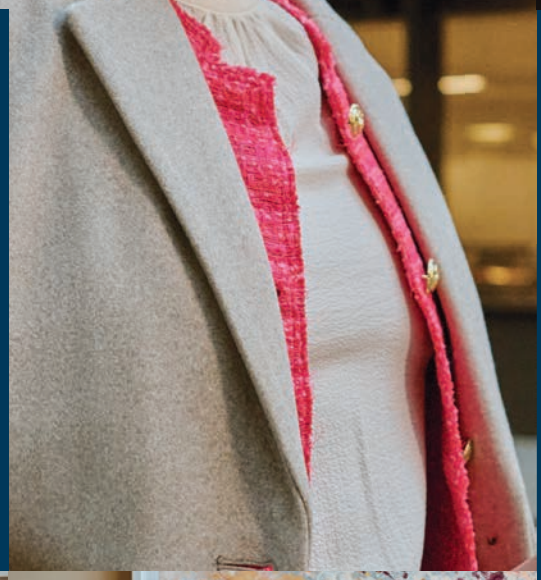

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ServiceNow

earnings reveal a tireless appetite for growth and first shots across the bows at ERP vendors

BY PAUL ESHERWOOD


Bill McDermott

ServiceNow continues to dazzle with its latest set of results disclosing unabated growth across all metrics. While the numbers followed a predictable path, the ramped-up narrative signalled that sleeves were being rolled up at NOW HQ.

Ever since Bill McDermott took the helm at ServiceNow the message has been clear: 'others don't have to lose for us to win'. The company has repeatedly used this cordial positioning to describe its status within the enterprise tech ecosystem. Presumably to allay any rumours that McDermott would take the business head to head with the likes of **Oracle**, **Workday** and his old employer, **SAP**, and to reassure customers that they wouldn't have to choose between ERP modernisation and buying ServiceNow products.

However, during its most recent earnings call, McDermott zeroed-in on the company's ability to move customers from twentieth-century business architectures to one that is designed for the digital age – comments which clearly take a swipe at the traditional proprietary software vendors.

"Businesses are leaning into the generational shift from architectures built in the last century to platforms engineered for this one. Through dramatically improved experiences for customers, employees and creators, ServiceNow is becoming the strategic centre of gravity for digital transformation. Our focus on value creation is unmatched."

McDermott took a strong position when asked whether ServiceNow could continue its momentum against global headwinds, pointing out several times that customers were taking a completely new approach to IT architecture – an approach that only ServiceNow is able to support according to McDermott.

"It's important to reinforce that the 20th century architectures were heavily invested in by our customers," he said. "And our desire is not to replace them. Our desire is to make them more relevant. Those underlying systems, some of them that are point solutions and they never should have been there in the first place, they do disappear. The core large, well-known brand systems, they remain, but with the agility of the ServiceNow platform above them and our ability to automate the workflows and completely change the experience set."

Back in February when I interviewed McDermott for a cover story he was far less bullish on the ERP market and favoured a narrative that sounded more like co-existence rather than a full incursion into SAP territory. However, the narrative has shifted of late and there is definitely a sharper focus on highlighting wins in the ERP space – and this is underpinned further by some of the strategic hires ServiceNow has made across sales and marketing in recent months.

McDermott said: "If you look at the ERP market, we see customers at various stages of their move to the cloud. Some of the world's largest manufacturers, for example, are consolidating hundreds of old procurement processes into a modern workflow experience. This declutters the legacy environment, driving more than $1bn in cost efficiencies for just one of our many ERP wins this quarter."

ServiceNow isn't yet saying that it is taking on the incumbent ERP vendors – but watch this space, I predict it won't be long before the narrative turns from a whisper to outright assault.

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Workday surpasses 2000 customers in Europe and rising

Workday revealed its applications are now used by over 2,000 customers in the EMEA region. The figures come as Workday continues to scale rapidly in EMEA, spanning across European-headquartered companies including **Asda**, **Basic Fit**, **franprix**, **Glovo**, **Mazars**, and **Telpark**.

The company has also seen significant growth in France, Germany, and the UK, along with other European countries.

Workday watchers may not be too surprised by the news; in April the company saw greater expansion in EMEA with the announcement of an all-new European HQ in Dublin, Ireland, poised to create 1,000 new jobs and increase Workday's Ireland-based workforce by 60 percent.

The Workday Rising announcement also underlines that both Workday's HCM and finance solutions are being used by clients, showing the company's depth of range in EMEA.

Commenting on the news, Angelique de Vries, president of EMEA, Workday, said: "There is incredible momentum in EMEA for Workday because of our ability to help companies effectively navigate change and drive positive business outcomes. Employee adoption is often one of the biggest challenges in new digital transformation initiatives, but the simplicity of Workday user experience and speed of the Workday architecture encourages rapid user adoption.

> The simplicity of Workday user experience encourages rapid user adoption.

"Workday is committed to helping customers make faster, more informed decisions that help them fuel business growth."

VODAFONE AND IBM ENTER INTO QUANTUM PARTNERSHIP

Vodafone Group is collaborating with **IBM** on quantum-safe cybersecurity, as well as joining the IBM Quantum Network. The latter will give the company cloud access to IBM's advanced quantum computing systems and quantum expertise.

Vodafone will work with IBM to help validate and progress potential quantum use cases in telecommunications and explore quantum computing for a variety of telco use cases.

The telco giant will also advance their employees' skills in quantum technology through iterative prototyping led by IBM, as well as actively recruiting quantum computing experts.

With the collaboration, Vodafone plans to explore how to apply IBM Quantum Safe cryptography technology across its entire and diverse network infrastructure and systems.

Scott Crowder, vice president, IBM quantum adoption and business development, said: "We're excited to partner with Vodafone to help them simultaneously adopt quantum technology, and move to quantum-safe technology as they serve an entire ecosystem of operators, vendors, regulators, and open-source community."


Alex Rinke

CELONIS ADDS 'THIRD DIMENSION' TO PROCESS MINING

Celonis has launched two new updates to its process mining software. Co-founder and co-CEO Alex Rinke explained to ERP Today how new platforms Celonis Process Sphere and Celonis Business Miner add an extra dimension to process mining and supply chains.

"We're basically launching a complete reinvention of the core technology," said Rinke. "It's a new way for customers to mine (and gain) an entirely new perspective on their businesses. It's like moving from 2D to 3D.

"We want to be able to represent the entire event for the entire business and its multiple processes."

The Process Sphere app provides companies with a multi-dimensional understanding of processes, helping to connect their end-to-end supply chains and understand the complex relationships between objects.

Celonis Business Miner meanwhile enables businesses to investigate enterprise ERP, SCM, and CRM systems for hidden process opportunities, and then mobilise the right team, resources, and actions to optimise the process.

"This economic condition...is going to sustain for some time," Rinke said on the matter of supply chain issues. "Businesses that can adapt quickly and run and execute well (we) can separate from those that can't. These crises usually weed out the businesses which aren't innovative enough."

> Celonis secured $1bn at a $13bn valuation to tackle supply chain challenge

In August, Celonis secured $1bn at a $13bn valuation to tackle supply chain challenges, with Process Sphere doubling down on the company's thesis. The company has been having a record year of growth, with more than 2500 enterprise deployments worldwide. It also boasts partners such as **IBM** and **ServiceNow.**

Maincare selects HPE GreenLake for health cloud

Leading French healthcare software provider, **Maincare** has adopted **HPE GreenLake** to power its highly secure cloud offering.

Maincare will use HPE Synergy, which includes a software-defined composable infrastructure, in an as-a-service model, to provide a responsive platform for secure, healthcare-certified cloud services while meeting rigorous European regulations.

Charles Henry, transformation, solutions and cloud services growth leader at HPE, said: "We're delighted to see our solution matching market demands for smarter healthcare, whilst simultaneously reducing overheads and environmental impact by creating a scalable system."

Eric Machabert, CTO and CISO at Maincare Solutions, said, "Technology offers immense possibilities to the healthcare industry to improve patient care and save lives, but that comes with additional responsibilities. HPE fully embraced that responsibility. The result caters exactly to our current needs, but can grow as we do, making it both an environmental and economical solution."

Seismic or small, change is all around us

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we can make change work for you
and your business.

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Daniel Dines

UiPath named Microsoft partner at FORWARD 5

UiPath has been named a **Microsoft** preferred partner for enterprise automation.

The announcement came at the UiPath FORWARD 5 conference, alongside news of several updates to UiPath services that aim to offer a full spectrum of business productivity enhancements across enterprise-wide and individual user automation pursuits.

The partnership allows low-code and no-code deployment of unattended software robots quickly on the Microsoft Cloud, without large infrastructure implementation, automating business processes and aiming to save hundreds of hours of labour.

Key UiPath platform offerings such as Automation Cloud, Process Mining and Test Manager are available on the Microsoft Azure Marketplace, and full integration with the Microsoft Power platform is expected by early 2023.

> UiPath is perhaps the largest company ever built on the Microsoft platform

"UiPath offers that unique platform where people can deal with the same set of technologies, both for personal and enterprise automation," said Daniel Dines co-CEO of UiPath, "We are choosing Microsoft Azure Cloud and it's a proud moment for me to announce the partnership, UiPath is perhaps the largest company ever built on the Microsoft platform."

Scott Guthrie, executive vice president of cloud and AI at Microsoft said, "Customer success is what both Microsoft and UiPath are very focussed on. I am excited to announce that UiPath is a preferred partner for enterprise automation and Microsoft. As part of our strategic partnership, Microsoft and UiPath are committed to helping our joint customers harness market-leading integrations to increase productivity and accelerate business value. We're deeply committed to this partnership and optimistic about the tremendous opportunity."

AWS AND BMW GROUP DRIVE NEW CLOUD-BASED DATA PLATFORM

A strategic collaboration between **AWS** and **BMW Group** will develop customisable cloud software to simplify data management for millions of connected vehicles.

The new software will be available to other automakers, enabling integrated vehicle data, accelerated vehicle and fleet application development and improved life cycle management, while delivering personalised driver experiences at lower costs.

Sarah Cooper, general manager of industry products at AWS, said: "We are excited to make the vision of software-defined transportation a reality and to enhance the capabilities of vehicles on the road."

Nicolai Krämer, vice president of vehicle connectivity platforms at BMW Group, said: "We have 20 million connected vehicles on the road today. Our offboard cloud platform, powered by AWS, will process roughly triple the volume of vehicle data."

Infor partners with NMIS to power model digital factory

Infor has entered into a long-term strategic partnership agreement with the **National Manufacturing Institute Scotland** (NMIS).

Infor's investment will underpin the development of Model Digital Factory Demonstrators (MDFD) for the NMIS Digital Factory environment at the new NMIS 11,500m^2 headquarters.

Operated by the **University of Strathclyde**, NMIS is a group of industry-led manufacturing research and development centres with a network of partners brought together to boost the manufacturing community and is part of the UK's High Value Manufacturing Catapult.

The new headquarters will provide facilities where ground-breaking manufacturing and related supply chain research is undertaken to transform productivity levels, making companies more competitive and boosting the skills of the current and future workforce.

Anwen Robinson, Infor GM and SVP for UK and Ireland, said: "At a time when manufacturing is beset with local and global business challenges, there has never been a greater need for government, industry, and academia to join forces to help drive transformational change. Infor is wholly owned by **Koch Industries**, one of the largest industrial companies in the world, and our investment in NMIS highlights Infor's commitment to supporting manufacturing through not only the latest advancements in technology but through the continual development of key skills right across the sector."

Chris Dungey, research director at NMIS, said: "I am delighted Infor has decided to join the National Manufacturing Institute Scotland's community and is committed to working with us to transform manufacturing in Scotland and the wider UK."

IBM strategy payoff revealed in Q3

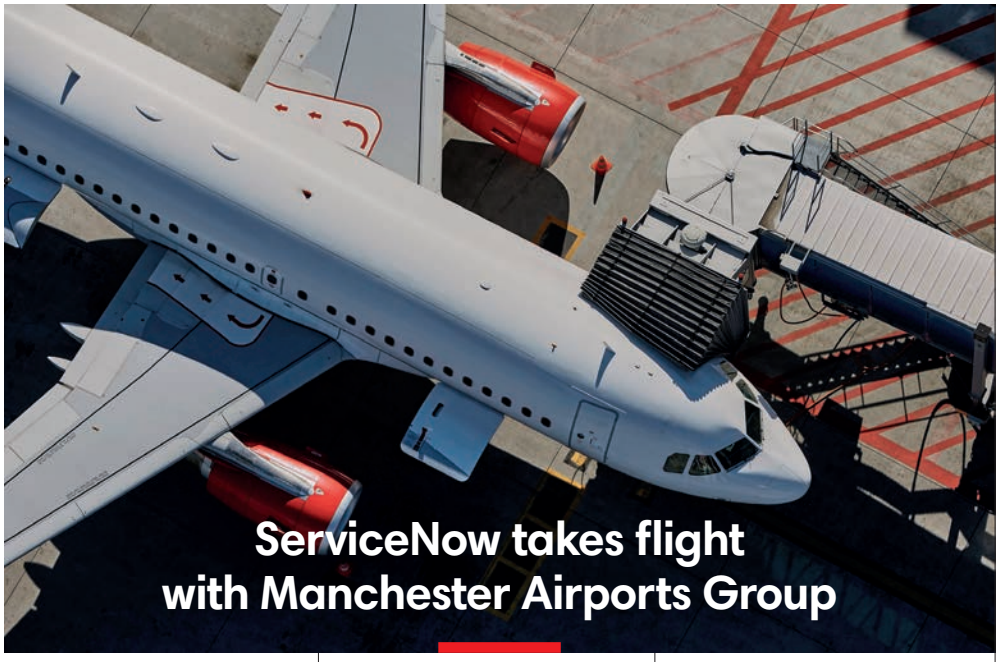
All **IBM** business segments grew in Q3, resulting in $14.1bn total revenue, up six percent, 15 percent at constant currency, and shareholders saw $1.5bn returned via dividends.

Infrastructure and hybrid cloud increased 15 percent, up 23 percent and 20 percent at constant currency.

The IBM-**Kyndryl** separation produced significant percentage gains across segments, notably seeing software and infrastructure total revenue up five points. **Red Hat** and transaction processing saw IBM's software top revenue gains, sitting at $5.8bn.

Total cash on hand was $9.7bn, up $2.2bn from the year-end 2021, and expected consolidated free cash flow is $10bn for the year.

"Our revenue growth and operating profit profile align to the investment thesis we outlined last fall," said James Kavanaugh, IBM senior vice president and chief financial officer. "Our portfolio mix, strong recurring revenue stream and solid cash generation allow us to invest for continued growth."



ServiceNow takes flight with Manchester Airports Group

Manchester Airports Group (MAG), one of the UK's largest airport operators, is using the **ServiceNow** platform to reduce the complexity and time to onboard new employees.

With ServiceNow's HR Workflow module, MAG can expect an increase in productivity and efficiency to enhance employee experience and the hiring process. MAG will also migrate from the ServiceNow IT Service Management (ITSM) product to the ITSM Pro version, to further support the onboarding of new colleagues. This includes both employees who are office-based and those who work in frontline operational roles.

Jordi Ferrer, vice president and general manager of ServiceNow UK and Ireland, said: "Through our digital workflow solutions, on average, we've been able to help our customers reduce the time it takes to onboard new employees by 41 percent. For any business with a complex and siloed structure, its HR function needs to run smoothly. It's about a complete journey, from hire-to-retire, onboarding and offboarding. We've welcomed the opportunity to rejuvenate MAG's people systems to ensure not only their employees have a better experience, but that passengers do, as well."

ONBOARDING TIME FOR NEW EMPLOYEES WILL REDUCE BY 41 PERCENT

Ryan Cant, chief digital officer at MAG, said: "Our partnership with ServiceNow will enable us to deliver an automated onboarding experience for our new employees, allowing us to reduce complexity and manual handoffs. Crucially, we anticipate that it will improve the time it takes between a colleague accepting an offer, to them being fully onboarded and ready to help our customers start their journeys."

ORACLE BANKS PARTNERSHIP WITH HSBC

In a multi-year agreement with **Oracle**, **HSBC** will upgrade and migrate select database systems to Oracle Exadata Cloud@Customer, a cloud platform delivered as a managed infrastructure service in HSBC's own data centres.

Oracle Exadata Cloud@Customer is an Oracle Cloud Infrastructure (OCI)

that will enable HSBC to continue using Oracle databases while controlling data governance, thereby meeting data locality and security regulations.

Richard Smith, executive VP technology, EMEA, Oracle, said: "Our partnership with HSBC is enabling it to consolidate critical systems on a secure, scalable on-premises cloud platform and develop cloud-based services faster. We look forward to our collaboration with HSBC as we help deliver the next generation of financial services."

Frank McGrath, CTO at HSBC, said: "Our strategy is to digitise the bank at scale, so that we can innovate faster for customers, and our collaboration with Oracle is important in advancing this transformation agenda."

Deloitte.

UiPath

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Crypto hedge bet?

Google combines Coinbase into Cloud

Cryptocurrency platform **Coinbase** has selected **Google Cloud** as a strategic cloud provider, in a move touted as driving Web3 innovation and development.

The news comes after Google's recent partnership with the blockchain arm of embattled crypto service **Binance**.

Announced at Google Cloud Next '22, the Coinbase collaboration will see Google Cloud's compute platform used to process blockchain data at scale, enhancing the global reach of the start-up's crypto services through Google's fibre-optic network. Google Cloud meanwhile will leverage the Coinbase Commerce offering to enable cryptopayments for its solutions for a "handful" of "select customers".

The move is seen as validation of cryptocurrency technologies in a difficult year for the tech, as well as a cementing of Coinbase's status as a safe bet in crypto. September saw Google Cloud partner on a smart contract blockchain service from Binance, the cryptocurrency exchange which has faced legal trouble in a variety of nations, along with a major hacking. Unlike the Coinbase deal, the September announcement fully focused on the rebranded BNB Chain with nary a mention of Binance and its cryptocurrency wares.

As part of the deal, Coinbase will move current "data-related" apps from **AWS** and build its global data platform on Google Cloud infrastructure. Using Google's data and analytics tech, Coinbase users could potentially benefit from machine learning-driven cryptocurrency insights.

Web3 developers can also access Google's crypto public datasets, as powered by Coinbase Cloud Nodes, across major blockchains. Additionally, Google will use Coinbase Prime for institutional crypto services such as secure custody and reporting.

NO-BRAINER: CAPGEMINI COURTS BRAINCOURT

Capgemini has entered into a share purchase agreement to acquire **Braincourt**, a specialist in business intelligence and data science services.

Braincourt's client base is highly complementary to Capgemini's, with leading brands in the automotive, construction, energy and telecommunications industries.


Zhiwei Jiang

Zhiwei Jiang, CEO of Capgemini's insights and data global business line and member of the Group Executive Committee, said: "The team of experts are a natural fit for Capgemini in terms of culture, as well as their portfolio of data driven services, key accounts, and competences. I am happy to welcome them to the Group."

Günter Hauser, executive partner of Braincourt, said: "We are very much looking forward to bringing our deep expertise to augment Capgemini's data and analytics offerings. Our clients will have access to a much broader range of services that can be delivered for them across the globe."

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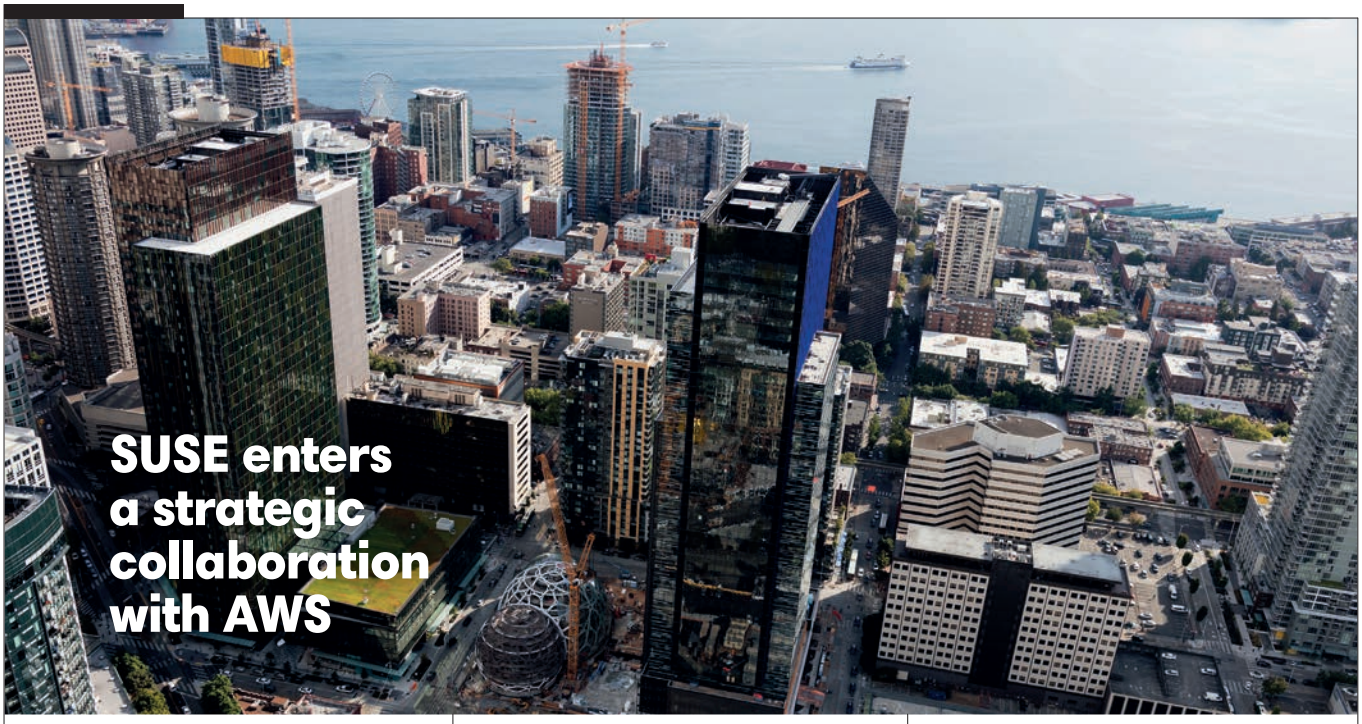

SUSE enters a strategic collaboration with AWS

SUSE and **AWS** have entered into a multi-year strategic collaboration agreement that offers migration acceleration programmes for **SAP** customers seeking a cloud shift.

The collaboration between the two companies outlines deliverables and investment areas to ensure smoother migration of customers' SAP landscapes to AWS. These deliverables include joint go-to-market activities across sales and marketing, channel enablement and training, and dedicated personnel worldwide.

Kelly Collins, global head of cloud at SUSE, said: "By deepening our collaboration with AWS and their top global system integrators, we are making a promise to our customers that we are committed to supporting their most mission-critical workloads being migrated and modernised on AWS."

Kathleen Curry, director of AWS strategic alliances, said: "This multi-year collaboration will facilitate stronger marketing and co-selling programmes to complement our respective technologies. Our work will help SAP customers modernise, shorten migration timelines, and accelerate time to value."

UiPath targets midmarket with Neostella partnership

UiPath has announced an enhanced diamond partnership with **Neostella**, to provide flexible automation investment and usage models for midmarket businesses.

Specialising in automation, business consulting, and implementation services, Neostella will help UiPath bring managed services to small to midmarket organisations.

The move continues the aggressive expansion of the UiPath network, marking a trend of further diversifying the target enterprise use cases for the vendor.

Jay Snyder, senior vice president and global head of customer success and partners at UiPath, said: "As CIOs and other business leaders make automation an imperative, they are continuing to rely on automation experts within the UiPath partner ecosystem to ensure success. Neostella has demonstrated tremendous impact in helping customers achieve business outcomes faster through the UiPath end-to-end automation platform."

"With our enhanced partnership, Neostella and UiPath will collaborate to drive added value to customers through flexible models that allow organisations to deploy automations quickly and efficiently and expand their automation footprint."

Jay Snyder

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ITV gets new ERP with Oracle Fusion Cloud

ITV has chosen **Oracle** Fusion Cloud Applications to support the digital transformation of its finance and HR processes.

With Oracle Fusion Applications for finance and HR, ITV can simplify and integrate critical business processes, create new ways of working and better support employees to build, evolve and respond to a rapidly changing market demand.

The transformation team chose the Oracle Fusion Cloud ERP and Human Capital Management to drive a programme of digital focus and real-time, data-driven decision-making throughout ITV's business operations.

With these solutions, ITV can automate financial processes and better connect data across its lines of business to increase productivity, reduce costs and improve controls. Oracle Cloud HCM will assist in optimising HR processes to improve employee experience.

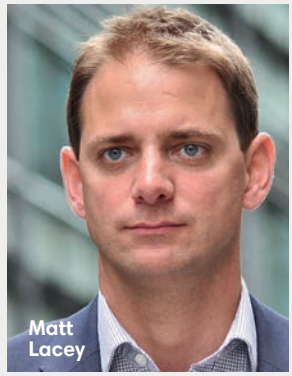
Cormac Watters, EVP Applications EMEA, Oracle, said: "The media and entertainment industry is among the most dynamic and disruptive in the world. Organisations like ITV need to remain agile and adaptable as they continue to evolve their offerings and tap into new audiences in a globalised market."

Mark Smith, CIO at ITV, said: "Digital transformation is at the heart of ITV's strategy. As part of this we're taking a 'digital first' perspective on our business operations, making sure we're providing our teams with the digital tools and data insights they need to enable our wider strategic direction and priorities. With Oracle Fusion Applications, we will have an integrated suite of applications that will enable us to respond swiftly in a dynamic, global marketplace."

Deloitte reveals large-scale expansion with Google Cloud

Deloitte and **Google** Cloud have made the most significant expansion of their alliance to date, combining Deloitte's industry and domain knowledge and modern software engineering capabilities with Google Cloud's technology to continuously build and evolve industry-leading cloud solutions.

Deloitte and Google Cloud will co-invest in several joint new solutions to accelerate enterprise cloud applications, speed time-to-value for clients across industries and commit to train thousands of professionals.


Matt Lacey

Both companies will adopt new industry solutions for priority industries which include real-time associate productivity, Deloitte Google Cloud Accelerator, and Candidate360.

Matt Lacey, Deloitte's global chief commercial officer for the Alphabet Google relationship, said: "Our work together in shaping markets and engineering cutting-edge solutions has already made an incredible impact on our clients and their businesses. The expansion of our alliance and our global Google Cloud practice further solidifies our commitment to bringing Google Cloud technologies to organisations in all industries and sectors."


Carmine Di Sibio

'Big Four' accountancy firm EY announces split

Ernst & Young's biggest member organisations have unanimously agreed on a vote to break the business into separate audit and advisory firms. 13,000 partners across 150 countries will vote country-by-country, completing early next year and affecting 312,000 employees globally.

Marking the biggest shift in decades among the accounting and consulting 'Big Four'; EY, **KPMG**, **PwC**, and **Deloitte**, it follows several high-profile corporate collapses, including **Carillion**, **BHS**, Fintech's **Wirecard AG**, and **NMC Health PLC**, which raised questions about the firm's audits.

EY leaders hope to redefine the firm and promote faster growth, removing operational challenges and conflicts of interest, and preventing business failures.

The firm announced in a press release: "The world is changing, and we have to adapt to continue to thrive and achieve our full potential."

EY speculates a separated firm could raise $10bn by selling 15 percent of shares, with audit partners in the business receiving multi-million-dollar payouts.

It's estimated by EY's CEO, Carmine Di Sibio, that standalone advisory offerings to large technology firms could raise a further $5-10bn per annum. Back in July, Di Sibio told the **Financial Times** that "When EY committed to keeping both its audit and advisory operations almost a decade ago, it had not anticipated how important cloud technology and partnerships with tech companies would become."

"IT HAD NOT ANTICIPATED HOW IMPORTANT CLOUD TECHNOLOGY AND PARTNERSHIPS WITH TECH COMPANIES WOULD BECOME"

Despite all 'Big Four' firms anticipating increased revenues this financial year, Di Sibio hints at inevitable future splits. "As these firms get bigger and bigger, [conflicts] become harder and harder to manage", he said.

MICROSOFT Q1 REVEALS CLOUD WINS AMIDST INCOME FALLS

Microsoft's Q1 revenue increased 11 percent to $50.1bn YOY. Net income, however, fell 14 percent amidst wider economic uncertainty and personal computing losses.

Intelligent cloud revenue reached $20.3bn (up 20 percent), with Azure and cloud services growing 35 percent. Dynamics 365 revenue (up 24 percent) drove success for productivity and business processes, up nine percent to $16.5bn, and **LinkedIn** revenue rose 17 percent. Office 365 saw products and cloud services revenue rise seven percent.

Personal computing fell to $13.3bn after Windows OEM and **Xbox** content and services dropped 15 and three percent respectively.

"In a world facing increasing headwinds, digital technology is the ultimate tailwind," said Satya Nadella, chairman and chief executive officer at Microsoft. "In this environment, we're focussed on helping customers do more with less, while investing in secular growth areas and managing our cost structure in a disciplined way."

IBM MERGES WITH RED HAT STORAGE

Big Blue will integrate **IBM**'s storage business unit and **Red Hat**'s container storage technologies.

Red Hat OpenShift Data Foundation will accelerate IBM Spectrum Fusion capabilities for the Kubernetes platform market.

Services provided by the merger include: unified storage for containerised apps, a consistent IBM Ceph hybrid cloud experience, a single data lakehouse to derive intelligence from unstructured data on IBM Spectrum Scale, and flexible cloud and on-premise automation builds.

ServiceNow results defy macroeconomics

Gina Mastantuono

The latest **ServiceNow** earnings call followed a similar theme to previous quarters: revenues up by more than 20 percent; average contract value soaring with customers paying $10m or more up 60 percent; and more than 1,500 customer with ACV higher than $1m. Across every metric, ServiceNow defies the macroeconomics and industry trends – as Bill McDermott, CEO, confidently stated, "we have a tireless appetite for growth", and their customers seem equally hungry.

Commenting on the stellar financial performance, Gina Mastantuono, ServiceNow CFO, said: "Q3's outperformance is a testament to the mission-critical nature of our platform and the strong execution of the ServiceNow team. We continue to see a robust pipeline and are maintaining our investments in growth hires as the opportunity in front of us remains enormous. Our business is resilient, our teams are delivering, and we are as confident as ever about becoming the defining enterprise software company of the 21st century."

> Q3's outperformance is a testament to the mission-critical nature of our platform

My big call out from the previous earnings was centred on NOW's ability to hire at a relentless pace even under the toughest of conditions. Not only did customers want to work with ServiceNow, but so did salespeople, architects, HR specialists and marketeers. It's clear from the latest numbers that trend has not abated, in fact it's accelerated. The establishment is losing top talent to ServiceNow across virtually every line of business and the company now boasts a global workforce of more than 20,000 people.

This ability to hire talent has provided the platform for ServiceNow to boldly push into new markets and has seen company revenues increase to $1.83bn on the quarter, of which $1.74bn came in the form of predictable subscription billing. However, recognising that even with such an assertive recruitment strategy there simply aren't enough resources to keep pace with their growth ambitions, ServiceNow also announced the launch of RiseUp – a new programme designed to skill one million people on the NOW platform by 2024. This is an incredibly ambitious project but one that will lay the ground for the kind of ecosystem expansion required to hit the company's aggressive growth targets.

