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Editor's View

By Phil Alsop, Editor

Hybrid is the future

THIS ISSUE of Digitalisation World includes a major focus on the hybrid workplace. You'll also find a wealth of extra content on this subject on the DW website – it's our current hot topic. The idea that the recent pandemic has any silver lining is perhaps somewhat optimistic. Nevertheless, the flexible work practiceswhich became a hallmark of lockdowns, many of which were already beginning to infiltrate companies across the globe pre-Covid, seem to be with us to stay.

Yes, some traditionalists, who are still coming to terms with the invention of the wheel and the discovery of electricity, bemoan the lazy workers who spend all day at home doing very little work (as if it's not possible to measure productivity in this day and age!), but the vast majority of organisations recognise that different employees respond well to different working environments and many, if not all, enjoy the idea of days in the office and days spent working remotely.

Shock, horror, there are even intrepid companies who have been trialling the four day week, with apparent success in most cases. Yes, there may well be some downsides to a distributed workforce – the 'accidental' conversation that leads to a new idea, that turns into a major revenue generating innovation is most often quoted. But, hey, I can think of significant downsides to television, the Internet, online shopping, but these appear to be overcome or ignored for the 'greater good'.

In the case of the hybrid workplace, I think that employees see almost only upsides. Employers maybe discover the disadvantages, but a contented workforce is surely more productive than one stressed out with the long and expensive daily commute?

When one considers that the hybrid approach is becoming a hallmark of so many aspects of working life – hybrid cloud, hybrid IT devices (as in employer-provided and BYOD, as well as traditional servers and PCs alongside tablets, mobile phones and the like), hybrid infrastructure (on-prem, colo and/or cloud and managed services), hybrid storage (SSDs, HDDs and tape), hybrid networks (fixed and wireless) to name but a few – it is perhaps surprising that anyone is brave enough to rail against such progress.

Of course, a hybrid approach has many possibilities within it. When it comes to the workplace, employees can be given flexible working hours, core hours and/or days when they must be in the office, each individual's circumstances can be allowed for (as with parents with young children). Flexibility and agility are key.

And, wouldn't you know it, flexibility and agility are two of the key objectives when it comes to digital transformation of a business. Most usually applied to a company's IT infrastructure, it makes complete sense to recognise that what's good for servers, networks and storage, is also perfect for sales, HR and many other departments.

(I wrote this column at 5am, the day after the Queen's funeral, and put in a four hour shift until 9, before taking the dogs for a walk).

DIGITALISATION WORLD

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DW DIGITALISATION WORLD

IN THE FUTURE OF WORK, EMPLOYEES HOLD THE POWER

Magnus Falk, CIO Advisor at Zoom, discusses how employees are influencing workplace trends such as asynchronous work, meeting free days and the four day week

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The data centre trade association

Research reveals post-pandemic risk factors

Economist Impact survey of 2,000 business leaders, sponsored by Cognizant, shows key challenges include competing priorities, deriving value from technology investments, addressing a talent and skills gap, and sustaining action on ESG.

COGNIZANT has introduced The Future-Ready Business Benchmark, research from Economist Impact, commissioned by Cognizant. This comprehensive survey of business leaders across eight industries and 10 countries is aimed at understanding the state of the modern business and how leaders are preparing for long-term success in a post-pandemic world.

The research identifies three essential interrelated areas that leaders must prioritise to create a resilient, future-ready enterprise: 1) Realising full value from accelerated technology adoption, 2) overhauling workforce strategies, and 3) closing the gap on thought and action in the face of growing environmental, social, and governance (ESG) challenges.

"Resilience is the new must-have capability for every organisation that expects to thrive in this time of intensifying competition, ever-accelerating digital technology, and unpredictable global events," said Euan Davis, Head of Cognizant Research. "To succeed as a modern business, leaders must be ready for anything, and prioritisation is key when everything seems equally critical. We've shown that savvy technology investment, attention on developing talent with new and expanded skillsets, and embedding and acting on an ESG agenda are core elements of focus on which leaders can build. The successful CxOs will build future-ready, resilient businesses by ensuring their organisations learn, adapt, and continually evolve."

Economist Impact surveyed 2,000 senior executives in 10 countries across North America, Europe, and Asia-Pacific to assess and compare their businesses across a range of metrics.
Survey highlights include these insights:

Strategic clarity is muddled. Over 90% of business leaders surveyed say it is a strategic priority to adopt a data-driven approach and create a digital-first business model, with 37% citing both imperatives, along with the need to align operations with these new modes of working, as "business critical."

Technology investment is accelerating beyond what has become the standard shopping list of cloud, advanced analytics, IoT and artificial intelligence/machine learning (AI/ML) even while respondents say they are not yet realising full value of existing investments. In addition to these foundational technologies, of which the vast majority of respondents, 80%, say they have adopted or plan to adopt, there is a growing appetite for an emerging set of technologies; over 60% of respondents say they plan to or are already adopting quantum computing, blockchain, and robotics.

Workforce and talent management strategies need a major overhaul to prepare workers for new ways of work. Nearly half of respondents, at 46%, recognise they lack the skilled talent necessary to make productive use of advanced technologies. When asked about the biggest hurdles to implementing new processes, products, services and technologies over the last 12 months, the two most significant challenges were workforce-related: a lack of knowledgeable staff and a chronic lack of focus on preparing workers for the new ways of work. For example, just one-third, or 33%, of respondents are using data to identify and understand training needs and cultivate talent.

Business resilience is at risk for companies that recognise ESG as a critical consideration but fail to take action to integrate ESG throughout the organisation. Nine in 10 decision-makers, or 90%, recognise attending to ESG issues is an important aspect of being a modern business.

However, there is a massive disconnect between recognition and action, with only 31% having dedicated staff and resources devoted to ESG, and only 35% incorporating ESG into company strategy. A slight majority, 54%, report setting and taking action on specific environmental targets, while only 44% currently measure social impact.
"Many businesses today are struggling to prepare for next month, let alone years from now," noted Vaibhav Sahgal, Principal at Economist Impact. "Firms genuinely embedding principles of future-readiness from our Future-Ready Business Benchmark into their operational realities will maintain and grow their competitive advantage. Our data validated the fact that it is particularly challenging to make progress on the matter when juggling a vast array of often competing priorities.

Our guidance is to start where the gaps are most significant and dial up the focus on people; the benchmark offers tangible calls to action for businesses across countries and industries. A failure to embrace the volatility that is here to stay, and prioritise business plans and investments accordingly, puts your business at the risk of losing relevance."

Zero Trust now a boardroom discussion

Okta's fourth annual State of Zero Trust Security report reveals that budgets for Zero Trust initiatives are increasing for 85% of organisations.

ZERO TRUST has quickly progressed from a buzzword to a critical business imperative, Okta's 2022 State of Zero Trust Security Report has found. Today, 97% of businesses say that they have a Zero Trust initiative in place or will have one in the next 12-18 months, rising from 16% in 2018 - a more than 500% increase in the past four years.

EMEA businesses are dragging their feet on Zero Trust strategy - but budgets are on the rise

Businesses in EMEA (Europe, Middle East and Africa) are falling behind other regions when it comes to having a defined Zero Trust strategy. Just 36% of organisations say they currently have a strategy in place, compared to 50% in APAC (Asia & Pacific) and 59% in North America. However, this is set to change with EMEA leading the race in terms of budget increases for Zero Trust strategies. 90% of businesses in EMEA are increasing investment, compared to 83% in APAC and 77% in North America. In terms of the biggest challenges for businesses implementing Zero Trust initiatives, talent shortages are listed at the top in North America and APAC, and among the Global 2000. However, in EMEA, cost concerns are judged to be an equivalent challenge with awareness of solutions to support Zero Trust ranked even higher.

Globally, 80% of all organisations say identity is important to their overall Zero Trust security strategy, and an additional 19% go so far as calling identity business critical. This means that 99% of organisations cite identity as a major factor in their Zero Trust strategy. Among CISOs and other members of the C-suite specifically, 26% deem identity business-critical.

"Organisations in EMEA need to alter their approach to cybersecurity if they want to safeguard systems, data, workforces, and customers in a continually changing world", comments Ian Lowe, Head of Industry Solutions, EMEA at Okta. "The region is making significant progress in their Zero Trust initiatives, but businesses still face a number of challenges, like improving awareness, skill shortages and making significant investments to help their teams implement new technologies."

EMEA is most balanced when it comes to usability and security concerns

Okta's research shows that finding the balance between usability and security concerns is an ongoing challenge for organisations today. The shift toward security is more pronounced in APAC and North America, with the EMEA region reporting a more balanced prioritisation between the two.

"Companies are now leveraging pandemic-era investments in usability, and catching up on some security debt," adds Lowe. "But increasingly, they are also realising that stronger security and better usability aren't necessarily at odds anymore. Passwordless technologies, as an example, simultaneously improve the user experience by making logging in frictionless, whilst also being more secure."

Healthcare and financial services strive ahead, whilst Government falls behind on passwordless access

For financial services and healthcare organisations, most of the definitional work to get Zero Trust initiatives in place is already happening.

Within financial services:

- Nearly 100% of financial service respondents plan to have a Zero Trust initiative underway within the next 12-18 months
- Nearly half (48%) already have such an initiative in place today
- 75% of financial services companies expect to have SSO and/or MFA extended to servers, databases, and APIs within 18 months

Within healthcare:

- 58% of respondents have already begun implementing their Zero Trust initiatives, representing a 20% increase from 2021
- 99% say identity plays an important or business critical role in their overall Zero Trust security strategies
- All healthcare respondents say they plan to have extended SSO and/or MFA to SaaS apps, internal apps, and servers in the coming 12-18 months

Nearly 22% of respondents from financial services companies indicate that they will adopt passwordless access options in the coming 12-18 months, while 16% of healthcare and software companies plan to follow suit. Government institutions lag behind, with only 7% either already having passwordless access in place, or planning to implement this in the coming months. Yet, nearly all government respondents around the world say that identity is an important part of their overall Zero Trust strategy, with 19% deeming it as business-critical.

Largest spend on cloud services expected over next 24 months

Two-thirds of firms find cloud migration easier than expected.

BUSINESSES are accelerating their move to the cloud, with half of enterprises (50%) suggesting that their biggest anticipated spend will span the next 24 months, according to the latest research* from Colt.

The research, which interviewed 500 senior IT and C-suite decision-makers across key markets in Europe and the Asia Pacific, is included in Colt's third annual international study of cloud adoption.

Other key findings were that sustainability remains a core component of cloud adoption for decision-makers. In addition, early adopters have found it easier to migrate to the cloud, with 67% of respondents at firms that have already invested in cloud applications finding migration easier than anticipated. Much of this resulted from strong partner support on their cloud journeys. The report also highlights how IT leaders split their time evenly between the main elements of cloud strategy (planning, testing, migration, and optimisation); however, they felt that more of a focus on optimisation could see firms reap greater rewards.

Those respondents who had overseen optimised cloud connectivity saw a range of benefits, including improved performance (41%), more network visibility (39%) and better security (45%), because they could bring in more products or solutions, for example, SASE (Secure Access Server Edge). SASE is also one of the top features decision-makers are considering or will include in future projects (66%), along with hybrid and multi-cloud orchestration (66%).

According to Colt's research, enterprises are also achieving KPIs quicker than expected, with IT leaders believing that they've met almost half (49%) of their goals already, with eleven percent having completed their cloud project KPIs.

In terms of lessons learned, flexible connectivity topped the list of features that IT leaders wished they'd included in previous migration projects (24%). This is because successful projects are often followed by more requests that fixed connectivity might not be able to handle.

Planning for flexible connectivity that can scale up with demand during projects and scale down when assessing, testing or optimising mitigates this problem.

Two thirds of employees are comfortable with their employer monitoring them - if they can see the data

RESEARCH by data science company Profusion has revealed a clear opportunity for businesses to improve how they use technology and data to monitor and assess the performance of their employees.

Profusion's analysis revealed that 61% of employees were comfortable with technology and data being used to monitor their output, activity or presence. However, 81% said that data must be made available to employees to enable them to challenge any interpretations.

Currently, only 26% of employees were certain they were provided with a copy of data in advance of reviews and only 25% said they are definitely empowered to challenge the interpretation. Worryingly, one in four employees were unaware or unsure about whether data was being used to monitor or assess their performance.

Crucially, 72% of employees believe that applying data to HR decisions could be better than the practices currently used by their employers. This number rises to 80% for BAME employees and 82% for disabled employees. Areas where data was seen as particularly important were in performance assessment and improving diversity and inclusion. 68% of all employees agree that using data is important to achieving an effective D&I agenda.

Fear of discrimination is the number one barrier to sharing personal information, followed by fears over data security and information confidentiality.

Natalie Cramp, CEO of data science company Profusion, said: "Many people believe that better use of data in HR could level the playing field and lead to fairer decision making. As a result, the vast majority of employees are actually comfortable with HR teams using more advanced analytics as long as it is transparent and they are given an element of control. The task for employers is to ensure that they educate their workforce on their data rights, create transparent and clear processes, and ensure they act responsibly and fairly."

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91% of IT leaders want to be progressive in managing risk

Half (50%) of IT leaders cite too much bureaucracy and process overload as a key barrier to employees being able to focus on their core role.

ZIVVER has released data showing that processes and bureaucracy are negatively impacting job progression and satisfaction, impeding employees from innovating and managing risk progressively. The research, exploring the attitudes and behaviors of more than 6,000 end users and 850 IT decision makers in Europe and the US, is one of the largest global surveys into secure digital communications and employee productivity to date.

The "Freedom to Focus" report explores the balance between employees' need to be effective in their day-to-day work and IT teams' responsibility to ensure robust security.

The survey highlights that inefficient security processes are stopping both IT leaders and employees from developing the skills they need to maintain a secure, digital lifestyle, free from costly data breaches and empowered with productivity in a hybrid working world.

Half of employees (50%) found that IT security slowed them down and made them less productive, leading to a likely email error due to their being distracted from the job at hand. Meanwhile, the majority of employees (78%) felt that the IT environment requires them to grapple with too many arduous IT security protocols and disparate IT systems, hindering productivity and increasing the risk of mistakes.

Most IT leaders (82%) echoed these sentiments, recognizing employees' right to focus, free of distractions.

But, instead of being able to focus on their own roles, IT teams are being pulled in too many directions and working on initiatives that just aren't working, such as training. Only a third of employees (36%) spoke of putting their data security training into practice, while another third (33%) questioned its value in the first place.

On the other hand, IT leaders view training as essential (85%), and three quarters (76%) recognized its advantages in reducing email security errors. It's clear that training alone is not the right strategy for tackling modern security issues.

Smarter technology is cited by many as a key component to helping organizations achieve productivity and focus. Four in five (79%) IT leaders now think that smarter email data security could reduce errors, and 87% say it would be beneficial if businesses had a solution that protected people from email security errors.

The data reveals that the vast majority of IT leaders (91%) think they could be more progressive in managing risk and should regularly review their approach to email security (72%).

According to respondents, progressive risk management entails doing more frequent reviews of security practices (52%), increasing the use of smart security technologies (49%), and taking an approach to risk management that's more proactive than reactive (38%).