Google Cloud launches new healthcare data engine accelerators

Google Cloud has launched three HDE accelerators to help organisations address common use cases around healthcare.

The accelerators offer tailored infrastructure deployment configurations, BigQuery data models, and Looker dashboard templates to support adoption and time-to-value of HDE for common industry challenges.

Leveraging Google Cloud's infrastructure and data storage, the HDE accelerators give customers an added layer of security, privacy controls and processes to protect patient data.

The accelerators will be available from Google Cloud in early 2023.

SALESFORCE UNVEILS PATIENT 360 TO LOWER COSTS

Salesforce has released Patient 360 for Health innovations, a solution providing cost-saving automation, personalised intelligence, comprehensive patient success and equitable care with greater efficiency for healthcare and life sciences organisations.

New innovations include Behavioural Health, Advanced Therapy Management, and Salesforce Genie for Healthcare to integrate real-time clinical data. From one single platform, Patient 360 for Health innovations can help with behavioural health specialists, crisis centre counsellors, treatment centre care coordinators, care managers, and medical device companies.

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ISO 14001 ENVIRONMENTAL MANAGEMENT


Aiman Ezzat

Capgemini Q3: company-wide double-digit growth

Capgemini Group sustained revenue growth in Q3, seeing a 22 percent year-on-year rise (15.7 percent at constant exchange rates) equating to consolidated revenues of €5,553m.

The quarter's results set Capgemini well on track to reach the company's revenue growth target of a 14-15 percent increase by year-end.

Bookings for the company totalled €5,427m, a 13 percent increase at constant exchange rates year-on-year, translating to a book-to-bill ratio of 0.98. The group's headcount increased 16 percent year-on-year.

Every operational region for Capgemini has seen double-digit growth year-on-year, with Asia Pacific and Latin America, North America and the UK and Ireland seeing the largest rises of 35.9 percent, 32.6 percent and 17.2 percent respectively (24.1 percent, 14.7 percent and 17.2 percent at constant exchange rates). Manufacturing, financial services, and (UK and Ireland) public sector industries were stated as the main drivers for success in these regions.

All Capgemini Group business lines also reported double-digit revenue rises with strategy and transformation services seeing the largest; 28.5 percent at constant exchange rates.

Aiman Ezzat, chief executive officer of the Capgemini Group, commented: "Given this very good Q3 performance, we now feel comfortable with the top end of our growth outlook for 2022. We are reaping the benefits of our strategy and market positioning. We continue to invest in the high demand areas of cloud, data and AI, intelligent industry and cybersecurity. We are accelerating our investments in the 'what's next' with a focus on sustainability, quantum computing, and metaverse."


Christian Klein

KURT REBRY

SAP Q3 BRIGHTENS THE CLOUD SKY

SAP Q3 results saw a cloud revenue boost, expected to continue accelerating through 2023. Total revenue rose 15 percent, with the cloud revenue increasing by 38 percent and 25 percent at constant currency.

A significant jump in international financial reporting standards (IFRS) cloud gross profit was reported, rising to 44 percent, while non-IFRS cloud gross profit increased to 42 percent and 30 percent at constant currencies.

Cloud backlog, marking the contractually committed cloud revenue expected over the coming year, rose by 38 percent and 26 percent at constant currencies. Specifically, the SAP S/4HANA revenue enjoyed a jump of 98 percent, with a backlog up 108 percent, and 90 percent at constant currencies.

Significantly improved from Q2, IFRS operating profit dropped one percent and non-IFRS operating profit was flat and down eight percent at constant currencies.

Christian Klein, SAP CEO, said: "Our cloud solutions are the answer, as customers turn to us to help them future proof their businesses. This trust in SAP is reflected in our accelerating cloud momentum. With a recurring revenue share of more than 80 percent, it's clear that our transformation has reached an important inflection point, paving the way for continued growth in the future."

SAP CFO, Luka Mucic, said: "We have delivered a strong cloud quarter with accelerating momentum across all key cloud indicators. We're at an important inflection point in our transformation which we anticipate will lead to accelerating revenue growth and double-digit operating profit growth in 2023."

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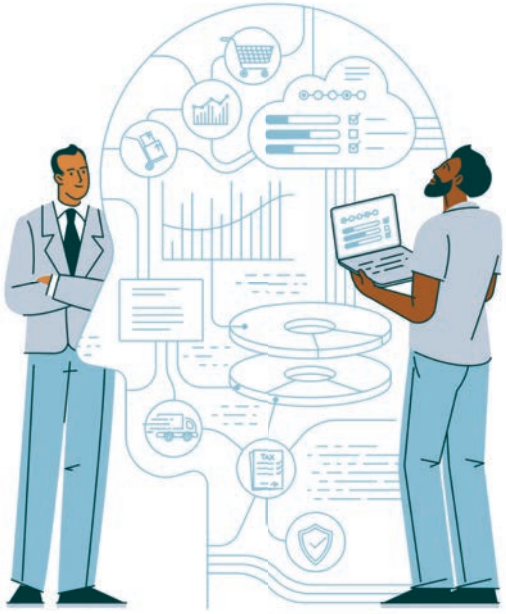

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IFS Q3 SEES CLOUD REVENUE UP 104 PERCENT

IFS scored a third consecutive period of growth in Q3 results. The annual recurring revenue increased by 38 percent, with cloud revenue growing at 104 percent against the same quarter last year.

The success follows as IFS boosted its cloud enterprise capabilities this year, embedding innovations such as AI, ML, IoT, automation and advanced analytics. The acquisition of **Ultimo**, providing asset management solutions, also saw IFS make substantial inroads into the EAM market.

New customer names made up 44 percent of the new ACV and existing customer upgrades achieved significant revenue.

Constance Minc, CFO at IFS, said: "Our performance over the first nine months of this year has been exceptional. ARR has increased by 38 percent compared to Q3 2021. This demonstrates the health and resilience of our business."

In a five-year sponsorship deal with **Transport for London**, October saw IFS launch their biggest-ever brand activation event with the IFS Cable Car, taking over from **Emirates** Airline.

IFS scooped a number of 2022 major industry accolades, including the ERP Today ERP Vendor of the Year Award, **Gartner** Peer Insight Customers' Choice for EAM, Gartner Magic Quadrant for Field Service Management and Leader in IDC MarketScape for Worldwide SaaS and Cloud-Enabled Manufacturing ERP.

Darren Roos, CEO of IFS, commented: "Our compelling proposition and genuine commitment to our customers continues to serve us well in driving growth for IFS. We are uniquely positioned in the industry with the best asset and service management capabilities."

Oracle Q1: cloud wins, USD struggles

Oracle Corporation revenue rose 23 percent in Q1, $200m above estimates.

Cloud services and licence support revenues rose 20 percent to $8.4bn. Cloud and on-premises licence revenues rose 19 percent to $0.9bn.

A strengthened USD against foreign currencies lowered GAAP ($0.56) and non-GAAP ($1.03) earnings per share by eight cents. Q1 GAAP operating income dropped 23 percent to $2.6bn. Non-GAAP operating income was $4.5bn, up three percent.

Oracle's **Cerner** acquisition, a health information technology service, boosted revenues by $1.4bn.

"We expect Cerner to do even better in the coming quarters as we develop an all-new suite of healthcare cloud services," said Oracle CEO, Safra Catz.

Microsoft Azure and **Amazon** Web Service users were granted Oracle Database access. Oracle Chairman and CTO Larry Ellison said:

"Multi-cloud access to the Oracle Database and Oracle's MySQL HeatWave database will make the world's two most popular databases even more popular."

UBIX LABS AND SAPPHIRE COLLABORATE

Sapphire has entered a strategic partnership with **UBIX Labs** to simplify and accelerate the use of advanced analytics and data science in digital transformation outcomes.

The collaboration will lead to a Sapphire white labelled AI services platform powered by UBIX Labs.

UBIX enables organisations to leverage existing customer analytics, ERP and CRM infrastructure, blending transactional and external data to create new insights that drive intelligent action.


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Automation Anywhere brings automation to "a billion more workers"

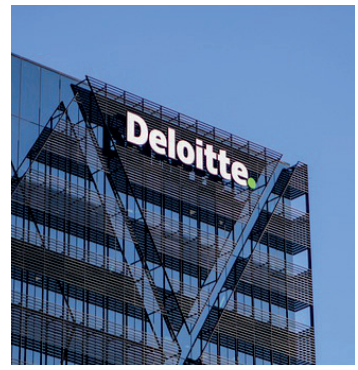
Automation Anywhere (AA) launched its Imagine 2022 event with platform announcements to keep 'humans in the loop' of intelligent automation.

A citizen development app will provide a low-code UI builder for 'digital co-worker' automation. Built-in governance features including static code analysis and 'computer vision' will offer standardisation, software update compatibility checks, and business rules protection. Meanwhile, a CoE Manager app will provide CoE leaders centralised command, and process discovery suggests ROI automation opportunities.

AA's interface, AARI, will function within enterprise apps including **Google**, **Salesforce**, and **SAP**, minimising user steps and screen jumps.

Mihir Shukla, CEO and co-founder of AA told ERP Today, "Our mission is to bring automation to a billion more workers and make it more and more solution-focussed, putting it in the hands of people and making it successful at scale. With AARI, we will be part of every single application, bringing automation inside everything we do."

Mihir Shukla



DELOITTE TARGETS FAST-GROWTH BUSINESS WITH ORACLE MYCLOUD

Deloitte has launched **Oracle** MyCloud ERP, a service aiming to help fast growth and private clients accelerate business transformation, whilst being risk adverse.

The platform aims to eliminate the barriers of talent constraints and high upfront costs which are often associated with ERP implementations.

A bundled subscription offering allows organisations to access Oracle Cloud products as well as Deloitte implementation and support services for a consistent monthly fee.

Highland Council turns to TechnologyOne for digital overhaul

The UK's largest council by land mass, **Highland Council**, has chosen **TechnologyOne** to support its digital transformation.

The council, which serves a third of the land area of Scotland, will implement TechnologyOne's solutions to streamline and automate its operations and gain access to real-time data for better decision making amid increasing inflationary pressures across the UK local government sector.

The solution, which includes financials, HR, and payroll, will be rolled out via TechnologyOne's new transformational end-to-end, SaaS+. The SaaS+ offering is said to provide a guaranteed outcome and a drastically reduced implementation timeline.

Leo Hanna, UK executive vice president at TechnologyOne, said: "We know local governments in the UK and around the world are facing huge challenges. Information sharing is stifled by a lack of integration of legacy systems and ageing infrastructures are carrying with them significant and increasing risk. When combined with inflationary and budget pressures, it means councils are continuously asked to do more with less.

Edward Foster, Highland Council's head of corporate finance, said: "We're delighted to partner with TechnologyOne on this large-scale digital transformation programme. We saw not only how great their product was, but also realised our organisations were greatly aligned through a relentless focus on people and collaborative approach to problem solving. The new solution meets changing requirements, offers better value, resilience and security and is flexible and adaptable for the future."

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Salesforce enhances business processes with Workday

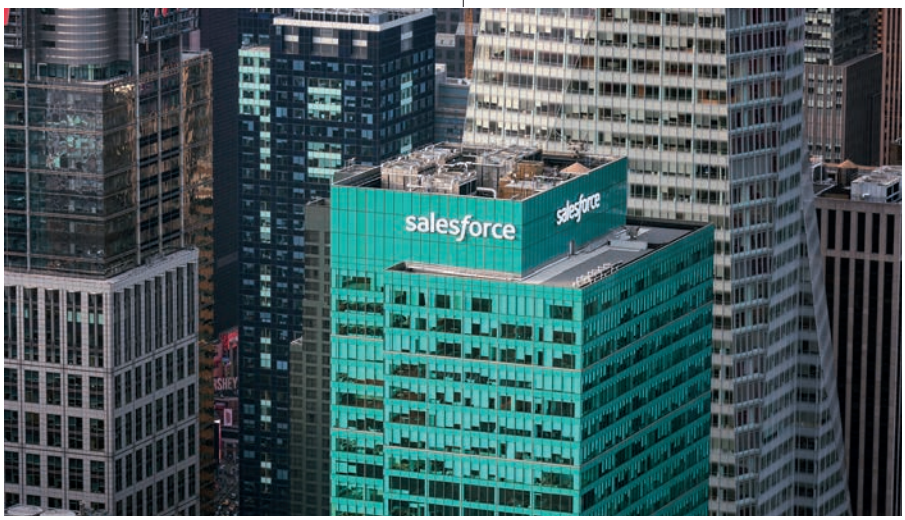
Salesforce has expanded its use of **Workday** to support growth across the organisation and support its workforce.

The company has selected Workday Financial Management, Workday Accounting Center, Workday Adaptive Planning, and Workday Prism Analytics, building on its existing use of Workday Human Capital Management (HCM), Workday Recruiting, Workday Time Tracking, and Workday Payroll for US and Canada.

Faye Olson, senior vice president of business technology and enterprise enablement at Salesforce, said: "We've seen first-hand the opportunity for cloud technologies in helping our customers drive better relationships with their customers. Workday's financial management and HR solutions offer a single system to create collaborative opportunities for our finance and HR organisations."

"A SINGLE SYSTEM TO CREATE COLLABORATIVE OPPORTUNITIES FOR OUR FINANCE AND HR ORGANISATIONS."

Doug Robinson, co-president, Workday, said: "Salesforce's expanded use of Workday to include financial management underscores the power of a comprehensive digital backbone in navigating change and bringing finance and HR insights together to drive growth."



HZI selects IFS Cloud

Global cleantech company **Hitachi Zosen Inova** (HZI) has selected **IFS** Cloud for its mission-critical ERP processes.

The company helps clients recover useful materials from waste and dispose of non-recyclable waste safely, generating renewable energy.

IFS' cloud technology will be supported by **Arcwide** and rolled out across 13 countries, HZI aims to expand into new markets and service offerings, remove operational silos and connect teams via the IFS Aurena user interface.

ACCENTURE DOUBLES DOWN ON DISRUPTION WITH INSPIRAGE

Accenture has acquired **Inspirage**, an integrated supply chain specialist firm, to help clients re-invent their supply chain networks.

With Inspirage, Accenture's **Oracle** Cloud capabilities will be enhanced through touchless supply chain and digital twin technology offerings.

Headquartered in Bellevue, WA, Inspirage's 710 employees will join the Accenture Oracle Business Group.

The deal follows Accenture's recent acquisition of supply chain consultancy **MacGregor Partners**, showing growing investment in disruption management.

CAPGEMINI-MICROSOFT COLLAB: CLOUD-NATIVE DIGITAL TWIN

Capgemini and **Microsoft** are collaborating on Reflect IoD, a first-of-its-kind, cloud-native, serverless Azure-based digital twin platform.

The scalable platform leverages Azure suite architecture, allowing organisations to meet the ever-increasing brownfield management needs across ecosystems.

Built on an evolutive data model, it is organisation/industry customised and federates data from multiple systems and formats such as 1D to 3D, Point Cloud, geographical information, OT and IoT data into the asset digital twin.

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ServiceNow serves up NHS Digital backbone and beyond

As announced at London's **ServiceNow** World Forum 2022, the ServiceNow platform is powering **NHS Digital**, the national information and technology partner of the UK health and care system. The partnership, as exclusively reported by ERP Today, will continue once NHS Digital merges with **NHS England** and NHSX in 2023.

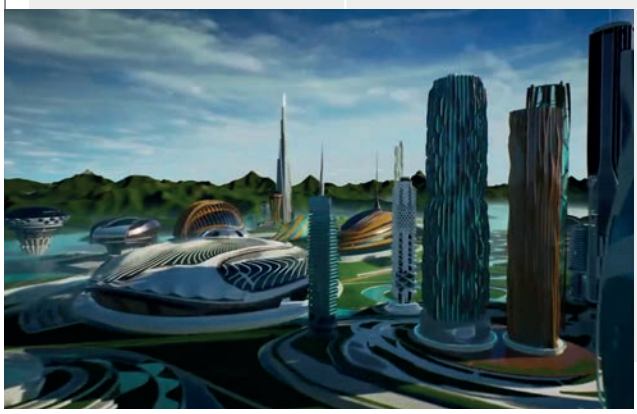
NHS Digital commissioned ServiceNow and consultancy **Cognizant** to develop a platform that would be scalable, manageable, and secure, while driving efficiencies and reducing complexities across its service, case, and incident management capabilities.

On announcement of the news, Jordi Ferrer, VP and general manager of UK&I at ServiceNow, said: "With the flexibility and scalability of the ServiceNow Platform, we were able to build a service management platform for NHS Digital that meets the current and future needs of the NHS network and its employees."

EY does the metaverse without "certainty"

Ernst & Young (EY) has updated EY wavespace™, a global network that provides clients with experiences in the so-called metaverse space, helping them to shift to a decentralised economy arising out of Web3-based applications and platforms such as blockchain.

On a granular level, EY is offering people with skills in 3D design, web animation, game development, art direction and human experience design. These talents are offered up with experience in AI, IoT and digital twin robotics to create extended reality environments across web, AR, VR and MR. Solutions are customised per industry and client; industrial clients, for example, may benefit from virtual supply chains and smart factories in EY's metaverse space.



Edwina Fitzmaurice, EY global chief customer success officer, said: "I am seeing a lot of interest in the metaverse from clients in all sectors and industries. At this stage, the metaverse is about creativity and opportunity, not certainty."

Islamic Relief selects Embridge for historic digital transformation

Embridge Consulting has been selected by **Islamic Relief Worldwide** (IRW) to implement **Unit4** ERP as part of the largest digital transformation project in IRW's history.

The global nature of IRW's work means that they need to operate with multiple currencies and have reporting available at global, national, and regional levels. Embridge will be working with Unit4 to replace IRW's existing ERP system and improve the efficiency of their day-to-day operations.

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ROB ENSLIN

All roads lead to automation

New co-CEO brings scale mentality to automation's hottest brand

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ROB ENSLIN

UiPath has been the market leader in automation for as long as automation has been a thing. But a sharp decline in value as a public company and a big shift in its go-to-market strategy poses fresh challenges for new co-CEO, Rob Enslin.

"Our Business Automation Platform can discover, capture, test and execute automations across the enterprise and we are transitioning from a company that just sold RPA to one that delivers automated business outcomes for our customers."

Since the dawn of civilisation, humans have worked tirelessly in the pursuit of social and economic progression. It's time for us to take a break.

At least that's what Rob Enslin and UiPath believe as they ramp-up their mission to rid the world of monotonous, labour-intensive, low value work. As I start the interview in a swanky Dublin hotel, the South Africa-born exec confidently tells me that UiPath is poised to play a lead role in shaping the future of work by unleashing the power of automation across the enterprise.

"Automation has the potential to solve the hardest problems that companies face whilst improving employee experiences," he said. *"With the power of the UiPath platform behind them, organisations such as Uber, the U.S. Army and EY are changing how repetitive work is completed which drives huge efficiencies, improves processes and allows people to focus on higher value tasks."*

Enslin is a former **SAP** president who has served in the upper echelons of enterprise technology for more than three decades. His recent appointment as co-CEO at UiPath follows 27 years at the German software giant and a four-year spell at **Google Cloud**. He joins the company's founder, Daniel Dines, in a shared capacity at the top of the organisation and brings a wealth of expertise that will help transform UiPath from a provider of isolated RPA solutions to an enterprise-wide enabler for hyperautomation.

"UiPath is becoming the strategic partner for companies that want to optimise their processes and digitally transform," said Enslin. *"Our Business Automation Platform can discover, capture, test and execute automations across the enterprise and we are transitioning from a company that just sold RPA to one that delivers automated business outcomes for our customers."*

UiPath history

UiPath was formed in 2005, in a small Bucharest office when a group of engineers hatched an idea. The concept was simple but far reaching: give every person on the planet a digital robot to liberate humanity from the grind of repetitive work. The theory proved popular and the company grew rapidly, acquiring thousands of customers around the world that wanted to automate elements of their back office functions.

Its early guise operated in silos to perform repetitive tasks quicker or more accurately than a human. It offered some benefits but its effectiveness was limited to narrow chores rather than broad outcomes. Early adopters bought standalone bots that were plugged into disorganised systems to speed up data entry tasks - although it worked and made these routine assignments more palatable, to describe early RPA as digital transformation was a disservice to a term that is itself confounded by many.

"Our RPA solutions have historically been utilised at a department level where they solved an isolated problem. It wasn't really transformative but it did deliver efficiencies. As customers start to look more holistically at their digital transformation objectives, they realise that they need an end-to-end solution, and that does start to really transform how a process works and starts to drive outcomes that can be measured."

Originally called DeskOver, the cohort of engineers started a mission to help companies minimise repetitive tasks with digital robots. The principle was misunderstood by many but enough forward thinking businesses latched on to the idea and the company got a foothold. By outsourcing automation libraries for point solution RPA applications, DeskOver found early success in an industry that was largely unheard of. In the years that followed, it rebranded as UiPath, raised significant funding and ultimately floated on the **NYSE** in one of the biggest software IPOs of all time.

That short history underlines the prodigious job that Daniel Dines has done trailblazing the automation cause. He has taken UiPath from a startup to a company that consistently ranks as the number one automation platform on all

ROB ENSLIN

Enslin brings the scale-mentality that he learned at SAP and refined at Google which can take UiPath from RPA market leader to a global powerhouse that sits at the centre of digital transformation efforts.

major review sites and partners with the world's leading consulting brands to deliver global automation solutions. UiPath has offices in 40 countries, serves more than 10,000 customers and generates predictable recurring revenues in excess of $1bn.

However, despite the success and recognition, UiPath's value has faltered as a public company. Its revenue model historically relied on the acquisition of new customers with relatively low contract values. While the spread of revenue and the impressive number of users initially won favour with the markets, the company lacked the experience and depth of product to convert line-item sales into package-solution customers.

I asked Enslin what motivated the move from Google and how he appraised the opportunity with UiPath, especially given the fall in value that the company had experienced since it went public.

"I wanted to work with a founder and when I looked at how far they had come, and I read the Gartner reports, I was blown away with what Daniel had achieved. It was a tough time in some respects because software valuations were being hit hard and we were on the back of the pandemic, but the potential at UiPath was exceptional and I knew I could add some real value. I spent a lot of time with Daniel, I had a lot of discussions with customers, colleagues and friends, and the energy around the product and the brand was really compelling. I wanted to work in a meaningful company where I could make a real difference and all the fundamentals were there. Yes, the valuation had taken a hit, but the business was heading in the right direction: we have great market share, the product is the best out there, the culture is amazing and we are sitting on a bunch of cash. UiPath can be a generational company that changes how we think about work and I have the experience and motivation to make that happen."

Enslin's assessment is consistent with my personal take - UiPath is not alone in suffering at the hands of the markets. Many tech stocks have tanked recently but the underlying opportunity remains sound and Enslin joins the company at a time when its product has matured, its market is more defined and, above all else, customers are crying out for solutions that return instant results. Whilst the journey towards packaged automation solutions and a platform-play started before Enslin's arrival, he brings the scale-mentality that he learned at SAP and refined at Google which can take UiPath from RPA market leader to a global powerhouse that sits at the centre of digital transformation efforts.

As Enslin emphatically told me, *"I know how to scale and the opportunity at UiPath is unprecedented."*

Why will automation change the concept of work?

In order to understand the impact that UiPath and hyperautomation will impose, it's important to think more broadly about the purpose behind the technology.

You may not realise it, but we are transitioning as a species. That transition is not defined because we can stream movies, make video calls or order goods over the internet. Those types of benefit arising from the first wave of digital technologies have improved our existence but they have not fundamentally changed the human condition. They have simply afforded us more time to become consumed with other digital travails.

Looking back through history, people came together in the agricultural revolution to move humanity from a subsistence living to one of plenty. During the industrial revolution we built machines to increase productivity and now, in the digital age, we have developed the tools to create utopia. Yet we remain slaves to the notion of work, akin to those who came before us and worked on farms and in coal mines. Throughout the ages and despite bounds in knowledge and capability, one thing has remained consistent. Humans turn the wheels.

As farmers, industrialists and now digitally-

enabled workers - the reliance on people has not abated. Despite the supposed benefits of the technological revolution, we have not managed to relieve ourselves from the drudgery of work. One could argue that instead of reducing toil, the digital age has in fact, increased the burden. The tasks may have changed, but human effort is still inextricably linked to the vast majority of economic output. We have simply swapped a plough for a keyboard.

As Enslin succinctly put it, *"there's still a lot of 'cut and paste' work that goes on and automation can fix that at a stroke."*

For the first time in our existence, we have the ability to change the fundamental concept of work. For centuries it was entirely centred on manual labour. Industrial automation put an end to that kind of employment and we shifted to a service-orientated economy fuelled by computerisation. For the last 50 years, people have been employed to sit in front of a screen and furiously type, print and file. Now there is an opportunity that can free us from the mundane and prosaic nature of digital work. That opportunity is called hyperautomation.

Throughout the ages and despite bounds in knowledge and capability, one thing has remained consistent. **Humans turn the wheels.**

The evolution from RPA to hyperautomation

Hyperautomation takes the raw concept of RPA (which is the narrow application of automation) and supercharges it with mining capabilities, machine learning and artificial intelligence to deliver more coherent outcomes across processes and workflows. It can be applied to virtually any business object where a chain of inter-dependent actions occur in sequence or as a consequence, with each stage of the chain being controlled, managed and executed by software rather than a human.

This leap forward in capability has the potential to radically and permanently alter the nature of work whilst freeing human capacity from the shackles of repetitive digital labour. The benefits at an individual level are obvious and the collective advantages promise exponential opportunities for innovation, creativity and value.

Hyperautomation is also the piece of the digital transformation puzzle that many organisations have found so elusive. It is impossible for an enterprise to truly transform if it does not automate at every conceivable step. Moving applications to the cloud is not transformative, it's just a slightly better way of doing the same thing you've always done. To truly change there needs to be a fundamental shift in the underlying operating model which must be optimised with digital tools at every level. Modern automation platforms provide this opportunity and they represent the final frontier for any digitally ambitious organisation.

Enslin told me that UiPath was now part of a much broader conversation focussed on enterprise transformation rather than detached instances of RPA and that its Business Automation Platform brought together all the tools for enterprises to truly modernise the way they operate.

"With our platform, customers can get all the benefits from RPA like reducing errors and driving efficiencies but now they can also think about using automation as a driver for transformation and new opportunities. Our customers are innovating at pace, bringing new services to market and building their operating models around automation and the UiPath platform sits at the heart of those conversations."

Step change in approach

UiPath may be at the centre of customer transformations, but it too is embarking on its own

period of evolution. The shift in its product portfolio has big implications for the way its sales and go-to-market teams are organised which will require significant re-engineering. Its move towards packaged solutions, in more complex environments, often with multiple partners and with a far higher price point, necessitates a different sales beast to get deals done.

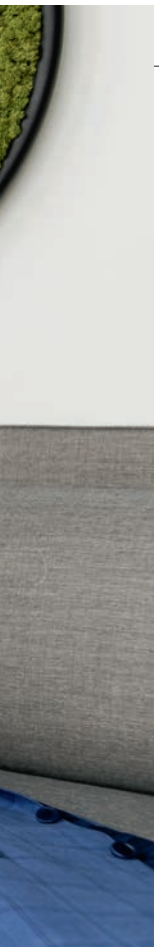
"The challenge is not the expansion of new customers, but the expansion of automation within customers we already have," said Enslin. *"Our shift towards programmatic solutions and platform pricing will make it much easier for companies to consume the full spectrum of our technology and extract maximum value from their investment. It will also inevitably lead to larger deal sizes and that has implications for the way we structure our teams."*

In the past, direct sales teams sold relatively low value contracts to multiple customers and account teams managed large portfolios. That approach was good enough to take UiPath so far, but it will need Enslin's 'scale-mentality' to take it to the next level. It's no small task to redesign a global sales organisation but Enslin has recent form for doing a similar job at Google Cloud where he was instrumental in building its international sales operation. As the profile of clients increases and alliances with the likes of **Accenture**, **Deloitte** and **EY** deepen, it will be imperative that Enslin and UiPath can resource teams with the right calibre of candidate to meet the client on the terms they expect.

It will also be vital that internal resources keep pace with product development so that domain experts are taking industry package solutions to market. Allied to the emergence of the platform play is UiPath's industry ambitions where it is building end-to-end automation use cases for specific vertical applications. As we have seen with cloud vendors recently, industry expertise and solutions that are finely tuned for a specific purpose have resonated with customers. As UiPath develops these products it will need to attract its own experts to drive development and ultimately win over customers that are looking for solutions tailored to them. Some of that expertise will come in the form of partners that ultimately own the customer relationship and have a history of domain intelligence behind them. But UiPath will still need appropriate resources within key vertical markets to maintain momentum and fulfil their industry-solution ambitions.

Mining for opportunities

The early narrative used to describe the value in automation was focussed on the benefits at an individual level. RPA tools promised to eradi-



Hyperautomation is also the piece of the digital transformation puzzle that many organisations have found so elusive. It is impossible for an enterprise to truly transform if it does not automate at every conceivable step.

cate boring desk duties and afford the employee more time to do other things. A simple example could be seen in the finance department where a person may be employed to open emails and copy invoice details from an attachment into an ERP system. If that process happens 200 times a day, that's a lot of rudimentary effort that can be replaced by a bot, and perhaps the employee can then be deployed in a more strategic, value-driven capacity. The benefit to the individual is obvious, and although the basic logic is still sound, it is the compound effect these efficiencies have on an enterprise that brings the real benefits of automation to light.

There is no company in the world that can claim its operations are as performant as possible and many have implemented digital technologies in such a haphazard fashion that their IT landscapes are slowing productivity rather than increasing it. The amount of technical and process debt that exists in most organisations is staggering and the biggest problem of all is that the hairball architectures are so complex it is almost impossible for a human to untangle.

This is where mining tools play a vital role in helping companies understand what their processes are, which ones are efficient and which ones need re-engineering. Process, task and communication mining applications can investigate structured and unstructured data to identify weak links and suggest opportunities for automation. Process mining tools analyse data and event logs from business applications to understand the end-to-end process and the scope of the system. Task mining tools review the work people do on their desktops to recognise how assignments are executed. And communication mining tools interrogate unstructured data in emails, text messages, even voice conversations, using AI and neuro-linguistic programming, to understand and trigger process improvements.

The discovery tools within the UiPath Business Automation platform can be applied to virtually any process or operation (even hidden or unknown processes) and build a digitally-optimal solution which can then be automated.

The UiPath Business Automation Platform essentially contains three action layers that can be separated as 'discovery', 'automate' and 'operate'. Within the discovery layer, the mining tools mentioned above seek out opportunities for automation and present the potential for optimisation back to the business. Once implemented, the discovery layer provides continuous analysis to deliver a feedback loop to the business.

The other two action layers feed into the UiPath Automation Studio and include an integrated test suite which allows users to constantly monitor, test and validate automations and reduce redundancy over time. The continued development of this integrated automation suite sets UiPath apart from its competition and provides customers with a compelling, easy-to-use and demonstrably valuable tool to build high-performing and optimised solutions across the most complex of business operations and processes.

Value creation

Hyperautomation's silver bullet is its ability to demonstrate a return on investment in a way that few, if any, other digital technologies can. While an ERP modernisation project will likely sit at the heart of big transformation, value realisation can be hard to quantify. With automation the return is simple to measure and directly linked to every dollar invested.

Productivity gains, error reduction, increased compliance and cost savings are all calculated and measured. And then there is the new revenue opportunities that automation can deliver through increased customer satisfaction, new routes to market and innovations made possible by additional human capacity.

In a worldwide September 2022 survey conducted by **IDC**, 72 percent of respondents expect 2023 to be a recession year and this will herald a

ROB ENSLIN

"Our customers are innovating at pace, bringing new services to market and building their operating models around automation and the **UiPath platform sits at the heart of those conversations.**"

more conservative approach to IT spending with a sharper focus on value. Half of the respondent's expected IT budgets to remain flat or reduce slightly and that will lead to more pressure to prioritise investments which will have the biggest (and fastest) impact.

According to the Future Enterprise Resiliency and Spending Survey, the top three automation priorities in 2023 are: lowering operating costs (42%), greater efficiency (41%), and improving customer satisfaction (41%). Another top challenge cited by survey respondents is the difficulty they have building metrics that tie investments to financial outcomes. Automation vendors are heavily focussed on this problem by using both process and task mining technologies to scope automation opportunities, moving to fact-based documentation, planning and design.

UiPath's ability to demonstrate value to customers before a single dollar has been invested through its discovery and mining tools will play a key role in wrestling under-pressure budgets away from enterprise CIOs.

"We think of it as true value engineering," said Enslin. *"We drive the outcomes from day one with every customer and our teams do analysis in the discovery phase to identify the benefits and then measure the value over time. We are seeing savings of millions of dollars for customers through productivity and efficiency gains and the value doesn't stop there. Customers are becoming more agile, they are able to innovate quicker and see a return on their investment in record time."*

Conclusion

UiPath has been the market leader in automation since automation has been a thing and Enslin's appointment as co-CEO strengthens that position considerably. Although he still thinks of himself as an engineer at heart, it won't be his technical nous that drives UiPath forward - it will be his considerable experience at building big and scaling. 27 years at SAP provides the lens to visualise UiPath's journey from a seller of RPA to a strategic and integrated partner for transformation. Enslin's network and reputation elevate the brand while his experience with large-scale programmatic solutions puts UiPath into a different orbit altogether. Its alliances with the world's most influential consultancies propel UiPath into conversations that it would not otherwise be part of and opens up immeasurable opportunities to extend its footprint giving UiPath a seat at the table when big enterprises make big investments.

The value proposition is clearly defined and offers a direct line to a return on investment. Coupled with this easily-quantified benefit is the speed at which automations can be implemented. Time to deploy and value have always been hot potatoes for the enterprise tech industry as many of the traditional vendors have been far less able to demonstrate dollar spent for dollar returned, and definitely less able to give accurate timeframes to get solutions working.

As the interview draws to a close, I asked Enslin to reflect on our conversation to summarise the UiPath strategy and set out what we can expect to see in the next stage of its progression. *"We are ready to re-accelerate growth and human achievement by putting the full weight of UiPath technology behind our customers,"* he said. *"Our move to platform pricing and focussing on outcomes will be a game-changer for UiPath and the organisations that we work with. Daniel and I have a shared vision of how to create a generational company and we are poised to play our role in modernising the enterprise and helping customers achieve their digital transformation objectives with products and services that deliver measurable value in rapid time."*

In today's harsh economic climate, enterprise leaders must evaluate opportunities that can deliver value and outcomes in weeks rather than years and that pushes automation and companies like UiPath up the priority list. Doing more with less is something that every business is coming to terms with, and UiPath promises big wins, fast. ■

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HOW ARE FIRMS ADDRESSING

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THE SKILLS SHORTAGE?

BY CHRISTINE HORTON

WORKFORCE AUTOMATION

DESPITE THE HYPE SURROUNDING THE NEXT INDUSTRIAL REVOLUTION, A GLOBAL SKILLS SHORTAGE IS HAMPERING INDUSTRY 4.0

Industry 4.0 has arrived, with its focus on interconnectivity, automation, machine learning and real-time data promising to deliver a new golden age for manufacturing. But there's one big problem: the rate of innovation is outpacing employees' skills.

The skills shortage that's hit many industries is especially acute in manufacturing, where an existing skills gap was exacerbated by the pandemic. According to **Deloitte**, US manufacturing alone is expected to have 2.1 million unfilled jobs by 2030. Elsewhere the firm's research shows that attracting and retaining a quality workforce is a top focus for 83 percent of manufacturers, with almost 45 percent of manufacturing execs being forced to turn down business opportunities due to lack of workers.

"While we have seen a greater number of apprenticeships and university courses being made available, it takes a few years before these people become productive and independent," says Antony Bourne, SVP of industries at **IFS**. "And if you layer on top of that the fact that there has been a tremendous exodus of people in jobs in the last few years, and in combination with the pandemic, the resulting number of people that make it to being 'productive' is unfortunately low."

So what's the solution to the Industry 4.0 skills gap? There's no silver bullet, unsurprisingly. But it is understandable that given Industry 4.0's focus on digitalisation, organisations will look to technology to help them plug their skills gaps and transform workplaces. With the considerable gulf between supply and demand, the conversation among software vendors has fully shifted to automation, which they tout as a panacea to current workforce burdens.

Research from **Oracle NetSuite** shows that more than half of execs and managers in manufacturing said their staffing needs were for workers with specific expertise. At NetSuite's annual SuiteWorld conference, the company unveiled SuitePeople Workforce Management, with founder and EVP Evan Goldberg highlighting the importance of optimising access to workers in the current economy.

"In a tight labour market, organisations need to elevate the management of their workforce to be competitive," said Goldberg.

Indeed, with the global economy heading for recession, automation will accelerate as companies adopt new

ANTHONY BOURNE
/ IFS

"A hybrid working scenario needs to be offered by companies today to bring them back to the shopfloor"

technologies and attempt to redesign their workflows to increase productivity, according to Laura Petrone, principal analyst in thematic research for **GlobalData**.

However, she believes the impact of automation will be felt differently across job categories and disproportionately affect workers with lower levels of education. According to a 2020 report by the **CBI**, nine in 10 UK employees will have to reskill by 2030 due to the pandemic accelerating automation.

"For example, low-skilled or routine jobs like elementary sales jobs feature among the most exposed to the risks of automation," Petrone tells ERP Today. "When it comes to higher skilled sales roles, technologies like artificial intelligence (AI) will be used mainly as a support for sales representatives and as an enhancement for their consulting tasks."

The data challenge

While IT automation seems like an effective solution to relieving the skills shortage, leveraging the power of data will be central to automating processes in manufacturing. But as we know, more data equals more complexity. The big challenge is for firms to harness that data effectively.

"In the early 2000s, ERP implementations soared. As manufacturers embraced - and continue to capture and accumulate - data from new technologies such as robotic process automation, machine learning and artificial intelligence, they are generating an explosion in the data available to them," says Nick Mitchell, VP and country manager UK&I, **Celonis**. "And while, in theory, this data can help manufacturers streamline inefficient processes, improve their products and innovate, more data actually results in more complexity."

"Process mining and execution management can turn challenges like an overabundance of data and analytics into opportunities. They will be key to harnessing the possibilities of Industry 4.0, helping organisations visualise internal processes and ultimately identify and prioritise inefficiencies across the manufacturing process, from the start of a production order through to delivery. For that, new approaches are required.

"The factory workers of the future will evolve to be skilled knowledge workers at the forefront of reassessing business processes."

A glimpse of the factory of the future can be seen in **Infor**'s recent long-term strategic partnership agreement with the **National Manufacturing Institute Scotland** (NMIS). Infor's investment will underpin the development of Model Digital Factory Demonstrators for the NMIS Digital Factory environment at the new NMIS headquarters, all 11,500m² of it.

Operated by the **University of Strathclyde**, NMIS is a group of industry-led manufacturing research and development centres with a network of partners brought together to boost the manufacturing community.

Anwen Robinson, Infor GM and SVP for UK and Ireland, says that in addition to its investment in the physical Model Digital Factory, Infor is also investing in developing core skills aligned to the goals of NMIS.

"We will be working collaboratively with the NMIS Manufacturing Skills Academy and the wider University of Strathclyde, the operator of NMIS, to develop micro-credential courses that advance their programmes around manufacturing, bringing together aspects such as the use of data science principles within manufacturing," she explains to ERP Today.

"We will also be sponsoring a number of multi-year doctoral placements, working on solving core manufacturing problems around areas such as energy visibility and reduction, circular manufacturing, net zero strategies and how AI can be used to solve new challenges."

It's a people thing

It is also important, though, to realise

EVAN GOLDBERG
/ NETSUITE

"In a tight labour market, organisations need to elevate the management of their workforce to be competitive"

ANWEN ROBINSON
/ INFOR

"We'll sponsor a number of doctoral placements, working on circular manufacturing, net zero strategies and AI"

WORKFORCE AUTOMATION

that technology doesn't hold all the answers. An onus on digital transformation leaves little room for one of the most important factors: people.

Jordi Ferrer, VP and general manager UK&I at **ServiceNow** says that the human element is the part often forgotten in the boardroom. But Industry 4.0 is not just a technological change, it's a change in the way people work-and that requires new skills.

"If an organisation invests in emerging technologies, such as machine learning or process automation, they also need to invest in people to take action on the business insights generated by the technology," says Ferrer.

Echoing Celonis' Mitchell, the VP knows an overabundance of data can only bring complexity and little else. The key is to ensure workers are able to harness data correctly.

"It's no use spending vast sums of money on technology that captures data without having a team of people prepared to analyse and use it to implement change. Without that, the initial investment will be wasted."

'The old way isn't the only way'

Similarly, aside from technology and an obvious emphasis on training and skills for Industry 4.0, it is important to consider the societal and cultural aspect of filling the skills gap.

MAGNUS FALK
/ ZOOM

"Apprentices can be employed, trained and mentored from where they choose to be, enabling an onsite workforce through the offsite support"

JORDI FERRER
/ SERVICENOW

"Business leaders need to arm employees with the right training and technology to turn them into knowledge workers"

IFS' Bourne points out that people have become used to working from home over the last couple of years, for example. Therefore, "a hybrid working scenario needs to be offered by companies today to bring them back to the shopfloor".

In agreement with this is Magnus Falk, CIO advisor at **Zoom**, who says those in the knowledge economy adapted to remote work in the early months of the pandemic. In much the same way, workforces in Industry 4.0 will adapt to a different way of interacting with the rest of the business.

"By changing the model of employment, employers can attract and retain staff as those close to retirement choose to do less, or those with caring responsibilities cope with life events. Employers that successfully allow people to fit work around life, rather than the decades old model of fitting life around work, will have access to deeper pools of talent."

Falk says the key to new employment models is cultural change, accepting that the old way isn't the only way, underpinned by enabling technology and updated people policies.

"With the talent secured, more apprentices can be employed, trained and mentored from where the talent chooses to be, enabling an onsite workforce through the offsite support."

Skilled labour the 'last mile' of Industry 4.0

The global Industry 4.0 market is expected to reach $132.11bn in 2022, growing to around $155.76bn by 2030. Addressing the skills shortage is a priority for organisations.

But more importantly, the factory workers of the future will need different skills from those in previous decades.

As Ferrer notes: "Business leaders need to arm them with the right training and technology to turn them into knowledge workers who can deal with the information generated by Industry 4.0. Skilled labour is the 'last mile' of Industry 4.0 - and without it, the new phase in the Industrial Revolution will not fully realise its promise." ■

WORKFORCE AUTOMATION

DELVING DEEPER INTO THE NMIS DIGITAL FACTORY

As announced in October, **Infor**'s partnership with the **National Manufacturing Institute Scotland** (NMIS) will underpin the development of Model Digital Factory Demonstrators (MDFD) for the NMIS Digital Factory environment.

The project follows Infor's role as founding sponsor of 'The Smart Factory @ Wichita', an immersive experience centre launched by **Deloitte** and **Wichita State University in Kansas**, U.S. **Giacomo Lee** delves deeper into the tech with **Anwen Robinson**, Infor GM and SVP for UK and Ireland, and discovers what it means for upskilling aspirations in the UK.

Giacomo Lee (GL): How best to position MDFDs to CxOs who may not be clued up on them?

Anwen Robinson (AR): The purpose of the MDFD is to showcase the benefits of new and available technologies in a real factory setting. Throughout NMIS, the latest technologies and equipment will be on show; additive manufacturing, robotics, laser cutters and smart equipment etc.

The difference to run-of-the-mill technology demonstrations is that we'll be showcasing how these various technologies come together in a real production line, supported by a variety of intelligent, real-time systems and cloud applications that drive new value for manufacturers.

GL: What kind of value?

AR: NMIS will showcase how Industry 4.0 digital technology, in all formats, can be used to solve current and future manufacturing challenges. It will serve to both educate, physically demonstrate and inform organisations about 'the art of the possible'. It will show how an organisation can optimise existing investments and will also provide a 'sand-box' environment where they can work collaboratively on projects to prove the value prior to making major capital outlay.

> **It will serve to educate, demonstrate and inform organisations about 'the art of the possible'**

GL: How do you see people interacting with all this?

AR: Once fully operational, it is anticipated that there will be between 2 - 3,000 visitors per annum through NMIS. These will be from all sectors of manufacturing and size of business, plus academia. Many will be looking for advice on how they can build upon investments made to transform equipment and environments using available technology to take advantage of digital insights.

GL: What lessons will you be drawing from The Smart Factory @ Wichita?

AR: The Smart Factory @ Wichita is also aiming to showcase real-world, leading technologies and demonstrate how these come together for advanced manufacturing performance. The differences are in scale and the number of collaborating partners. With NMIS collaborating with multiple manufacturing industrial and academic partners and service providers, it truly is a centre of excellence for manufacturing advancement.

GL: What does this project say about the future of all things industrial and manufacturing?

AR: To remain competitive on a global stage, it is vitally important for UK manufacturing to remain at the forefront of adoption. However, we are currently constrained by a lack of knowledge and understanding of how to best adopt, and a dearth of relevant skills in how to take advantage. NMIS serves to bridge these gaps.

We hear all the time from manufacturers that their biggest inhibitor to Industry 4.0 adoption is the skills gap. The MDFDs and NMIS provide a safe place for manufacturers to come, spend time, talk with experts, learn and feel comfortable about taking the first steps towards digitisation for their business. Along with this, NMIS has a Manufacturing Skills Academy as part of the group that helps people throughout the manufacturing community at all stages of their career aiming to futureproof the workforce. ■

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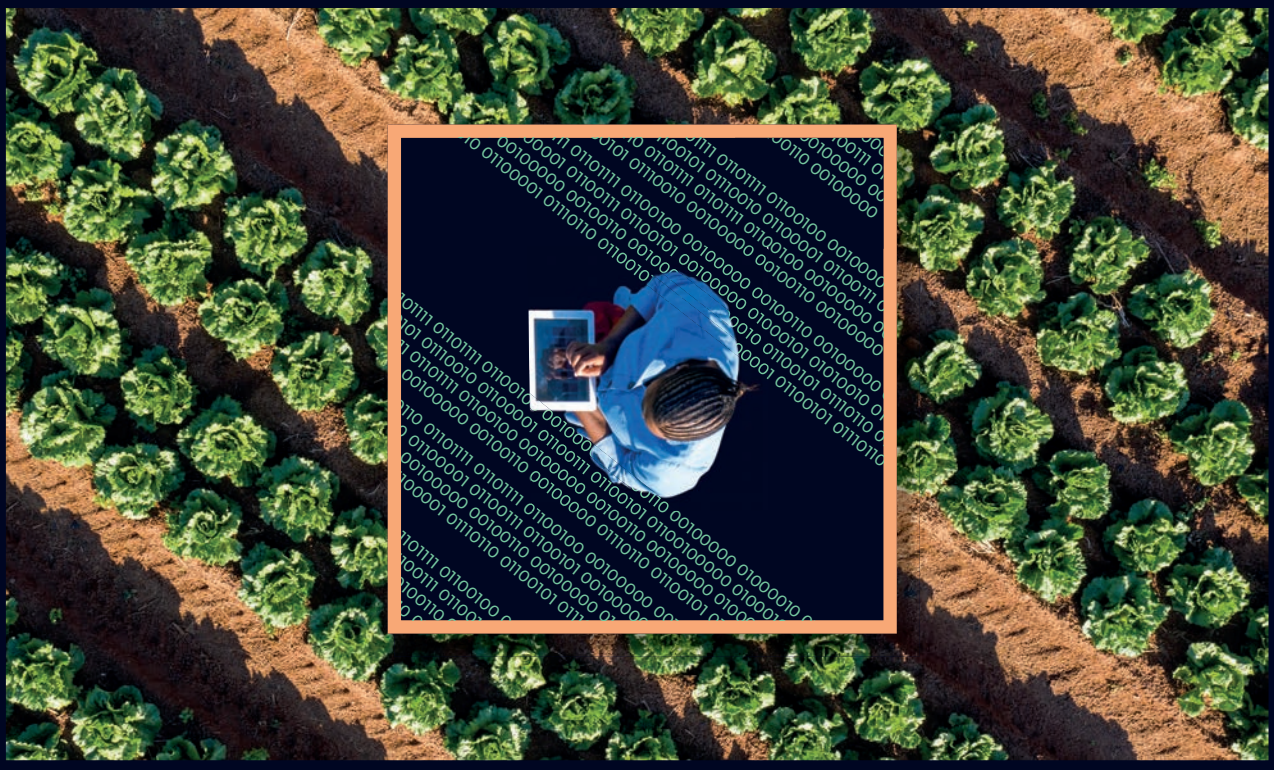

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Machine learning in ERP needs Clarity with a capital C

BY ADRIAN BRIDGWATER

Developers get good press. Widely lauded as kingmakers and heroes of the new digital revolution, software developers are in short supply, high demand and are globally recognised as being key to the new fabric of computing we are building across the web and the cloud.

But throughout their recent reign in tech, things have broadened; the operations function that works to underpin, manage and facilitate developer needs has been championed and brought more closely into line with software programmers' workflow processes.

What has happened here has a special name - and of course we're talking about DevOps. This is the portmanteau pairing of Dev (developers) and Ops (operations) in a new approach to workplace culture designed to enable these traditionally unwelcome bedfellows to live together better.

Developers want speed, functionality and choice of software tools. Operations wants security, compliance and control. The two worlds don't always match. With DevOps, both teams can more productively work to an effective middle ground.

We need this pretext if we are to understand what is happening inside the new compute engines being created to serve AI and the machine learning (ML) functions that drive it. What comes next is MLOps.

Welcome to MLOps

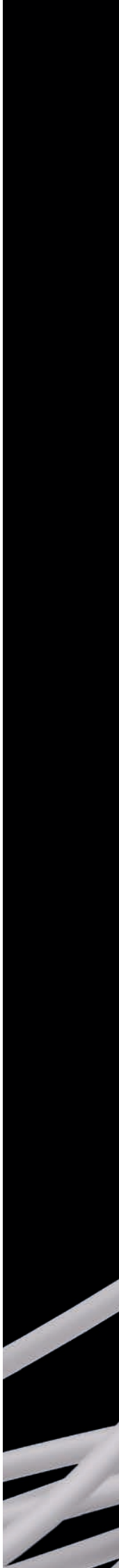
Now a part of the way progressive cloud-native IT departments are looking to embrace automation and autonomous advantage, MLOps has a slightly unfortunate and possibly confusing name.

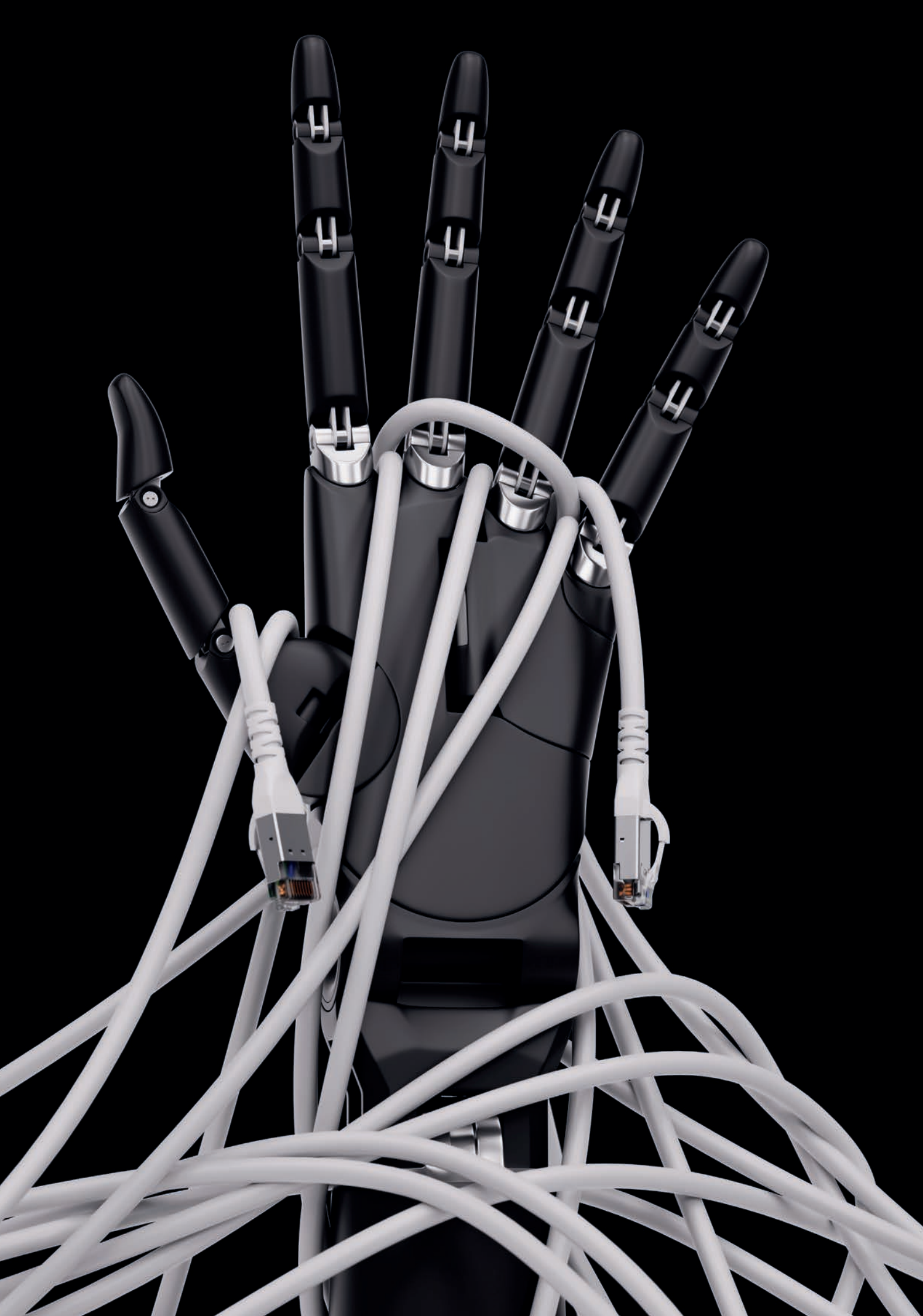
MLOps is not traditional Ops (i.e. database administration, sysadmin and so on) powered by ML. Instead, MLOps is the term we use to denote the operations and functions needed to make ML work properly.

So this means that MLOps is all about creating an ML operations pipeline to ensure we channel and manage the right data and connections into our machine brains. If we have good MLOps, then we have smart ML - and that paves the way to AI that is truly intelligent.

In terms of working practice, MLOps is all about feeding ML properly. This means it includes elements such as data ingestion, data wrangling, information management and data manipulation. Closely related to the extract, transform and load tasks that need to be executed to make an organisation's data pipeline work effectively, MLOps also includes ML work related to feature selection, training, testing, deployment and monitoring.

"What we've seen in the past few years is models done wrong and gone wrong" **MOSES GUTTMANN,** CLEARML





At the risk of attempting to cover off a short history of MLOps data science, let's just look inside a couple of the finer points involved in MLOps mechanics.

To create great ML models, teams need to be able to track every part of the ML experimentation process as they look to automated definable repeatable tasks. This means being able to log, share and version control all experiments as the ML pipeline starts to form and ultimately benefit from being orchestrated.

"MLOps helps solve problems like that by monitoring model performance and managing model drift before problems occur," according to Moses Guttmann, CEO and co-founder of **ClearML**, a company that styles itself as a frictionless, unified, end-to-end MLOps platform specialist. "ML engineers in charge of models in production can monitor them in real-time and see if or when they should be retrained on new data."

As we know, ML is powerful and thus it needs fuel to burn. Teams will need to think about cloud and system resource allocation and scheduling in order to control costs. As the ML experimentation process becomes more esoteric and the team's ML models get more sophisticated, more use of unstructured data can be brought into play and new previously untapped innovations may open up.

Customers are forced to invest in multiple tools, creating a fragmented experience for end users.

MLOps and ERP

So then, what more do we need to know about MLOps and what impact does it have on the ERP stream? In our world, ERP has only been truly AI-augmented for perhaps a decade, so is the machine intelligence we need getting the right operations-level consideration and support?

"Today we can see that ERP is an area that relies heavily on machine learning and when companies get their models right, they are more productive and profitable. But what we've seen in the past few years is models done wrong and gone wrong," as Guttmann explains.

The CEO says that one recent resource planning example that played out at enterprise level was the abrupt and unexpected changes brought about by COVID-19. As we know, this disruption greatly impacted companies' abilities to plan and update their ML models quickly enough, leading to the now well-known global supply chain issues.

"Given the scale and velocity of today's global business, I believe MLOps is really the only way large companies will be able to stay ahead of issues, meet demand and to run efficiently."

Although MLOps-rich AI for ERP could be arguably applied to any industry vertical, key growth markets are thought to include healthcare and healthtech, retailtech, advertising and marketing adtech and martech, alongside manufacturing and others.

Fragmented point solutions

Anyone questioning the state of this sector of technology fabric and thinking, "Okay, but why all the fuss now?", is justified in posing the question.

The answer is quite straightforward, and it helps clarify and validate where we are today with MLOps. The rise of ML in the modern era of AI (i.e. the real device deployments of today, not the fanciful AI dabbling that first happened in the 1980s) has parallels with the post-millennial age of cloud.

Too much happened in too many places, too fast, with too little integration and with too little consideration for scalability and interoperability.

This reality meant that ML has developed in a scattershot fashion, leading to closed-off 'point' solutions (i.e. single purpose, narrow, overly proprietary etc.) and fragmented semi-platforms that failed to connect in an end-to-end fashion.

ClearML and others in this field often use this term end-to-end as some kind of marketing label or generalised affirmation of functionality, but here it really means something. In this context, end-to-end takes us from the initial point of data ingestion, through to processing and analytics inside intelligence engines and onwards to the user (or machine) endpoint of use.

"Every component of (our product) integrates seamlessly with each other, delivering cross-department visibility in research, development and production," says Guttmann. "Many machine learning projects fail because of closed-off point tools that lead to an inability to collaborate and scale. Customers are forced to invest in multiple tools to accomplish their MLOps goals, creating a fragmented experience for data scientists and ML engineers - and ultimately for the end users, be they ERP professionals or others."

The central issue emanating from this discussion - even if we get over the fragmented point solutions hurdle - is that the ML data science team does ML in one corner, while the ERP team does ERP in the other. It's a scenario that's frightening redolent of DevOps all over again.

The current proliferation of MLOps is of course meant to address not only the departmental disconnects that exist in any given enterprise, but also the information management processes that exist in this space.

There's no point in trying to use smart 'thinking' technologies if you don't think smart about how they operate. Organisations serious about using AI will now need to think about the provenance and process behind their ML pipelines - and this is precisely the pressure point at which MLOps is applied. Clever really, isn't it? ■

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Saying goodbye to ERP Today

BY EMMA SINCLAIR MBE

If nearly twenty years of entrepreneurship has taught me anything, it's that it's not enough to just start a project: you have to finish it too. We live in a society so obsessed with the new, with the starting of things, that we tend to not give a lot of time and respect to the closing of a chapter.

When I first started writing this column for ERP Today I was excited to find topics that would connect with you, the readers, and I was thrilled to be a contributor alongside the likes of people I personally know and respect such as Dr Zara Nanu and Mark Sweeny. Over the past year I've talked about the mindset you need to succeed, unlocking procurement to unlock innovation and economic success (a topic I'll be talking a great deal about on the Government's High Growth Task Force) and what it was like to build an employment programme supporting Ukrainian refugees which brought together over 200 of the UK's leading businesses in a matter of weeks. All of these topics are close to my heart, however they also all support the idea that the beginning of something is where all your energy should go. But in this column, my final column, I want to focus on something I believe to be equally important - endings.

My business, EnterpriseAlumni, was set up to help businesses reimagine endings - specifically the moment when an employee leaves and it seems as if the relationship between business and person is broken. As such, it's little wonder that I'm intrigued by them. Traditionally we have seen endings as one-off events, something that cuts a cord, that brings a situation to a full stop, the curtain coming down forever. But in my experience endings are rarely that clean, and if we want to get them right, we need to start to view the whole experience differently. Here's what I now know to be true about endings...

Firstly, don't burn your bridges. This should be obvious but in today's society, I feel we've become too quick to turn our back on our prior experiences. Everything moves so quickly these days that it can be easy to assume that old relationships don't matter, that we'll make new ones and those new relationships are the ones to focus on. Don't get me wrong, I love the new - I run a tech company, after all. But I believe those old relationships matter. I left investment banking in my twenties for entrepreneurship, and while my work in that area ended, my relationships continued. One of the people I worked for from that era was actually one of the first investors in EnterpriseAlumni, something that wouldn't have happened if I'd simply closed that door and forgotten about the people behind it.

When we're skipping off to pastures new it can be easy to forget about the good things we're leaving behind. If you want to do endings right, acknowledge that at some point in the future you'll remember the greenness of the grass you're currently standing on and you'll be grateful you didn't let it go completely.

Secondly, 'out of sight, out of mind' no longer exists. Do you remember those days when you left a job or a relationship and it only took a short amount of time to forget about it? That doesn't happen today. Social media has made it impossible to ever truly leave the

past in the past. You think you'll never have to hear your ex-boss' thoughts on the economy again and then they pop up on your **LinkedIn** feed with so much regularity it feels as though they're deliberately targeting you. You share a link to a piece you've written on **Twitter** and an employee from ten years ago wants to have a debate about why your managerial style then didn't match the tone of the piece you've written now. It can feel like today's connectivity makes it impossible for anyone to ever just leave with grace.

However, I'd argue that there's something rather wonderful about the fact that we never lose sight of those people who've known us at different stages of our lives. Living in a world where we can build and foster connections with people, even when they're no longer regularly there in our lives, is a privilege. It allows you to watch as people grow. It gives us the opportunity to support them on the way and it provides the same for us in return. It's part of life's rich tapestry of connections.

Finally, it's not goodbye: it's more 'au revoir'. I know, I know, it's the biggest cliche! But like all cliches, it's grounded in truth. One of the reasons I set up EnterpriseAlumni is because I realised that more and more people were returning to their former places of work. As we all worked longer and moved around more often, it became inevitable that we'd look at previous employers and wonder if there was still a role there for us. In fact it became so common it's now a recruitment category of its own - boomerang hires.