For IT leaders, the most important attributes for a CISO in the next two years are being analytical in assessing threats (51%), being flexible to change as the landscape shifts (46%), having the ability to engage effectively with employees (45%), and being innovative/ encouraging appropriate 'risk-taking' in the business (43%).

Wouter Klinkhamer, CEO at Zivver, said: "Given the speed of how much the world of work is changing, organizations must take a more proactive approach to data security. Our data shows that only 18% of IT leaders have their approach to risk and email security under constant review.

Instead, they are relying almost entirely on employee training to prevent security incidents. As well as not being the right answer to the problem, this also points to wider issues concerning the growing skills gap and talent shortages which are hampering teams' ability to manage cybersecurity proactively and truly innovate within their organization. We must empower employees– including IT teams – to work securely and give them the freedom to focus on innovation."

Klinkhamer continued: "IT leaders now understand that employees need tools and technologies that enable them to work freely, rather than more restrictive measures or processes. Machine learning in a smart secure communication platform can and should be used as an active monitor as well as providing guidance or even automating security in real time. As well as benefitting the IT team by improving productivity, this would also allow individual employees to have the freedom to focus on the content of their message, not its delivery. This, in turn, will have an enormous impact on overall business operations and innovation."

Data sprawl creates risk

More than one in five users upload, create, share or store data in unmanaged personal apps and instances.

NETSKOPE has released new research detailing the proliferation of cloud apps used within businesses worldwide. The Netskope Cloud and Threat Report: *Cloud Data Sprawl* found that cloud app use within organizations continues to rise, as it has already increased 35% since the beginning of 2022, with an average company of 500-2,000 users uploading, creating, sharing or storing data in 138 different apps, and using an average of 1,558 distinct cloud apps each month.

The report found that more than 1 in 5 (22%) users upload, create, share or store data in personal apps and personal instances, with Gmail, WhatsApp, Google Drive, Facebook, WeTransfer, and LinkedIn ranking as the most popular personal apps and instances.

A personal app, such as WhatsApp, is an app that only sees personal usage from personal accounts. A personal instance is a personal account of an app that is also managed by the organization. For example, someone's personal Gmail account in an organization that uses Google Workspaces is a personal instance. Additionally, highlighting a continued trend in insider risk, the report revealed that 1 in 5 users (20%) upload an unusually high amount of data to such personal locations during the 30 days before they leave an organization, marking an increase of 33% during the same time period last year.

"Cloud apps have helped to increase productivity and enable hybrid work, but they have also caused an ever-increasing amount of data sprawl that puts sensitive data at risk," said Ray Canzanese, Threat Research Director, Netskope Threat Labs. "Personal apps and instances are particularly concerning, since users maintain access to data stored in those instances even

well after they leave an organization. Proactive security measures – especially policy controls that limit access to sensitive data to only authorized users and devices and prevent sensitive data from being uploaded to personal apps and personal instances – can help reduce the risks of loss of sensitive data."

Additional key findings from the report include:

- Personal app usage is lowest in Financial Services, highest in Retail: The Financial Services sector has the most success in limiting the flow of data into personal apps and instances, with less than 1 in 10 users (9.6%) doing so, whereas nearly 4 in 10 (39.1%) of users in the Retail sector upload data to personal apps and instances.
- More users than ever are uploading, creating, sharing, or storing data in cloud apps: The percentage of users with data activity in cloud apps increased from 65% to 79% in the first five months of 2022, with Cloud Storage, Collaboration, and Webmail apps ranking as the top cloud app categories used within organizations.
- Organizations use many apps with overlapping functionality: Of the 138 apps for which an organization with 500–2,000 users uploads, creates, shares, or stores data, there are on average 4 Webmail apps, 7 Cloud Storage Apps, and 17 Collaboration apps. This overlap can lead to security issues, such as misconfigurations, policy drift, and inconsistent access policies.

"Organizations are usually surprised when they discover just how many overlapping apps they are using. Gaining this visibility is an important step to helping rein in cloud sprawl and reduce the risks it poses to sensitive data. Once you know how data is being accessed, you can begin enforcing policies that reduce data risks without compromising productivity. Data security and productivity don't have to be a tradeoff," concluded Canzanese. The Netskope Cloud and Threat Spotlight is produced by Netskope Threat Labs, a team composed of the industry's foremost cloud threat and malware researchers who discover and analyze the latest cloud threats affecting enterprises.

70% of organisations struggling to innovate due to inability to use data effectively

New research from VMware and Professor Feng Li highlights the challenges of balancing innovation and cost cutting.

NEARLY THREE-QUARTERS (70%) of businesses are struggling to unlock the value of their data – directly impacting their ability to innovate, according to 100 C-suite executives in Forbes Top 2000 companies across Europe.

Nearly a third (30%) of business leaders cite cost reduction as their number one strategic objective, but as threats of recession loom, the better utilisation of data could be an antidote for the short term and long-term innovation. Fifty nine percent believe organisations who are prioritising data-led decision making are stealing market share, with 58% fearing they will fall behind the competition if they do not make better use of their data, highlighting how the inability to innovate could leave many businesses struggling to compete.

An inability to turn ideas into new products, services and strategies, at pace, continues to put organisations at risk of failure. This innovation-execution gap, first revealed in Bayes Business School and VMware's 2018 report, Innovating in the Exponential Economy, has been exacerbated by organisations struggling with data. Four of the top seven strategic business objectives over the next two years require accurate, relevant and timely data to inform decision-making, from understanding workforces and productivity to improving the customer experience, according to the business leaders surveyed. Fifty two percent incentivise their teams to be more innovative and find new ways to bring products, services, and strategies to market.

"Most companies are not short of good ideas. But despite progress in executing on their ideas, the innovation-execution gap has persisted, due to a lack of digital capabilities and skills, rigid infrastructures, and various constraints and risks associated with data sovereignty and compliance," said Professor Feng LI, Chair of Information Management at Bayes Business School at City, University of London, who authored the foreword to VMware's new Innovation-Execution report, a follow-up to the original 2018 paper. "Interestingly, having too much data and issues over access to the right data have been cited as major barriers, and the current technological stack in many organisations is preventing them from becoming more data-driven, resulting in strategic opportunities being missed."

Barriers to innovation success

The data barriers flagged by business leaders include organisations having too much data, cited by 83%; difficulty in accessing the right data (74%), and technology constraints (60%). Data sovereignty, where data st ored or collected is subject to the privacy laws and governance structures within a nation, industry sector or an organisation, is also a major concern, with national (76%) and industry (67%) directives highlighted as significant barriers to realising the value of data.

Joe Baguley, VP & CTO EMEA at VMware, said, "Innovation can't be put on ice, especially in economic downturns. It is something that runs through a business' DNA and it takes time, the right culture, the right processes and the right technologies to foster and ensure it succeeds. It isn't a nice-to-have, it is what creates competitive advantage, attracts and retains employees, and creates shared value. Any transformation, whether it is wholesale organisational change or identifying ways to reduce costs and optimise processes, relies on a digital

infrastructure that can support informed decision making. Data does this. If business leaders can better utilise the data they have to drive decisions and improve people's data literacy across the organisation, they can overcome challenges including data sovereignty restrictions and will be better placed to generate real business advantage from their innovation investments."

Bridging the innovation-execution gap

Organisations looking to tackle how data is hampering their innovation efforts are advised to focus on people, process and technology to bridge the gap between ideas and tangible impact. And when that connection is made, organisations can not only realise value from their data but use it to unlock greater levels of innovation: 64% are using AI and machine learning to inform innovation.

"The companies that get this right at the right time will increase their market presence and share," commented one Chief Medical Officer from a Swiss healthcare firm, who was interviewed as part of the research. "They will be in an advantageous position, ahead of their competitors. Improving data quality and managing data well by maintaining customer privacy improves the company's reputation and increases its revenue."

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Announcing the 11th edition of the premier IT awards: The Storage, Digitalisation + Cloud Awards 2022.

In what has been, and continues to be, extraordinary times for the business world, it seems doubly important to recognise the projects, innovations and individuals which have made such a huge difference during 2022. Almost overnight, employees switched from office working to working from home, and the new, or next, normal, means that, into the future, what might be called a 'hybrid work' model looks set to evolve, with flexible working very much the order of the day. What was already becoming a trend as part of many organisations' digital transformation programmes, has been accelerated.

The SDC Awards 2022 will celebrate the achievements of end users and the IT community as they have innovated like never before to ensure business continuity in these challenging times. This year more than any other, please do make sure that you enter our SDC Awards. There's no limit to the number of entries, all of which are free of charge, and we'll be promoting all the short-listed entries via Digitalisation World's multi-media platform over the coming months, ahead of the awards ceremony. We really do want to celebrate and recognise the many amazing achievements which have come about in response to the coronavirus.

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Need for greater efficiency and automation will maintain strong European growth in AI

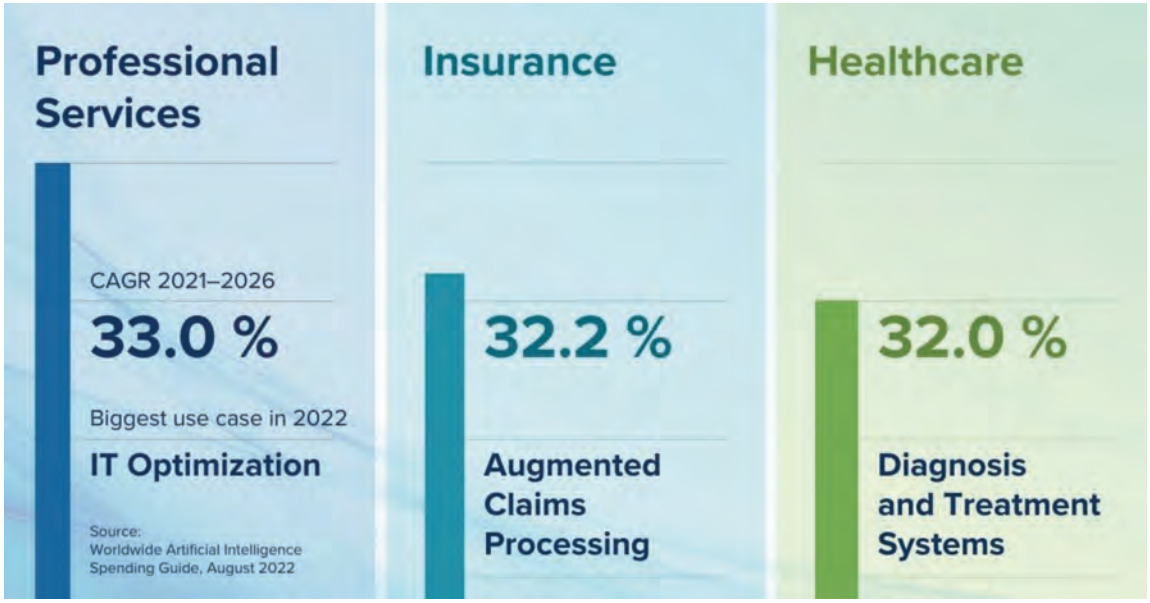
European spending on AI systems is forecast to jump from $25.4 billion in 2022 (up 27.8% from 2021) to more than $72.9 billion in 2026, according to the new Worldwide Artificial Intelligence Spending Guide from INTERNATIONAL DATA CORPORATION (IDC). The compound annual growth rate (CAGR) for 2021–2026 will be 29.6%. Germany, Spain, and the U.K. – the fastest-growing markets in Europe – will drive growth in 2021–2022.

THE AI MARKET is more resilient to the current macroeconomic events than other technologies. AI technologies and software are helping companies to build efficiency through automation and contribute to a safer operational environment.

"AI is a strategic investment for European companies that are focusing on productivity and automation solutions and looking for new ways to deliver business value," said Carla La Croce, research manager, IDC Italy. "In addition, the European Union is playing a key role in boosting research and industrial capacity around AI, with the Commission and member states working together on policy and investments that will leverage the Recovery and Resilience Facility."

Software technologies are driving spending on AI in Europe, with AI applications accounting for the highest share until 2023, which are focused more on longer-term innovation and product/service creation use cases. AI platforms will gain share from 2023; this is the fastest-growing category and includes AI life-cycle software, AI software services, and intelligent knowledge discovery software. Banking, manufacturing, and retail will spend the most on AI solutions over the five-year forecast period, accounting for almost half of total spending. Professional services, healthcare, and insurance will have fastest growth in the long term.

Banking will invest in fraud analysis and investigation, along with augmented threat intelligence and prevention system, given the increasing cybersecurity risks. Manufacturing will focus on maintenance by investing in automated preventative maintenance and quality management investigation and recommendation systems. Retail will focus on customer and automation, investing in augmented customer service agents as well as sales process recommendation and augmentation and smart business innovation and automation.



Caption

European companies will spend $100 billion in human augmentation

ACCORDING TO International Data Corporation (IDC), the European Human Augmentation market, including augmented and virtual reality, biometrics, exoskeletons, wearables, affective computing, and other human augmentation technologies, will reach over 62 billion dollars by the end of 2022 and more than 100 billion dollars by 2026.

International Data Corporation's (IDC) newly published European Human Augmentation Forecast, 2021–2026: How AR/VR, Biometrics, Wearables, and Other Augmentation Techs Will Elevate Human Skills and Transform Businesses shows that businesses are increasing their investments in augmentation tech, and the overall human augmentation market will grow 37 percent in Europe by the end of 2022. Companies are adopting a digital-first model and adapting to new realities and work policies that require support for use cases such as remote collaboration, virtualized presence, and employee augmentation.

"As the work culture changes in Europe, many companies will accelerate their digital transformation

Human Augmentation Technology	2022 Spending ($B)	2021-2022 Expected Growth (%)
Smart devices	36.62	0.65
Wearables	18.56	0.03
Biometrics	3.28	0.20
AR/VR	2.41	0.66
Ingestible, injectable, and implantable devices	0.64	0.22
Exoskeletons	0.30	0.33
Brain computer interfaces	0.04	0.04
Affective computing	0.01	0.29
Total human augmentation market	**61.86**	**0.37**

Caption

efforts and we will more frequently hear about human augmentation and its benefits," said Andrea Minonne, research manager, Data and Analytics, IDC Europe. "We live in an era when skill and staff shortages, supply chain disruptions, security concerns, and hybrid workspaces are part of our daily life. Human augmentation will be crucial to bridge these gaps and address industry needs, and European companies will use technology to unlock new skills and elevate existing ones, while also creating digital-based employee experiences."

European spending on smart devices that users can activate using voice commands and wearables will reach 55 billion dollars this year. These technologies are fully established in the market and although they aim to elevate consumer experiences rather than targeting business needs, they will support most of the investments in human augmentation. Other tech including biometrics, AR, and VR are at an emerging phase, with several projects rolled out in at least a couple of business lines across enterprises targeting multiple use cases. Finally, tech including ingestible, injectable, and implantable devices, exoskeletons, brain computer interfaces, and affective computing are still niche and at a nascent phase, with many projects still at a trialing phase.