There's something rather wonderful about the fact that we never lose sight of those people who've known us at different stages of our lives

I would argue that this happens in all areas of our lives. Those people you thought you'd never hear from again pop up at the exact moment you need them. An old university friend turns out to have exactly the right skills you need for your startup. Your new partner's best friend turns out to be married to the person you sat next to in your first graduate role. While technology might allow us to expand our worlds, the reality is that our day-to-day lives tend to stay very small. Back in the 90s, Oxford Professor Robin Dunbar posited that most humans would only make 150 friends in their lifetime. When you think about how long we're all living now, it's no surprise that people crop up again and again in our lives. So while that goodbye today might feel final, don't be surprised if it's only for a little while.

And so that brings me to the end of my final ERP Today column. I could wave you off with a final goodbye, but if I know anything about endings, it's really "until we meet again". ■

Emma Sinclair MBE, co-founder, EnterpriseAlumni

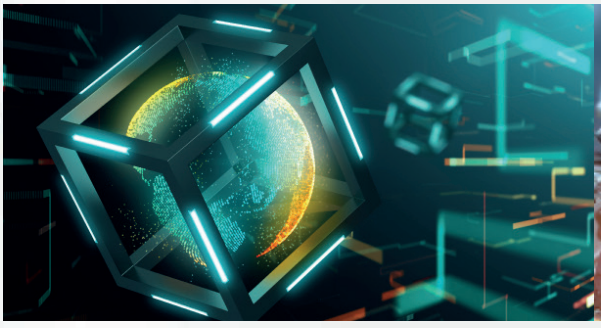
STAY WITH ERP TODAY AS WE COVER

Q1

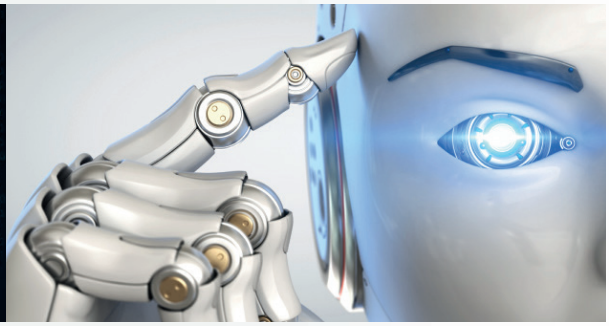
ESG

Q2

DATA & ANALYTICS



THE BIG THEMES FOR **NEXT YEAR**



Q3

CLOUD & SECURITY

Q4

AI & AUTOMATION

ENTERPRISE APPLICATIONS AND ASSOCIATED TECHNOLOGIES

DOCTOR BOT

CURING THE NHS BACKLOG?

TECHNOLOGISTS ARE OUT TO HEAL THE DEFICIT IN NHS RESOURCES, CREATING BATTALIONS OF DIGITAL WORKERS TO BOLSTER THE FRONT LINES WITH INTELLIGENT AUTOMATION.

BY STEPHANIE BALL

AUTOMATION IN HEALTHCARE

Let's turn back the dial to the peak of the pandemic. As the world fought back against COVID-19, hospitals were reliant on oxygen machines to keep a segment of the infected population alive. Each patient in this situation required a certain millilitre per second of oxygen solution, drawing from delivery devices on a colossal scale. If the calculations were inaccurate, and machines ran out, the results were nothing short of catastrophic, with death tolls rocketing.

At **Northampton General Hospital NHS Trust** (NGH NHS Trust), experts gathered to develop a solution, and in just six hours, 'Oxybot', a robotic process automation (RPA) bot, was born amidst the turmoil.

"In a few hospitals around the world, the oxygen stopped because of this challenge, and every single patient died because of an oxygen crisis," explains Tremaine Richard-Noel, head of emerging technology and RPA director at NGH. "Here was something repetitive and about data, as oxygen amounts needed to be checked hourly. It was the first time I'd ever sat down with engineers at the hospital, and together with clinical staff, we built a system, factoring in calculations like the conversion rates and sublimation of liquid to gas, the types of patients, the capacity and ICUs, and it was powerfully simple."

The bot, created using the **Automation Anywhere** (AA) platform, monitored oxygen levels 24 hours a day without human intervention and with 100 percent data accuracy, and it enabled the hospital to repurpose over 1,500 hours of staff time in 2020. Despite a long line of technology failures in the healthcare sector as a whole, the **NHS** started to imagine the possibility of an entire healthcare revolution due to Oxybot's success.

By January 2021, NHSX, an NHS unit responsible for setting national policy and developing best practice for NHS technology, had selected NGH to become an NHS RPA Centre of Excellence (CoE). Here, experts like Richard-Noel led the charge to create an army of software bots to bolster the deficit in NHS resources and support the workflows of employees.

Neeti Mehta Shukla, co-founder and social impact officer at AA, helps to explain the uptake: "Seeing the world from a technology lens, the best innovations come at a time of crisis, because the need is so much. It pushes the solutions to meet that need. And that's what we've seen in healthcare. It's that lightbulb moment, where you think, 'Oh my god, this technology actually exists, imagine what I can do now'. That is why you get goosebumps and why you continue coding."

Despite being the tenth largest employer in the world, the NHS is struggling with pressures striking at every area of operations; the past few years have seen hiring and workforce challenges, with nearly 40,000 nursing vacancies alone pre-pandemic. There are also dramatic service demand

IT'S THAT LIGHTBULB MOMENT, WHERE YOU THINK, 'OH MY GOD, THIS TECHNOLOGY ACTUALLY EXISTS, IMAGINE WHAT I CAN DO NOW'

NEETI MEHTA SHUKLA / AA

THE CHALLENGE
ISN'T WHAT TO AUTOMATE. IT'S WHEN TO AUTOMATE IT

TREMAINE RICHARD-NOEL / NGH

increases and backlogged cases, and cascading supply chain delays and shortages to boot.

"Everything needs to be automated because, realistically, there's too much work to do," Richard-Noel explains. "The challenge isn't what to automate. It's when to automate it. There is a backlog that is really difficult to recover when we could only just deal with what it had at the time. Now we're at a point where we have to be innovative because we've got to suddenly find more capacity, particularly with workforce challenges at the minute. There's a huge burnout. The only way we can deal with these challenges is to do something quite dramatic."

However, there is a history of technology implementation flops in the healthcare sector, whether due to non-adoption, scale-up failure or else sustainability concerns and eventual abandonment. Therefore, how will RPA technology hope to break the mould? What will the picture look like for employees, end users and the NHS as a whole?

REIMAGINING HEALTHCARE - THE NHS RPA REVOLUTION

The past attempts of **Google**, **Amazon**, and others have, if anything, taught the healthcare industry to be incredibly reluctant to undertake new technology projects. But Richard-Noel explains that the flexibility of intelligent automation technology specifically, and its potential to enable team members throughout the organisation (whether developers or non-developers, administrative employees or front-line clinicians, porters and domestics) is key to its successful uptake at scale.

"We could start small and build up together," he explains, "and we've been able to work and shape this product around our problems with an ability to glue things end-to-end across multiple organisations."

Thus far, the NGH's RPA CoE, encompassing business analysts, developers, clinical safety governance, principal medical officers, outreach and engagement, has enrolled more than 28 NHS organisations across the UK in their automation accelerator programme. This has seen 50 employees per month targeted to complete training, and over 500 automation opportunities already identified.

With a CoE in place to manage the governance of each bot, the control is placed directly into the hands of the NHS teams to create endless amounts of resource-saving initiatives, as Richard-Noel explains: "Giving automation to the hands of the organisation, because we're a heavily regulated environment, is creating an option for individuals to sandbox before submitting it to the CoE. Even if you just have 10,000 staff out of 1.7 million trained and producing one automation each a year, that just becomes astronomical in terms of value."

SORRY, DOCTOR - IT'S CHANGING AGAIN

From Richard-Noel's estimations, one could argue that the fear of technology is morphing into an opportunity mindset as the awareness of RPA capabilities grows. Rather than taking jobs or introducing yet more procedure changes, automation is starting to be imagined as the very reason that burnt-out and overworked employees can hope to continue in these fast-paced and heavy-workload professions.

The key, then, is to use the ecosystem of knowledge readily available to the NHS, and present technology concepts that are both governance-ready and free from forms, and which are designed internally to save time and effort from the start with minimal training and processes required. For NHS staff whose working days are ruled by countless procedures and best practice, the last conversation they want to have, on top of updated policies or new medications, is the 'sorry, it's changed again' chat.

"Healthcare is almost all logic-based," Richard-Noel continues. "So, there are clinicians looking at something and choosing which rule set to follow. Their specialty is being able to

go outside of that if they need to. But what we've got with the ability to do automation is organise the human workforce, so you don't just take away the manual tasks that automation can do, but you also use automation to better utilise human resource."

Looking at real-life workflows, automation technology could be onboarding new team members, allocating patients to a particular surgeon or booking appointments, alerting mechanisms, or even enabling porters to be automatically ordered and their routes throughout the hospital calculated intelligently and efficiently. In the most basic sense, whether it's writing a report, extracting information, or removing manual tasks throughout the day, it would mean patients would get out of A&E faster after receiving the care they need without the extensive waits.

From the vendor perspective, it's the availability of this software to everyday NHS employees that marks the change in healthcare technology. Mehta Shukla explains: "We know there are different needs for different parts of the organisation. It has to be a low-code, no-code environment so you can have citizen developers at a much larger scale than you would otherwise for traditional technology. It's really about creating an ecosystem and automation success platform that can benefit the non-development folks on the frontlines as well."

In a recent whitepaper from NGH NHS Trust, it's estimated that more than 80 percent of NHS organisations will have RPA live, and allow the NHS to regain one million hours of time by 2023. It is further hoped that automation will give frontline and back office workers up to a day a week back for higher value tasks that involve empathy, creativity or decision making, and ultimately clear the case backlog weighing down operations. For ROI financially, it's claimed that one single bot has already saved the NHS over £1m with greater savings to follow.

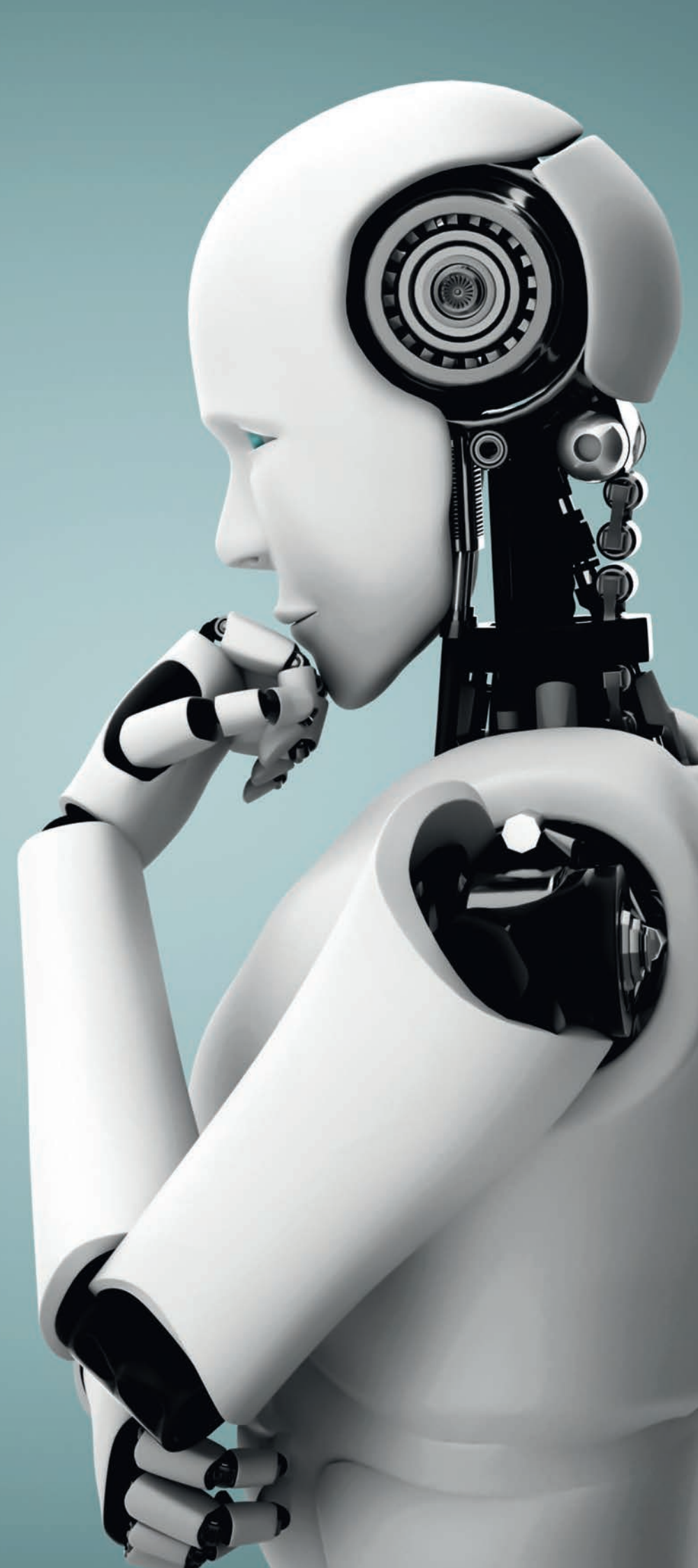
IF YOU CAN REDUCE THE TIME TO TELL SOMEONE **'THIS ISN'T CANCER',** THAT'S DAYS OF STRESS, PAIN, WORRY, SHAVED OFF, YOU CAN'T QUANTIFY IT – **TREMAINE RICHARD-NOEL /** NGH

THE NEXT REAL-LIFE USES FOR HEALTHCARE BOTS

The potential of RPA to shape automation within the NHS no doubt sounds promising, but where are we likely to see the first areas of change? One issue with using technology for healthcare in the past has been seeing through the overwhelming mass of data to discover the biggest wins and separate the promising opportunities from the wasted ventures.

"With the NHS, there is so much potential that it is slightly overwhelming, right? Because you can't do this stuff quick enough," Richard-Noel says. "We are looking to take advantage of

IT'S ABOUT CREATING A PLATFORM THAT CAN BENEFIT THE NON-DEVELOPMENT FOLKS ON THE FRONT LINES – **NEETI MEHTA SHUKLA /** AA



process discovery features in the future to help here."

In the meantime, the RPA NHS team is focussed on areas like the handling of clinical outcomes, cancer patient referrals, and long-term conditions like diabetes and heart failure. There are also aims to create greater workload visibility for each clinician with AA's robotic interface dashboard, with the potential to gamify performance.

"There's a huge journey in terms of time per patient. You think 20 million referrals - that's a lot of time and energy that needs to go into understanding someone's care. There's about ten minutes of admin work per patient that we can save here. Across all that equals around (a total of) 2014 doctors' worth of time; if you times that by the average doctor's pay across the year, at a time where we can't recruit enough doctors, it's really important. The use cases are huge."

It's not just the time and cost implications here, but in true not-for-profit fashion, the potential effect on the human element of these services.

"If someone is referred with suspected cancer, they have to wait up to two weeks for an appointment," Richard-Noel says. "If you can reduce that time for instance, to tell someone the 'this isn't cancer news', that's days of stress, pain, worry, shaved off, and you can't quantify it, but I know it's important."

It's clear that introducing intelligent automation into the NHS is awash with potential for positive outcomes, whether we look at the ROI financially, or else from a resource or social value. These projects are still in the early stages, but now the technology is entering more healthcare settings, the hope is that automation and digital workforce bots can provide the healing hands for NHS operations and pave the way for global healthcare innovation. ■

GLOBAL CONSULTING FIRMS ADAPT TO LIFE

BOX THE OF OUT

All change! How are the Big Four responding to increased demand for business process design and change management rather than tech implementations? BY CHRISTINE HORTON

CONSULTING

Tech investment today isn't being driven by feeds and speeds, but on the business outcomes that customers want to achieve. Technology is no longer at the heart of transformation; instead, it is a business enabler. At the same time, most ERP software today comes out of the box as standard. The upshot for global systems integrators (GSIs) is that there is now very little technical work for them to do for clients – unless it's developing extensions.

Put simply, there is little or no technical complexity for GSIs to manage.

"As infrastructure complexity is being abstracted by the cloud, and development is being led by citizen developers leveraging low-code or no-code platforms, the complexity the GSIs used to manage is reducing," says Steven Dickens, senior analyst at **Futurum Research**.

This has changed the game for those firms. Previously engaged in technical assignments, the lion's share of their work is now focussed on business process design and change management – which of course requires completely different skills and delivery models.

There have been some corresponding operational shifts this year within the 'Big Four' consultancies – **Ernst & Young** (EY), **Deloitte**, **KPMG** and **PwC** – as they react to changing market needs. We've seen the launch of new divisions and even a break-up of the business in the case of EY. But how are the likes of the Big Four adapting to these particular changes to how they engage with clients – and what do they mean for customers? We spoke to some of those firms to find out how they are steering their businesses into 2023 and beyond.

Focus on the human element

Benoit Laclau, UK&I managing partner for consulting at EY, points out that in the past, organisations used technology to automate and standardise their processes, recreating their existing ways of working. But it also meant less need for meaningful change management, as you were training the business to use a new technology system to run the business as they did beforehand.

These days however, a study by EY and **Oxford University's Saïd Business School** confirms the need for strengthened change management and people focus when it comes to transformation. It reports that 85 percent of firms have been involved in two or more major transformations in the past five years. At the same time, the rate of failure for transformation projects "remains stubbornly high", with 67 percent of respondents having experienced at least one underperforming transformation during the same time.

"It is the human factors that drive transformation success and failure. For that reason, people should be at the centre of every decision a business makes," says Laclau.

"Ultimately every transformation has a people impact. Developing approaches that involve active listening, considering the perspectives of different audiences and actively seeking to create a groundswell of enthusiasm and involvement from the grassroots will be the transformations that best succeed. Leaders need to understand this if they are to move in line with what a business transformation journey looks like today."

Interestingly though, it seems employees are also growing more resistant to change - in 2016, the **Gartner** Workforce Change Survey showed 74 percent of employees were willing to change work behaviours to support organisational changes, but that number dropped to 38 percent in 2022. This indicates that while they may have their work cut out for them, there is a clear need for consultants to help their clients navigate their tech transformations.

So where else can GSIs find opportunity as their enterprise clients move to next-generation ERP? For a start, Laclau says businesses need numeric insight to understand where it makes sense to extend the standard ERP package, because there is clear differential value.

"For everything else, businesses should use the standard out-of-the-box capability. Within this context, change management is critical to bringing about new ways of working as the business moves to a more standardised process," he explains. "Every transformation cycle needs to be looked at through this value lens if it is to succeed."

Again, consulting firms have a role to play in complementing this with an enhanced focus on the people elements of the transformation. This includes "ensuring there's a human roadmap, strong change management and leadership workstreams," says Laclau.

"Global consultant firms will need to ensure that change – including the ability to adapt and manage change – is ingrained in all aspects of their culture.

"By building this into the company's transformation structure from the start, organisations can ensure they are providing their people with the skill set they need to manage both the technical and business aspect of the transformation journey."

Changes still underpinned by tech

Looking to another of the Big Four, Ian West, head of technology and alliances at KPMG UK, maintains that clients are still looking for technical implementation. However, this now fits into a broader client strategy where the firm also engages in the wider transformation piece and change management.

"There is definitely increased demand for broader solutions and work outside of the technical assignments, but our clients still very much want our expertise in that too," says West.

Reflecting this, KPMG launched its products business earlier this year. According to the consulting major, a new specialist team will be building a portfolio of products designed to help clients streamline their processes, and better understand and analyse their data as they relook at their operations "against a challenging operating landscape and (also) invest in digital transformation."

"Our technologists are building a range of digital solutions to solve our clients' most complex challenges, and this still requires a more technical skill set and delivery as our clients make changes to their strategies and operations," says West.

"However, it shows how we have adapted as a business to meet the evolving needs of clients in an innovative way. We are also forming strategic alliances with key technology providers, working together to utilise each other's skill sets and expertise to solve our clients' challenges."

West says KPMG's approach to alliances enables it to advise clients on the best technological solutions for their business, working closely with the technology providers to implement these, thus providing "a seamless approach".

"This also requires us to constantly monitor and be aware of emerging technologies so we can look at where we should be forming alliances to provide the best solutions for our clients," he adds.

Next generation of technical consulting

Jag Bandla, principal and leader of Deloitte's AIOPS.D business argues that the current generation of consulting services actually go beyond just business model and change management. They can extend into providing services faster, better and more accurately by enabling digital and cloud-based ERPs and light RPA (robotics process automation) for clients.

"RPA can certainly allow clients to perform single tasks

CONSULTING

faster on/in their ERP ecosystems, while there are still the same number of steps required to get things done," he says.

In fact, Bandla says the next generation of technical consulting engagements are poised to fundamentally change the way work gets done.

"Clients no longer need to experience bulky reporting and analysis to make time-sensitive and flexible vendor selections. Instead, imagine if clients could have a conversation with its ERP to carry out this process."

Launched in March, the AIOPS.D service focusses on helping clients deploy intelligent, AI-based applications that autonomously execute core processes across critical business functions. Bandla describes it as "a next generation of RPA, combining AI/ML frameworks referenced above to help clients make real-time decisions."

"Market signals from Deloitte clients show robust demand at the intersection of 'operate' and 'autonomous technology,' says Bandla. "Clients are asking Deloitte to bring technologies to serve as RPA next-gen while simplifying the process, and concurrently expressing interest in outsourcing the process to us."

Consultancies in 'a unique position'

So given the rapid acceleration in transformation projects we've seen in recent years, it is interesting to consider the next iteration of changes for the Big Four.

According to Dickens, the pace of transformation is only likely to increase, especially as complexity shifts and Line of Business executives become more comfortable with no-code tools and process orchestration software from the likes of **ServiceNow**.

IMAGINE CLIENTS HAVING A CONVERSATION WITH ITS ERP TO MAKE TIME SENSITIVE, FLEXIBLE VENDOR SELECTIONS

JAG BANDLA / DELOITTE

WHILE LOB EXECS CAN TAKE THE LEAD, THIS LEAVES A LOT IN THE HANDS OF THE UNDERLYING CLOUD PROVIDERS

STEVEN DICKENS / FUTURUM RESEARCH

"The challenge will be ensuring that data, and the insights from that data, keeps pace, and the complexity of data silos is collapsed," he explains. "While Line Of Business execs can take the lead, this leaves a lot in the hands of the underlying cloud providers."

A potential shift of power to the cloud providers will see them with a stronger hold over IT than ever before – which could cause issues for consultancy firms.

"The Big Four will be uncomfortable with this dynamic as they currently control the C-Suite and bring in vendors piecemeal," agrees Dickens.

Ultimately, says Laclau, a focus on value when making decisions will reduce customisation and an increased focus on the 'human' element will have to become the norm for future transformation endeavours.

"Increasingly, clients with a value-based approach will use the processes made available from the standard ERP. This act requires meaningful change and works in line with creating strong change management.

"However, studies consistently show that only 10-30 percent of transformation projects succeed, and success is elusive. Global consultancy firms are in a unique position here as a sector because they have the knowledge and expertise to value people while simultaneously delivering innovation at scale – something that organisations need to consider when putting their transformation framework in place."

It's a cliché to say that the only constant is change, of course. But the ongoing transformation efforts of organisations do demand and require partners with the right skills to help them navigate those changes. The Big Four clearly recognise this and are evolving their own businesses in response in no small terms. ■

WELCOME TO 2023

IS THE PUBLIC SECTOR READY FOR A WORLD POPULATION OF 8 BILLION?

NEXT ISSUE **ERP.TODAY**

Privacy: Straitjacket or competitive advantage?

BY WAYNE LLOYD

In 2012, Neelie Kroes, then the vice president of the European Commission, referred to data as being 'the new oil'. Her definition underpinned a belief that the impact of data would be as profound as the oil industry had been on our world and the economy over the previous 150 years. Just five years after Kroes' announcement, **The Economist** supported her prediction by announcing data as the world's most valuable resource in 2017, trumping the black stuff. This was declared given that the collective net profits of **Alphabet**, **Amazon**, **Apple**, **Facebook**, and **Microsoft** had stood at more than $25bn in just the first quarter of the same year.

Despite its value, there is evidence to suggest that many organisations and businesses take for granted what is arguably the most important data asset - the consent and data permissions of the individual that provide them with access to the data and rights of usage.

Data, remember, is simply defined as meaning facts and statistics collected for reference and analysis. Academic Meredith Loken elaborates on that, defining data as "everything from personal data like age, gender and height, to data collected from sensors on ships or from the production process in a factory. You'll find data in words, pictures, sound, ideas, facts, measurements, statistics, or anything else that can be handled by computers, broken down to binary numbers, 1s and 0s.

While data creates economic competitiveness, the comparisons of data being like oil creates tension for academics and experts alike. **Indium Software**'s Vaibhavi Tamizhkumaran argues data can no longer be metaphorically compared to oil given that data is essentially infinitely renewable whereas oil is a finite resource. Alec Stapp of the **Institute for Progress** applies a more simplistic perspective, arguing that the comparison "has become the dumbest meme in tech," for comparing data to the physical world is "fundamentally flawed". He concludes, "people who analogise data to oil or gold may merely be trying to convey that data is as valuable in the 21st century as those commodities were in the 20th century," which is, perhaps, the most accurate summary of all. Regardless of your view, one argument that should always hold true on both sides is that, to quote British mathematician Clive Humby, "like oil, data is valuable, but if unrefined, it cannot really be used".

Humby is credited as being the first person to introduce the idea of data being the new oil, and unlike Kroes, his comparison was applied with a different lens. He was less focussed on the economic impact of the data industry on society and more focussed on how data needs to be refined or cleaned for its true value to be unlocked. His argument that, like oil, data cannot unlock value in its raw state is fundamental, and should focus the minds of any organisation or business who might believe that by accumulating large quantities of data they have value.

The truth is, it's simply not enough to have data. To unlock value, organisations and businesses must implement a robust data strategy that enshrines a commonly understood and consistently executed set of rules and behaviours for managing data. An effective data strategy must be underpinned by four principles: provenance, preparation, protection and privacy.

Provenance, also known as data lineage, is metadata paired with the records that detail origin, changes to, and the details supporting, the confidence or validity of data. Data preparation, meanwhile, is the process of gathering, combining and structuring and organising data so it can be used in a meaningful way.

As for the tenet of protection, the **ICO** says this is "ensuring people can trust you to use their data fairly and responsibly," which requires organisations and businesses to keep their customers' data safe from theft and

loss. There is evidence to suggest that businesses and organisations see protection as meaning privacy, and whilst they are described by some as 'kissing cousins', the terms privacy and protection should not be used interchangeably. Whilst protection is focussed on security of data, privacy relates to its governance i.e. how data can be shared and used.

A failure to understand the difference between the two can leave organisations and businesses exposed to risks that their data protection strategy will not save them from. Such risks include regulatory fines, reputational and economic damage, and loss of customers and consumer trust. For those that do recognise the distinction, there is clear evidence that the existing privacy strategies of today might not go far enough and the technologies that are typically used to underpin them are not fit for purpose. Simultaneously, many privacy strategies fail to consider the changing dynamics of an increasingly interconnected and open data world, which will limit the competitiveness of organisations and businesses in the future.

Some organisations and businesses have seen privacy as nothing more than a 'tick-box' exercise or something that must be done to appease the demands of the regulator. As such, obtaining important regulatory requirements such as garnering the customer's consent is seen as something of a 'given' and there is little regard for how this part of a customer journey can be used to unlock a more granularized view of how the customer wishes for their data to be shared and used.

This is exacerbated when we consider that the consent of a customer is often stored on platforms and technology that can be remastered and changed, creating multiple records of the customer permissions that demonstrate differing data permissions as time progresses. As such, organisations and businesses become locked out from using their data over time as they have no single view of how to use it, whilst they also prevent themselves from gaining access to new sources of clean data which a robust privacy management strategy might afford them.

As the founder and CEO of a company that has developed its own consent and permissions management software, we have found instances where some organisations and businesses have been unable to process and use 100 percent of their customers' data, and due to the regulatory concerns it has caused, their default position has been that it might pose too much risk to the business to market to their customers, denying themselves future opportunities of revenue.

For the organisations and businesses willing to risk using data without the relevant consent and permissions, they should become increasingly aware of the growing teeth of regulators around the world, which show such an approach will not be tolerated.

Recent examples include the UK's ICO issuing a £40,000 fine to one company after receiving just five complaints about e-mail marketing campaigns that had contacted them without valid consent. A second fine was issued for £80,000 following the same number of complaints made about predatory marketing calls without consent, whilst another fine was issued for £1.48m following 25 complaints from individuals that identified their personal data was being used without the relevant data permissions. In Europe alone we have seen more than 1200 fines issued to organisations for breaches of GDPR, totalling more than £2bn.

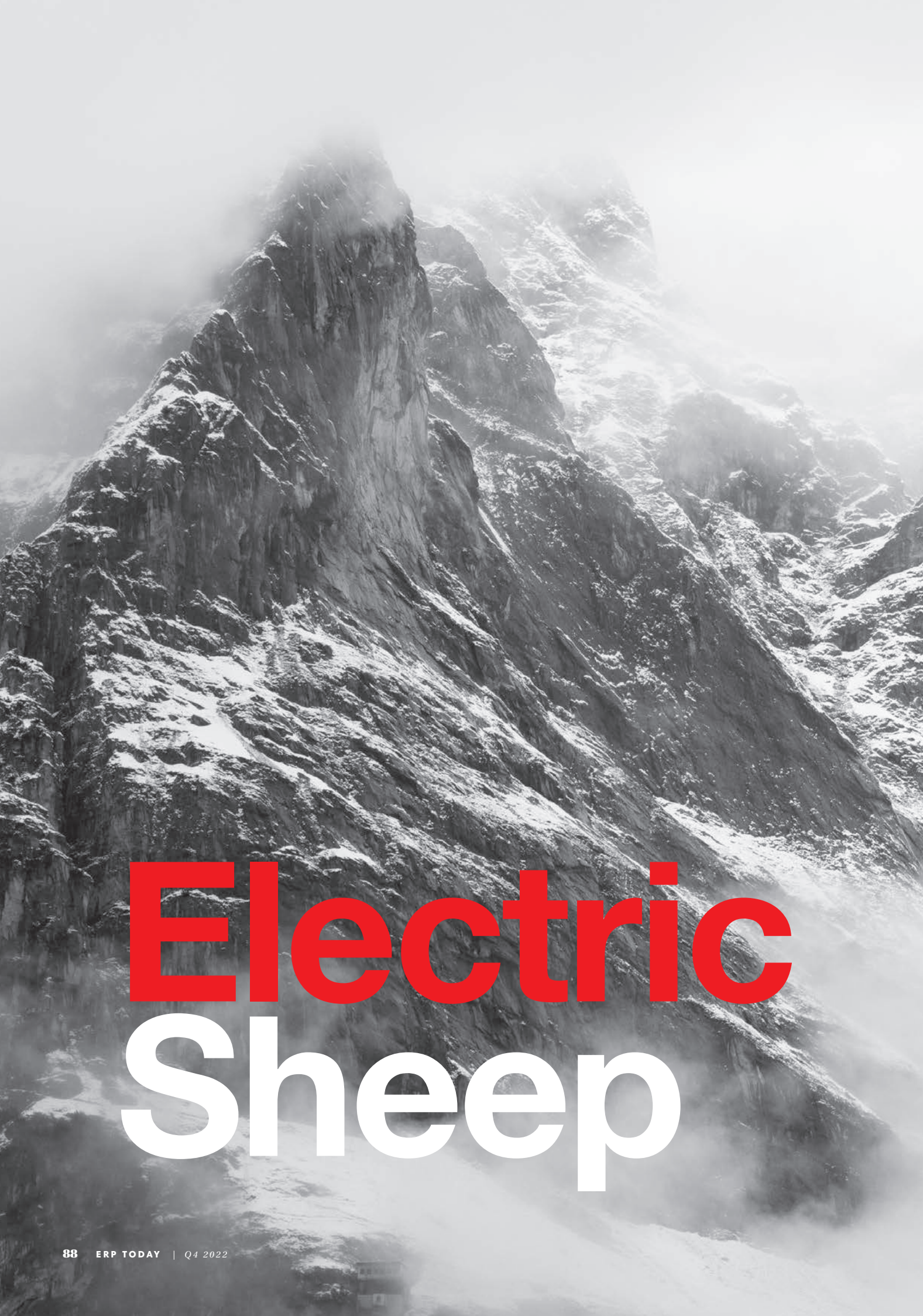
Some organisations and businesses are trying to solve these problems by creating large data lakes for their data permissions to be stored; however, these permission lakes will be limiting for multiple reasons. At the same time they will not allow the organisations and businesses doing this to participate to their full potential in an open data economy that requires customer data to be shared by multiple parties across a network. As such, this approach to data is creating future experiences for their customers that will ultimately lead to friction, limiting engagement opportunities and their future revenue potential.