The Human Augmentation market has been affected by several factors in the past couple years, including the conflict in Eastern Europe. The Russia-Ukraine war has generated a 200 million dollars spend loss in AR headsets, as many companies have pulled out of Russia, slowing down augmentation-oriented projects in the country but also drastically decreasing product availability.

Human Augmentation will also play a role in supporting the metaverse. IDC's Market Perspective The Metaverse Tech Ecosystem: How and When Human Augmentation Technologies will Support the Metaverse shows that although much tech, such as affective computing and brain computer interfaces, will take more time to become a key component of the metaverse tech ecosystem, AR and VR will be the foundation stones for the metaverse and companies already deploying these techs will find themselves a few steps ahead in the metaverse game.

Europe IT security spending to grow 10.8% in 2022

DESPITE THE CHANGING geopolitical situation and consequent inflationary pressure, European IT security spending will continue to rise at a sustained pace, with expected growth of 10.8% year on year (YoY) in 2022, according to IDC.

Overall spending picture

IDC's new Worldwide Security Spending Guide highlights that European IT security spending will reach almost $47 billion in 2022. The forecast five-year (2021–2026) compound annual growth rate (CAGR) is 9.4%, surpassing $66 billion in 2026. Security services will have the highest growth, driven by the lack of skilled cybersecurity professionals. over the forecast period (10.2% CAGR). Services will also represent the biggest spending category, followed by software and hardware.

The highest IT security spending YoY growth rate in 2022 in the region will be in Czech Republic and Poland, both above 15%. Over 2021–2026, Czech Republic will still be the fastest growing country, followed by a Western European bloc composed by Belgium, France, Germany, and Switzerland. "The evolution of the European cyber security market continues to progress at high speed. The increased threat landscape, the shift to hybrid work environments and greater reliance on cloud services have expanded organization's attack surface that needs protection and monitoring" said Research Manager Stefano Perini, IDC European Data & Analytics. " This has pushed European organizations to upgrade their security infrastructure, especially in cloud, network, and data security."

Overview of industries

Banking is the biggest European industry for IT security spending in 2022, at more than $6 billion. More advanced in cybersecurity maturity, banking is set to further increase spend with a driving focus on building cyber resiliency.

Discrete manufacturing and professional services are forecast to be the second and third top spenders on security in 2022 (with respectively more than $5 billion and $4 billion spending). With cyber-attacks increasing in volume and complexity, discrete manufacturing companies are having to secure gaps in their IT and OT cyber defenses, whilst professional services firms are putting an increased focus on cloud and endpoint security solutions.

Government will be the fastest growing IT security spending industry in 2022 (11.9%), followed by transportation and wholesale, both above 11%. The top 3 security priorities for the government sector are cloud workload protection, securing collaboration platforms and data security. In transportation supply chain security is the key focus, for wholesale stronger edge security and protecting remote devices and contactless payments systems.

Employee experiences and workplace access control, drive biometrics spend

According to International Data Corporation (IDC), European companies will spend $3.3 billion in biometrics in 2022, growing 20% versus last year. Spending in biometrics will expand in the years to

come and reach $6.1 billion by 2026, at an 18% five-year CAGR, 2021–2026.

IDC's European Human Augmentation Forecast, 2021–2026: How AR/VR, Biometrics, Wearables, and Other Augmentation Techs Will Elevate Human Skills and Transform Businesses shows that investments in biometrics solutions in the next year will be driven by a strong need to improve employee experiences and bring innovation to the workplace. Most European companies will use fingerprint, facial, and voice recognition, which will remain most popular forms of authentication and identification. Only a limited number of European organizations will use gait analysis, keystroke dynamics, hand geometry, or iris/eye scanning, the types of biometric solutions that remain localized in specific settings.

Although biometrics solutions face a lot of challenges, including privacy, security, and bias concerns, IDC's Emerging Technology Survey 2021 showed that 59% of European companies will be using biometrics solutions by 2023. European companies use the tech to strengthen security and manage employees in automated ways. Facility access control, employee authentication for data access, and employee time and attendance management will be the most popular biometric use cases. Finance will lead the way in terms of projected adoption, with most investments taking place to tackle cyber security, physical security, and regulatory compliance.

Source: *IDC Worldwide Security Spending Guide — Forecast 2022, July (V2 2022)*

"Workplaces are transforming, and focusing on biometrics solutions that drive innovation, employee experience, and facility security will be key to ensure European businesses run smoothly," said Andrea Minonne, research manager and lead of Human Augmentation Research at IDC.

"The COVID-19 pandemic and the Russia-Ukraine war have bypassed security concerns and have highlighted how biometrics can deliver extraordinary outcomes and bring positive impacts on business and society."

In the future of work, employees hold the power

MAGNUS FALK, CIO ADVISOR AT ZOOM, discusses how employees are influencing workplace trends such as asynchronous work, meeting free days and the four day week

AS A RESULT OF THE PANDEMIC, the power dynamic has changed in the workplace. Rewind nearly three years and it was employers that decided when, where and how their teams worked, but fast forward to today, and the tables have turned. It's time for employers to rethink what work means, and recognise the importance of employee experience in a job market where staff have never had so much choice. For a business to succeed in the long run, employee happiness and the working experience will become crucial factors in retaining as well as attracting talent.

For most organisations, flexible working will become the default option for those jobs where it's not imperative that the person has to be on site. In this new flexible world, employers hoping to attract top talent will find themselves moving further and further away from top-down management and rigid nine-to-fives, with technology enabling new and radical approaches to working, built on one key ingredient: trust. Employers may find themselves embracing ideas such as meeting-free days, or employees who set their own hours, or even a four-day week.

-Research conducted this year at Zoom has highlighted that employees do not want to return to the old working world. It found that 69% of respondents wanted to decide where and how they worked. That figure rose to 85% among those who are already working remotely. Employers who choose to ignore this trend may well be in for a rude awakening, as 45% of employees said that they would look for a new job if they could not work where they want, rising to 55% among those already working from home. Remote workers are confident in their ability to deliver results while working from home, with 92% saying that their current working environment enables them to succeed.

Towards an asynchronous future

When it comes to delivering flexibility for employees, when they work could be just as important as where they work, with asynchronous working already high on the menu of employee desires. In a recent study conducted with 10,000 knowledge workers, more employees (93%) said they wanted flexibility in when they worked than wanted flexibility in where they worked (76%). The pandemic made employees realise that location wasn't the secret ingredient that made them productive - and increasingly employees are realising that productivity doesn't have to happen to a particular schedule either.

Asynchronous work is already becoming a reality in knowledge-based industries around the world. Technology is a key enabler of this, with meeting software allowing people to replay meetings after the fact, and offer input at that point. Going forward, technology will increasingly incorporate functions to allow teams to work together effectively, regardless of how separated they are by distance or time. It's also about company culture. In the early months of the pandemic, employees had to take the reins in a way they never had before. So it's understandable that employees now expect greater autonomy, and to be trusted to keep that hand on the reins.

Asynchronous work

allows employers to be more inclusive of people with families, people with caring responsibilities and people who have to travel abroad. Business leaders need to learn trust: rather than using monitoring tools to assess productivity, they need to listen to employees, ensuring that managers understand what they are doing and what they need, using surveys and town hall sessions to gauge employee happiness throughout the organisation.

The advantages of meeting-free days

Listening to employees has never been more important. Employees throw up useful and interesting ideas, such as having days without meetings to boost productivity. At Zoom, we found in one company survey that our colleagues wanted more meeting-free time to focus and plan: hence we introduced 'Meeting-Free' Wednesdays, giving everyone one day with no internal meetings. Research found that one meeting-free day per week can boost productivity by more than 35%. It certainly seems to make people happier, too. In a follow-up engagement survey, we found that 84% of us wanted to continue having meeting-free days. We encourage teams to only have meetings where strictly necessary: for instance, for the start of a project, or for the discussion of sensitive information. We also follow the 'Triple-A approach', paying close attention to agenda, attendees and action items. Have a clear agenda for the meeting, ensure it's only attended by people who need to be there, and aim throughout to create and assign action items, to minimise wasted time.

Experimenting with a four-day work week

An employee-led approach to how people want to work has been shown to be highly effective. Workers who are able to choose whether they want to work in the office, from home, or somewhere in between are happier, and more productive. In the future, could we all be embarking on a four-day working week?

Asynchronous work is already becoming a reality in knowledge-based industries around the world. Technology is a key enabler of this, with meeting software allowing people to replay meetings after the fact, and offer input at that point

Britain is currently host to the world's largest experiment in the four-day working week, with more than 3,300 workers at 70 companies working just four days a week, on the same pay. Will the idea take hold? If employees demand it, there's a reasonable prospect that a four-day week may become reality at many companies - although research this year has shown that while employees like the idea, flexible working is actually more important to them than having a shorter working week, with 45% saying they would choose a job which advertised flexible working, compared to 40% for a four-day week.

Employee are shaping their futures around their needs

Employee satisfaction is something that businesses can no longer ignore or dismiss as an extra perk. In today's world, employee experience should be considered just as important as customer experience, and employers should set the standards high. For those businesses looking to retain and attract the best talent, they should empower employees to shape exactly how, where and when they want to work. This, combined with the right technology, will set organisations up for a successful future defined by flexible working.

Cutting through the complexity of the 'Dark Matter of Work'

95 percent of the known universe is made up of 'dark energy' and 'dark matter', making it essentially invisible. The same can be said about the way we work today.

BY ANDREW FILEV, FOUNDER AND CEO OF WRIKE

ACCORDING TO recent research from Wrike, half of all work isn't visible to key stakeholders, and employees say there's even less visibility than their employers believe, a situation that's causing friction and productivity issues across businesses. For example, employees spend an average of 89 days a year on 'wasted work' due to this situation, including five days of their own time.

One of the root causes of 'Dark Matter"' for organisations is the failure to successfully integrate synchronous applications. Business leaders claim they're only able to integrate half, and 60 percent of employees say they were already juggling too many applications prior to the pandemic – that number has since increased further.

Businesses must, therefore, take greater control over disparate applications if they hope to shine a light on their own Dark Matter of Work and address its impact on productivity, employee wellbeing, and even profitability.

Increased complexity

The shift toward digital ways of working has many benefits. Cloud-based applications, for instance, mean workers can access documents and communicate with colleagues and customers wherever they are, at any time. This, of course, proved invaluable during lockdown when most people were forced to work remotely. At the same time, though, this explosion in digital tools and technologies has significantly increased the complexity of work.

Employees have seen an exponential increase in the pace of work, the amount of information they must process, and the number of applications they use every day – up to 14 in many cases. This is because organisations are implementing more synchronous applications to support hybrid working practices. 70 percent of business functions now use three or more communication tools, while 25 percent use five or more. It's perhaps unsurprising, then, that 70 percent of workers claim to feel stressed having to juggle multiple tasks, systems, and applications.

Lack of visibility

This growth in complexity also means employees and heads of departments alike find it increasingly difficult to ascertain what work is underway, its progress, and how that work relates to their organisation's goals.

According to the report, 47% of business leaders don't have real time insight into the risks of projects failing or being delayed. In addition, roughly four in five employees have found themselves working at cross purposes with their colleagues, while two thirds of leaders have encountered problems with projects that could be avoided with real-time insight into their status.

Left unchecked, this 'Dark Matter' can have a serious impact on a business and its employees. Indeed, time wasted on activities, such as repeating work that's already been done, attending unproductive meetings, or following up on actions and statuses, costs organisations an average $52 million a year.

Single source of truth

To bring the issue of Dark Matter into the light, and mitigate impact on productivity and profitability, organisations need a way to integrate all their applications and capture all information in one place so that it doesn't slip through the cracks.

It's encouraging to learn that 87 percent of business function leaders have made it a top-three priority to create a single source of truth for both the information that is created and the activity that happens in their business function. In addition, similar number of enterprises (86 percent) intend to invest in technologies such as AI and workflow automation to create such a single source of truth. Indeed, fully aware of the human cost of 'Dark Matter', 94 percent of business leaders believe having a single source of truth for information and activity would reduce stress in their teams.

To combat this, businesses need a robust approach that can manage and orchestrate complex workflows while, at the same time, is simple enough for the average employee to use. There needs to be recognition of how a single task or project can travel across and beyond an organisation – between its employees to its partners, customers, and suppliers – something that involves multiple workflows, each harnessing multiple applications. Only by integrating these workflows and applications and consolidating the data they produce, at all levels, will an organisation be placed to tackle the Dark Matter of Work.

As organisations move deeper into the digital age, an increasing reliance on unstructured tools and applications is creating burnout and confusion while lowering general productivity. The Dark Matter that exists in these tools and applications has a gravitational mass that can easily pull business and projects in the wrong direction. But by understanding Dark Matter and taking steps to reduce the complexity from which it grows, organisations will be better able to ensure it exerts the correct pull on the business.

The metaverse: possibilities for businesses to explore right now

Much has been written about the metaverse in the last 12-18 months; many predictions have been made about when it will mature and what it means for organisations, consumers and citizens.

BY CATE ELDER, LEAD CONSULTANT IN CGI UK›S EMERGING TECHNOLOGY PRACTICE

CGI SEES THE METAVERSE as a digitally-enabled world, where organisations and communities interact in real-time. A persistent, collaborative environment where people come together to learn, work, shop and share experiences.

The metaverse has already started to change the way we live, work and consume content. What is it offering businesses and organisations and how can it be leveraged to unlock value?

Existing metaverse use cases

Organisations are exploring numerous metaverse use cases to create value for customers and employees in the short term, such as training and collaboration environments to improve knowledge share, retention and employee experience. For example, scenarios that immerse the user in a 'real world' event using virtual reality can help with health and safety training.

The metaverse is also already supporting proactive remote health monitoring for the health and care industries to enable virtual care at home. Long-term conditions and well-being for proactive intervention can be monitored using a digital twin and control centre.

An increasingly popular use case is to use the metaverse for increased audience engagement, driving greater brand awareness and revenue. This is continuing to evolve, and we are already seeing businesses build brand awareness and drive new revenue streams with digital rewards to unlock additional benefits for consumers using fan tokens and unique and limited edition non-fungible tokens (NFTs). Currently, business use cases and associated technology investment are typically built around factors such as increased revenue, margin improvements and increased efficiency of people and assets.

Many businesses are exploring how and where to start with the metaverse and looking at internal use cases to further understand the technology, its impact and capabilities. Pressures on recruitment, retention and the shift to hybrid working are leading many businesses to explore how the metaverse can be leveraged to support these challenges and improve the experience for employees.

Our experience of the metaverse

CGI is building pathways to the metaverse for its organisation and for clients. With a diverse workforce geographically spread around the UK, we recognise that creating a collaborative and supportive place to work requires innovative approaches supported by technology.

We have developed the CGI Meta Hub, based on our London office at 20 Fenchurch Street. It's a collaborative metaverse environment which enables a unique and progressive onboarding experience for new joiners to CGI. It's used to bring together new CGI employees – known as members – from across the UK into a single virtual space to share key onboarding information and meet leaders from our business.