One fine was issued for £1.48m following 25 complaints from individuals that their personal data was being used without permission

As global regulators lean towards supporting data sovereignty and organisations, and businesses contend with the emerging threat of web3 platforms that enshrine data sovereignty as a principle, the need for more robust and forward-thinking data privacy strategies will become increasingly prevalent for those wishing to win the trust of their customers and compete in the future. Furthermore, organisations and businesses will also need to think about themselves not just as a single entity, but as a party within a network. This is particularly so as open data initiatives become increasingly prevalent and mature.

As a result, enterprises will need to think about whether their existing privacy strategies allow them to participate in the open data economy or instead hold them back like the proverbial straitjacket. ■

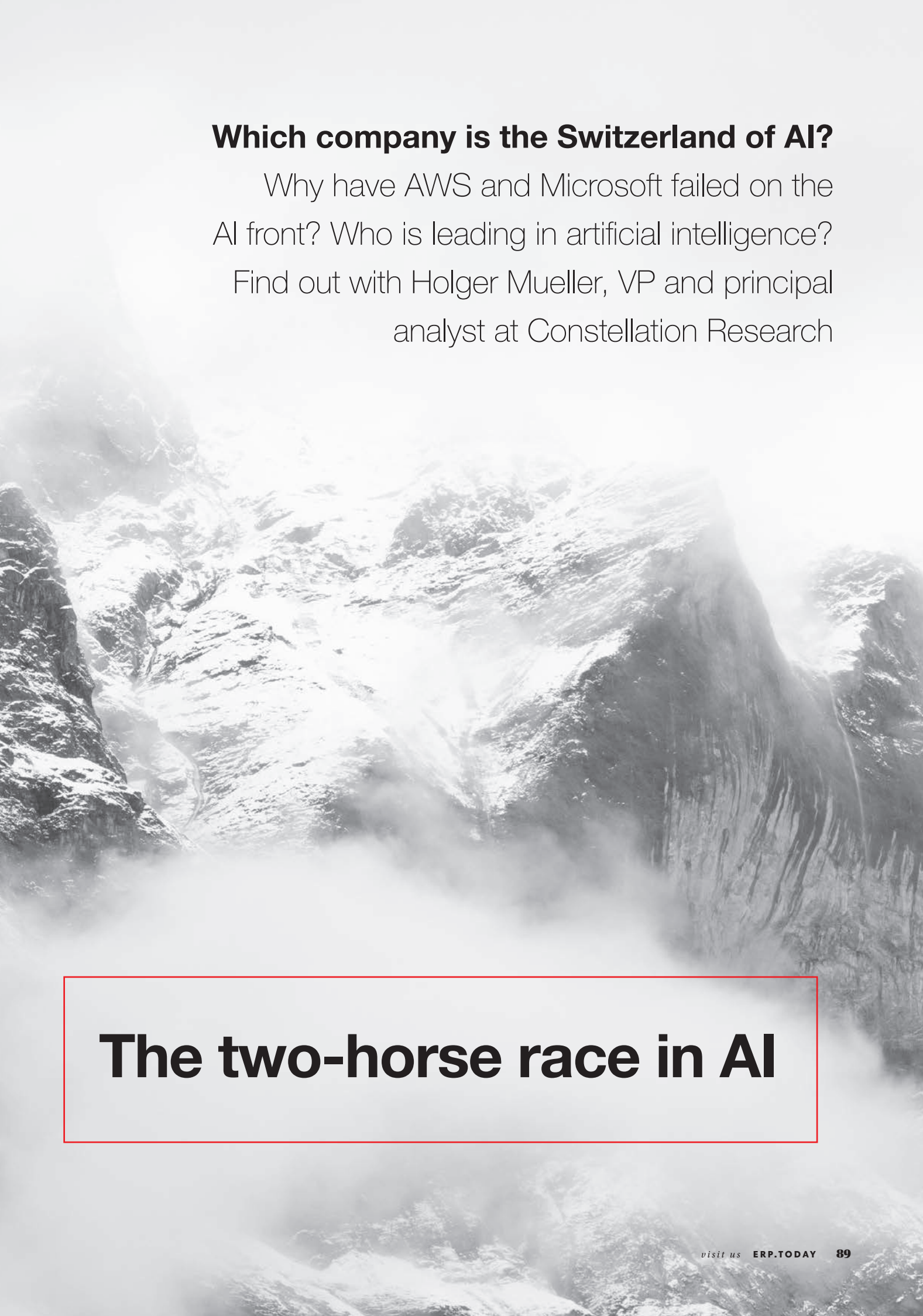
Wayne Lloyd, founder and CEO, Smarter Contracts



Electric Sheep

Which company is the Switzerland of AI?

Why have AWS and Microsoft failed on the AI front? Who is leading in artificial intelligence? Find out with Holger Mueller, VP and principal analyst at Constellation Research



The two-horse race in AI

THE AI RACE

It's time to look at one of the most disruptive technologies that is just around the corner in enterprise tech: artificial intelligence (AI). While I don't think general AI adoption has been achieved, we have made massive progress on machine learning (ML). So, writing about AI means primarily discussing ML, with a tiny bit of AI on the side.

BY HOLGER MUELLER

Infinite computing is the backdrop

We live in the era of 'infinite computing', on which I have researched and written extensively. For all practical purposes, the key computing resources - networking, storage and computing - have become infinite thanks to the cloud. Across the five layers of infinite computing, 'infinite connectivity' is the most integrated function in today's world. We consume data and expect high quality video conference connections anywhere in the world at no, or a very manageable, cost.

The next layer, 'infinite insights', is a reality for countless enterprises thanks to the revolution of **Apache** Hadoop style technologies (most recently referred to as lakehouses). Unfortunately, BigData developed a bad reputation and slowed progress on infinite insights - to the detriment of enterprises unable to integrate AI automation to the expected progression in the 2020s. Even fewer enterprises have dug into the third layer of 'infinite compute', in which computers are used to run AI on their data.

AI will have the ability to take over for humans, should they choose to give AI the authority

Enterprises mastering the insights and compute level are ready for 'infinite machine learning'. Machine learning automates, improves or suggests outcomes for any business process, assuming all enterprise process data is part of the infinite insights layer. In a few years,

Unfortunately, BigData developed a bad reputation and slowed progress on 'infinite insights'

enterprises will be able to use 'infinite deep learning' - or self-driving AI - to effectively look at data and business outcomes. In this final layer, AI will have the ability to take over for humans, should they choose to give AI the authority.

Cloud is the AI platform

The cloud is a key enabler for enterprises, as it turns capital spending into variable cost and enables enterprises to only pay for what they use. The art of using the cloud is tying cloud usage to the level of business - when business is up, enterprises pay more for cloud; when business is down, enterprises pay less. So, when a new technology comes along and an enterprise is uncertain of the extent it will be used, does it make sense to budget for the hardware, allocate time to train employees on operations and then see how much it might be used? No, enterprises should look at a consume-as-you-go platform for AI, which is available in the cloud.

The other key aspect, which by now is a commonly accepted basis of AI success, is using data to determine the success of AI. When software does not include the data critical for AI, it cannot provide the answers enterprises want and need.

Handicapping the key AI cloud vendors

Much has been said and done about AI's impact on enterprises. The long anticipation phase is ending, and the benefits are becoming real - so real that enterprises not taking advantage of AI will struggle to remain relevant towards the end of the decade. The cloud is essential for fuelling the move to AI, as it enables infinite insights (the unlimited, economic data storage of all things digital in an enterprise, without prior knowledge of queries to the data, as fuelled by Hadoop technologies) and infinite computing (the ability to ramp up and down computing infrastructure to fuel AI processes to the volume enterprises need).

For cloud vendors to be successful, their products need the following key capabilities.

1. Data capability supporting AI strategy
2. Efficient computer hardware to train and operate AI models
3. An AI platform allowing efficient creation of AI applications

Now, let's take a look at the top five cloud players (in alphabetical order):

- **Amazon is playing catch-up but remains a key competitor** There is only

Enterprises not taking advantage of AI will struggle to remain relevant towards the end of the decade

one area where Amazon Web Services (**AWS**) has fumbled: AI. But AWS management realised they held too long to the belief AI was merely a linear regression tool exercise and are realigning AI prioritisation. AWS has all the data capabilities needed for a successful AI strategy; the only concern is on the computer hardware side. The company though has launched Graviton, and, at time of writing, is likely to announce its third iteration of the custom AI chip at its yearly 're:Invent' conference.

On the AI platform side, AWS offers SageMaker, a powerful and popular platform well-established with AWS customers. Unsurprisingly, when an enterprise wants to build its AI on AWS, there is no way around SageMaker.

• Google is clearly in the lead

Among the vendors listed, **Google** is far ahead due to the nature of its other businesses. AI, speech recognition and language translation have been the main game for Google over the past few years. The result is likely a three-year lead when it comes to the infinite compute layer, with Google's Tensor Processing Unit in its fourth version. Google's platform framework, TensorFlow, is the most adopted in the market. As an acknowledgment of Google's leadership, TensorFlow models are supported by and run on AWS as well. On the data side, Google

There is only one area where Amazon Web Services has fumbled: AI

has a mature platform differentiated by BigQuery Omni. BigQuery Omni retrieves data residing on other cloud platforms, helping enterprises avoid data egress fees and acknowledging the reality of data gravity.

• Microsoft keeps kicking the can down the road

Microsoft got somewhat lost on the AI side, banking on its work for Microsoft Bing that ultimately did not deliver. Microsoft also had to abandon its smart home device strategy, likely due to lack of quality and/or the footprint of its speech AI.

Microsoft got somewhat lost on the AI side, banking on its work for Bing

Microsoft has a suitable data platform, Azure Databricks (of the successful Databricks vendor, in which Microsoft holds a stake). Redmond also has proficient AI capabilities but has not tapped into the Visual Studio developer community. But the real area for concern is that Microsoft is still not making custom silicon for its AI algorithms. Microsoft has done significant work around ethical AI/responsible AI, which reflects itself in the offerings, but this has not helped Microsoft's overall AI capabilities.

• Nvidia is the wild card - and Switzerland

Nvidia experienced a remarkable growth phase, powered by the similarity of graphics cards and AI vector algorithms, most prominently used in neural networks. Nvidia offers the option to run AI on-premise, which some enterprises still prefer for performance, data privacy and cloud-phobic reasons.

At the same time, given its popularity, Nvidia's platforms are available in all large clouds, allowing enterprises to move AI training and execution. Nvidia has an attractive AI platform as well, although somewhat lacking on the data management side when compared to the top three cloud vendors. Nvidia is the only vendor offering customer training and operating models on both the three major cloud platforms and on premise, making it the 'Switzerland of AI'.

Oracle has stayed very quiet on the AI side, likely motivated by founder Larry Ellison's (rightful) scepticism towards general AI creation

Oracle is just at the beginning, plays the Nvidia card

Oracle has executed a remarkable strategy to stay relevant and become an attractive cloud vendor. But it has stayed very quiet on the AI side, likely motivated by founder Larry Ellison's (rightful) scepticism towards the ability to create general AI, preferring to side with the 'autonomous' approach.

To no surprise, Oracle announced a close partnership with Nvidia at its recent CloudWorld conference. This is

Nvidia is the only vendor for the three major cloud platforms and on premise, making it the 'Switzerland of AI'

good news for Oracle customers, who often hold out for the on-premise side with Oracle's Exadata platform. Running Nvidia adjacent to Oracle data is key to enabling relevant AI applications. In its new database offering, MySQL HeatWave, Oracle just added a lakehouse, which demonstrates significant progress on this front as well.

The AI race takeaways

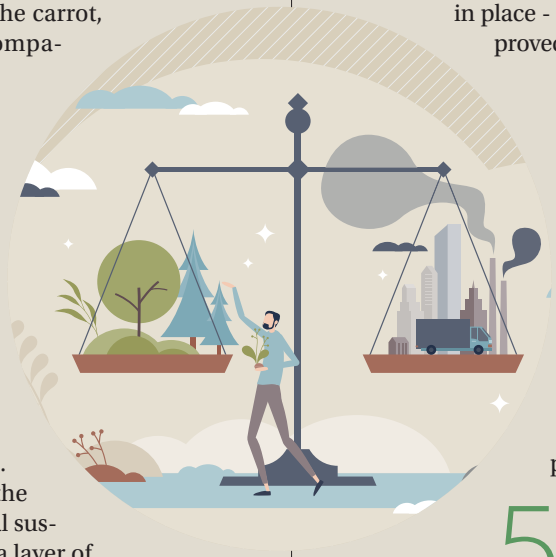
CxOs must understand the core differences between major cloud and AI platform players. It is key to comprehending their organisational DNA and charting the trajectory of their AI offerings. Using this as a lens for comparison, Google is unlikely to lose its AI crown, or it would go out of business (which would be very noticeable). All developers and early data scientists use and love AWS. Microsoft is used by nearly all enterprises and maintains a unique AI angle with its focus on productivity. Nvidia offers portability, and Oracle is slowly joining the AI game.

All vendors bring distinctive value propositions to enterprises - choose wisely! ■

While green metrics might currently be a problem, they can also be a future solution. In a climate of backlash and doubt, what better defence than solid, tangible evidence? Not only to prove that you are doing what you said you'd do, but also to measure the financial and non-financial impact of those policies and practices.

The naysayers argue that until there are common metrics that hold all organisations to the same standards, there will always be doubts about what a company's claims really mean in practice. The good news here is that the **International Sustainability Standards Board** has made great progress in setting such standards, and the **US Securities and Exchange Commission** is also due to bring in new climate change-related disclosures. For those who prefer the stick to the carrot, these new standards will be accompanied by tighter regulations.

> **Why spend money on sustainability and tie yourself to onerous non-financial targets when your very survival is at stake?**



ERP to the rescue

I'm conscious that readers of ERP Today may be thinking that, even by my own standards as a regular contributor, this is a very long way to go without mentioning ERP. But hopefully it's already clear that such systems have an important role to play. Put simply, if you don't measure it, you can't manage it, let alone assure or benchmark it. So not only do ERP systems hold the key to collecting and analysing vital sustainability data, but they also add a layer of transparency and accountability that is vital in a world where everyone - from consumer to investor - is tired of being sold stories and wants firm facts.

So, how do you go about all that? While it's the 'tall poppies' that have felt the backlash simply because they are the most visible, it's perhaps those still on the journey who most need support, especially given the economic pressures they are facing. So, here are six tips for those looking to ramp up their sustainability capabilities:

1 **Don't go it alone.** Sustainability is likely to reach into and impact every facet of your organisation so you should involve and gain support from multiple business functions, from operations to IT. Also, remember that even after implementation, your new system will be ineffective unless stakeholders have bought into, and actually use, it.

2 **Do build a business case.** Putting together a thorough business case which clearly demonstrates all the benefits - including reducing risk, improving operational efficiency and boosting reputation - can be tricky, especially when it extends to taking non-financial factors into account. But don't think you have to reinvent the wheel: there are plenty of good examples out there.

3 **Don't get distracted by shiny things.** Don't be dazzled by the latest tech capabilities on offer in the market, no matter how great they look. These can quickly lose momentum unless they are tailored for your specific challenges and directly address your real business needs. And before you buy in, consider what systems the organisation already has in place - can they be extended, upgraded, improved, or added to, rather than replaced?

4 **Do start at the very beginning.** If you don't start with correct, clearly defined targets, you're unlikely to end up hitting them. And start thinking about data right from the beginning. Which data objects are the most important and relevant to the business? Are they available and in the same form right across your organisation - or will you be in danger of comparing apples with pears?

5 **Don't forget it's a marathon, as well as a sprint.** In today's dynamic business environment, technology that is merely maintained will soon diverge from business needs and begin to lose its value. Instead, it needs to be considered as a long-term journey with a focus on continuous improvement and investment so that it remains relevant. And the key to that is governance, particularly around data.

6 **Do choose wisely – and try before you buy.** If you are searching for new capabilities, test the robustness of any tool before you buy. While some players are simply rebadging existing systems to tap into the ESG boom, rising demand in the market has brought others to the forefront with great experience and insight. ■

Matt Bell, EY global climate change and sustainability services leader

SUPERMARKET SWEEP

THE ENTERPRISE APP STORE IS OPEN FOR BUSINESS

BY ADRIAN BRIDGWATER

As enterprise technology vendors now seek to make the software procurement process simpler, safer and altogether more straightforward, the use of enterprise app stores to present a 'curated showcase of solutions' is an appealing customer proposition for many.

Combined with the development of what we now call micro-vertical services, there is a concerted and growing effort to ease the headaches (and in some cases heart-aches) traditionally felt by the software buying team.

Enterprise software procurement should be a precise science. By its very nature as a digital entity, selecting and purchasing software should be as simple as auditing user and system requirements, pro-visioning for scale and connecting to a vendor's product and services menu to complete a transaction.

Except it's not. Software vendors, especially those in the ERP space, are often criticised for their bloated product catalogues and difficult-to-navigate buying systems. With many products and sub-products further confused by bundling, buying a chunk of software is not as simple as it sounds.

What is an enterprise app store?

An enterprise app store is an opportunity for software vendors to package and simplify their product sets. Think of this concept like going into a hardware store and buying a new electrical housing of some kind and being offered a specialised socket wrench along with it to make the fitting process easier. You might also be offered special protective gloves or some kind of sealant i.e. all the elements you need to make the job safe and long lasting.

Software vendors know that their portfolios can appear cumbersome or unwieldy, this is a way for them to group together a set of best practice tools in one place and in some cases offer them as tailored 'productised solutions' for specific different industry needs.

Sometimes stores will offer combined tools and processes that have been coalesced through internal product roadmap development. Other times, the application and services fusion is drawn from a process of carefully observing where other customers have had success. Perhaps unsurprisingly, the best enterprise app store offerings are usually a result of both.

Navigating the software universe

"The rise of enterprise application stores is a logical enough progression in a world - no, let's say universe - of software platforms, tools and services that appear to be booming on an ever-expanding trajectory of growth," says Prakash Vyas, global head of portfolio marketing at software app platform company **OutSystems**. "Given the additional fact that multi-national organisations often work with disparate teams across multiple locations, there are (in some cases, perhaps not all) too many avenues and opportunities for one team in one place to adopt one application, while another embraces a different tool altogether. The end result is poor integration, flaky interoperability and the creation of potential security fissures."

Vyas likens the rise of the enterprise app store to planned community housing schemes. From the outside, all the buildings look mostly the same, there's a perfect fit between streets and sidewalks, all the roof tiles are the same colour and there are community social gatherings to address local concerns and discuss development.

Inside these homes and offices, people are obviously free to furnish their dwellings to their own custom specifications and taste, but they can do so in the knowledge that their water supply and other utilities have been engineered to the same (hopefully high) standard as their neighbour.

"We're not advocating some draconian vision of homogeneity in software or social housing - and this should not necessarily be a carte blanche approach to the way all technology is purchased in the future. But what this market construct does offer is a way of channelling procurement and deployment into more defined streams.

"This is a process that can lead to not only sharper and more accurate application usage - it can also help to cut down instances of shadow IT where teams have adopted (sometimes quite random) software tools that fail to align perfectly with the central IT stack," adds Vyas.

Searchable self-service

When an enterprise app store is working well, customers get what they need at the right time and at the right price point. Much like today's supermarket checkouts and self-scan grocery systems where the retailer barely needs to be present, the software vendor can often take a back seat here too.

By offering a searchable index of software solutions that includes and incorporates a catalogue of partner products, the enterprise app store is able to automate and streamline the whole procurement process. Customers can buy with full knowledge of product functionality and scope. Much like the way we select hotels or other products and services online today, where customers want more information they can read about other user experiences with the tools they seek to purchase.

Sales consultants and product specialists don't need to panic just yet. As is the case with most AI and automation, this process largely allows product salespeople to focus on more complex customer requirements, which will typically be higher value and higher revenue.

All of this leads us to the subject of so-called micro-verticals and the specialisation of software to serve this notion of industry sub-sectors.

What is a micro-vertical?

As it sounds, a micro-vertical is a smaller subset of a vertical industry. If petrochemicals or aviation are verticals, then petrochemicals or aviation services for farming and agriculture

WE'RE NOT ADVOCATING SOME DRACONIAN VISION OF HOMOGENEITY IN SOFTWARE OR SOCIAL HOUSING

PRAKASH VYAS / OUTSYSTEMS

OUR STORE IS NOT ONLY FOCUSSED ON INDUSTRY FEATURES, BUT ALSO INDUSTRY CONTENT, SUCH AS KPIs, WORKFLOWS, BENCHMARKS, AI-DRIVEN OPTIMISATIONS AND RPA

SOMA SOMASUNDARAM / INFOR

requirements is a micro-vertical. We can further regionalise a micro-vertical and say that we're looking at petrochemicals for agriculture in Romania (for example), but we don't need to emphasise the concept any further at this stage.

The point to grasp here is that the classification of micro-verticals enables enterprise app store vendors to create pre-packaged, pre-integrated, pre-configured and pre-provisioned software to align more closely to its intended use at the coalface of deployment.

Infor chief technology officer and president of products Soma Somasundaram calls his company's app store a 'smart ecosystem' designed to offer hundreds of solutions that have been pre-integrated with Infor software, or built with Infor platform technologies.

"(These include) partner-developed apps, which support certain niche industry needs, to...visualisations, extensions and reusable widgets. [It's] intended to showcase new and innovative solutions for our customers... not only focussed on industry features, but also industry content, such as KPIs, workflows, benchmarks, AI driven-optimisations and RPA," according to Somasundaram.

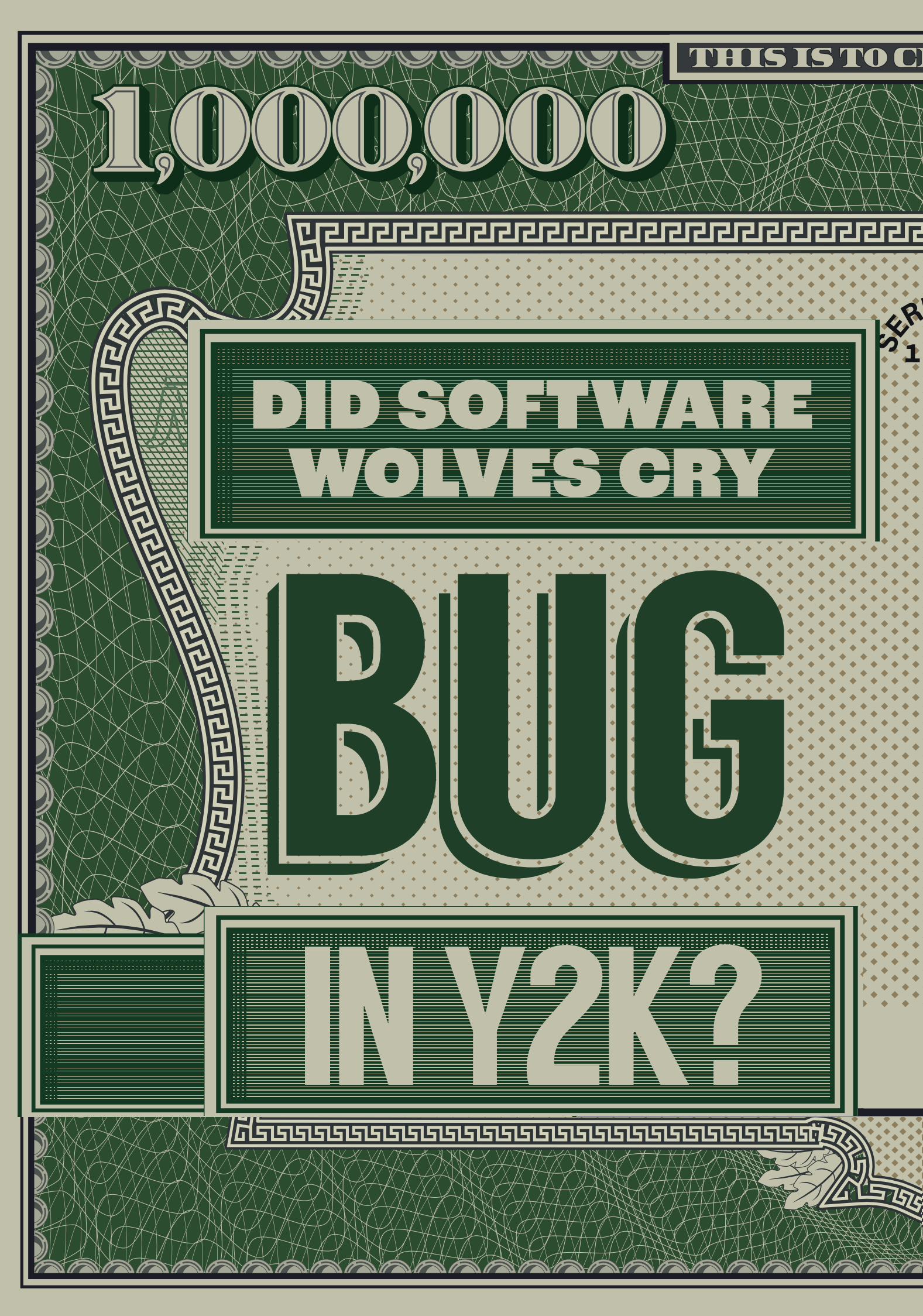
Ten items, or fewer

As we have tried to illustrate here, the rise of the enterprise app store has a number of obvious parallels with the way we have always shopped in marketplaces since biblical times. Crucially and more importantly, the app store concept is developing on a parallel path with the way we shop today with self-service, packaged solutions and the new era of productization (let's use a 'z' in deference to where the term originates from) that surrounds us.

Looking ahead, it's hard to predict where the parallels will go next.

In the high street supermarket, some people will want pasta ready meals, some people will want spaghetti and ragu sauce sold as a combined unit ready to cook at home, while others still will want flour, tomatoes and raw meat to build from scratch.

In the enterprise app store, the food is as good as on the plate and you may get an Italian waiter thrown into the bargain too. Pass the black pepper, please. ■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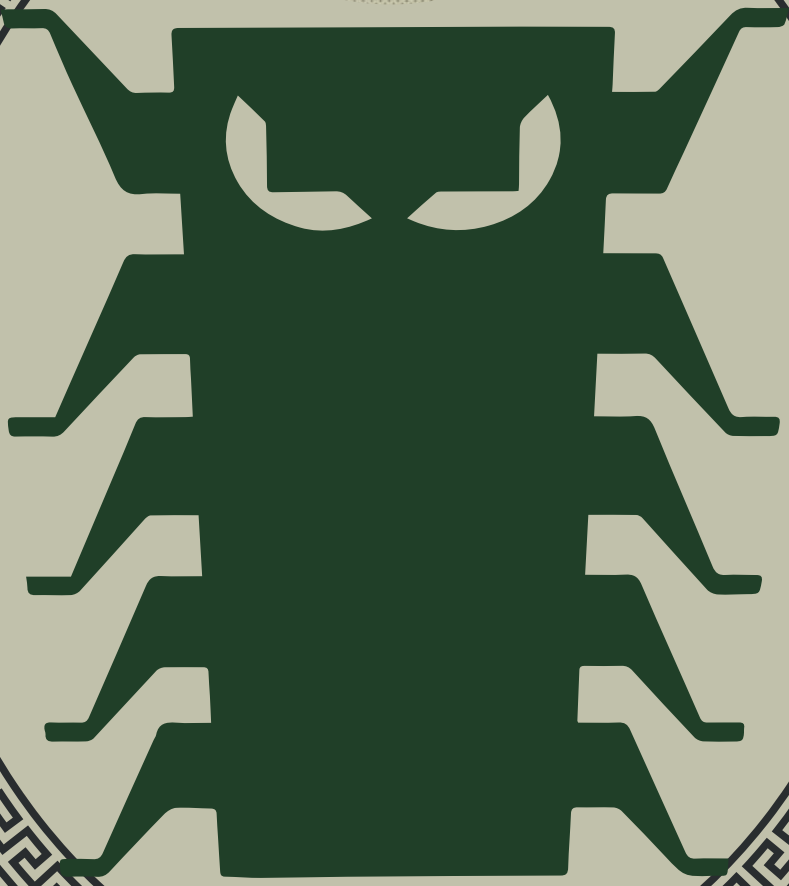

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THE BUG

MARC AMBASNA-JONES EXPLORES MAFIA KILLERS, K-POP AND WOODLAND BUNKERS TO FIND THE TRUTH ABOUT THE Y2K BUG AND SOME PRETTY BIG BUCKS.