Through a tour of the CGI Meta Hub new joiners are able to familiarise themselves with both the virtual and physical office layout and environment. The welcome sessions held in the metaverse allow participants to meet CGI business leaders, build networks and access key information such as career pathways, learning and development opportunities and business offerings through pre-defined stalls. Through this environment, employees can view relevant content and quickly get up to speed with the capabilities of the business.

These scenarios are enabled by the technical capabilities of the Meta Hub, including user-driven video and presentations for content sharing; 1:1 and spatial audio for presentations and Q&A; and high-quality and true-to-life visuals for familiarisation of our office environment.

The next stages of the CGI Meta Hub include scaling the solution to further enable multiple meetings across locations, gamification of learning and associated digital rewards and joining up international Meta Hubs to further build global business communities

For equity of access the CGI Meta Hub can be accessed via PC, virtual reality headset and, as it scales, a mobile app. The addition of the Meta Hub into onboarding processes has been warmly welcomed by our members and has unlocked several benefits including a truly immersive and productive space to build networks across all levels of the business. We are confident that this approach will improve the overall experience and retention of key information for our new hires by enhancing the hybrid working experience and offering a truly innovative onboarding experience which differentiates us as a business.

The next stages of the CGI Meta Hub include scaling the solution to further enable multiple meetings across locations, gamification of learning and associated digital rewards and joining up international Meta Hubs to further build global business communities. The possibilities of the metaverse for organisations are seemingly endless. Getting started with a clear use case and target benefits will help your organisation further understand the potential, associated capabilities and benefits it will unlock. Using the metaverse for immersive onboarding and collaboration across your organisation for improved employee experience could be an ideal place to start.

Communicate your way through the chaos

A workplace should be a vehicle for social interaction. And with that comes creativity, connection, and collaboration.

BY SOPHIE AUSTIN, HR PARTNER AT MONAHANS, A LEADING UK ACCOUNTANCY AND BUSINESS ADVISORY FIRM.

IN MARCH 2021, Spotify announced its 'Work From Anywhere' model, giving its 6,500 global staff 'the freedom to work where they work best, wherever that may be'. Since then, the company reports, its staff have been 'happier and more productive' and turnover has decreased by 15% as they have enjoyed increased flexibility and autonomy.

Productivity has a positive impact on the bottom line, of course, but this drop in resignations will have also seen its way onto the balance sheet because it's significantly cheaper to retain staff than it is to recruit them.

While staff retention should be a continual focus for all organisations, the current financial climate brings the benefits into the spotlight.

But what about the managers, leaders and HR teams tasked with their happiness, as well as their guidance and development? Amidst all the changes that the COVID-19 pandemic brought with it, 'ways of working' is top of the managerial agenda. With workforces now spread out across countries, continents, or even the world, managers face an unprecedented challenge of simultaneously supporting their staff and getting the most out of them. Navigating challenges like the stress experienced by the workforce as a result of the pandemic and trends like 'quiet quitting' – a trend that's increasingly prevalent on social media of employees only really doing what they need to do, and no longer going the extra mile, or working beyond their contractual hours – which have emerged as a result, is now part and parcel of a manager's responsibilities.

So, amidst all the changes we're experiencing, how can managers help their teams through these unprecedented times?

It can be hard to communicate in different ways with people in different places. But doing so early, frequently, and with structure needs to be central to your team dynamic and your business

In short, it's a challenge! There's no rule book or guide for the situation we find ourselves in and uncertainty is the greatest cause of issues amidst the new ways of working. We're having to adapt to huge cultural shifts and learn to do business differently, whilst trying to keep up levels of innovation and creativity.

Managers, leaders and HR teams are generally used to certain processes and ensuring these are adhered to. But as things change, we're now having to keep an open mind to the fact that things have changed. It's like chaos theory, where 'within the apparent randomness of chaotic systems, there are underlying patterns'; at the moment we need to be the eyes and ears (and conscience) of our businesses, looking for the patterns that work within the chaos.

What's going to get us through the chaos?

Communication. And early communication. Employers need to facilitate this wherever possible so that employees feel empowered. Employees want to be in the know, especially if systems are changing, so that they can understand how they will benefit, how they can get involved – the change process can be a long journey as people make their way through the different emotions experienced and come to terms with it..

Communication also breeds insights. Engaging with colleagues will help you understand what they need and how you can support them, and you are more easily able to act in the best interest of colleagues if you fully understand their emotions. Getting them involved in key decisions is one way to engagement and successful change. But organisations also need to be open to using these insights. Forcing people back to the office, for example, may seem like the best way to prompt collaboration and creativity, but if it will affect people's wellbeing, if they're spending more time away from their families or will struggle to afford the commute as prices rise, the approach may not be appropriate or commercially sensible.

Fail to address this adequately and you risk losing your top talent. Employee retention should be even more of a focus than normal in a world where candidates are demanding greater flexibility. If you can't offer this, employees may well look for it elsewhere. This may mean challenging the business on what it offers its workforce. Managers need to understand the impact of change and its implications, as much as their teams, since they're the ones tasked with implementing new initiatives and ensuring engagement. They need to continually talk to their teams to find out how they are adapting.

Talking, though, is a challenge in itself, especially when doing so remotely. The onus is therefore on the organisation to explore the best approaches, perhaps using collaborative technology where face to face meetings aren't always possible. Facilitate human connection as much as possible, even via a Teams or Zoom meeting, and give your teams structure. Maybe it's a virtual lunch or a focus for the day; even informal meetings or time spent together can promote collaboration. In the absence of chatting casually whilst making a cup of tea, we should be championing these opportunities to exchange ideas as the best alternative to learning from one another when interacting face-to-face. Overhearing conversations and shadowing colleagues are key elements of learning, so ensuring new colleagues and trainees have these opportunities is critical.

It can be hard to communicate in different ways with people in different places. But doing so early, frequently, and with structure needs to be central to your team dynamic and your business. A workplace should be a vehicle for social interaction. And with that comes creativity, connection, and collaboration. So, give your staff the ability to integrate and build relationships successfully, even if it's not face to face.

Boosting employee engagement and work culture in the hybrid world

Through the turbulence of the past two years, one of the more frequent topics to emerge regarding the future of work, is how to acclimatise to new cultures and new working patterns.

BY NICK OFFIN, HEAD OF SALES, MARKETING & OPERATIONS AT DYNABOOK NORTHERN EUROPE.

ACCORDING TO new research from TDM Group, most businesses are not getting the right IT support or advice to provide employees with the technology they need to transition to hybrid working.

Meanwhile, Gartner's recent report also stresses the importance of hybrid work policies to attract talent and improve business outcomes. It is also evident that the pandemic has changed office culture forever, according to 64% of employees.

While some employees have returned to the office full-time, offices in many cities around the world are operating well below their regular capacity. Businesses opting for a hybrid approach are responding to individual employee needs, as well as taking advantage of the benefits of flexibility and talent acquisition that home working brings. Undoubtedly, the way people are living and working today is opening up many new questions -- as well as new opportunities -- around what great employee engagement and support truly looks like.

Business leaders understand that the question of boosting employee engagement starts with daily interactions and points of connection between the people they work with. Without constant, in-person meetings or gatherings, how can employers really be sure how their workforce is doing? And how can IT help with that question?

The importance of engagement

Employee engagement is crucial for the health and success of any business. 2020 and early 2021 saw a whole host of methods and tactics for business leaders to engage their employees – from virtual happy hours to online trivia nights. But Zoom fatigue took hold fairly quickly, and events like these often don't feel particularly personal, even with the best intentions.

So how can businesses be empathetic and attuned to colleague needs? And how can technology help with this?

Here are some tips to successfully raising the bar for employee engagement - regardless of the physical environment where the work gets done.

1. Invest in the right tools

Technology will make or break company success, but it can also have a huge effect on company culture. The right collaboration and communication enabling technologies can make all the difference to how engaged employees are.

Unfortunately, effective communication can prove to be a huge challenge in hybrid environments. Many employees who are onsite can often receive crucial information in person, which remote workers won't always be privy to. It can be difficult to communicate small problems or provide quick information and opportunities to workers at home.

As a result, the digital channels of communication have to be well set up, fast, effective and convenient. With faster and more efficient ways of communicating, remote workers will be able to feel more integrated with the team as a whole and also stay engaged with the work. Tools such as Microsoft teams, Slack, Zoom, and Egnyte can help boost productivity and collaboration, which means better results all around. The importance of such investments can't be overstated.

2. Invest in the right hardware

Ultimately, the equipment that employees have at home needs to be just as effective as what they would normally have in the office. This means laptops and accessories that are built to be as efficient as they are reliable.

Naturally, portability is important too. Employees that regularly have to carry their laptops between home and work will benefit from lighter machines, with a slimmer design and enhanced battery life. Business laptops must also come with heightened security features, such as biometrics, and two-factor authentication to make sure that information remains secure as employees shift from space to space.

Of course, accessories for convenience, comfort and security are crucially important too. An ergonomic keyboard and mouse, headsets for video calls, and docks with multiple ports to turn any desk into a clutter-free workstation, can all go a long way in helping employees feeling better connected, and more engaged with their work.

3. Invest in Unified Communications

Hybrid working requires a unified communications (UC) approach and collaboration platforms to enable it. Simply the reality of having half of your workforce onsite, and half remote drastically increases the IT burden for UC and magnifies the importance of software tools that can swiftly identify any UC issues before they arise. For example, fluctuations in the number of employees on any given site means that bandwidth needs to be large enough to deal with unexpected spikes, to avert a standstill.

Employees need access to high-quality conferencing experiences, frequently on multiple UC platforms. This will mean call quality needs to be tracked and spikes need to be monitored to ensure experience parity. Troubleshooting tools that can identify in-home and in-office crises simultaneously will also be extremely valuable.

While it is unlikely that any transition to hybrid working will be seamless and perfect immediately, IT teams can track and leverage their data to identify areas that need reconfiguration or adjustment. The number of calls failed, video latency, bandwidth spikes need to be regularly assessed and benchmarked to ensure that IT teams can move beyond experience to excellence and engagement.

4. The four-day working week?

Even before the COVID-19 pandemic, interest in a shorter working week had been gaining momentum. Microsoft trialled a four-day working week across its Japanese offices in 2019, with positive results that included more efficient meetings, happier workers and a 40% increase in productivity.

Similarly, 86% of Iceland's workforce has now either moved to a shorter working week, or gained the right to do so without reduction in pay, thanks

to a number of positive trial results. According to a recent report by the Financial Times, more UK employers are also now exploring the feasibility of a four-day working week.

It isn't really any wonder that a four day working week can dramatically improve employee engagement. An additional day off dramatically helps to shift the work/life balance. Andrew Barnes, CEO of Perpetual Guardian, a New Zealand-based company that ran a trial run of the four-day workweek, implemented the shorter workweek at his company. They found that not only did the sense of work-life balance shoot up from 54% to 78%, but that team engagement increased by 20% on average too. Fewer hours in the office may help some workers to focus more intently than they would in a longer five day week.

In addition, a four-day week may also lead to more company pride, less stress, and better morale. It's estimated that the annual cost of workplace stress to the global economy is somewhere around $300 billion. So giving your workforce more time to relax, and decompress can go a long way in ameliorating this issue. And indeed, the results in multiple studies speak for themselves. One study, which polled 1,989 UK office workers, found that workers are productive for only 2 hours and 53 minutes each work day on average. Cutting the available work week may lead to fewer opportunities to be distracted, fewer unnecessary meetings and better overall engagement.

Keeping employees engaged, completely and consistently, is a big enough task when everybody is in the same place. The growing demand for hybrid working may not make this easier – but with the right communication and collaborative tools, the best equipment, and a tailored approach to show business understanding of individual needs, this can help any company get on top of the challenge.

The future of face-to-face meetings in a virtual world

As things are returning to normal it's clear that businesses are keen to find their footing when it comes to defining the workplace. While the UK Government has urged Civil Servants to return to office working, others are embracing remote working on a part or full-time basis.

BY STEVE FRANKLIN, EXECUTIVE DIRECTOR AT CINOS

RECENT DATA from the Office for National Statistics shows that the UK is getting back into the office once again. As of February, this year, there has been a decline in the percentage of people working from home – 15 per cent compared with 26 per cent in January 2022. And there has been an uptake of people travelling to work over the same time period. On the other hand, the cost of living crisis is also having an impact as a survey of 1,000 UK workers revealed people were apprehensive over the associated costs of working from an office.

If there's one phrase we're hearing more of right now, apart from "you're on mute" - it's hybrid working. Of course, it's always existed but after a two-year remote working experiment it's been turbocharged by the pandemic. Now that hybrid working practices are evolving, how do businesses make it work?

The perils of remote meetings and power of face-to-face

Virtual meetings, of course, have their purposes, and can be enjoyable and productive. But nobody wants

to be faced with a constant stream of video calls. I have been on many conference calls where most, if not all participants don't have their camera on. You enter a 'virtual room' that is often full of 'faceless tiles' with name badges, many of whom don't even speak. Researchers at Stanford University have found that "Zoom fatigue" is real and a day of video conferencing can leave us feeling exhausted. I'm sure at some point we've all looked in our diaries to find a day crammed with as many virtual meetings as possible. The problem with this is that there isn't enough 'breathing space' between these meetings, meaning actions and outputs get pushed later and later into the day and as a result, you end up working a longer day than if you had met in-person initially.

Boosting engagement

Virtual meetings run the risk of being draining if they're not planned and executed properly. But there is a place for them. Using features like screen sharing, allows participants to share a real time view of their computer, giving them the control to share documents and presentation slides. Remote teams can then collaborate and work together on a specific document simultaneously all while working in different locations. Other video conferencing platforms allow users to mute and provide written input in the call text box to ensure no one interrupts the flow of the meeting, meanwhile blurring the background prevents any unwanted distractions and interferences during the meeting. Also keep in mind that participants become disengaged in large meetings. Try to invite people that are essential and make the best use of the features you have available. Perhaps sharing relevant information with those who didn't attend using the transcript or recording functions. If you do find yourself in a situation where there is a large number of attendees, breakout rooms are a good way to create smaller groups so that people remain involved and engaged in the conversation.

It is important to be able to engage everyone in the conversation by making eye contact and using body language to ensure you have everybody's attention. What does seem to happen is that multiple meetings are arranged to cover off one topic where I'm sure a single face-to-face meeting would produce the same output. Virtual meetings aren't going away, but the fatigue certainly can.

Future impact on office working and in-person meetings

Communication and collaboration platforms have a number of key benefits for facilitating remote meetings, but technology should not replace the face-to-face experience. Business is all about people and building relationships – irrespective of industry. Face-to-face meetings help build trust and a perception of people's emotions which is always important. When you visit or are visited by a customer often the meeting will start and end with 'small talk'.

This helps relationships develop and ensures you understand the person you are dealing with, including their likes and dislikes outside of the business in hand. Business leaders need to echo the message that all meetings should be productive.

Having said that, I feel a hybrid approach of both in-person and virtual meetings is best, as working collaboratively using the tools we have all become accustomed to for follow up or perhaps small breakout meetings, can be productive.

Inevitably, due to the fact that organisations and businesses have been able to continue working remotely, there will be less in-person meetings, but for those that do happen, they will be more productive. The challenge here is determining when it's best to meet in-person or meet virtually.

What's clear is that both approaches have their benefits, but it's important for businesses to use them in the right way to ensure meetings remain productive in the months to come.

It is important to be able to engage everyone in the conversation by making eye contact and using body language to ensure you have everybody's attention. What does seem to happen is that multiple meetings are arranged to cover off one topic where I'm sure a single face-to-face meeting would produce the same output

Preparing a secure cloud environment in the digital new norm

As hybrid or remote working is being adopted by many companies globally and becoming the 'new norm' for millions of workers, cyberattacks meanwhile continue unabated.

BY RAYMOND MA, GENERAL MANAGER OF EUROPE, ALIBABA CLOUD INTELLIGENCE

BUILDING A SECURE and reliable IT environment has therefore become an increasingly important priority for many businesses who are exploring the opportunities in the global digital economy. While moving to the cloud and using cloud-based security features is a good way to challenge cyber risks, it's important to delve deeper into how best to construct a secure and reliable cloud environment that can fend-off even the most determined attacker.

In today's digital environment, discussions about cyber security's best practices have never been more important. In this article, I would like to share some thoughts on how to create a secure cloud environment - from building the architecture, to adopting cutting-edge security technologies and putting in place important security management practices – to inspire more thorough conversations on this subject.

Design the Next-generation Enterprise Security Architecture

A resilient and robust security architecture is essential for creating a cloud environment capable of assuring an organisation about the availability, confidentiality and integrity of its systems and data. From the bottom up, the architecture should include security modules of different layers, so

that companies can build trustworthy data security solutions on the cloud layer by layer – from the infrastructure security, data security, application security to business security layers.

In addition to the security modules of all of the layers, there are a variety of automated data protection tools that enable companies to perform data encryption, visualisation, leakage prevention, operation log management and access control in a secure computing environment. Enterprises can also leverage cloud-based IT governance solutions for custom designs of cloud security systems to meet compliance requirements from network security, data security to operation auditing and configuration auditing. This ensures the full-lifecycle data security on cloud, with controllable and compliant data security solutions in place.

Another consideration is to build a multi-tenant environment, abiding by the principle of least privilege and adopting consistent management and control standards to protect user data from unauthorised access. In addition, establishing strict rules for data ownership and operations on data, such as data access, retention and deletion, is also pivotal in creating a safe environment.

Moreover, enterprises can embrace the zero-trust security architecture and build a zero-trust practice by design to protect the most sensitive systems. The architecture requires everything (including users, devices and nodes) requesting access to internal systems to be authenticated and authorised using identity access protocols. As such, the zero-trust security architecture cuts down on automatic trust, or trust without continuous verification, addressing modern challenges in securing remote working environments, hybrid cloud settings and increasingly aggressive cyber threats.

Adopt Cutting-edge Security Technologies

Cutting-edge security technologies such as comprehensive data encryption, confidential computing and many more emerging tech solutions, can be leveraged to ensure we stay on top of the trends in cybersecurity.

Comprehensive data encryption provides advanced data encryption capabilities on transmission links (i.e. data-in-motion), compute nodes (i.e. data-in-use), and storage nodes (i.e. data-at-rest). Key Management Service and Data Encryption Service help users securely manage their keys and use a variety of encryption algorithms to perform encryption operations.

Another emerging technology to safeguard the cloud environment is confidential computing. Confidential computing is dedicated to secure data in use while it is being processed, protecting users' most sensitive workloads. Confidential computing based on trusted execution environments (TEEs), ensures data security, integrity and confidentiality

Another consideration is to build a multi-tenant environment, abiding by the principle of least privilege and adopting consistent management and control standards to protect user data from unauthorised access

while simplifying the development and delivery of trusted or confidential applications at lower costs. At Alibaba Cloud, we apply confidential computing to the hardware layer, virtualisation layer, container layer, and application layer, so that data can be protected in the most comprehensive way.

Security Management Practices in Place

It is equally important to adopt proper security management practices and mechanism to maximise the security protection of one's critical system and important data.

One essential mechanism to protect the cloud environment is to develop a comprehensive disaster recovery system, which enables businesses to configure emergency plans for data centres based on factors such as power, temperature and disasters, and establish redundant systems for basic services such as cloud computing, network and storage. It helps companies to deploy their business across regions and zones and build disaster recovery systems that support multiple recovery models.

Setting the effective reviewing and response mechanism for your cloud security issues is imperative. First, having vulnerability scanning and testing in place is important to assess the security status of systems; second, it is vital to use cloud-native monitoring tools to detect any anomalous behavior or insider threats; furthermore, establishing proper procedures and responsibility models to quickly and accurately assess where vulnerabilities exist and their severity, will help ensure that quick remedy actions can be taken when security problems emerge.

In the future, developing the security architecture, technologies, management and response mechanism will no longer be perceived as a cost-centre burden for companies, but rather, critical capabilities to safeguard the performance and security of daily business operations. Crafting a comprehensive cloud security plan, adopting the best industrial practices, and choosing a professional cloud service provider with strong security credentials to work with, should be an imperative subject in a CXO's agenda.

The mass remote work revolution needs rural connectivity

Remote connectivity is now an issue of central importance for businesses. Remote work rests on our ability to provide connected services with the same kind of reliability that workers might expect in an office. For many urban workers - that's not too much of a problem.

BY JAMES CATER, VICE PRESIDENT - EUROPE, MIDDLE EAST AND AFRICA (EMEA), SPIRENT COMMUNICATIONS.

HOWEVER, the countryside is a place that has historically been poorly served by telecommunications. As remote work solidifies its place in modern ways of working, the need to get connectivity in even the most isolated of places is mounting fast.

How remote work became a fact of working life
In 2018, remote work was a benefit offered by a growing collection of forward-thinking companies. Even then, those dispensations were uncommon - there would only ever be a handful of employees working remotely at one time, and even then for only a few days a week. The next year, that all changed. As the Covid-19 pandemic swept the world - remote work went from a fringe benefit to a survival necessity. As lockdowns eased and the pandemic receded, remote work became a fixture of working life. It wasn't too long before Silicon Valley giants were announcing that their employees would never need to come into the office again. One Gallup study from 2021 underlined the ironclad popularity of remote working among workers in the US. Gallup's State of the Workforce Study polled thousands of American workers and found that 91% of them hoped to continue remote working after the pandemic and three in ten would look for another job if their current employer forbade them from remote work. In the UK, data from the Office of National Statistics (ONS) shows that over 80% of British workers want to maintain a hybrid working model in the future. Remote work is modern work. We have to ensure that workers can work from anywhere with the same productivity that they might otherwise enjoy in the office. To do that, we have to extend connectivity to areas which have often been poorly served.

Rural connectivity

The countryside is one of those areas. While urban centres enjoy the heights of connectivity, rural areas are often overlooked by telecommunications operators who may not see profitable opportunities in areas of such low population density.

As a result, many areas have suffered from slow internet speeds, poor connectivity and reduced infrastructure. Better connectivity could provide opportunities for remote work as well as market incentives to invest in these areas and bolster existing infrastructure. According to a recent report from the Department of Media, Culture and Sport (DCMS), nearly 10% of the UK and 20% of Scotland are 'not-spots' meaning that they have no coverage at all. In the US, the FCC has said that around 17% of the rural US population cannot access internet speeds faster than 25 Mbps. To make remote working viable, that has to be fixed.

New 5G technology is solving an old problem
Fortunately that appears to be changing. 5G is bringing new possibilities for rural broadband coverage and remote work onto the horizon. Urban areas enjoy fast connection speeds of

sometimes gigabits per second. However, those signals - which represent the higher band of the radio spectrum - cannot travel far. In fact, most need to live within a mile of a radio tower to actually take advantage of those speeds. Where rural areas can benefit is in the low and mid bands. In this part of the spectrum, 5G networks can use radio signals to deliver service over hundreds of miles. These signals can provide connections that well exceed 4G capabilities and do so over a greater distance too. There have also been a long line of indications that better connectivity is indeed coming to the countryside. Operators are now promising to extend their areas of coverage. US operator T-Mobile, for example, have loudly proclaimed its plans to extend mid-range coverage across the United states by three-fold.

Governments are incentivising operators to extend service to these areas too. In 2020, the UK government pledged £5 billion to extend 5G out to underserved areas, while the US government's 5G Fund for Rural America will devote $9 billion to the task. Developments in 5G technology are also furthering the cause with efficiency gains that will allow operators to extend 5G to more places for less. Developments such as Non-Terrestrial Networks and Low Earth Orbit (LEO) satellites - which can beam 5G signals from space to previously isolated areas - will do much to improve the possibilities here.

Beyond remote work

The benefits extend far beyond effective remote work. Secure internet connections could vastly expand the economic potential for poorly-served rural areas. Internet connections are the critical underpinning element of modern business. With rural connectivity, remote areas will be better placed to attract new businesses, taking advantage of untapped local talent pools and enjoying the considerable savings from locating outside expensive urban areas. Rural internet users will likely experience greater value for money than they currently experience, as they pay premiums for connections that often don't provide worthwhile service.

The agricultural sector also stands to gain much from 5G which can power a series of connected technologies which will help farms automate complex processes and make informed decisions. A 2019 report from the US Federal Communications Commission revealed that better broadband connections were associated with both lower costs for things like fuel, fertiliser and seed and a near 4 percent increase in crop yields. Similarly, rural healthcare and education will enjoy those benefits as better connectivity aids their adoption of new capabilities such as telemedicine or better long-distance learning.

Obstacles

5G is making huge strides but rural connectivity is not a foregone conclusion. Despite those strides,

operators may not see enough profit potential in extending coverage to those rural areas. Furthermore, there is still resistance in certain communities about the possibilities of telecoms infrastructure crowding their otherwise idyllic landscape. Many also believe the misinformation that has been spread around 5G. If rural communities were to turn against 5G, projects could stop in their tracks.

There are also concerns about the viability of individual networks. 5G's capabilities are just that: Capabilities. 5G networks need to be tested rigorously under real-world conditions in order to realise their true potential. 5G network infrastructures are commonly placed in urban environments, and rural locations provide new conditions and challenges which those infrastructures will have to be tested against. If network operators neglect this stage then the reliability of their 5G networks, and the wide coverage they're supposed to make possible, could be at risk.

5G makes the remote work revolution work

5G for rural areas will make remote work a continually viable option for employees and employers alike, and permitting even greater productivity gains from secure, reliable and available connections to the workplace. This will also allow businesses to draw on untapped rural talent pools who have been held back by simple geography. The run-off effects of these developments could be transformative for those areas who can attract investment, empower local businesses and revive infrastructure. One Cisco report estimates that the economies of rural areas in the UK could grow by £17 billion when they have access to sufficiently fast 5G services.

Remote work looks like it's here to stay. If we want it to keep working, 5G could provide a way to reinforce its efficacy as well as inject capital into remote areas. The advent of 5G may be the thing that finally brings connectivity to even the most remote of rural areas, and in so doing, undergirds the remote work revolution.

Four ways superautomation is boosting ITSM

The benefits of superautomation are simply too great to ignore.

BY LINDA KING, CHIEF-GO-TO-MARKET OFFICER, CLOUDSOFT

EARLIER THIS YEAR, the IT sector reached a crucial tipping point.

For the very first time, it is predicted cloud spend will outstrip on-prem infrastructure spend, heaping yet more pressure on businesses already grappling with a severe cloud skills shortage, ongoing worries about over-complicated IT systems, and not to mention a 40-year high inflation rate.

As companies become more heavily invested in creating virtualised environments through the cloud, DevOps, agile delivery and automation are helping to reshape the ITSM (IT service management) sector. This, however, often leaves I&O (infrastructure & operations) teams under increasing pressure to enable change faster, whilst still assuring quality and governance – frequently pitting them against developers who want to run fast, build, test and rebuild.

These challenges are making it clear that a new approach is needed to modernise ITSM practices – enter, superautomation.

Automation has, of course, been a buzzword for years, with 'next gen' automation practices like hyperautomation becoming increasingly commonplace as businesses look to capitalise on advances in cloud technology.

Superautomation – achieved through tools such as DPCs (Digital Platform Conductors) – takes this one step further.

It quite simply represents the ideal way for ITSM teams to free-up time for better delivery, reduce IT complexity, and improve business operations.

In case you're not sold on the benefits of superautomation – here are four ways it can help reduce internal friction and boost day-to-day operations for ITSM teams:

Improved monitoring and observability in different environments

At its core, superautomation connects the observe, sense and respond processes which complex environments depend on to increase reliability, maintain uptime and limit the impact of outages. Essentially, it strips manual intervention from the equation – which is often too time consuming, unscalable, and ultimately nigh-on impossible to do well when battling against complex, enterprise-level, legacy estates.

With the frequency and length of outages on the rise, and regulation in the pipeline in the form of the EU's Digital Operational Resilience Act (DORA) and the PRA's equivalent regulation the UK, outages are fast becoming critical business issues. They risk both reputational damage and a dented bottom-line, given research by IDC estimates just an hour of downtime costs in excess of $100,000 for a Tier-1 bank.

By setting up predefined parameters, systems can continue to be well governed and compliant, but crucially they can recover in minutes, not hours.

Increased resilience

This can often boil down to one key ingredient – a system's ability to seamlessly switch workloads between public clouds and on-prem environments, meaning services stay online even during a critical network outage.

This happened only a few months ago during the UK's sweltering summer when Google took the unprecedented step of switching off its London-based datacentre for fear of overheating. The outage caused multiple access issues across its services, though the company was quick to assure users it was auditing its cooling system to avoid a repeat incident.

Designing hybrid environments is key to being able to achieve this; if these environments are expressed as code and controlled via a superautomation or superorchestration tool which sits across your entire estate, then you can switch environments and workloads much quicker and easier.

Improved leveraging of ITSM tooling

ITSM tools are crucial in helping to manage the consumption of infrastructure. Whilst there are several to choose from, three tools spring to mind as benefiting most from superautomation: Ansible, Terraform and – the world's largest ITSM tooling company, ServiceNow.

For Ansible, ideally suited to cloud-based environments, superautomation delivered through an orchestration tool represents the best and most advanced way to simplify, orchestrate and manage playbooks in both your traditional IT infrastructure and the cloud.

In Terraform's case it achieves the same end solution but delivers this by combining Infrastructure-as-Code capabilities with the governance, automation, and control.

By layering advanced orchestration with ServiceNow, ITSM teams can modernise and extend their service and governance reach with self-service catalogue integration and CMDBs (Configuration management database) – allowing it to handle different types of workloads.

Automation at each stage of lifecycle - Day 0-2.

Day 0: By baking a superautomation layer into blueprints and architecture templates, applications will have governance deep rooted from the start, helping create efficiencies further down the line and freeing up time. It also creates consistency and avoids unknown variables – two of the biggest challenges in implementing superautomation across IT estates.