SOFTWARE HISTORY

IN THE LATE 1990S THE MILLENNIUM BUG WENT VIRAL BEFORE SOCIAL MEDIA EVEN EXISTED. IT TRIGGERED ENOUGH FEAR ACROSS THE GLOBE THAT GOVERNMENTS AND BUSINESSES SPENT BILLIONS. BUT WHEN NOTHING REALLY HAPPENED, THE ACCUSATIONS AGAINST SOFTWARE VENDORS BEGAN. BY MARC AMBASNA-JONES

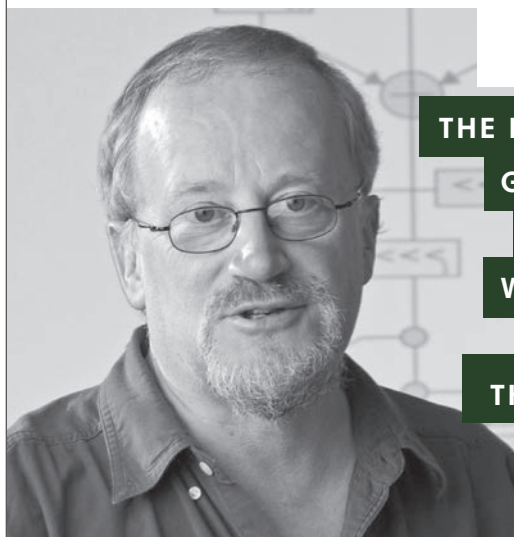
In the days leading up to New Year's Eve in 1999, the Italian government was taking a bit of stick for not acting quickly enough, or at least, not spending enough, to address the millennium bug. One **CBS** report on December 26th suggested a common reaction from Italians was a perhaps stereotypically relaxed 'who cares?'. But while the majority of other countries had already spent billions on so-called fixes for the Y2K problem, Italy seemed to have had the last laugh. When the clock struck midnight and computer dates moved from 99 to 00, nothing really happened. Planes didn't fall out of the sky and there was no infrastructure meltdown - although one Italian court clerk did discover that four convicted mafia killers should have been released 100 years earlier on January 10, 1900.

In the aftermath of Y2K, some problems did materialise. Cash registers at convenience store chain **7-Eleven** went belly up, for example, although this wasn't down to the millennium bug but because programmers that 'fixed' Y2K forgot the year 2000 was a leap year. There were reports of other issues on the days that followed, but to get a real sense of the hype and fear as midnight approached, you only have to remember the **BBC**'s real-time 'bug watch' coverage.

The lack of drama come midnight did prompt questions as to whether or not the whole thing had been an elaborate hoax by the software industry. Given that global spend on Y2K fixes were estimated to have been in the region of $300-600bn (some estimates put it even higher), it's easy to see why. There were already rumblings of discontent at the money spent and the lack of real evidence for doomsday. Stories, such as the one where the **US Navy** put all its computer clocks forward only for everything to carry on as normal, didn't really help.

For some, all of this hadn't come as a big surprise. On December 11, 1999, Ross Anderson, Professor of security engineering at **Cambridge University** and **Edinburgh University**, published a paper titled 'The Millennium Bug - Reasons not to panic'. It was the results of his department's own experiments in measuring the potential effects of a 00 date change. The conclusion was that 'had we done nothing at all about Y2K, we would not have been much worse off than we are now,' wrote Anderson in the paper.

"I'd realised by the start of 1999 that the risks were greatly exaggerated, but the hype was still going strong and the vendors were doing great business off the back of it," says Anderson reflecting on the build-up to the new millennium. "I wondered when the best time would be to offer some reassurance and reckoned it would be later in



THE HYPE WAS GOING STRONG AND THE VENDORS WERE DOING GREAT BUSINESS OFF THE BACK OF IT

ROSS ANDERSON
CAMBRIDGE UNIVERSITY

the year. I did my best but the media basically weren't interested. 'World not about to end' isn't a story. Afterwards, I faced some real anger from CIO types who said that if they hadn't spent millions fixing the bug, their company would have failed."

Anderson, who first became aware of the possible disruption of the millennium data problem back in 1986, admits that the possibility of the glitch causing chaos and civil unrest was a factor in his decision, ten years later, to buy a secluded house in the country with a wood burning stove and well. The fact is, Anderson was never dismissive of the Y2K problem; he just wanted clarity and for governments and businesses to have some perspective.

"While lots of things may break, few of them will matter much," he concluded in his paper. "Many of the concerns we had last year about the millennium bug turned out to be misplaced once we examined the relevant systems in detail. I am now pretty confident that the British government's concerns about small to medium sized businesses are mostly groundless."

The British government at the time, like many governments around the world, was taking it very seriously. Its Action 2000 task force, set up to monitor readiness for Y2K, pumped out a series of black-and-white public information films to try and get everyone, primarily small and medium sized enterprises, to also take it seriously. It had also started naming and shaming local authorities as the pressure mounted. Ian Hugo, a UK technologist who wrote the UK's Y2K standards, even suggested, on Sunday January 2nd 2000, that the remedial work had been a big success.

"Throughout the world I think you'll find that almost a trillion dollars was spent on Y2K work. There ought to be some results," he said.

It was the same Ian Hugo that Julian Tanner, managing partner at tech PR firm **Tuva Partners**, managed to annoy at a conference in 2001, when during a talk he suggested Y2K was a fraud perpetrated by the IT industry. In the 90s and the noughties, Tanner worked as co-founder of tech PR firm **AxiCom** with some big names that operated in the Y2K space.

"All IT vendors fed voraciously off the fear that the Y2K bug engendered among customers, but coming towards the date they split into two camps; there were those like **IBM** that pulled back from even mentioning Y2K in the final six months for fear that they might be sued by angry customers when it turned out to be nonsense. Then there were those like France's **Groupe Bull** that drank the Kool-Aid and even held a vigil on the eve of Y2K," says Tanner.

"There were companies set up like Italian software firm **HAL** that did nothing but Y2K preparedness, and who made millions out of the paranoia that the IT industry had created. When nothing happened on the 1st January 2000, it was extraordinary how quickly they disappeared or pivoted to new markets.

"Even after Y2K had come and gone with barely a problem globally, the people who had been behind the furore and heading up the Y2K task forces still insisted that it had all been true and that only the state of preparedness had stopped a calamity. Thank goodness for Italy that did absolutely nothing to prepare for Y2K and so showed the world that the whole thing had been a very expensive farce."

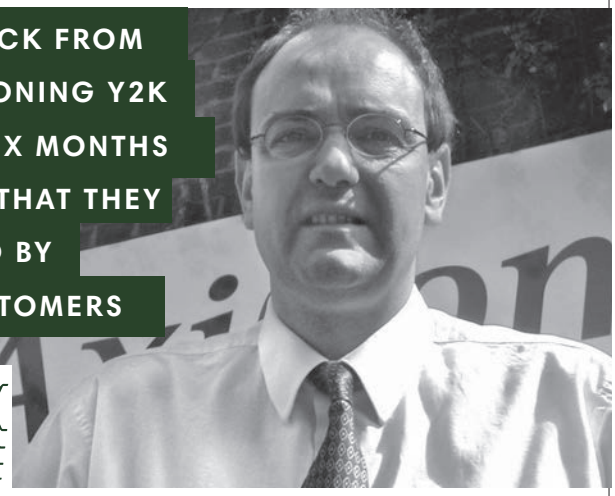
The idea that big software companies and consultants were profiting from the hype and fear-mongering of Y2K started well before the year 2000. As **CNET** suggested in a 1997 article tided 'Profiting from the Year 2000 Bug', 'the upside, if you believe Wall Street, is that the so-called millennium bug will be a moneymaking opportunity for a handful of software makers and consulting firms'.

The article also refers to an **IDC** study claiming it 'expects the high-tech market to benefit from extra spending on Y2K-related problems, which may continue throughout the year. Existing information technology budgets are being exhausted, and additional cash from other areas is being shifted toward dealing with problems associated with the year 2000 changeover'.

Of course, money was spent. Y2K was a real problem, after all. For Tom

IBM PULLED BACK FROM EVEN MENTIONING Y2K IN THE FINAL SIX MONTHS FOR FEAR THAT THEY MIGHT BE SUED BY ANGRY CUSTOMERS

JULIAN TANNER
TUVA PARTNERS



SOFTWARE HISTORY

Cheesewright, applied futurist and author of 'Future-proof Your Business', the lack of post-year 2000 incidents justifies the actions that were taken.

"I'd say that the Y2K experience is a pretty good advert for foresight," he says. "We looked at the possible outcomes well in advance and most people worked to avert the threat or made contingencies. As a result, the problem was minimal.

"While we remember it now as largely a non-event, around the world thousands of systems were affected by Y2K, from spy satellites, to banking systems, to nuclear reactors. While the scale of the issue was minimised, lots of individuals were - at best - inconvenienced."

AROUND THE WORLD THOUSANDS OF SYSTEMS WERE AFFECTED BY Y2K, FROM SPY SATELLITES, TO BANKING SYSTEMS, TO NUCLEAR REACTORS

TOM CHEESEWRIGHT
BOOK OF THE FUTURE

An article published in 2013 by **Brightwork Research** was a little more accusatory of the role of software vendors. The report, 'How the Y2K issue was deliberately exaggerated by ERP vendors', was written by Shaun Snapp, a former **SAP** consultant and supply chain specialist.

"Before 2000, a relatively minor issue concerning addressing a coding oversight was blown into a full-bore crisis by entities with software and consulting services to sell," says Snapp in a video clip.

A lot of what Snapp claims is believable but it's not necessarily new. He suggests Y2K was a simple fix blown out of all proportion, and in some cases he may be right. But as a **New Scientist** article pointed out two years ago, 'an estimated 80 percent of computers fixed in 1999 used the quicker, cheaper option,' in a process referred to as 'windowing'. This was essentially a patch, something which Dr Dylan Mulvin at the **London School of Economics** suggested was "the worst of all possible solutions because it kicked the problem down the road".

The big money though, was in the large transformations. **BT** alone was reported to have spent around £300m on the Y2K glitch. Speaking to **InfoWorld** in 2010, David Quinn, who ran the systems software group at BT, said that while around 70 percent of the concerns about Y2K turned out to be unfounded, BT couldn't take a chance on it. Mission critical services needed to be sure nothing would go wrong. So, in that sense, the conditions were perfect for overt capitalism to spread its wings. Industries have always taken advantage where they can, especially during a time when, for many organisations, technology was still very new and relied heavily upon outsourced expert opinion. For Steve Ingram, director at **Deloitte** UK, it was this "naivety" that really led to the panic and uncertainty.

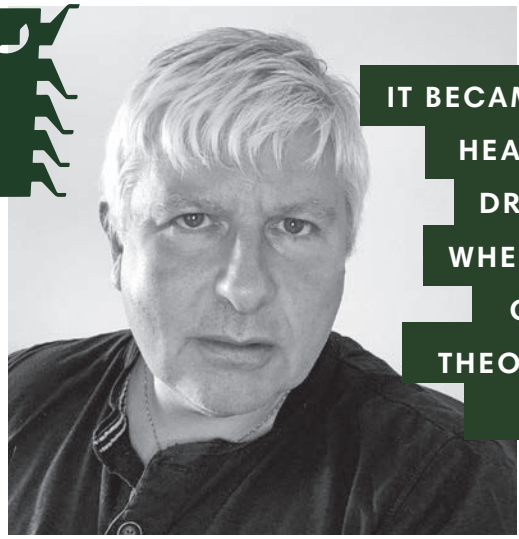
"Nobody really knew for sure what would happen," he explains. "Given the uncertainty, the chance something might happen, it was probably a right call to action change and amend systems. But then it became a headline writer's dream and that's when all the conspiracy theorists got into it."

Ingram agrees the Y2K scare created an industry in itself at the time. It was a perfect storm, with so many organisations and government departments investing in new software systems and patching old mainframes. Some saw it as an opportunity to modernise, but in those days migrations to new technologies took years, not months. As such, software vendors and consultants were needed more than ever before, and budgets were being created to address Y2K as a matter of urgency, especially throughout 1999.

"You could charge a premium for the software and you could charge a premium for the services, as long as you hit the date," admits Ingram.

The turnover figures for ERP vendors at this time were astounding. Oracle saw a 22 percent growth in revenue ($2.9bn) in a record fourth quarter, while SAP also saw record profits. But in the two years following the new millennium, ERP vendors were struggling. There was transition to the internet age, new competition and increasing interest in integrated ERP, customer relationship management and supply chain management solutions. This was no longer boom time for traditional ERP, and as one report suggested, some vendors were still blaming the Y2K bug for poor financials. Such is the ebb and flow of the constantly disrupting tech industry.

In the days that followed New Year's Day 2000, some media outlets did try



IT BECAME A HEADLINE WRITER'S DREAM AND THAT'S WHEN ALL THE CONSPIRACY THEORISTS GOT INTO IT

STEVE INGRAM
DELOITTE

to address the cost issue and whether or not it was all worth it. The horse had already bolted by then, of course. But writing in **The Guardian**, the then-tech editor Jack Schofield quoted Bruce McConnell, from the UN-backed organisation **IY2KCC** that tracked Y2K progress, on the true costs of Y2K.

"I don't think anybody knows - or will ever know," said McConnell.

The legend of Y2K, however, never seems to go away. There's still enough doubt and intrigue to keep the doubters and theorists busy, and now there is suggestion of a new problem on the horizon. In 2014, South Korean pop star PSY shot to global fame with the hit song 'Gangnam Style'. The video broke **YouTube** as the site, like so many others, was built using a 32-bit system. This essentially meant that there was a threshold and PSY's rodeo-style dance moves hit the ceiling. The view count stood at 2,147,483,647.

The **Metro** newspaper ran a headline. 'All computers are going to be wiped out in 2038... and YouTube's Gangnam Style problem may prove it'. No doubt the sort of headline to irk Professor Anderson at Cambridge University, but while sensationalising computer glitches sells newspapers - or gets clicks - this doomsday scenario has yet to really take hold. Is there any real truth in it? Surely 32-bit systems will be a thing of the past by 2038?

"There's a lot of old software out there, not all of it well written, or maintained," says Cheesewright. "Just like Y2K, inevitably some will slip through any checks." The futurist though admits that he has yet to come across the issue and clients have not raised any concerns.

What have we learned from all of this? To be more sceptical, perhaps? To keep up to date with software upgrades? To not leave everything to the last minute? To always have a back up plan, a log cabin with a generator and a larder full of tinned food? Whatever the lesson, it's clear that software vendors and consultants cleaned-up with Y2K, some in the knowledge perhaps that they were over-egging it a bit, and others with, well, maybe a bit more altruism.

So many years after the event, it's difficult to know for sure. But one thing is certain: it won't be the last time software vendors jump on a bandwagon and try to squeeze IT budgets into submission. ■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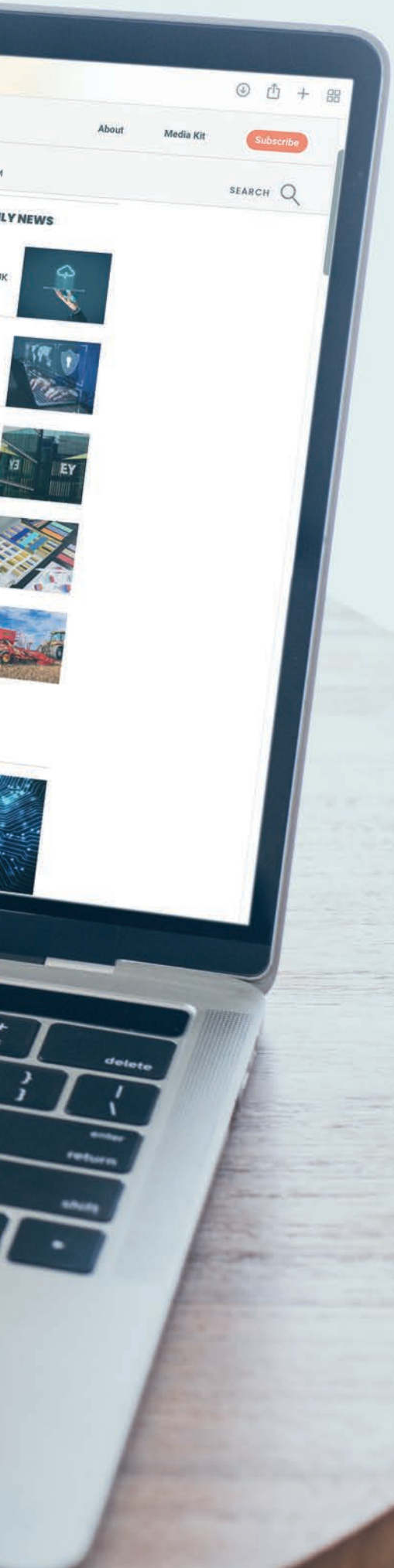

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Intelligent automation is the hot potato every business wants to grab. But how long before hands are burnt as automation technology moves faster than ethics?

BY STEPHANIE BALL

Big Miner

The hot potato in automation ethics

DATA MINING

Recent gains in process and data mining technologies are enough to have C-suites across the globe chomping at the bit to implement. Intelligent automation platforms now have the power to create 'digital co-workers', scraping information from across endless systems: apps, UIs, unstructured documents, images, emails, chats, Excel and more. No and low-coded automated software bots can pull, process and input data, and complete hundreds - potentially thousands - of hours of manual tasks in seconds.

The opportunities for automation span across industries, from finance's ivory towers to fast-paced healthcare wards. Now, handing these tools to your teams could reveal opportunities in data near impossible with solely human capabilities. As said by Robert Enslin, co-CEO of **UiPath**, while at the company's FORWARD 5 intelligent automation conference in Las Vegas, "Every company has to be a software company. This is an opportunity to increase the productivity of everyone."

Certainly, this is a deal not to be sniffed at with current labour shortages. But what will businesses need to consider to ensure data privacy, transparency and protection are maintained for their employees? Is there a chance that automation is moving too fast for organisations to keep up with any ethical dilemmas?

"I know that there are five emails in my inbox right now, and they're burning a hole in my conscience because I know I need to reply and I haven't"

ED CHALLIS, RE:INFER

Intelligent automation is coming in hot

Re:infer, a new partner of UiPath, is a company enabling specific email mining abilities for the UiPath platform, enabling large quantities of communications to be searched through and categorised, highlighting the main tasks that are eating up employee time, and suggesting and actioning areas where automation can step in to assist using no-code software tools.

Catching up with Dr Ed Challis, general manager at Re:infer, after his FORWARD 5 keynote, we took a seat to discuss the latest process and data mining technology.

"In the last two years, the best natural language processing algorithms [NLP] have started to outperform human baselines," Challis says. "Personally, I know that there are five emails in my inbox right now, and they're burning a hole in my conscience because I know I need to reply and I haven't. We constantly forget to do things because we are too busy, and that can cause big problems in business. Imagine I was selling Re:infer and I said, 'it basically works, but sometimes it just doesn't ever work' - because that's what you get with a human."

For Challis, intelligent automation is about enabling the often mindless parts of the working day, the policy renewals, or information change and invoice requests, to become the job of the digital worker, without causing massive upheaval for employees.

"SMEs with no technical skills, across any UI, can get valuable analytics on their workloads and drive the best actions to automate. The software is trained by a user clicking around in the UI, to teach it what the task is. You can test the AI algorithm to see how well it matches up with human signals and assign the algorithm to certain use cases: from banking and financial services, insurance, industrial manufacturing, FMCG [fast-moving consumer goods], to even digital-first ecommerce."

Once live, the automation extracts the relevant information like policy numbers, effective dates, topics, and even the intensity rating of the wording to assess the email's tone, before automatically logging details in the CRM and ERP systems and replying to the email.

Nancy Hauge, head of people at **Automation Anywhere** (AA), told a similar story of intelligent au-

tomation advances at AA's Imagine conference in New York. Here, the way that people and automation opportunities are combined is what seems to make all the difference. The AA HR team have enabled software bots for automating the sorting of resume relevance, interview scheduling, reminder alerts and onboarding support. Hauge's team have also automated bespoke employee development programmes that give management specific actions and timelines for supporting each individual employee's growth.

Grabbing a word with her away from the crowds, Hauge shared her thoughts with ERP Today:

"Both finance and HR are areas that are very ripe for automation," Hauge explains. "I've got the equivalent of seven full-time employees with automation."

Intelligent automation all sounds like quite the deal, but before leaping in to grab it while it's hot, Hauge is cautious to share some ethical areas that need to be thought through to achieve a successful digital worker and human worker collaboration.

"You can't worry about the things that two percent of the population might do and treat 98 percent as thieves"

NANCY HAUGE, AA

Businesses can't be fluffy on data ethics

When thinking about automation ethics, for Hauge, the role of human resources is a vital area in helping businesses maintain data protection and employee privacy with their automation pursuits. No matter how advanced the technology, the old principle stays the same: permission should always be asked before collecting and using data.

The tricky part is, with tools scanning the inner wording of emails, web apps, images, and more, safeguarding an area of privacy for the employee is becoming increasingly problematic. HR needs to be able to assess whether the data handling is legal and appropriate in any given case, and also interpret the extent of the impacts of unearthed data findings for any given employee and ensure fair treatment.

"My CEO once asked me about the role of human resources when only 30 percent of the workforce are human," Hauge says. "My answer was we need to be humanists that care rather than just business partners - because a bot can't care - and not thinking how I monetise it every day. Chief people officers need to embrace automation and get ahead of it. To protect promises of confidentiality when implementing automation products, it's vital that management build in security protocols, so users will have to consciously breach them.

"Every single person in AA HR has been through bot writing training, and when the bots impact anybody else, it is reviewed by our CoE for standards. With automation providing this customised world that we live in, you better be equipped. We must be more human than resources, and bring humanity to it."

The Automation Anywhere head explains some big tech names are struggling in this arena.

"**Google**, for instance, is in a tough spot. Interestingly enough, they didn't have a very accessible management team and, therefore, people had to find other outputs for expressing things. HR needs an open-door policy. You can't worry about the things that two percent of the population might do and treat 98 percent as thieves."

Hauge's argument here is spot on. Businesses need to ensure they avoid turning data mining into a 'Big Brother' exercise. Also, if they are going to process data on workflows, they need to maintain a sense of anonymity for employees. When seeking to automate, managers should determine exactly which data needs to be tracked and what can be ignored. They also need to ensure a company policy of data privacy and protection is maintained in spite of information on employees becoming increasingly available. For Hauge, data should not always be used, even if it is readily accessible:

"Streamlining everything doesn't make it better. My

DATA MINING

concern is that email mining could misinterpret messages, without knowing what the true context is, creating wrong assumptions. Also, you might observe that a chat goes on for too long on email or team comms, and you realise that it's just about people connecting. With data mining, if you aren't considering all these factors, well, it's like mining for anything: you can bring up a lot of crap and think it's gold."

As Hauge alludes to, there is the potential for employers, developers and citizen developers to use automation tools in the wrong way. What if personal data seen by management during mining leads to bias, impacting the avenues for employee promotion, or leading to unfair dismissal? How about if the software designed to make water cooler moments less guilt-ridden, could be the very thing that pushes employers to limit these opportunities for the sake of efficiency? Or else what if bad-mouthing the boss becomes a recommended automation after too many mentions over email?

"Every company has to be a software company. This is an opportunity to increase the productivity of everyone"

ROB ENSLIN, UIPATH

Ethical oven gloves

Vendors and businesses can't be passing this hot potato issue back and forth. There needs to be a way to ensure businesses are on the right path with automation ethics, and that vendors are helping them catch up securely. This way, people at all places in the chain don't get burned as the technology gets ahead of the ethics.

Head of **VOCAL** (Voice of Customer in the Automation Landscape) Shail Khiyara, told ERP Today the dangers of customers getting automation use cases wrong:

"Data can be used implicitly or explicitly to introduce biased treatment, unauthorised monitoring and encroaching on individual rights. When it comes to ethics in data, it's not just about improving the technology, it's about a social reform that ensures that current social biases are not built into the technology. There are several ethical ratings out in the market, many based on ESG principles. It's time for automation to enter as a parameter that influences the definition and scoring of an ethical company."

For Khiyara, businesses using this technology have the choice to buy or build trust in automation and data mining, with building being preferable. Potentially, the future of privacy is to cut the chain between the data and the person, and the responsibility lies at both ends of the platform.

"Employee privacy is a balancing act. Organisations should have a strong culture management and education programme around the benefits of automation and alleviating fears around job loss." Khiyara continues. "Building trust requires clear policies to be outlined and enforced, ensuring a 'fear-less' environment. Automation tools should enable the easy masking of data and anonymisation (one-way data encryption) of any personal identifiable information (PII) data."

The boost businesses can get from intelligent automation is truly amazing, as long as ethical responsibility remains a priority for businesses and vendors. As Hauge said it, the way things currently stand, 'bots can't care'. Intelligent automation is not yet able to ensure its uses are ethical. As such, it's up to humans at either end of the UI to bake ethical expertise into the creation of every bot, and to make sure the power of this technology doesn't fall into the wrong uses and ultimately burn the hands it was meant to feed. ■

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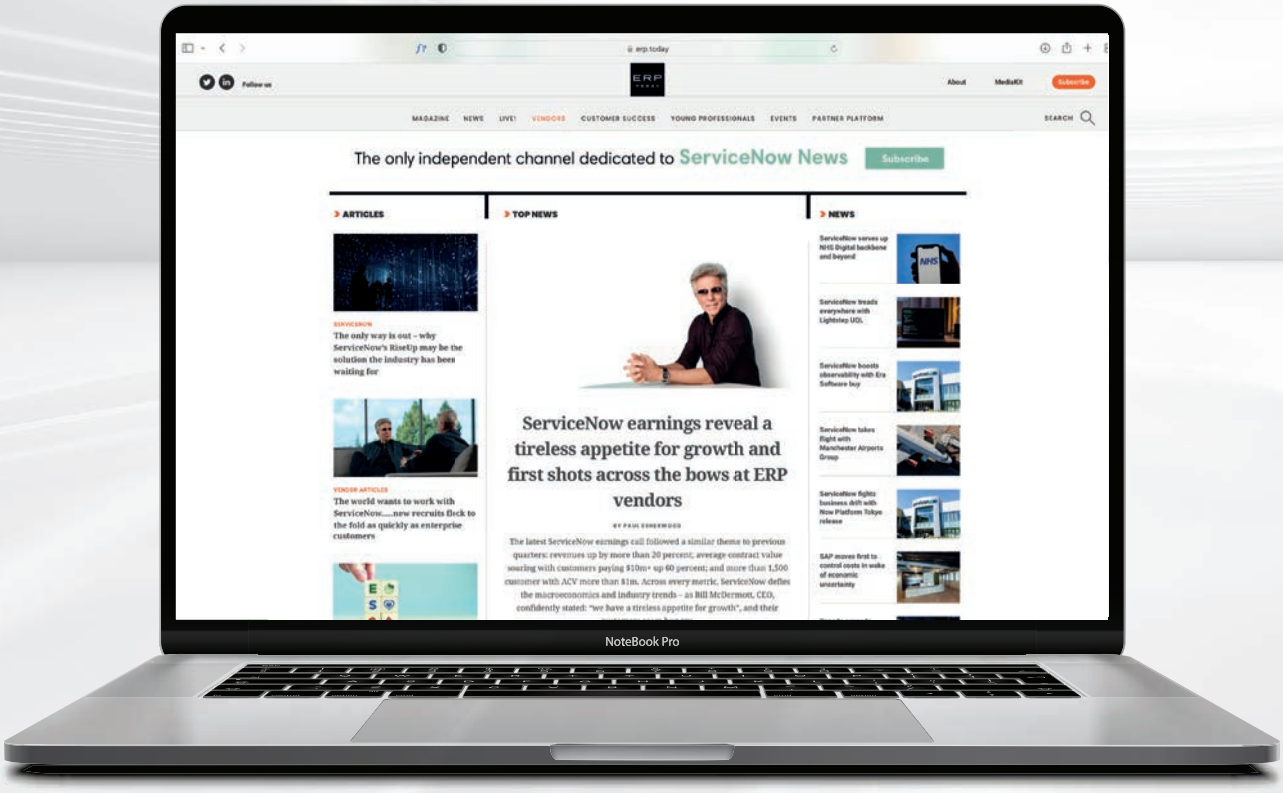

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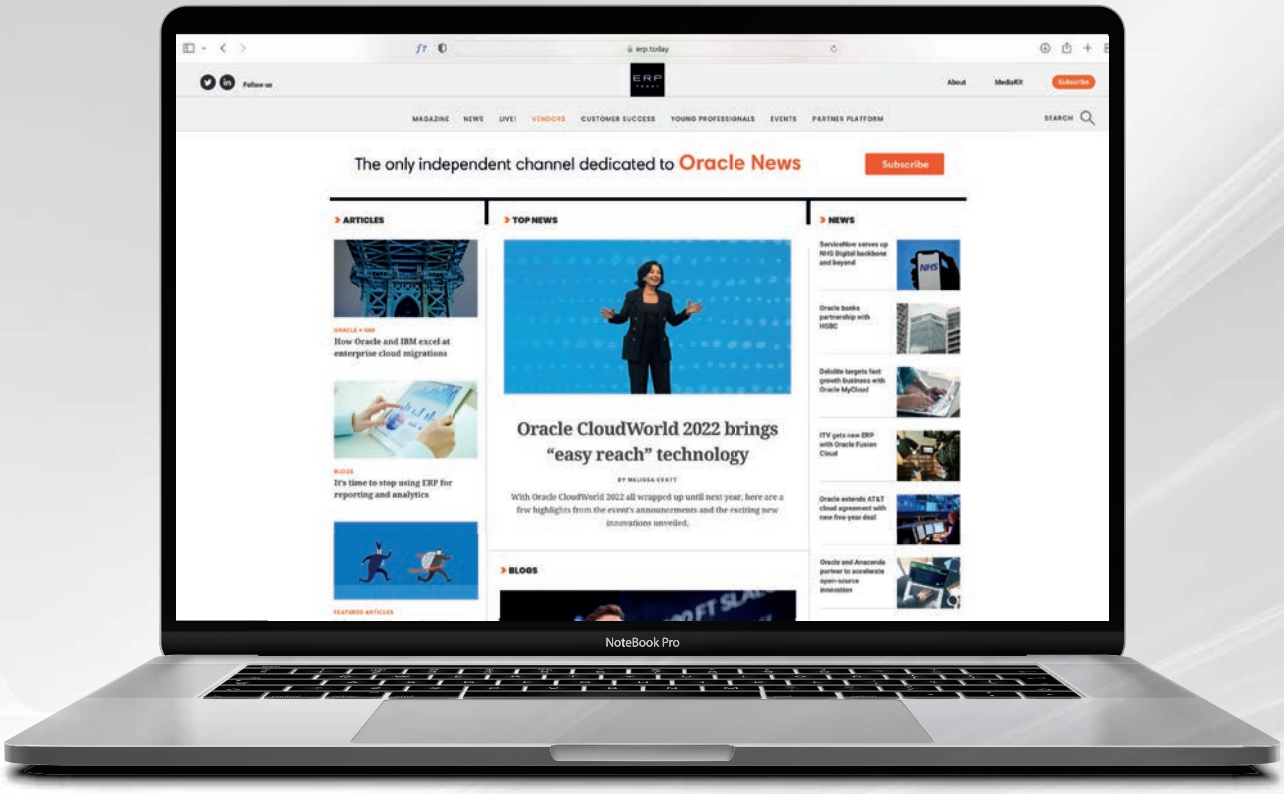

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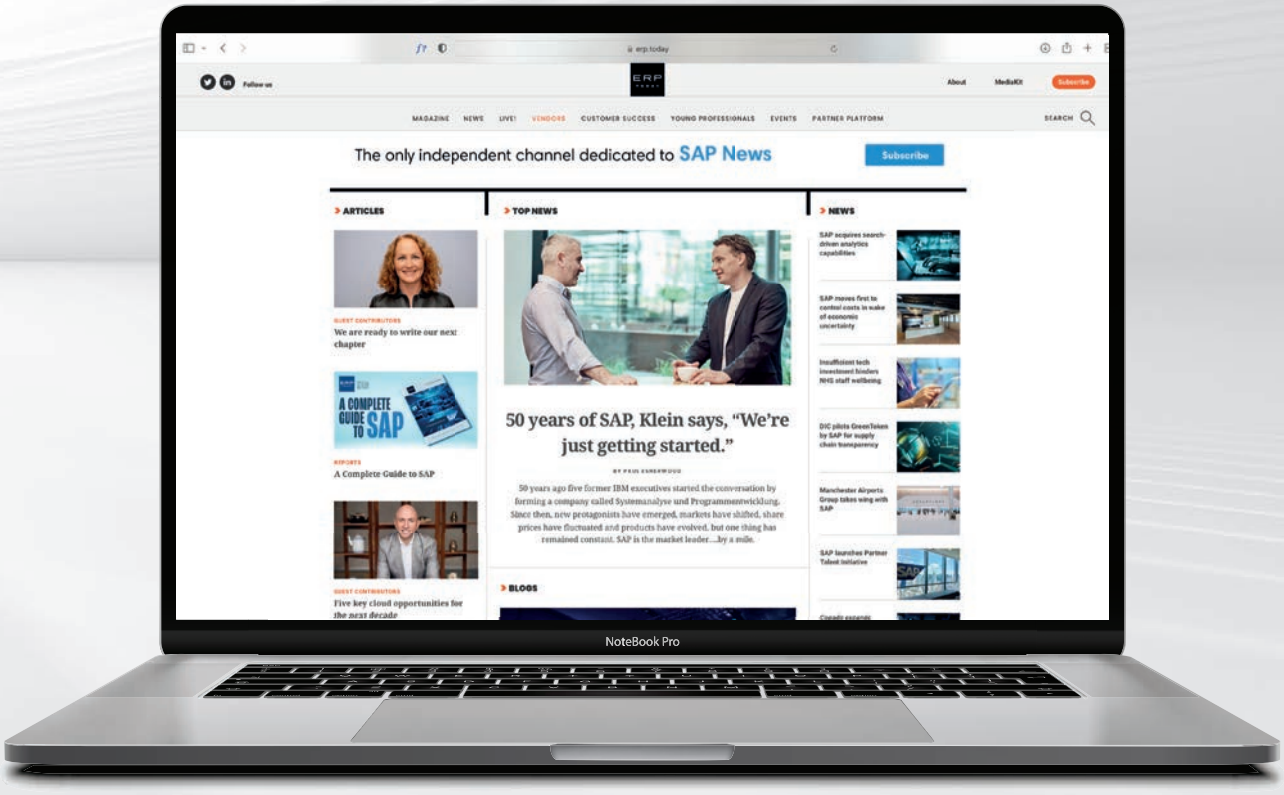


HOW AI IS CHANGING THE WORLD
TURNING ISSUES INTO OPPORTUNITIES


INPUT

AI

AI IS CHANGING TECH ON A GLOBAL BASIS. BUT THE BACKGROUND BEHIND THE TRANSFORMATION VARIES BY REGION - CAN ENTERPRISE KEEP UP?

BY ULF BRACKMANN

As with any high growth industry or sector, nations around the world compete to lead the way on innovation and applications that benefit governments, citizens and businesses. The artificial intelligence (AI) industry is growing at an incredible speed and companies around the world are investing billions of dollars to win the 'AI race' and to secure the largest market share. Predictions show that by 2030 about 70 percent of companies will have adopted some sort of AI technology. According to **Google** CEO Sundar Pichai, the impact of AI will be even greater than that of fire or electricity on our development as a species. The reason is simple. Whether modelling climate change, developing new medical treatments, exploring space, or increasing speed to market in manufacturing, AI is changing the way we all live and work.

Marc Andreessen, the American entrepreneur, investor and software engineer, said that "software will eat the world". He implies that every company will become a software company or die, and this applies equally to AI. Every company will eventually leverage AI since AI is a new paradigm of software development that extends the reach of the software. This doesn't mean, however, that every company needs to build huge data science teams; for example, as AI matures, increased AI capabilities are available embedded in business software, and as low-code/no-code development tools. What's more, large pre-trained models in the public domain mean companies need less or no training data. Therefore, we define an AI company as any organisation that leverages artificial intelligence to improve business processes and products at scale.

"COMPANIES, LIKE OURSELVES, ACROSS EUROPE, US AND ASIA ARE ENGAGING WITH POLICYMAKERS TO DISCUSS SUITABLE APPROACHES"

Aside from the mass investment in the technologies, another main driver of the adoption of AI is the urgent need for automation and intelligence in global civil infrastructure. As populations continue to grow, innovation - in particular, big data and AI technologies - is needed to improve the standard of life and work. Despite macro-economic factors impacting innovation and productivity globally in 2022, there's no slowing the development of AI. While there are certain challenges, there are even more opportunities.

Regulation is coming, but will it slow down innovation?

In Asia, governments tend to be very open to the use of big data and AI and the state invests massively in digital solutions. The commercialisation of AI applications has been very successful. In the US, AI innovation is led by large corporations and is enabled by their investments. The US is currently leading the AI technology research and AI applications. Finally, the European approach is often focussed on regulation and safeguarding before innovation, and public opinion is still rather sceptical about digital transformation, AI and

big data. Europe has been very successful in basic research and also has a long tradition in AI research. But when it comes to commercialising AI, the European industry has fallen behind the US and China, especially in AI for the internet and consumer products.

2022 has seen markets continue down the regulatory path. In July, the UK Government set out its emerging thinking on how it would regulate the use of AI. It is expected to publish proposals in a white paper later this year, which the committee would examine in its inquiry. AI's role in the UK economy and society is growing. However, there are concerns around its use. MPs will examine the potential impacts of biased algorithms in the public and private sectors. A lack of transparency on how AI is applied and how automated decisions can be challenged will also be investigated.

The European Commission is also proposing the first-ever legal framework on AI, which addresses the risks of AI and positions the EU to play a leading role globally. The regulatory proposal aims to provide AI developers, deployers and users with clear requirements and obligations regarding specific uses of AI. At the same time, the proposal seeks to reduce administrative and financial burdens for business, in particular small and medium-sized enterprises.

"WHEN IT COMES TO COMMERCIALISING AI, THE EUROPEAN INDUSTRY HAS FALLEN BEHIND THE US AND CHINA"

Regulation is tricky to introduce, given how quickly the technology and its use cases are developing. Developers may shiver at the thought of restrictions being introduced that may stifle their innovation, but it will not generally be the plan of regulators to prohibit or slow down the use of AI, but to limit intentional or unintentional issues. Companies, like ourselves, across Europe, US and Asia are engaging with policymakers to discuss suitable approaches to achieve both, enabling growth and innovation in AI as well as managing the risks.

Regulators and governments are not typically technology experts. When lobbying or collaborating with governments on what AI regulation should include, it is important that companies help governments to focus on the nature of the use cases and not so much on the technologies themselves. The risk-based approach of the EU's AI Act is a right step in this direction. The law assigns applications of AI to three risk categories.

Firstly, applications and systems that create an unacceptable risk, such as government-run social scoring of the type used in China, are banned. Secondly, high-risk applications, such as a CV-scanning tool that ranks job applicants, are subject to specific legal requirements. Lastly, applications not explicitly banned or listed as high-risk are left unregulated. In any regulation, the defined obligations need to be general enough so they can cover all existing and emerging AI approaches, for example by defining processes rather than technical parameters to be adhered to.

Business challenges impacting AI development and adoption

Earlier this year, a report from the European Parliament's special committee on artificial intelligence in a digital age said that the EU had 'fallen behind' in the global tech leadership race. "We neither take the lead in development, research or investment in AI," the committee stated. "If we do not set clear standards for the human-centred approach to AI that is based on our core European ethical standards and democratic values, they will be determined elsewhere." While the potential frameworks in Europe do seem strict, they force us to develop rules and methods to deal with challenges. GDPR and the emerging AI regulations require the AI solutions to be transparent, and while this may create hurdles initially, they urge AI research and development to invest more effort in trustworthy AI.

Another challenge for businesses is managing expectations and building a better understanding of AI. A baseline level of data literacy is a prerequisite. Businesses must also get comfortable with probabilistic modelling, the statistical process that uses the effect of random occurrences or actions to forecast the possibility of future results. Probabilistic modelling considers new situations and a wide range of uncertainty while not underestimating dangers. Using this method, businesses can quickly determine how confident any AI model is and how accurate its prediction is.

People are increasingly sceptical of AI, and yet technology is spreading into all areas of life and becoming more integrated into the way we live. So how can we bring more transparency to how AI works and help allay people's fears? Many excellent executive education programmes on the strategic and practical implications of AI have sprung up over the past few years that can help executives navigate this new world.

The fast-moving and diverse international regulatory environment is creating uncertainty and risk. For example, individual US states are now releasing their own diverse regulations ranging from data privacy laws in California to algorithmic bias audits in the recruitment process in New York. While this remains up in the air, companies must continue to engage with policymakers and closely monitor the situation. The aim isn't to prevent the use of technologies, but to ensure they are safe and beneficial to every citizen and business.

> "INDIVIDUAL US STATES ARE RELEASING THEIR OWN REGULATIONS RANGING FROM CALIFORNIA'S DATA PRIVACY LAWS TO ALGORITHMIC BIAS RECRUITMENT AUDITS IN NEW YORK"

Closing the AI skills gap

The hangover from the pandemic and macroeconomic disasters continue to damage markets and industries globally, which has had a detrimental impact on recruitment, education and upskilling in various sectors. The skills shortage in tech in Europe has been well documented and filling this void must be a priority for governments across the region to keep up with Asia and the US.

In October, the **European Institute of Innovation and Technology** called on partners to get behind its new Deep Tech Talent initiative, which aims to address the current skills gap across Europe's deep-tech sector. Over the next three years, it will provide one million people with the skills they will need for the EU to become an innovation and tech powerhouse.

Initiatives like this are a great start, and it has also been fantastic to see universities across Europe starting to teach courses focussed on AI. One of the biggest criticisms of AI and a leading cause for concern in its adoption and use cases is both conscious and unconscious biases feeding into decision making. Bias is an inherent human trait, reflected and embedded in everything we create. European AI adoption will only be able to reach its true potential if diversity and inclusion is at the core. It's a complex topic. Diversity is not just about gender, it is also about age, nationality, sexual orientation, socioeconomic backgrounds, neurodiversity and ethnicity. When we talk about closing the skills gap, there must be diversity in development teams, so the skills needed cannot be hired from one place or using one process.

We need more data scientists, but we also need AI experience with people designing, developing and operating applications that integrate AI. Taking an open and collaborative approach to data science can pave the way for a fairer and more equitable world by reducing bias in AI.

It has been an incredibly challenging year for everyone, and I hope that the developments and innovations we are seeing in artificial intelligence will continue to make both work and personal lives easier for everyone in future. Whoever wins the AI race, it is clear that there is a global concerted effort to improve the lives of everyone with a fascinating and brilliant technology. ■

Ulf Brackmann, vice president - artificial intelligence technology, SAP

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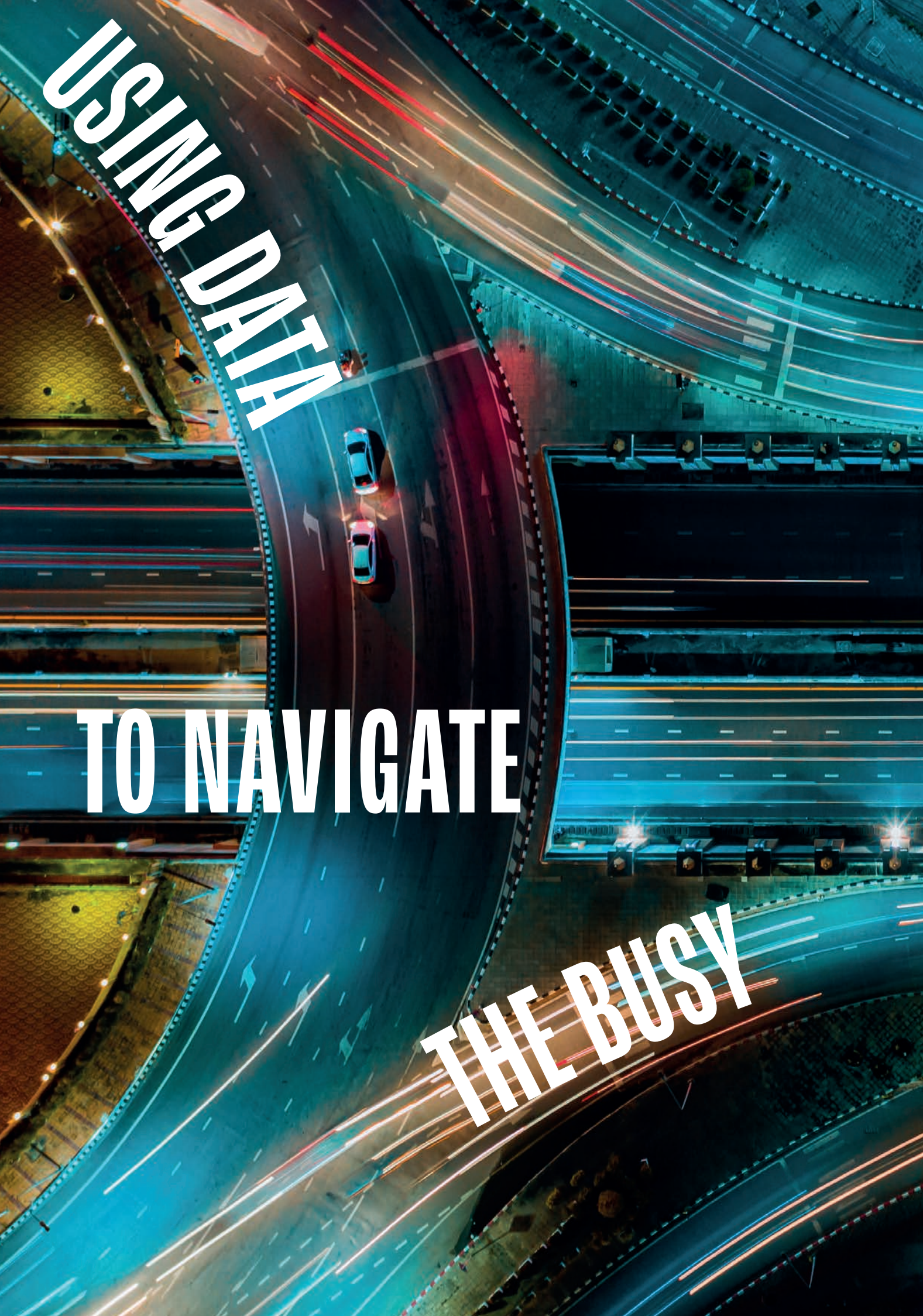
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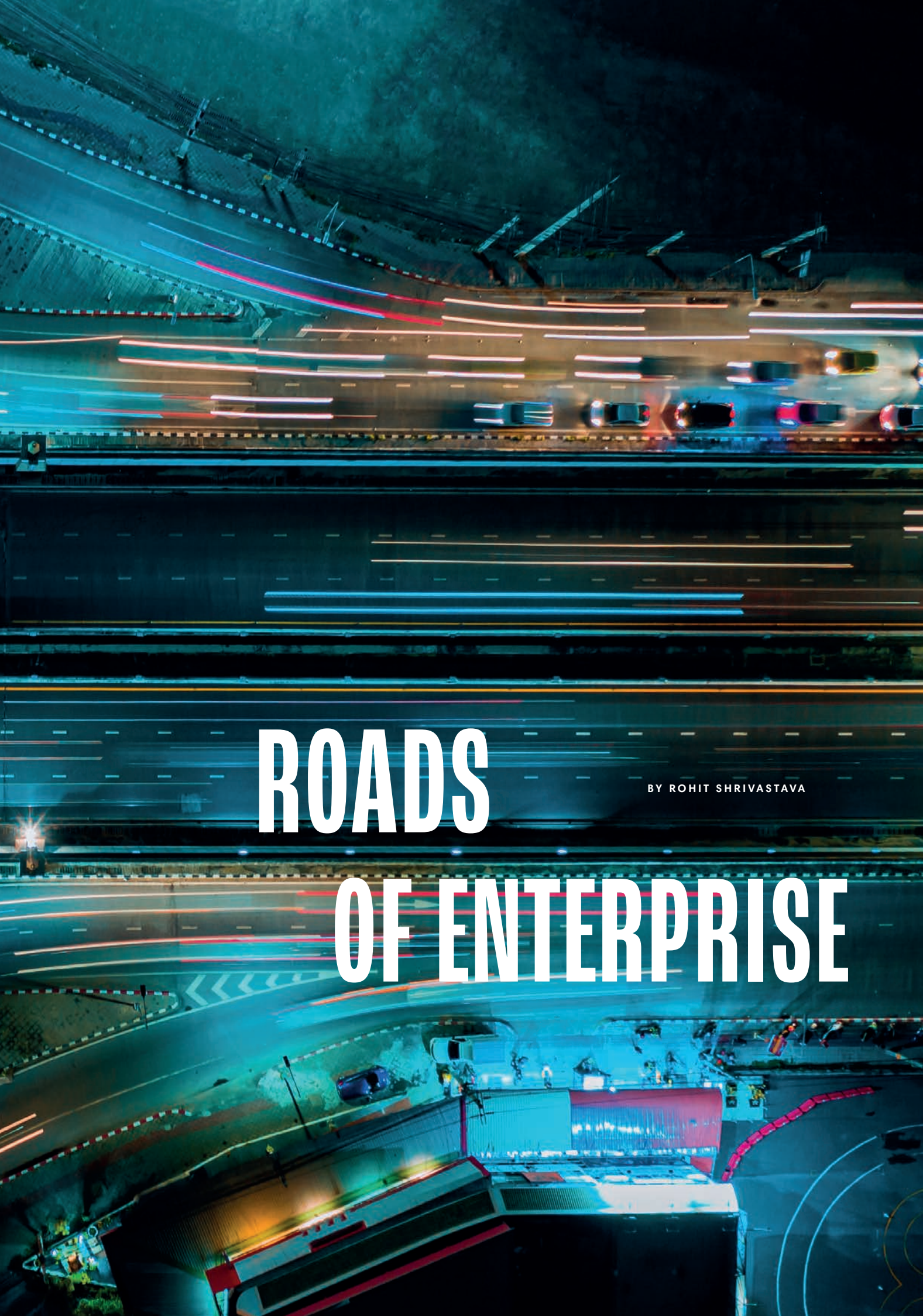

ROADS OF ENTERPRISE

BY ROHIT SHRIVASTAVA

ENTERPRISE DATA

SOPHISTICATED DEMAND PLANNING EMPLOYS REAL-TIME COMPUTATIONAL CAPABILITIES AND AI AND ML. HAVING ACCESS TO EXTERNAL DATA - MARKET SIGNALS OR WEATHER DATA - IS ESSENTIAL FOR MAKING GOOD DECISIONS.

Constant and unpredictable change has become a norm for enterprises today, and many have learned to anticipate and handle it at a moment's notice. However, with the right foundation, it's possible for organisations to achieve results in the face of disruption which earlier were difficult to even imagine. If we can approach change as an opportunity and learn how to work with, not in spite of, it, we will be able to fuel unstoppable creativity and growth.

Data can be the unlock for this transition, but only if it's used correctly. It can help enterprises plan for and anticipate change, but too much data can also overwhelm businesses that are not prepared to properly analyse and leverage it. Teams must act quickly and confidently to turn data into insights so that decision-makers can turn those insights into strategic actions. Getting there requires deeper trust. Businesses must trust their IT systems, for instance, to make recommendations and even strategic decisions for them, whether automatically re-allocating resources, shifting territories, or updating forecasts in real-time.

This trust in data and systems serves as an essential building block for the next frontier for data-driven organisations – what we call the autonomous enterprise. The autonomous enterprise is more than just intelligent planning and decision-making. It is a state of being in which tightly woven business units, processes, products, technologies and people all move in unison. Small, unnoticeable company and market changes are automatically detected and transformed into prescriptive, insight-driven actions. Tasks are delegated, workflows are automated, and data is put to use, allowing you to uncover and act on new opportunities faster than your competitors.

The benefits of this autonomous approach have become particularly obvious in the last two and a half years. Data-driven retailers have been able to act fast to identify and react to surges in demand or changes in buying behaviours, turning a clamour for trousers, for instance, into a new line of athleisure wear for the world of remote work. Similarly, an ambulance company puts data to work by leveraging AI and machine learning to predict daily emergency calls more accurately. With this data in hand, the ambulance service has been able to create workforce plans to ensure that the right resources are immediately available when needed.

Getting to this point of autonomy and trust, however, requires embracing solutions that can seamlessly conduct complex analyses using large volumes of data to guide more refined decisions.

Learning from the autonomous vehicle about autonomous enterprises

Drawing a comparison to the automotive industry, which is going through its own transformation in its move toward autonomous driving, is a good way to understand the scale of the benefits of autonomous functions. The transformation to enable self-driving cars is very similar to the journey many enterprises are beginning.

Before cars incorporated intelligence, everything was manual and analogue. It's only in recent years that this has shifted, in an effort to make driving safer.

Auto manufacturers started adding alerts to notify drivers of hazardous conditions. The introduction of backup cameras eliminated the need to take your eyes off the road. And blind-spot monitoring and lane departure warnings have created a safer experience for everyone driving.

Today, the automotive industry is still evolving to include more sophisticated automation, such as advanced driver assistance systems (ADAS),

which can supplement or even replace the driver's involvement. However, vehicles equipped with modern ADAS systems necessitate entirely new infrastructure, such as high-definition cameras, LiDAR, multi-core central processing units, and AI algorithms. All of these systems are connected. They collect and evaluate gigabytes of data each second and do advanced modelling.

SaaS solutions are analogous to this technological progress in the automotive industry. Sophisticated demand planning, for example, employs real-time computational capabilities, advanced intelligence like AI and ML, plus refined modelling, to tie demand forecasts to inventory strategies, enabling retailers to adjust stock levels at a moment's notice based on changing 'road' conditions.

necessary element. A UX that offloads complexity makes it easy to use and trust insights that lead to correct outcomes.

Then, it's intelligence. Powerful AI algorithms can produce meaningful insights that can be used to drive decisions, such as collision avoidance or adjusting inventory levels based on social trends or inflation rates.

A fourth ingredient is speed. Your car (or SaaS system) needs to have the computing power to anticipate change and act fast. To go back to our auto analogy, **Tesla**'s chip powering its self-driving capabilities can perform 36 trillion operations per second. This is a vital element to drive the autonomous enterprise forward.

And finally: scale. The systems you put in place need to be able to evolve as your business continues to grow and

Of course, there's a reason why city streets and highways are not yet filled with fully autonomous vehicles. Establishing trust and safety in complex systems is a huge challenge, one that machine learning and AI are helping to solve.

You will find your own challenges on the path to building an autonomous enterprise, but it's important to keep in mind that this is a journey, not a destination. Having access to external data - market signals or weather data - is essential for making good decisions, but data access and management are not simple. On top of working with your team to harness the power of data, look for solutions that can help build and establish trust. For example, low-code and no-code platforms - and an emphasis on integrations - make third-party data easy to access and act on, plus they re-

YOUR SAAS SYSTEM NEEDS TO HAVE THE COMPUTING POWER TO ANTICIPATE CHANGE AND ACT FAST

How do we reach full autonomy?

Deciding when and how to deploy automation depends on the nature of the business and other factors, from organisation culture to regulations. For that reason, it's critical to continuously evaluate what needs automating. On this journey to reach full autonomy, whether a self-driving car or a global business, there are five key capabilities required.

First, it's access to a variety of data. Businesses need to realise - and embrace - both new and traditional data sources, like purchase history and social data, as they plan and make decisions. Think of a car that needs to see the road, traffic and pedestrians - all while monitoring its speed - in real-time.

A great user experience is a second

change. This scalability can be enabled through the reach of your platform and its computational power. Self-driving cars need to process huge volumes of data, but they also require sophisticated real-time processing to navigate changing road conditions.

Getting comfortable with technology in the driver's seat

As humans, it's often difficult to let go, but, as we've seen with the rise of automation in the auto industry, we are adaptable to new types of technology that ask us to cede control. Today we embrace things like lane-departure assist and automatic brakes because we understand their value in giving us more confidence on the road, especially in unfamiliar terrain.

duce the burden on IT teams to make business applications useful, which means your users can be in charge.

The transformation we are seeing in the business sector is a necessary progression for organisations that want to drive growth, even in complex markets. Companies are seeing the value that agile, insight-driven operations can provide in the face of upheaval and volatility - they are recognising the need for the autonomous enterprise. Over time, the path towards autonomy will offload complexity, allowing organisations to focus on what matters most: using change to their advantage. ■

Rohit Shrivastava is chief product officer at Anaplan


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The dragon has awoken and is finding its voice

BY MARK SWEENY

As my three-year tenure as an expert contributor to ERP Today sadly comes to an end, I wanted my final swansong to promote the wider technology evolution that is geographically occurring across the UK.

With the HM Government policy around 'levelling up' coming back into focus, many tech hubs are flourishing. We have the Newport-Cardiff-Swansea corridor in South Wales, which is close to my beating Welsh heart. Throw in ecosystems around Manchester, Newcastle upon Tyne and the Glasgow-Edinburgh corridor, and you will find there's a lot more going on in the tech space these days outside of London.

In Wales, the tech dragon is well and truly roaring and finding its voice. It comes aided and abetted by a series of business-friendly Welsh Government policies that look to encourage entrepreneurs to develop Welsh based-businesses that actively contribute to the local economy, as well as independent trade bodies such as **FinTech Wales** and innovative organisations like the **Alacrity Foundation**.

The Welsh Government recognised early on that the local economy was lagging behind other regions across the UK, and the need to drive growth would only come from transitioning away from the traditional industries and market sectors of heavy manufacturing, agriculture and tourism, to one that is firmly based around advanced engineering and digital technology. In return, this has been unlocking the potential of the rich talent pool that is available in-country, driving specialism and economic growth. It is a generational project, true, but unless started, a journey can never be travelled.

> **"It is a generational project, but unless started, a journey can never be travelled**

The markers of intent

The Welsh Government has been clear with its mission: "drive economic growth, productivity, resilience by embracing and exploiting digital innovation".

Turning strategy into viable tangible action, its intention is to deliver by (1) encouraging collaborative and shared workspaces; (2) recognising the wider role colleges and universities have beyond research and structured education; (3) relentless focus on niche technology skills and products that service long-term growing markets - e.g. cybersecurity; (4) supporting businesses in accelerating adaption to the future of work and skills based upon principles of a green sustainable economy; and lastly (5) improve procurement practices and processes by working with suppliers to deliver better outcomes.

Outcome-based results delivering tangible value include:

- A thriving digital business sector and community, with a mixed ecosystem of small, medium and large technology-based companies
- An ability to capitalise on new areas of digital innovation, to stand out in global competition for new markets and industries and attract new talent to Wales
- Ensuring people have the skills to be able to take the jobs of the future and employers have a pipeline of talent for digital, data and technology careers
- Developing a global reputation for leading technical innovation and a thriving export business
- Adoption of leading procurement practices that will enable Wales to move forward

Shy bairns get nowt

Whilst the mission is well intended, it is pleasing to see that Welsh technology entrepreneurs are not just waiting around, but instead moving forward, investing time and money ahead of the economic curve. As they say in Newcastle, 'shy bairns get nowt'.

Part of the game is calculated risk taking and having resilience. We can only build and grow the economy by getting out there and doing stuff, kicking down doors, not accepting the status quo, and refusing to accept no as an answer.

In South Wales, for example, a partnership between **Wesley Clover** (the family investment company of billionaire Sir Terry Matthews), the Welsh Government, and **The Waterloo Foundation** (David and Heather Stevens) has resulted in the **Alacrity Foundation**.

Alacrity actively attracts, develops and promotes graduate entrepreneurial talent to create the next generation of technology companies. However, it is much more than a study course. The Foundation actively links entrepreneurs, corporations, universities, risk capital and government in one network. The programme is unique because no one is required to enter a cohort with an idea. The ideation is instead developed through challenges and problems sourced from the public and private sectors. This approach ensures solutions are designed to address customer challenges at a repeatable and expanding scale.

"Young graduates are a blank canvas and see challenges through a new lens," says Simon Gibson, CEO of Wesley Clover. "By empowering young entrepreneurs with an applied business and technology curriculum, complemented by more than 100 professional mentors, innovations are being developed with considerable market potential."

> **In recession the need for economic recovery always starts with government spending**

Tech always needs people

Organisations like **Tramshed Tech** meanwhile look to bring like-minded startups together through collaborative sharing of experiences and space. First in Cardiff and now in Newport, these spaces are designed for entrepreneurial early-stage startups and collaboration of like-minded technology businesses, thereby facilitating a key ingredient of any successful entrepreneurial community - effective networking.

The technology industry needs people, and one of the many benefits of regional technology hubs is that they reach communities and ecosystems of talent that many of us did not know previously existed. The days are long gone when the best resource was the perceived monopolistic domain of Oxbridge and that all things had to revolve around London.

'In-house' of the dragon

The Welsh tech-dragon needs to keep roaring. But the often-missed opportunity, and perhaps the most obvious, is that in recession the need for economic recovery always starts with government spending. Central and local government organisations and bodies need digi-

talisation to deliver services more effectively, and therefore need technology companies and technology service providers to facilitate this.

Whilst competition between suppliers must be maintained for the markets to work effectively, spend should be targeted towards small/medium enterprises who can actively demonstrate that they are contributing to growing the local economy.

Government spending in any form should be seen as an investment and not a cost. Just like entrepreneurs, public sector bodies must see their spend as investment to accumulate. If you don't invest, the only guarantee is that nothing ever changes.

Innovation is the hotbed of SMEs and not large corporations. Large established vendors find it impossible to deliver niche innovation and have a strong reluctance to pioneer new technology in-house as it does not make an immediate cashable return on investment they can demonstrate in-year. Organisation pricing and political dynamics both internally and externally with market expectations, especially at publicly listed companies, always work against them.

Finally, we should proactively challenge thinking around offshoring - why is it that when we are making arguments to develop our own talent, we still consider moving work and money offshore? I have long been vocal about the 'race to the bottom of the ratecard', but we can achieve similar financial models through labour arbitrage across the UK, stimulating our own economy.

Offshoring does nothing for the local economy as we do not see the benefits of monies spent re-entering the local economy. It sounds nationalistic, and it is hard to avoid politics here - but if we are truly serious about creating new ecosystems of home-grown talent then the answer will not be found in this outdated commercial model which does not drive the outcomes we are looking for to grow the economy.

Apprenticeship schemes - 'learn while you earn'

Apprenticeship schemes surely must be one of the key ways forward across the country for attracting, developing and retaining the next generation of talent. I have personally never believed that an individual's future should rest solely on a score achieved on one hot sunny day in an exam room. What we want is access to the raw material that we can encourage in the workplace to innovate and learn, injecting real life working experience alongside continuing a structured education.

The Welsh scheme is simple. An individual is employed by an organisation for four days a week, and on the fifth day they are enrolled and attend an approved degree course at a local approved university. The course fees are picked up by the Welsh Government. The individual is employed and can 'learn while you earn'. They do not leave university with student debt levels which they are then unable to repay.