Day 1: When superautomation comes into its own by allowing teams to easily increase the frequency of their CI/CD pipeline (continuous integration; continuous delivery) bringing with it a host of benefits to help modernise the entire ITSM process and open up traditional IT environments to DevOps practices. As we accelerate towards containerised applications and multi-cluster Kubernetes strategies

By setting up predefined parameters, systems can continue to be well governed and compliant, but crucially they can recover in minutes, not hours

– helping to boost availability, compliance and accelerate the adoption of a cloud-native microservice driven architecture – organisations need powerful service orchestration tools to monitor, manage and maintain their Kubernetes and other containerised or virtualised deployments throughout their full lifecycles.

Day 2: A key challenge of implementing a hybrid IT strategy is sourcing accurate and timely data from across your IT environment, giving yourself the ability to quickly flex restorative action into gear. Good observability means you can immediately identify a problem, its impact on other systems and the solution to the problem, reducing the likelihood of a critical outage.

Your existing monitoring tools may only surface information from cloud platforms or on-prem deployments, meaning your teams have a one-dimensional picture of application performance. At its core, superautomation closes these gaps, making performance data visible from across diverse platforms and infrastructure, ensuring your automations (and the services they power) are resilient and deliver value.

Whilst take up in superautomation initiatives is increasing – 70% of large global organisations will have over 70 concurrent hyperautomation initiatives (according to Gartner) by 2024 – there are several challenges to overcome to be successful.

These include:

Not working with IT teams

This may be because of perceived barriers, such as waiting for resources and educating IT on the desired outcomes.

Integration, complexity and dependencies all must be overcome with IT teams' input, especially when upgrades or replacements can break the automation. For the best outcome, the business and IT should work together to create a well-governed process where IT can provide guidance and support to the business.

Failing to recognise automation doesn't work like a human brain

Whilst automations are rules-driven and can process much quicker they aren't able to take nuance into account. To avoid delays and failures in production, evaluate and redesign your process before you commit to a particular tool or path. This means you can automate through complexity and deliver an end-result with better outcomes.

Not monitoring in post-production

You've tested your automations throughout the implementation phase, but in changeable complex environments it's essential to extend monitoring and testing to automations in production too. Application updates and process changes can break your automations, leading to the perception they've failed - and creating customer experience, financial and regulatory issues.

The increase in superautomation is being driven by customers increasing their digital expectations, and organisations' digital footprints growing to meet these demands.

Although they come with challenges, these can be rectified with a solid roadmap and correct oversight in place. The benefits of superautomation are simply too great to ignore. Or to adapt a well-known industry quote: "Software hasn't just eaten the world, it has devoured it and has come back for seconds," which is why every business needs to invest in superautomation – or risk being left behind.

Hospital Trust leans on EcoStruxure™ IT Expert for continuous uptime.

Discover how Birmingham Women's and Children's NHS Foundation Trust leveraged EcoStruxure™ IT Expert to enhance it's reliability and continuous uptime.

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The 7Rs of modernisation – identify how best to update your apps

The post-pandemic acceleration of digital transformation is showing no sign of letting up this year. While for consumers this change might look like a brightening up of websites and new services, developers know that there are far more complex tasks they need to power through in the background.

BY MARC ZOTTNER AND MICHAEL COTÉ AT VMWARE

HISTORICALLY, enterprises were unsure if IT or technology mattered (hence the outsourcing trend of a decade ago). But today's companies are focused on how to solve complex technical problems in software – whilst ensuring they are at the cutting-edge of innovation.

Modernising huge IT systems is no mean feat – if only it were as simple as hitting 'update' on the app store. Once you start identifying software to modernise, you'll soon discover that there's too much of it. Organisations often find that there are thousands of highly diverse applications and services on the list. Air France-KLM, for example, has been working on modernising 2,000 applications. Larger organisations could have even more, especially after many years of mergers and acquisitions.

Marc Zottner

Michael Coté

Putting together a plan for what to modernise is confusing if you only focus on technical reasons to modernise. There will always be a plethora of reasons because, for the most part, there's always a better way to run and build applications. That's part of the magic of technology: it's always getting better. But, modernising applications solely based on technical needs is not impactful enough business wise. Instead, we should consider how an application is fit for purpose, rather than whether it should become the fastest and most advanced it could possibly be. There's no point buying a Ferrari to do the neighbourhood school run.

We've found that there are seven different ways of modernising any given app. Perhaps humanity will one day discover an eighth, or ninth, and tenth if we survive long enough, but these seven approaches come up over and over. By design, these seven dispositions all begin with the letter R so that we can label them "The Seven R's." Here they are, ordered from least to most effort, risk, and value: Retain, Retire, Rehost, Replatform, Refactor, Rewrite, and Replace.

Retain

As someone wise once said: if it ain't broke, don't fix it. If an app is old but still serving its purpose, keep and don't touch the app for now. That is, make no changes and keep things running as they are. This is probably the default option for most apps in your portfolio, as doing nothing can be a wise strategic choice when there are likely other apps that more urgently need your attention.

Retire

Sometimes the need for an app simply runs its course. There's no need to update it - simply decommission any end-of-life applications. In this case, your analysis often finds that the application is used very little, has been superseded by another application, or is no longer profitable to run. A good example here is the Minitel service, once the world's most successful online service. Once the Internet gobbled up all of "online," Minitel was finally retired after 32 years of operating in June 2021. Applications that were purpose-built for regulations that no longer exist are another common app to retire, as are applications that run parts of your business that no longer exists.

Rehost

Often called "lift and shift", this is repackaging and moving existing applications with as few changes as possible. This is sort of like just copying an application and all its data to a new computer. Typical examples are cloud and data-centre migrations or the process your company has been through while virtualising its data centre.

Replatform

Now we get into the meat of what might typically be considered modernisation. Here, the application remains the same, but there are significant changes to the underlying technology stack and platform (runtime, framework, middleware, operating system) of your app. This can require changes to the actual application itself, but they should be very minimal. For example, replatforming might mean moving from an Oracle WebLogic Server to Spring Boot, from .NET to .NET Core, from Windows or AIX to Linux, or moving your applications from virtual machines to containers.

Refactor

In this type of modernisation, you're finally changing your application's code deliberately. When you refactor, you redesign and rewrite parts of your application to take advantage of new platforms and capabilities. This is distinct from rewriting in that the functionality of the application stays the same and is not updated: just the "internals" of the app are changed. This is sort of like keeping the exterior and interior of your car looking and operating all the same but replacing everything under the hood and under the body.

For example, you might refactor your application to scale from thousands to millions of users as your business gains customers. From video games backends such as Diablo II, to core banking systems such as the Open Banking evolution and governmental services exposed to citizens over the internet such as the German online access act, this option is often the default cost-effective choice to rejuvenate existing systems while bringing them to a new era.

Rewrite

The name says it all: sometimes it's time to start from scratch and write a new application. Your organisation still needs what the application does (for example, registering for fishing licences or scheduling ice machine maintenance), but the old application no longer solves the problem well and is challenging to maintain. Instead of just duplicating the same screens and workflows but with new fonts and colours, this type of modernisation gives teams the chance to reimagine how people interact with the application and how it functions. The only real option to modernise a digital user experience is usually to rethink and rewrite it from the ground up. There is nothing like throwing a bit of fairy dust on the frontend code to radically ameliorate usability and ergonomics. Many inspiring examples of application rewrites can be found in the world of software vendors, where operating

systems, middleware components, and frameworks of all kinds have been rebuilt from scratch with the newest available hardware and infrastructure paradigms: x86 and 64-bits architectures, parallel processing, and new end-user devices.

Replace

In this scenario, you still need the functionality that the application provides, but you no longer find value in the control and customization abilities that come from owning the application. Instead, you outsource it by replacing it with a commercial off-the-shelf (COTS) application, often a Software-as-as-Service (SaaS). The same "outcomes" are achieved, but you now use a third-party or outsourced option.

Such transformations are straightforward for highly standardised systems like mail or file servers. Also while remaining in the same software vendor's ecosystem such as Office to Office 365, replacement paths are frequently covered by exhaustive guides and tools.

For non-standard, end-of-life systems, this is often the most effort-intensive option. Transitioning your highly customised Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Human Resource Management (HRM), or e-commerce system to another, for example, will likely be a daunting task. The effort is usually worth it, however, as all that customisation, over the years, becomes a boat anchor that's causing all your problems. We have worked with large companies prioritising a rewrite of such systems over a replacement.

Choose right

While all of these technical approaches have their own merits, the decision on which you take should be motivated overall by the business goals behind modernisation in the first place. Modernisation project failure is often caused because this is left out of the decision-making process. With business context and technical knowledge, modernisation no longer needs to be a daunting task.

Storage simplification offers swift route to cutting carbon footprint

Acting responsibly and minimising carbon footprints are now key goals for companies in every single industry sector.

BY GARETH BEANLAND, UK & IRELAND COUNTRY MANAGER AT INFINIDAT

DRIVEN BY CONSUMER DEMAND, finding ways to reduce waste, and thinking more sustainably are at the top of boardroom agendas. Consumer attitudes are behind these shifts. A recent Deloitte survey found that 98% of consumers believe brands have a responsibility to make the world a better place. Adopting clean energy and recycling is just as important as developing a sustainable enterprise IT strategy.

When considering IT's carbon footprint, one naturally thinks of the data centre, of its energy consumption and the corresponding greenhouse gas emissions. Data centres are undoubtably huge consumers of power and predicted to use 20% of the world's electricity by 2025, more than any other sector. A large data centre may consume over 30GWh of power in a year, costing its operator around £3,000,000 for electricity alone.

Data centres utilise power in two ways: they need power to run the IT equipment that they house (i.e. the servers which execute the digital transactions we rely on) and, because servers emit heat when they are working, they need power to keep the servers cool enough to function reliably.

Although they use a lot of power, data centres support vital, service driven economies in the same way that heavy industries supported manufacturing economies – but a lot of energy intensive activity is taking place. Technology and digital capabilities, such as connected IoT (Internet of Things) sensors, AI and advanced analytics, and blockchain-enabled technologies may be transforming the way we live and do business, but it comes with the cost of significantly boosted energy demands.

Energy is usually the largest single element of operating costs for data centres, varying from 25-60%. The predominance of the data-driven economy has impacted every element of the worldwide business environment. That scale of transformation has not come without a cost.

Each year, approximately 8 million data centres worldwide consume vast volumes of electricity and generate carbon emissions that dwarf the global airline industry. In the UK, the total power demand of the UK data centre sector is between 2-3TWh per year.

CIOs therefore need to achieve a careful balancing act between having the necessary processing capability available in their data centres to utilise these technologies and minimising the environmental impact of energy consumption. Servers actually emit heat even when they are idle, which means that they are on but not doing anything much. This is the power consumed by what we call "recognisable facilities" by which we mean data

centres and does not include power consumed by server rooms and cupboards and other forms of distributed computing.

The logic of 'carbon proxies' provides a straightforward way to gauge the impact of enterprise storage on carbon emissions plus their tracking and analysis. Since the majority of electricity consumed is not obtained from renewable sources, it can be a good carbon proxy for the fossil fuel used to generate it. Reducing electricity demand therefore reduces the carbon it is responsible for emitting.

One way to tackle this issue and reduce the amount of power consumed in the data centre is to dramatically simplify the data centre by consolidating the number of storage arrays in the data centre. Thanks to advancements in enterprise software-defined storage technology, there is no longer any need for 25 or 50 different older arrays each running one application or workload, when all of those applications and workloads can fit on just one or two modern enterprise storage platforms. An enterprise can replace 50 arrays with 2 arrays, whilst still getting all the capacity, performance, availability, and reliability needed. Data centre simplification through the strategic consolidation of storage systems saves on power and cooling expenditure, minimises operational manpower, shrinks the need for rack space and floor space,

As consumers become increasingly sensitive to the threat of climate change, CIOs will face increasing pressure to do whatever they can to offset carbon consumption

and substantially reduces your data centre storage CAPEX and OPEX. It's also possible to consolidate storage whilst simultaneously improving real-world application and workload performance across a hybrid cloud and a container-native environment. This offers the additional benefits of greater cyber resilience and higher availability.

As consumers become increasingly sensitive to the threat of climate change, CIOs will face increasing pressure to do whatever they can to offset carbon consumption. With an eye on future, their organisations will also expect them to play an active role in minimising the environmental impact of their existing and new infrastructure and technology. Data centre simplification through the consolidation of the storage footprint is an obvious route to reducing the physical and carbon footprint in the data centre and something every CIO should be investigating.

Learn, adjust, repeat: - a new reality of digital adoption

Ultimately, the path forward in digital adoption is acceleration, not transformation. Doing this will free businesses up to innovate, react, and progress in a far more meaningful and deliberate way.

BY HELENA NIMMO, CIO, ENDAVA

Digital transformation has long been front and centre of the C-Suite's agenda, touted as the cure all for any woes ailing businesses as they move from manual to automated, on-site to remote (or hybrid!), and analogue to digital. Yet, despite the fact that digital transformation has driven long-term strategic thinking, many businesses are now reassessing this approach, favouring instead a more milestone based, iterative process which allows for flexibility and change along the digital journey.

This was the basis of Endava's recent report: Digital Acceleration vs. Transformation: A new reality of digital adoption, which found that by properly incorporating both long-term strategic thinking with the flexibility to adapt according to milestones and changes in the business, companies are far better set to succeed in times when the only certainty is uncertainty.

This article explores why companies should maintain this fast-moving, flexible approach, while considering how this type of approach fits into a long-term strategy. It also focuses on the benefits of digital acceleration and why incorporating both long-term strategic thinking with the flexibility to adapt is more suitable for companies in today's uncertain business climate to keep their business and technology up-to-date and innovative.

Assessing a changing digital economy

Over the past decade, there has been a seismic shift in how businesses approach technology adoption.

Wholesale transformation is a thing of the past. Companies are already operating and competing within the digital ecosystem. And huge disruptions like the COVID-19 pandemic have shown that rapid innovation and iterative implementation can – in crises like this – often be more effective than multi-year, multi-million dollar so-called "transformations". As many as 87% of organisations scrambled to accelerate digital deployments at the onset of COVID-19, yet few companies were completely ready. In fact, 99% of respondents stated that, in terms of digital tools, systems and processes, there was room for improvement in their preparedness.

As we came out of the pandemic, Endava commissioned independent third-party research, surveying 1,000 IT decision makers across the US, UK, Germany, Nordics, Australia, and Singapore. The research questioned whether and how actions, attitudes, and future plans regarding technology adoption have fundamentally changed, based on the impact of the past two years. The paper explores those results and outlines how an iterative, accelerating approach to technology adoption fundamentally offers a more effective and meaningful long-term return-on-investment (ROI) than wholesale transformation.

Benefits of digital acceleration

Endava's research found that many companies are already implementing technology adoption, with 70% focused on short-term delivery versus 30% invested in long-term outcomes.

What is notable here is that the vast majority of digital innovation today builds upon pre-existing infrastructure and capabilities, because no one is starting from scratch in 2022, but rather trying to grow and elevate their existing capabilities.

If companies are looking at cloud optimisation, big data platforms or even virtual reality and extended reality, then all of these should be implemented as part of an ongoing journey, one step at a time. Even early adopters exploring metaverse initiatives should not attempt to completely transform their businesses to accommodate it. A proper adoption of metaverse concepts should be the continuation of existing trends.