We know we are short on talent, without getting drawn into the political arguments that all of us in this country know too well. Regional technology offers a multitude of different opportunities and resources, from lower cost base to access to a wider diverse range of talent. We talk about diversity and inclusion every day; well, here's the opportunity on a plate to do something about it.

> **"Why are we still considering moving work and money offshore?**

Challenge of regional technology - getting noticed

Wales, alongside other regions, has a long way to go in marketing itself effectively to the world. What starts within its own borders needs to break out quickly, both across the UK and also across the world. The bigger the market, the bigger the opportunity - but being able to access that market in a cost-effective way has and remains key. However, effective outward promotion is the starting point, and again this is where government in partnership with business can lead to success. It is a much needed area for further capital investment.

For our economy to recover successfully, this will always require like-minded individuals to take calculated risks and invest. Regional technology hubs geographically spread and supported by business-friendly policies like those developed by the Welsh Government, bring success, as we make available all the resources we have available to us - innovation, people and capital.

As for Cymru, the region is well placed to stimulate and grow its economy over many years to come as it transitions to become a market leader in digital products and services, something **#wearedenovo** is proud to be a part of.

Yma o(07) hyd!

It's been an absolute pleasure and reassuringly cathartic to have been part of the ERP Today story. What a success it is, and my thanks to Paul Esherwood and team. I have met so many great people and learned so much over the past three years, but the time is now right to pass the torch onto new blood who will bring different perspectives and no doubt even wider diverse thinking.

One word of advice though, echoing the words of Daniel Craig to the actor who next inherits the 007 mantle: "Don't be sh*t!"

As for me, 'Yma o hyd.' ■

Mark Sweeny, CEO, de Novo Solutions

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A NEW INTERSECTION IT POLICY-AS-CODE

WHY BUSINESS POLICY AND IT POLICY-AS-CODE IS THE NEXT INTERSECTION IN ERP

POLICY IN TECH

Moving commercial business policy forwards into the digital age requires a deeper reliance upon cloud-native automation control from the IT function. For this to happen effectively we need to form a new intersection between traditional business policy and a new breed of IT policy controls.

This is the birth of Policy-as-Code at the technology infrastructure level, an approach to system operations designed to enable IT services to work correctly, even when under severe pressure to adapt, or in the face of cybersecurity threats.

One of those IT industry terms without a definitive definition, Policy-as-Code is as perplexing as serverless computing at first, but in fact comes from the same notion of system virtualisation.

In serverless computing, there are plenty of servers all located in our chosen cloud service provider's datacentre. We use the term to denote an application whose server allocation is decided upon only when it is actually needed. Through virtualised server provisioning we can (in theory at least) save resources and increase efficiency.

A defined set of network mechanics

Policy-as-Code stems from the same breed of virtualised system level control that has given us serverless. It enables us to stipulate a defined set of network mechanics in the form of policy rulings to govern how data services, applications and their related components and connections act in relation to compliance, operational excellence and security.

In the most basic terms, Policy-as-Code comes down to a system level evolution of 'if, then, else'. For example: if a security alert occurs, then apply this patch or raise this warning, else (otherwise) if it has already been installed, take no further action.

Why the need for Policy-as-Code in the first place? Because as shiny as it looks on the surface, real world deployment of cloud computing has never been a perfect science. Analyst house **IDC** estimates that just over two thirds (67 percent) of cloud breaches are a result of misconfigured applications or instances of clunky misconfigured infrastructure.

In the modern era of Infrastructure-as-Code (IaC), one would hope for greater harmony given that IaC also leans heavily towards security best practices, but even in cloud automation, the whole process starts with a human in the loop or has human administration and management involved at some stage.

"Whether for regulatory purposes or internal business requirements, policy enforcement is now an integral part of many operations teams' responsibilities," says Deepak Giridharagopal, CTO at **Puppet**. "However, if compliance depends on human effort, it is impossible to keep up with the rapid pace of change that is inevitable within a modern IT infrastructure. This is why we need continuous compliance, which is best achieved through Policy-as-Code and applying the principle of control loops."

What can Policy-as-Code control?

The question is, how far can Policy-as-Code go and what level of control should it be able to exert across an organisation's IT stack? In a world of distributed IT teams working across an estate of multi-cloud services using different programming languages with different configuration protocols and techniques, all spanning varying workflow methodologies, the penetration of Policy-as-Code arguably needs to match both the diversity and security stance of the environment it is actually applied to.

WHEN WE WORK IN A WORLD WITH POLICY-AS-CODE, TECHNOLOGY POLICIES MUST BE BOTH HUMAN-READABLE AND MACHINE-ENFORCEABLE.
- YOGESH GUPTA PROGRESS

By adopting Policy-as-Code, an organisation is able to lay down controls that will translate directly into system-level operations decisions. Always fairly binary in nature – there's a right way and a wrong way, there is no middle way – Policy-as-Code lays down the law for IT decision making.

These decisions can be used to govern where and when (or indeed, if) applications and services can be exposed to external connection points via application programming interfaces. They can also govern which software protocols and code structures are permissible, or they can be used to adapt system behaviour to keep the IT stack compliant in the face of legal and regulatory compliance requirements.

Achieving continuous compliance

Giridharagopal explains how codifying technology policies as code makes

them amenable to auditing, testing, sharing, reuse and peer review. This, he suggests, means that software application code can be fed to intelligent systems that can apply those rules across a fleet, not just when systems are first provisioned, but continuously for their lifetime in service.

"This enables us to progress to a point where humans can focus on the policies themselves, while software focusses on applying them and fixing any anomalies encountered in the process. For all the reasons that Infrastructure-as-Code is an indispensable part of modern systems administration, so too should Policy-as-Code be a modern fundamental," he says.

He reminds us that given the progression point we are on today with automation, the more we can automate, the more time, cost and risk can be reduced. So, surmises the Puppet CTO, the latest generation of continuous compliance systems can also include automatic repairs of detected policy issues, such as through reconfiguration of the affected system.

IF COMPLIANCE DEPENDS ON HUMAN EFFORT, IT IS IMPOSSIBLE TO KEEP UP WITH THE RAPID PACE OF CHANGE THAT IS INEVITABLE WITHIN A MODERN IT INFRASTRUCTURE

- DEEPAK GIRIDHARAGOPAL PUPPET

Mapping down Policy-as-Code

Implementing real world Policy-as-Code deployments into a functional IT deployment involves what we can call a mapping process. Starting with a human interpretation of system rules, best practices and compliance requirements, the operational conditions that these guidelines stipulate are codified and then mapped to a state where they can be digitally interpreted and ultimately enforced.

Explaining Policy-as-Code as what he calls a "very natural extension" onward from corporate business policy, CEO of infrastructure software company **Progress**, Yogesh Gupta, champions this approach as a means of finally getting traditional IT policy guidelines actually implemented.

"For too long, there has been a lamentable gap between what IT policy actually represents, features and contains in any given organisation and conversely, what is physically implemented," says Gupta. "When we work in a world with Policy-as-Code, technology policies must be both human-readable and machine-enforceable."

Looking at the reality of moving organisations towards a Policy-as-Code advantage, Gupta is realistic but sanguine in the face of the challenges that firms will face across different business verticals. He says that an IT policy instruction written by software engineers that can only be interpreted by machines and other technology department employees is good, but not quite good enough. He insists that a broader instruction format is required in order for subject matter specialists, domain experts and line of business managers to be able to understand it as well.

According to a **GigaOm** white paper, 'The [Policy-as-Code] space is evolving quickly and has heavy dependencies on exactly how infrastructure is provisioned and managed, along with how applications communicate. [Enterprise organisations] should consider their existing infrastructure and application development tooling roadmaps when seeking a Policy-as-Code solution to ensure it will be interoperable in the coming years.'

The as-code effect

Given the penetration of cloud computing with all its layers of virtualised and abstracted entities, this whole discussion falls in line with current approaches to AI-charged automation and IT systems that now benefit from a level of autonomous management.

From applications, to databases to complete computing fabrics, the as-code effect is penetrating every level. Logically then, a higher level policy coding process should also now come into place.

Where firms already have a customer service policy, an investment policy and a workplace behavioural conduct policy, they can now have an IT policy that features a deeper level of automated internal digital management in the form of Policy-as-Code.

Can we go any deeper than Policy-as-Code, or does this represent the internal mantle of our planet's IT functions as we stand today? The answer for now is no, this is the base layer. But let's not close off the wider possibility of an as-code approach evolving to be applied to something even more granular, cerebral or perhaps human.

Inevitably, we can expect You-As-Code at some stage, so make sure you remain human-readable and machine-enforceable. ■


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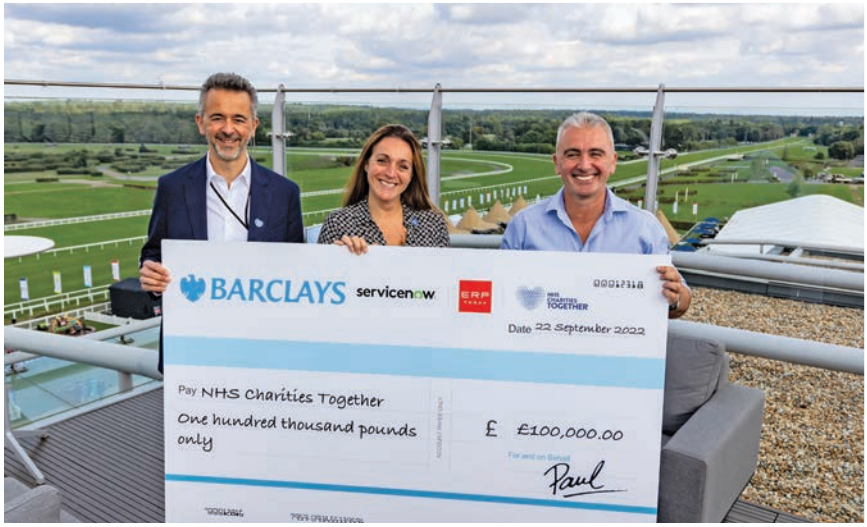
| PHOTODIARY | ASCOT RACECOURSE

ERP community puts on a show to support the NHS



On 22nd September, more than 3,000 people came together at Ascot Racecourse for the second installment of the **ERP Today Awards & NHS Fundraiser**. The event raised more than £150,000 to support frontline **NHS** workers and saw **IFS** crowned as vendor of the year while **EY** and **Network Rail** scooped the top prize for Transformation Project of the Year.

Following a similar format to the previous year, the outdoor extravaganza included a plethora of activities and events such as cocktail making classes, a penalty shoot out competition, golf challenge, cricket and, of course, the fiercely competitive Tug of War competition (more on that later).

More than 1,000 NHS staff were treated to a fully funded day out and we also hosted the first NHS awards at the end of the evening, kindly sponsored by our friends at **7FC**. The combination of an industry event coupled with a meaningful contribution to such a deserving organisation made for a rewarding and unique experience for all and our sincere thanks and gratitude go to everyone who attended.

Aside from the awards, fundraising and networking, the centrepiece of the day was the Tug of War event where 32 teams competed to dethrone **Capgemini**, the 2021 winners. Props to **Infor** for heroically falling on their sword when drawn against the NHS team and high praise too for the **Focus**

Cloud crew that took to the field in attire that was straight out of an episode of 'The Only Way is Essex'. Despite their muscles and skin-tight tops, they were unable to overcome the professional rowing team Cap had recruited and lost in the final. Two lessons learned: Focus, wear socks next year. And Lori, we want to see your team's employee records before the 2023 event.

The big change for this year was the inclusion of the After Party. We were unsure if anyone would come after such a long day but our fears were quickly allayed when Rob Churchyard rocked up an hour before the doors opened and was soon followed by 450 ERP revellers who were keen to keep the party going.

A huge thank you to Mark Hulyer and **Deloitte** for sponsoring the After Party and a special mention to

several of the Infor tribe for providing the post event talking points. Our expectations were relatively low for this element of the day but the community rallied to demonstrate that just because we work in ERP it doesn't mean we are boring!

Our editor, Paul Esherwood, rolled back the years and dusted off his decks to play a mammoth 5 hour set that started with the Bee Gees and ended with two hours of trance and hard house. It was such a thrill to see so many of our friends, colleagues and partners letting their hair down and dancing the night away.

After 10 encores and cries of 'one more' the curtain finally came down around 2am and the hardcore of party animals that remained were ushered to bed. The book was closed on another incredible event and we can't wait to see all of you next year for more of the same, only better. ■

| PHOTODIARY | LAS VEGAS

UiPath Forward 5

BY STEPHANIE BALL

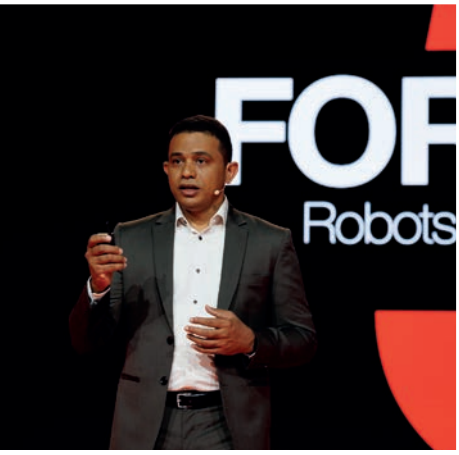
Like walking into Narnia, **UiPath** truly pulled every season out of the wardrobe for this year's Forward 5. Think everything from giant snowy igloo meeting pods to leafy spring trees overhead and you might just come close to some of the extravagances of this Las Vegas show.

One might think the Vegas razzle-dazzle might easily distract folks from the main event. However, over the first day's three hours of keynotes, featuring joint UiPath CEOs Daniel Dines and Rob Enslin, and EVP Ted Kummert, the announcements evoked collective gasps and applause from the thousand-strong crowd at the main stage.

RPA, a side-act for a new, all-singing platform

The RPA gusto seemed to get turned down a notch at Forward 5, as a new do-it-all intelligent automation platform headlined the show.

Product developments to the new UiPath platform included features for process and data mining to identify and action areas in business workflows with the most to gain from automation. A Clipboard AI feature wowed, with new and smooth data scraping abilities across unstructured documents, images, emails (courtesy of **Re:infer** technology), web and Excel. An Apps 2.0 announcement also claimed to allow developers and business users to access low-code custom automation projects and purpose-specific platforms, all



reaching across technology stacks.

Name-dropping the likes of **Uber**'s predictions, a 350 percent ROI from UiPath automation in one year, and **Puma** seeing a 50 percent increase in supply chain management efficiency outcomes, also surely weakened the knees of any remaining automation naysayers.

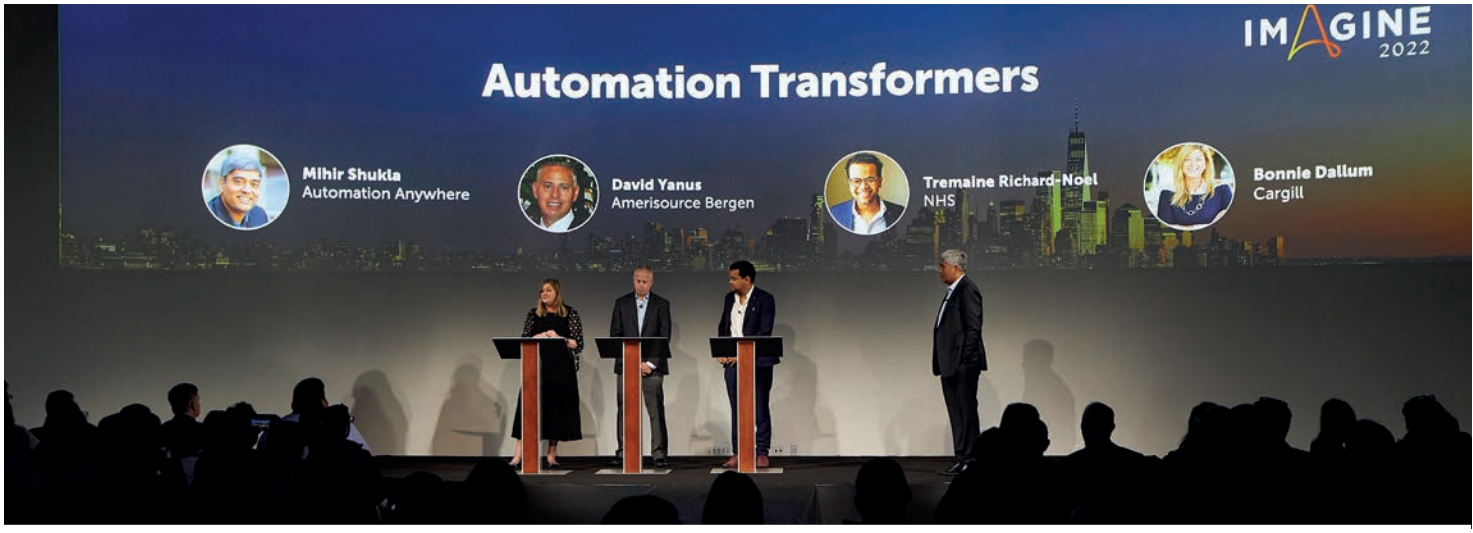
The big Microsoft partnership

With Dines marking the company as "perhaps the largest company ever built on the **Microsoft** platform", and Microsoft's Scott Guthrie's face filling the multiple wide screens, it certainly was a big win for UiPath. It was only dampened slightly by Guthrie's "deep commitment" being showcased in pre-recorded delivery.

With this partnership, low-code and no-code unattended UiPath software robots will deploy on the Microsoft Cloud without large infrastructure implementation, automating business processes and aiming to save hundreds of labour hours.

Microsoft Azure Marketplace will also offer integration with key UiPath platform tools such as Automation Cloud, Process Mining, and Test Manager, and full integration with the Microsoft Power platform is expected early next year. More than 80 best-in-class integrations will be available out of the box for joint customers.

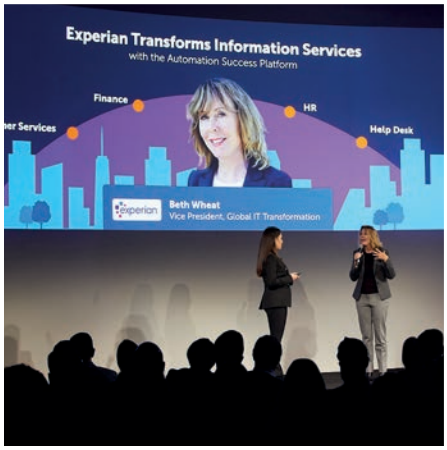
All that lacked, from this attendee's perspective, was enough talk about the ethics behind this data harvesting and, as seemingly the only media in attendance, some fellow journos. ■



| PHOTODIARY | NEW YORK

Automation Anywhere Imagine 2022

BY STEPHANIE BALL



Blustery New York offered up its predictable rainy autumn weather, but spirits were not to be dampened at Imagine 2022.

Rather than squeezing businesses to fit the mould, both the high-ceilinged venue at The Convene and **Automation Anywhere**'s (AA) software developments seemed designed for ample room to flex, breathe amongst the bustle and let human creativity flow. The keynote delivered by AA CEO, Mihir Shukla, got things off to a riveting start, with a very different take on how automation platforms should operate to keep humans 'in the loop' of intelligent automation.

In an interesting move, the Automation Anywhere Robotic Interface (AARI) will act as a hovering widget companion, functioning from within hundreds of other business enterprise apps such as **Google**, **Salesforce**, **SAP**, **Workato**, and **Genesys**.

AA is shooting for a truly connected user experience. Immediate accessibility aims to shape automation around the user throughout their daily cross-departmental and cross-application workflows, minimising employee steps, clicks and screen jumps required for everyday tasks.

Smarter bots, smoother workflow

Conscious of the high failure rate of enterprises' previous RPA projects, the era of run-of-the-mill RPA seems to be on the outs.

Jumping on the data mining trend, AA is launching process discovery features with deep learning and interactive mining after its recent

acquisition of **FortressIQ**. The smart tools will suggest what end users can automate next for the greatest ROI. Additionally, a new document automation tool is live, powered by your choice of AI.

As a bonus, resilient automation features will enable 'computer vision', highlighting app and programme updates that will affect live automation builds. Triggered alerts will feature, as well as detailed video and written explanations of the change event, in an increasingly human-focussed take on bot-building.

Did someone say citizen development?

You heard it right: Shukla really is aiming to bring automation to a billion more workers off the back of this year's conference.

A citizen development app will give every worker access to a simplified low-code builder to create their very own 'digital co-worker' automation, featuring built-in governance features such as static code analysis. Plus, a CoE Manager app, designed in AA partnership with **Shibumi**, will offer a centralised command centre to allow CoE leaders to build, monitor, and scale all automation within the business.

Appetisers Anywhere

Through the side doors of the main event, media attendees were hosted for a private dinner with the AA founders. The future plan they revealed for AA is simple: infuse more AI and, with the help of more partners, deliver increasingly specific use cases, with widespread user accessibility, to truly 'put automation in the hands of people'. ■

| PHOTODIARY | MIAMI

IFS Unleashed

BY PAUL ESHERWOOD

IFS Unleashed was the reincarnation of its World Conference, last hosted in Boston in 2019. In the three years that separated the two events a lot has changed at IFS and those changes were evident throughout the three day shindig in Miami.

The event itself was adequately organised save for the usual gripes that journalists tend to have whenever they are jettisoned into an all-expenses paid hotel on the other side of the world.

The set up at the Miami Beach Convention Center followed a familiar format with a packed main hall and a slightly less packed partner exhibition space. Day one kicked off in equally recognisable format with a slightly dry compere revving the 2000-strong crowd up in anticipation of CEO, Darren Roos', arrival on stage.

Enter stage left a man who has measurably grown into his role: Roos took the spotlight to welcome the assembly and confidently set the agenda for the show ahead. The keynote highlighted IFS' significant achievements from the past year and then moved swiftly on to position customers at the centre of the proceedings. In itself a great idea, but the procession of IFS staffers that rolled on to the stage to extol the virtues of their own work was less impactful than it would have been had the customers been there to tell the story directly. That said, several customers did make an appearance and those that did mirrored the narrative – IFS customers are a happy bunch and the 'moment of service' mantra is evidently more than just marketing speak.

Following on from Roos, Christian

Pederson, chief product officer, took to the stage and outlined the product roadmap majoring on the composibility of IFS Cloud and the way it develops innovation in collaboration with customer demands. Bas de Vos from the 'labs' department then stepped up to demo a unique application of IFS tech in the detection of failures in aircraft doors. Whilst the example was interesting the laboured demonstration lost me about half way through and by the time the presentation was finished it mainly served as another reminder that prod demos are not suited to a gallery audience.

Once the formal proceedings had drawn to a close the remainder of the event included a series of breakout sessions, intimate chats and panel discussions. I found the time to speak to several partners and customers between interviews with IFS execs and they all commended the vendor on the diversity and focus of the sessions.

My big takeaway from the three days in Miami was the evidence of a maturing brand. Back in 2019 Roos was new into the role and a first time CEO. The brand lacked broad recognition and the senior management team was light. IFS positioned itself as a 'challenger brand' which at the time felt appropriate, but that sentiment has been dropped and with good reason.

If you were to mark Roos' homework for the last three years it would be hard not to award an A* because there's very little more he could have done to reinvigorate an ailing brand. The product is transformed, customers are happy, revenues are up and the value has grown by 10x. ■

| PHOTODIARY | LONDON

IFS Cloud Cable Car Launch

BY GIACOMO LEE

October saw the London Cable Car renamed to the **IFS** Cloud Cable Car, with ERP Today attending the launch of IFS' biggest brand activation to date at London's City Hall. The government building is within a moment's reach of the newly rebranded IFS Cloud Royal Docks terminal for the service. Readers will likely be intrigued to know two stops on the London transport network are now named after one of enterprise technology's biggest names.

Of course, not everyone lives like us in the enterprise tech bubble. Traipsing the spacey, radiant environment of City Hall, I found myself giving one journalist a potted history of enterprise tech's newest star. Luckily though, IFS has anticipated this, with the whole cable car endeavour very much part of the company's plans for more brand awareness.

"(For) consumers who want to do a TikTok video, and equally for business commuters, we want to show how we're helping…(customers) use our software in the cloud," says Oliver Pilgerstorfer, chief marketing officer at IFS, as we share a cabin ride over the River Thames.

It's a shrewd move. The five-year contract is worth up to £2.1m, with a two-year break clause included in the new deal with **Transport for London** (TfL). It's also not an entirely random choice of branding. IFS software helps power TfL's barriers across the capital; the company's signature tones also nicely match with those of the Elizabeth Line, which can be found






serving Tube commuters just down the road from City Hall.

The TfL deal also fits in with the ESG trend that IFS is heavily invested in.

"It was so important to find something that was sustainable," as Pilgerstorfer tells ERP Today. "Many of our customers are coming to us saying 'we're asset-intensive and very industrial by nature, but we know we have to improve our sustainability.' (IFS) has made a huge investment to what we call our Sustainability Hub, which lets companies monitor, manage and change their operations to become more sustainable.

"Would we go to a football team or a stadium rebrand, simply sticking a sticker on the side of an asset? (Instead) I very much wanted something that was green."

The whole experience is a nicely epic bit of promotion for IFS, which had primarily dealt in sports sponsorship beforehand. Now, of course, IFS is steadily becoming more epic itself in the enterprise field.

"Our software revenue has been growing way over 20 percent year-on-year," Pilgerstorfer says. "It's testament to the fact that the business has been super-focussed, and now we're just taking that next step so we get bigger awareness, and we're part of the consideration when people are looking for a new technology platform."

You sure can't get bigger awareness than having your name out there as part of the infrastructure in one of the world's biggest cities, emblazoned over all the London Tube maps. ■

| PHOTODIARY | LONDON

ServiceNow World Forum 2022

BY GIACOMO LEE

Events are truly back in style. If in doubt, just look at the turnout for **ServiceNow**'s London World Forum in November. Countless turned up to the cavernous Kings Place, with so many attending the keynote speech from Dave Wright, chief innovation officer at ServiceNow, that even ServiceNow staff weren't guaranteed a seat for the show.

While Wright's talk had no major announcements, there was one key piece of news from the conference. As exclusively reported by myself for ERP Today, the ServiceNow platform is powering **NHS Digital**. The partnership will continue once NHS Digital merges with **NHS England** and **NHSX** in 2023.

The news came from an informative session led by Stacey Whyte, senior services manager at NHS Digital. Whyte introduced herself in this role and also as the ServiceNow product manager for the NHS subsidiary.

Surveys of NHS Digital employees turned up some data since the implementation of ServiceNow Rome and San Diego: nearly half of staff stated automation with the platform has had a positive impact on their work. 43 percent reported they could complete tasks faster than with the previous system; what that previous system was, I was unable to ascertain.

Cybersecurity is also high up in the ServiceNow proposition, with Whyte telling attendees of the priority of "keeping patient data - all data - safe". That's a major point for

the NHS these days in the wake of doctor data disgruntlement in recent years. Not long ago, NHS supplier Advanced was hit by a ransomware attack with patient data as its possible target.

Of course, the NOW news poses interesting questions on how **Oracle**, a current enterprise mainstay of the NHS, fits into this picture. Recent years have seen NHS England and **NHS Business Services Authority** put out tenders to replace pre-existing Oracle systems. ERP Today reached out to Oracle for comment shortly after the NHS announcement, but no response has been received at the time of writing this article.

EeX appeal?

Key themes in the London Forum included the burgeoning tech of low-code, addressing risk and bettering the digital employee experience. These days it doesn't suffice to find enough of the right staff to hire with speed - you also have to ~~contin~~ue the HR journey with them to ensure a smooth experience at the enterprise. **Wipro**, **Microsoft**, **Coca-Cola**, **Manchester Airports Group** and more all had talks on the matter, reminding attendees that post-pandemic scourges to business such as the Great Resignation are here to stay as employees demand more from their employers in the digital age.

ESG therefore may not be the biggest buzzword beginning with an E right now. Instead, employee experience - EeX? - is where it's at right NOW for enterprises. ■

The fall of Babylon?

Lessons for AI in the NHS

BY JACO VERMEULEN

In theory, **Babylon Health**'s presence in the **NHS** should have been beautiful - an AI-based chatbot that could triage patients, offering a virtual, self-service front line and diagnostic service. The promise of huge savings and efficiencies was palpable.

In practice, it has been a spectacular failure, even by the standards of public sector IT. The rollout was chaotic, to put it mildly. The regulator complained and most of all, the system didn't do what it was supposed to - it failed to spot illness. Yet, the NHS carried on regardless. It took Babylon to end the relationship when in October 2022 it cancelled its last contract with the NHS. The fact that this cancellation was eight years early is a damning indication of how little future they saw in the service.

I am not one to bash NHS IT. I have had the privilege of working with the NHS on some fantastic projects - but there needs to be an honest assessment of how the organisation interacts with technology.

Most (though not all) NHS operational systems procurements are done by someone outside of IT or in a non-tech role. At departmental, hospital or even trust level, there is no coordinated national strategy nor set of standards for what technology is needed not only now, but ten years hence. As a result, procurement is done 'as needed' with a myopic focus on immediate delivery of the technology that is touted to be a magic bullet. This makes the NHS an easy target for the marketing budgets of unproven technologies.

Babylon is yet another example of this short-term thinking and lack of strategy. It was sold as an alternative to GPs and actual people interaction. While AI can do basic triage and pick up a lot (when it is very focussed and trained for specific health care aspects), it fails where all artificial intelligence in commercial applications does. The tech can't understand, identify or action beyond a very narrow scope, and you need a plethora of AI/bots to try to cover all bases.

It bears repeating that AI lacks human interaction and understanding. And healthcare, nursing and all the associated areas are built on human interaction and understanding, and critically providing care. All things, of course, that a bot can't do.

Babylon tried to sell the idea that technology can do anything and everything. It cannot.

The NHS providers bought into Babylon because they don't have the capabilities to evaluate and thus understand the reality of the solution being marketed. Critically, procurement rarely knows how to make technology work within the operational context.

With such a rocky start, it is inevitable that a project will cost significantly more than expected to deliver, doesn't deliver the expected outcomes, and usually causes more disruption, confusion and frustration for healthcare practitioners in NHS organisations, as well as patients.

AI in healthcare is valuable, but it must be very focussed. The specific purpose of each AI solution must be clearly understood and integrated through a collaboration between specialist clinicians and technology experts. Babylon tried to sell the idea that technology can do anything and everything. It cannot.

AI works well for triage when clearly trained on decision trees and actions (including hand-off to a human), or handling specific health condition identification and recommending treatment options. But it needs to be incredibly focussed and 'reinforced', such as cancer pattern recognition from diverse symptoms, or the project within the ophthalmology unit at **Guy's and St Thomas'** that has applied AI to help improve diabetes detection from eye scans.

These are very discrete groups and specific conditions. In developing any technological solution to address them, the first step is to pull together the healthcare professionals and technology experts to make sure that the problem is fully scoped out. That means covering off, in depth, the problem as seen by the patients and the practitioners.

Technology doesn't even come into these discussions until much further down the road. I am not advocating some kind of labour-intensive Luddite approach, but rather recognising that for as long as these projects have vendors brought in at the very beginning, they will forever be skewed and more likely to fail. ■

Jaco Vermeulen is CTO, BML Digital

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