Creating the digital acceleration roadmap means first carefully examining potential solutions and considering which are most likely to deliver more value. For example, the metaverse should not be adopted purely because it's new, but because it provides a significant value to existing processes. Technologies such as VR have their roots in gaming but are rapidly being seen to be applicable across a wide range of industries and are likely to see strong development and investment in the coming years.

The growing appetite for digital adoption

Our research found that 92% of companies have increased their budgets for digital adoption and 88% are putting in place improvement programmes to respond to vulnerabilities brought to light by the pandemic.

Organisations no longer have the technology blank canvas that "transformation" suggests. Market conditions have clearly accelerated and pushed new adoption in all areas. So, it's important that businesses are able to acknowledge and build upon those choices, get the most out of those investments and refine them. This also allows them to innovate more freely and respond in a more agile way to the market and changing customer demands.

Agile evolution

It's been estimated that during the COVID pandemic, technology accelerated by as much as 10 years. The proof is in the pudding with 84% of organisations reporting such acceleration in large part because of the rapid technology pivots they made. While digital acceleration certainly allows for more agile delivery without undermining longer-term strategic thinking and established digital foundations, there will always be inherent risks that shape decision-making in technology. Central to combating these risks is understanding what the core objectives of the business and technology are, and their wider context.

The top five risk factors most affecting digital adoption over the next five years include: remote and hybrid work (40%); changing market context (34%); keeping pace with growth (34%); shifting customer expectations (34%); and technological disruption (33%).

Each of these risk factors further emphasises the need to build upon and improve existing capabilities, rather than overhauling entire systems and potentially opening up organisations to further risk.

Conclusion

It is clear from the research findings that the ambition of organisations is to progressively upscale their digital capabilities within a clearly defined strategy that allows them the freedoms of responding to dynamic needs.

These aren't necessarily new ideas, and, in fact, those companies that are considered best-of-breed in terms of their technology consistently display this process. Our research has concluded that there are five common traits shared by all these leaders in their adoption. Those successful within digital acceleration build on what they know, embrace change, focus on iterative milestones, understand the data journey and place the user first.

Ultimately, the path forward in digital adoption is acceleration, not transformation. Doing this will free businesses up to innovate, react, and progress in a far more meaningful and deliberate way.

Don’t neglect diversity in your digital transformation

When we talk about the evolution of businesses today, it’s impossible to escape the mention of digital transformation (DX). While DX, of course, involves strategic technology adoption, there is also a cultural transformation that must take place if it is to truly succeed.

BY SHELLEY ARMSTRONG, VP USER EXPERIENCE & DESIGN AT FINASTRA

CULTURAL TRANSFORMATION not only means adopting new tools and practices to aid the delivery of products and services which meet all customer demands, it also requires organizations to create a more diverse, equitable and inclusive workplace. Our daily lives don’t just take place in the physical world anymore. Having a disability doesn’t mean that everyday life simply stops. So, naturally, accessibility shouldn’t stop there either. Both for our customers and our employees.

When something as simple as a smartphone form factor can be exclusionary, it’s essential that design does its share of the heavy lifting when it comes to creating products and services that are inclusive. Design teams need to be both diverse in themselves and prioritize diversity and accessibility when designing products. We work in a global world and not being inclusive boils down to turning away 1 in 5 of your potential talent pool, as well as customers.

Expanding the understanding of diversity and accessibility in the workplace When it comes to accessibility in the workplace, businesses know they need to make ‘reasonable adjustments’ for certain disabilities, such as making physical workplaces more accessible for wheelchair users.

However, with technology being such an integral part of our lives, businesses now need to place additional focus on digital accessibility for a wider range of disabilities. For example, there are over 4.8 million disabled people in the UK in employment as of March this year, and some of these people will be classed within the neurodiversity category. Neurodiversity typically refers to the variation in how we process information, think, act, move and sense the world we live in and can include people with autism spectrum disorder, color blindness and dyslexia. There are many situational difficulties that neurodiverse people have to contend with. When

it comes to web and mobile applications, features that help solve some of these challenges include video magnifiers, braille display and speech to text solutions, which are easy to implement and should be included as standard in the workplace.

Another factor to consider when it comes to diversity in DX is the digital gender gap. A recent study by the World Wide Web Foundation found that there is a large gap in women and girls' digital adoption and use compared to men and boys, with men 21% more likely to be online than women globally, rising to 52% in the least developed countries. This is further enforced through the prominence of men working in tech, with an estimated 33% overall female representation in the industry, though this has been steadily improving year on year. The lack of accessibility denies full digital experiences to people with disabilities, reinforcing inequity.

Comparatively, the same issues arise with consumers of varying ages. Much like the inequity revealed by the digital gender gap, there have also been reports revealing age discrimination in the digital world. This is often driven by stereotypes that mark older generations as 'less interested' or 'less capable' in technology, meaning some workplaces may deprioritize, disregard, or even exclude older people.

A digital transformation strategy for internal processes, which prioritizes a broader range of tech-enabled reasonable adjustments and practices to encourage diversity, will not only improve employee experience. Its effects will also translate to an organization's customer-facing products and services. Diverse teams that understand the importance of inclusive digital tools and the challenges faced by different groups, will naturally create the tools that make the lives of all users easier. If you have never experienced these kinds of issues yourself, it's like having blinders on, making it more difficult to appreciate what others go through. A diverse team brings a wider perspective that only elevates the end products and solutions. Also, aside from the ethical benefits of including features that prioritize accessibility, there are clearly financial rewards when it comes to providing products and services for as broad a range of customers as possible.

The road to diverse product offerings through digital transformation

There are a number of different factors that a business must take into consideration when planning its digital transformation from a consumer diversity perspective. The most important is to be authentic. Today's consumers can be highly skeptical and cynical when it comes to trusting brands, with 71% having little faith that brands will follow through on their promises. For businesses to fully progress in the digital economy, they need to show that they are committed to their inclusivity agendas and that they are actively taking steps to enable this for their customers and stakeholders. Businesses that integrate accessibility are more likely to be innovative, inclusive enterprises that reach more people. Some 79% of companies have found that inclusive software improves usability and customer experience. Organizations with inclusive cultures are twice as likely to meet or exceed financial targets.

When it comes to creating a culture that prioritizes diversity and inclusion, it's essential to dedicate time to discovering the diverse requirements of users. Build in diversity, equity and inclusion (DE&I) learning sessions with design, product and developer teams, and discuss the potential challenges that might present themselves across the entire product portfolio. This will assist in developing existing and new products and services which create a positive UX for all.

Lastly, ensuring that the organization's systems meet user's accessibility requirements is often challenging with legacy applications. Digital transformation strategies seek to evolve infrastructure and enable a faster and more efficient delivery of products and services, but legacy systems must be slowly replaced as they are often mission critical. Simply ripping and replacing is not an option as the risks—from data loss to downtime—are far too great. To ensure all customer needs are met quickly, applications will need to be built on top of legacy infrastructure alongside upgrading these core systems, bridging the gap to a more agile situation. In this activity, diversity must again be part of the picture, with applications that depend on legacy systems audited for their accessibility and adjusted accordingly.

Accessibility drives success According to the World Health Organization, as of the end of 2021, around 15% of the world was classed as disabled, which is over 1 billion people. For decades, organizations have taken great strides to meet the needs of these groups when it comes to physical places of work and business. It is now time to replicate this in the digital world.

It's essential to advocate for accessible technology to ensure the needs of all employees are met, and that products and services serve the needs of all customers. Not only is this best practice from an ethical perspective, it also makes sense when it comes to an organization's continued growth. By opening up offerings to historically underlooked or vulnerable communities and ensuring users across different regions can digitally engage in a way that makes sense to them, organizations will expand their reach and increase employee retention. Success with any DX strategy must therefore be judged by the accessibility of the technology adopted and also the products and services that are enabled by its implementation. Organizations must embrace the challenge, drive innovation and inclusion, and change their mindset to change the world one pixel at a time!

Why a culture of innovation is required in an era of digital transformation

There are few items which should rank higher than building a more innovative culture in the enterprise. Essentially, innovation guides organisations through uncertain times, helping them adapt to new market conditions with the flexibility and agility needed in today's business ecosystem.

BY RAM CHAKRAVARTI, CTO,
BMC SOFTWARE

INDEED, modern business demands more innovation than ever before. In fact, recent research from McKinsey1 indicates that companies have significantly increased the pace of digital transformation throughout the pandemic. What was considered "best-in-class" in 2018 became slower than average last year, while companies with the best technology talent, leadership, capabilities, and resources are operating at an exponential pace. The reliance on hybrid workplaces has resulted in many businesses rethinking their IT infrastructure and finding ways to apply enterprise automation and artificial intelligence (AI). This frees up time for employees to focus on important matters such as innovation and excellent customer experiences. Since 2020, there has been an enormous shift in how people work, shop, and spend their leisure time. Therefore, companies are having to adapt their practices and technology to align with this. With many companies adding more hybrid working solutions and e-commerce to their technology stack, they have introduced technologies such as Edge computing platforms and IoT devices to generate more data than ever before. This is data which can be analysed to create even more value for stakeholders.

The companies that have successfully navigated digital transformations have one thing in common: a culture of innovation. Budgetary constraints, a lack of vision, and inadequate executive support can all stifle cultural change. There are numerous roadblocks to cultural innovation, and there is a big difference between companies that want to build innovative cultures and those actually doing it.

Building an innovative culture and keeping pace with modern business expectations

It is important to encourage employees to try new things, and celebrate them regardless of whether or not they succeed. By letting employees experiment

with ideas, and making it clear that it is okay to fail at first, employers can encourage employees to use those failings as learning opportunities. There is no better way to help employees find meaning and value in their work than to empower them to solve problems.
By implementing dedicated intrapreneurship programmes that encourage all employees to contribute ideas without fear, enterprises can put this mentality into practice. By creating a programme whereby employees can submit innovative ideas for products or concepts outside the company's typical business, for review at any time, everyone can feel welcome to shape the next generation of cutting-edge business technology.

Essentially, organisations will know they have built a culture of innovation with measurement. However, not in the way many traditionally measure success. Instead, organisations will need to rethink measurement relative to their innovation approach.

The importance of measuring success

If the end goal is to build an innovation culture which encourages digital transformation, organisations must measure two things. The first is the concept of culture, and the second is digital innovation itself. Traditional culture metrics track aspects such as turnover or employee sentiment through surveys, but there are also qualitative metrics. On the innovation side, many organisations often rely on the Innovation Quotient2 survey, which measures innovation across six dimensions. These assessments highlight the degree to which measuring soft variables is exceedingly difficult. There is also a small handful of quantitative innovation metrics, such as research and development (R&D)-to-product conversion, and the degree to which new products contribute to revenue.

There is no denying that innovation and culture feed into one another. If employees are given the chance to leverage their own creativity, their employers will see massive increases in job satisfaction. As a result, the business landscape becomes more collaborative, compassionate, and focused on collective values between human innovation and automated processes.

The ultimate testament to building an innovative culture is incorporating ideas from fail-first programmes into new or revised product offerings. Good ideas can come from anywhere, and often arise from an earlier project that never quite took off. A telltale sign of success is when these ideas and programmes come to fruition through the collaboration and ideation of individuals.

The bottom line is, innovation starts when creativity and a passion of your people is unleashed, giving them the tools to leverage analytics, navigate change, and ultimately help build agility into the business. Building an innovative culture means that innovation never ends, and that is how it should be.

FURTHER READING

➤ 1) https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-new-digital-edge-rethinking-strategy-for-the-postpandemic-era 2) https://sloanreview.mit.edu/article/how-innovative-is-your-companys-culture/

Essentially, organisations will know they have built a culture of innovation with measurement. However, not in the way many traditionally measure success. Instead, organisations will need to rethink measurement relative to their innovation approach

Why Agile is still a headline concern twenty years on

Two decades after the publication of the Manifesto for Agile Software Development, it might feel odd to be discussing Agile adoption as a live issue for organizations.

BY CHRIS FORDE, VICE PRESIDENT ENTERPRISE ARCHITECTURE AND GENERAL MANAGER ASIA PACIFIC AT THE OPEN GROUP

USUALLY, articles like this are concerned with promising, emerging, unproven ideas, talking about how to stimulate the area so that it can reach the point where its value is demonstrable. Agile, by contrast, is almost venerable.

In recent times, Agile has been gaining momentum and now, companies are looking to adopt Agile more and more into business operations. Across different industries, there is scope to complete the spread of Agile – but these are not statistics which suggest that we still need to shout from the rooftops about its benefits.

Deeper agility

Look a little deeper, though, and we find that this might not simply be the culmination of a long trend, with adoption in both IT and non-IT lines of business growing together as agile becomes more widespread.

For many, the parity between those two areas might be more surprising than the speed of the increase which, as has been discussed at length this year, is a jump that we might attribute to the impact of the pandemic. That parity is also mirrored in the reasons for adopting Agile, where an IT-specific purpose

(accelerating software delivery) and a non-IT reason (managing changing priorities) were identified as the joint most important factors.

All of this highlights the fact that, while almost every business might now be using Agile practices, those practices are not confined to the software development purposes that Agile was originally created for. Rather, Agile is spreading throughout organizations as a strategic priority. As it comes to operate on that scale, there will need to be some rethinking and reformulating about how we communicate and implement Agile methodologies.

Agile for all

This shift of Agile towards being a broader organizational principle, not just a development methodology, was also noted in last year's The Open Group Digital-First event, where Société Général and Fidelity Investments discussed their experiences using Agile to improve the client experience. In both cases, what started as an IT-led initiative became an enterprise-wide transformation spanning the business.

In practice, this meant adopting new organizational models (such as teams focused on certain value chains rather than certain business functions), changing governance processes (such as flattening chains of command using spaces for candid debate), and altering assumptions about investment and return (such as developing more flexible ways to allocate resources to projects).

Managing Agile at scale

The experiences of businesses like these teach us that Agile does, indeed, have valuable applications well beyond explicitly software-development focused areas of work. With a new perspective on how they act and organize, teams spanning the breadth of an organization can operate in a more digitally-native way and make better use of digital tools.

At the same time, however, it would be a mistake to think that the solution to today's vexing business challenges is to copy and paste the Agile culture already endemic to software development across the organization. If, at heart, Agile is about establishing teams which are self-organizing and so enjoy greater agency to take action, we have long known that it carries the risk of creating discrepancies between different teams' approaches, leading to internal incompatibilities and therefore inflexible outcomes which hinder future change. This problem might be informally avoided amongst a handful of software development teams, but as the situation scales up to tens or hundreds of semi-autonomous groups, formal coordination is needed to ensure that local decisions feed into positive holistic outcomes.

The experiences of businesses like these teach us that Agile does, indeed, have valuable applications well beyond explicitly software-development focused areas of work

It's an issue which will inherently become more known as Agile flows out beyond its IT wellspring and more different kinds of work are called on to feed into an aligned strategy. For Société Général and Fidelity Investment, along with an increasing number of other organizations, the solution was to introduce an architecture standard to make it possible to harmonize different streams of work. The Open Group Open Agile Architecture™ (O-AA) Standard is tailored to the demands of enterprises which need to support Agile at scale, providing toolkits and frameworks to guide organizations in enabling agility across the business without creating silos or losing sight of the wider business environment.

Moving forward, the next wave of Agile headlines might be all about how enterprises are making it part of the fabric of their business, not just something practiced by individual teams.

Focus on Data Centre Design & Build

By DCA CEO, Steve Hone

AS THE Trade Association to the Data This month we focus on various aspects of Data Centre design & construction.

The DCA are considering introducing a new group that will focus on the challenges facing data centre construction both for investors and those organisations tasked with delivering the service. This will be reliant on the level of interest we receive to setup this working group so please contact The DCA if this would be of interest to you (contact details are below).

The purpose of the group is yet to be fully defined, but its broad objectives will focus on removing barriers, identifying best practice, and increasing consumer awareness.

Although this is not an exhaustive list, the scope of this group could include key areas such as:

- Carbon assessments and embedded carbon energy reuse
- Sustainability and technology reuse
- Development planning and risk assessment
- Design Management
- Prefabrication
- Standardisation
- Speed of Construction/delivery and removal of barriers
- Essential utility supplies water, power, comms
- Energy shortages and grid capacity
- Supply chain contracts and SLAs
- Planning and Building Regulation

- Phased construction and dealing with live halls
- Managing the changing needs of consumers
- Skilled labour shortage
- Investment and DC financing
- Insurance and Legal considerations
- Ever changing regulatory pressures
- New disruptive technologies

Many of the suggestions above also feed into other Special Interest Groups we have set up, cross collaboration between groups is openly encouraged.

The DCA currently facilitates various Special Interest or Working Groups and DCA members are welcome to join any of the groups and contribute, to find out more here: https://dca-global.org/groups

If you or your organisation are interested in being part of the Data Centre Design and Construction Special Interest Group please contact Steve Hone: steveh@dca-global.org or call 0845 873 4587.

Digitising the Design and Build of Data Centres

By Steven Carlini, Vice President, Innovation and Data Centre, Schneider Electric

DIGITISING the design and build of data centres

Steven Carlini, Vice President, Innovation and Data Centre, Schneider Electric

Data centres have become the very heart of the digital economy, and critical to our ever more digitised way of life.

As we adapt to a new and hybrid world, greater innovation will be necessary to help overcome many of the remaining challenges, including the need for increased sustainability, more efficient use of energy, and for our industry to meet accelerated demands for capacity.

Let's take a closer look at five trends that are influencing the direction of data centres.

Digital design tools speed development

I expect to see greater innovation in the digitisation of data centre design and build. One of the top challenges customers are experiencing is the need to meet demands for new data centre capacity. To help address this challenge, new software tools are emerging that speed up the design and construction of data centres.

Schneider Electric's partner ETAP produces software (essentially a digital twins tool) that allows designers to model the electrical powertrain for availability, efficiency, and sustainability. Another company, in which Schneider Electric has a stake, is RIB, which develops construction management software.

Traditional computer-aided design (CAD) platforms have long allowed users to design the layout of a facility, however, the use of ETAP's software allows detailed modelling of the powertrain while RIB's enables time and cost modelling.

Although CAD tools have been familiar for many years, the ability to model the powertrain is new. End-users can now choose or substitute components and subsystems based on their environmental impact or energy efficiency - evaluating the effects on technical performance and pricing via digital twins before committing to physical prototypes.

The 6G effect

Fifth generation networks have been expected to make an impact for some time, but the fast millimetre wave 5G variant has been slow to materialise.

5G is, however, beginning to make an impact in open spaces with few physical barriers such as stadiums, airports, and shipyards. The problem remains that a killer application to drive the need for mass adoption has yet to materialise.

An exciting prospect is 6G networks, which could offer life and experience changing functionality. 6G operates at THz frequencies and has access speeds of 1Tbps, which will deliver near 'air latency'. Whereas high band 5G hits speeds around 500Mbps, with air latency aimed at 8-12ms. Potential use cases for 6G include embedded technology for controlling artificial limbs (prosthetics) through wireless Brain-Computer Interactions (BCI), which is an incredible prospect! In the 6G world, people could interact with their environment and other people using devices that could be held, worn, or implanted.

6G networks also have the potential to eliminate traditional base station and antenna networks because their high frequencies need a ubiquitous mesh network where everything around you has an antenna function. In theory everything that powers up will have a built in antenna function and become part of this new 'antenna free' network. While the network architecture may change with 6G, the computing capacity will need to grow, so placement at the edge will become even more crucial.

Energy concerns at the edge

Adoption of edge infrastructure will also continue to grow. However, energy efficiency will become a critical factor, with customers demanding that edge deployments match the capabilities of larger data centres in terms of resilience, efficiency, and sustainability. Edge deployments may be smaller than traditional facilities, but the scale and volume at which the infrastructure is likely to be deployed demands its environmental impact be minimised.

Building a sustainable edge at scale requires greater attention when selecting components, during the design and deployment stages, and use of comprehensive management systems to drive operational efficiency. Cooling will remain an essential part of the efficiency requirements, but the challenges presented by edge deployments, especially those in unmanned environments, will require innovative approaches in terms of technology and topology.

Air cooling is often unsuitable for edge deployments, which are frequently located in urbanised and harsh locations where dust and other contaminants abound. Blowing such material around an unmanned or remote edge data centre is far from ideal, and even if filters were attached, the task of frequent replacement and servicing remains a key challenge – especially where cost and circularity are concerned.

With sealed and unmanned edge data centres, therefore, liquid cooling will be required, although it is not yet clear what sort of topology will be best suited. As such, new liquid cooled architectures may emerge for the edge at scale. Whether that involves direct-to-chip liquid cooling or chassis-based immersive cooling is yet to be seen.

Standardised metrics for sustainability

The circular economy - the ability to reduce, reuse, and recycle technologies deployed at the edge - will be an important consideration in 2022 and beyond. However, another area growing in importance is the need for standardised sustainability metrics. Today, there are a plethora of metrics from which to choose, with data centre operators each reporting their own preferred measurements. However, I believe there is a need to measure sustainable progress in a consistent and organised way.

According to the Uptime Institute, IT and Power consumption, and Power Usage Effectiveness (PUE) remain the top sustainability metrics tracked across the industry. While PUE has long been an excellent marker of efficiency, we must also agree on metrics for the other categories of environmental sustainability – greenhouse gas emissions, water use, waste, and biodiversity.

Going forward, I believe sustainability metrics within the industry must evolve and become more standardised. This effort can leverage business processes, like GAAP balance sheets and income statements, to provide a ledger where each company can state the results using established rules and units of measurement.

An approach such as this ensures comprehensive reporting that is universally understood and provides a baseline to measure success. Further, it makes it possible to compare sustainability results with other companies.

At Schneider Electric, we know that not all companies are at the same stage of their sustainability journey, which is why we recommend a framework for Beginning, Advanced, and Leading. Beginning companies will report on energy use, Greenhouse Gas Emissions (GHG), and water utilisation. The 11 metrics for this level are a mix of measured values like GHG emissions in mtCO2e and ratios like Carbon usage effectiveness (CUE) in mtCO2e/kWh. 'Advanced' metrics bring in the 'waste' category and 'Leading' metrics will include a category for land and biodiversity.

Data centre functions become services

Data Centre as a Service (DCaaS) offerings are beginning to gain popularity. The trend is enabled by standardising power, cooling, IT and storage in data centres to offer the same user experience and data access from everywhere. Companies like Microsoft and Amazon have already started offering such services with their Azure and Outposts initiatives, extending versions of their cloud architecture into the edge environment where customers can pay a monthly service fee for their capacity.

Many traditional IT companies such as Dell and HPE have positioned themselves as IT advisors to help companies design and run business application or workloads in the cloud (consulting services, engineering, integration and management), rather than as IT hardware and software suppliers, so one might predict that DCaaS will continue to gain traction.

Overall, I believe data centre capacity will continue to grow at both the core and edge driven by digital acceleration and enabled by high capacity networking 4/5/6G and WiFi 6. Model based software will be leveraged to bring efficient, resilient, and sustainable data centre capacity online faster, which is great timing, as we are at the precipice of edge being deployed at scale.

Mitigating the Risk to Power Distribution Units

By Steven Bettson, EM Sales Manager, IEC Lock, Scolmore Group

A MARKET SURVEY conducted by IMARC Group has projected that the global data centre server market will reach $67.2bn by 2027, representing a CAGR of around 5.06% during 2022-2027.

IMARC states that the continuous transfer of data from private servers to cloud-based solutions is currently driving the growth of data centre servers in various industries across the globe.
Most consumers are now planning to increase the use of private and public cloud in the coming years. Moreover, various consumers are now transferring data across public cloud and other commercial facilities such as colocation sites.

Other factors elevating the growth of the data centre server market include increasing usage of unique client-centric solutions, enhanced security management, and technological innovations – Source IMARC Group Report.

All of these developments mean more data flowing across the internet and through data centres and provides more opportunities for business to use technology to grow revenue and improve business performance.
This growth means there are ever increasing risks, such as: business disruption, lost revenue, and damage to reputation, all through downtime.

According to a 2021 survey by Uptime Institute, 62% of outages that respondents classified as significant, serious or severe cost more than $100,000 (an increase from 56% in 2020), while 15% of these outages cost over $1 million. On-site power remains the most common cause of outages, and most downtime incidents are preventable. As with previous years, on-site power was the most common cause of outages in 2021, followed by cooling failures, software or IT system errors and network issues.

This information means that proactive measures should be taken when looking to mitigate risk. One effective way is to look at the data centre power infrastructure, more specifically the connection of servers and power distribution units (PDUs).

A single human error can escalate into a large-scale failure. The results from the Uptime Institute 2021 survey show that 79% of data centre outages involve human error, and that three out of four owners and operators believe their most recent outage was preventable, a 16% increase over 2019.

How can we mitigate risk to downtime though power distribution units?

Plug Retention

It is not uncommon for plugs to be removed, either accidentally or by vibrations. One way to reduce this risk from occurring is the introduction of some form of plug retention, of which there are several options available.

The table below shows some examples and highlights the pros and cons:

Colour Coding

1. Allows the identification of corresponding outlets to inlets. Reducing time spent hunting the power source and miss-identification. Also makes it easier for working in the rack
2. Easily identify unused power feeds
3. Variant voltage identification

	Pros	Cons
External Clip System	• Secure connection • Improved reliability	• Bulky • Dimensional body differences, reduced options • Additional costs • Time consuming installation • Impact on airflow
Cable tray	• Secure connection • Improved reliability	• Bulky • Additional costs • Time consuming installation • Impact on airflow
Sleeves	• Budget solution • Minimal impact on airflow	• Very limited retention strength • Reduction in engagement can cause arching
Propriety solution	• Secure connection • Improved reliability • No impact on airflow, reduces waste space • No impact on installation time	• Propriety solution, reduced options • High premium cost
Integrated IEC Lock Mechanism	• Secure connection • Improved reliability • No impact on airflow, reduces waste space • No impact on installation time • No propriety solution required • Greater availability of options • Reduced total cost ownership	• Limited premium cost

Hot-swapping

Hot-swapping PDUs allows for maintenance to be carried out without the need to down power any critical equipment. By using dual input power cables from separate power sources, you can manually switch the load from one source to another. This allows you to carry essential, cost-saving maintenance (such as UPS systems) without creating downtime.

Conclusion

As demand for data grows, there is a need for devices to stay connected. By taking the appropriate steps, risks can be mitigated and downtime can be reduced.

The reduced risk to the data centre facility may also help prevent potential additional physical damage to servers and financial damage to businesses. Small steps to eradicate potential issues can add up to larger benefits, such as increased reputation and brand recognition.

This can also lead to positive financial impacts such as a reduction in lost revenue and insurance premiums.

Sources:
IMARC Report: Data Center Server Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2022-2027

Uptime Institute 11th Annual Global Data Centre Report: https://uptimeinstitute.com/data-center-outages-are-common-costly-and-preventable

DC Design & Build

By Matt Edgley, Director, Teledata

WHEN IT COMES TO building a data centre facility, there are a whole host of questions and considerations to take into account. The first of which is - should you start from the ground up with a new build, or refit an existing data centre building? And of course, there are pros and cons to each of these options.

Generally speaking existing data centres will already have power availability, planning permissions, fibre networks and client bases in place.

These elements should never be underestimated as they are expensive and arduous to achieve in a new build, and reaching the levels required for a new build to be a success, can be a very lengthy process.

However, when refitting an existing data centre the chances are that the building was constructed several decades ago and therefore was not purpose built to accommodate today's technology so far as size, placement and ideal space configuration is concerned. Existing facilities can also be far less efficient, given their age - a really important consideration in today's world.

If the client base is already there, then great, that's a tick in the box, but be aware that you will have to conduct the refit around the existing clients and contracts that are already in place. Given that most data centre slas will commit to providing n+1 redundancy, a rolling replacement program will have to be put in place because you won't be able to do it all in one hit – temporary generators, chillers, power elements etc. May need to be hired and installed during the various refit stages to ensure that service can continue to be delivered to the clients as per their contracts.

So if you have the choice between refitting an existing data centre site and building a new facility from scratch, then the logistical side of things is always far

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more straightforward with a new build. No clients to work around and you won't be bound by the limitations of an older site that was not designed specifically for today's technology and infrastructure – square pegs in rectangular holes. Existing data centre refits can be done, but you will be working to solve a range of problems and challenges along the way – not to mention the strip out costs.

Efficiency and sustainability is going to become more and more important as the world changes and a new build can be designed to maximise the chances of achieving these goals.

Existing sites can get there slowly, but never to the extent of a facility that has been specifically designed to meet certain energy efficiency goals. It will never be quite as slick as a new build. The chances are that when existing data centre facilities were under construction, climate change, sustainability and net zero were nothing more than a small and distant notion - if that.

At teledata, we have done both. We've built brand new facilities and we've worked to improve existing facilities with a client base in place. It's much simpler to build something fresh - assuming you know what is going into it! But often, you don't. You build it and then you find the clients, and they will require a whole host of build variations which you then have to shoehorn into your new building. From this perspective, if you don't know exactly which customers will be filling the site or what their configurations are going to be, then it makes sense to retrofit the facility over a period of months as and when demand is there. Some hard work required from your sales and marketing teams here to ensure you hit that return on investment sooner rather than later!

Don't be fooled into thinking new facilities always have to require bigger budgets either – with the millions you are likely investing into the infrastructure within, often the physical building requires less expenditure than the infrastructure investment – but of course the size of the facility will be a large factor in that equation.

And if you do embark on a new build - and this is absolutely imperative - check what's there before you start. Is there available power and are there fibre networks nearby? Check what's under the ground, before you plan above ground.

Like most dilemmas of this type, the question of whether you should build a data centre from scratch or refit an existing facility is a question to which there is no wrong answer, however there are the factors that will always need to be considered in order to arrive at the right decision to suit your business strategy.