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Modern enterprise IT - from the edge to the core to the cloud

ISSUE III 2021

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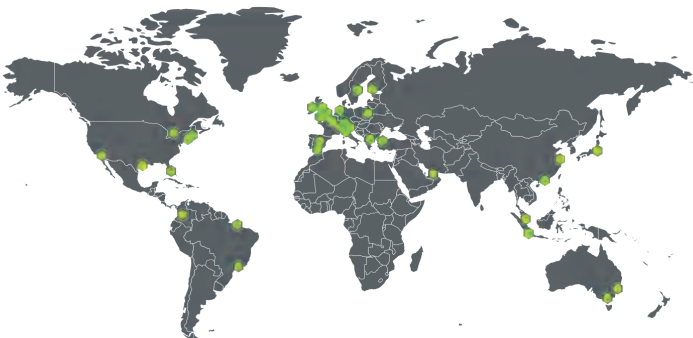




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# Editor's View

By Phil Alsop



## Lies, damn lies and...surveys

MANY YEARS AGO, Volkswagen advertised a new vehicle which, if memory serves, could do 800 miles on one tankful of fuel. Now, even though closer inspection of this claim revealed the 'laboratory-like' conditions under which this amazing feat had been achieved, all these years later, I can still remember the claim, and it still impresses me.

At a time when gaslighting, at least in the world of politics, appears to be the new normal, I sincerely hope that the business world does not follow suit. The reason I bring this subject up? Well, much of the news I receive is in the form of survey-based research. And the headline findings of many such news releases are arresting to put it mildly. And many of them contradict one another. So, one report will 'reveal' that, say, 90 percent of all businesses are already well on their way to digital transformation. Another might suggest that digital transformation projects are absent from a similar number of organisations. And then there will be the reports that either suggest digital transformation projects are, or are not, meeting expectations.

Look closely, and there's often a correlation between the research findings and the company which has carried out and published them. If your business is persuading everyone that the flexible, hybrid working model is the future, you won't be publishing survey results that suggest everyone wants to go back



to the office. Similarly, if your technology solution requires everyone to be in the office, you'll make sure to publish statistics that downplay the working from home trend.

All of which leads me to conclude that research surveys are far from worthless – indeed, many do uncover some fascinating trends and provide much food for thought; but they do come with a slight warning: be aware of where they come from. Just as the daily newspapers push their own right/left (not much interest in the middle ground these days!) political views with carefully crafted articles, so vendors are not immune from lobbying potential customers with carefully selected, perhaps incomplete, data sets. So, read as many surveys as you can, and you should end up with a balanced view!

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Digitalisation World is published 10 times a year on a controlled circulation basis in Europe, Middle East and Africa only. Subscription rates on request. All information herein is believed to be correct at time of going to press. The publisher does not accept responsibility for any errors and omissions. The views expressed in this publication are not necessarily those of the publisher. Every effort has been made to obtain copyright permission for the material contained in this publication. Angel Business Communications Ltd will be happy to acknowledge any copyright oversights in a subsequent issue of the publication. Angel Business Communications Ltd. © Copyright 2021. All rights reserved. Contents may not be reproduced in whole or part without the written consent of the publishers. The paper used within this magazine is produced by chain of custody certified manufacturers, guaranteeing sustainable sourcing. ISSN 2396-9016 (Online)



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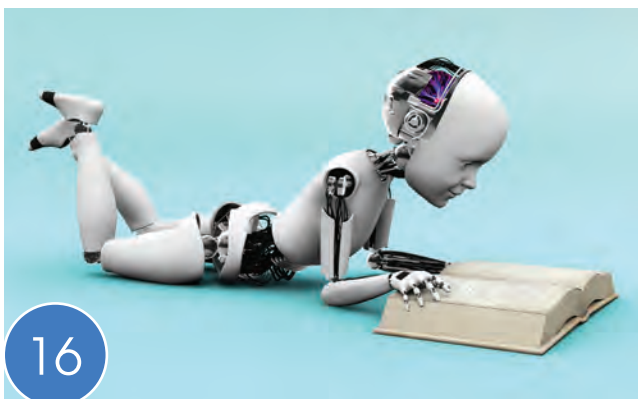
### Don't pay the ransom: How to recover from a ransomware attack

Everyone is petrified of ransomware attacks right now, and with good reason. The attacks have penetrated every sector, from academia to local government organizations, to manufacturing, healthcare, high tech and every other sector.



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# Flexible work is here to stay, but trust is an issue

RESEARCH conducted on behalf of LogMeln shows that flexible work is here to stay, but businesses need to reexamine their structure, culture, policies and technology or risk employees finding opportunities elsewhere.

Remote work, rapidly accelerated by the pandemic, is now essential to business success and worker productivity. However, as parts of the world open up and hybrid work becomes a reality, research shows that companies must invest in establishing flexible work policies and programs, and address a sizeable disconnect in trust between decision makers and employees, according to a Forrester study commissioned by LogMeln, Inc..

Remote work is at a crossroads. While necessitated by the pandemic, workers have reaped the benefits of greater flexibility that they are now not willing to go without. The study shows that nearly three-quarters of workers said the pandemic made them want to work more remotely in the future, with 83 percent of employees saying that they are more likely to stay at their company if they are allowed to work flexibly. 60 percent of respondents said they were even willing to accept less pay in a trade for flexibility. However, many decision makers and leaders are still taking an antiquated look at remote work rather than seeing it as the competitive differentiator it is. While 56 percent of employees say they are more productive when working remotely and 61 percent say they can get more done in an 8-hour workday when remote, only 5 percent of decision makers surveyed believe remote workers are more productive, and 70 percent said employees in the office are more trustworthy.

So, while companies must take this next shift toward hybrid or digital-first work as an opportunity to mature the remote work tools and programs hastily put in place one year ago, the study conducted using two online surveys – one of 582 remote work decision-makers, such as those leading human resource or IT departments, and a second survey of 427 employees – each at global organisations of 10-2,500 employees, shows they may not be. The results show that business

leaders must move away from outdated remote work stigmas and embrace the new way employees want to work. Shifting to an “anywhere” work program is not a simple task, but it is critical for business success. In fact, the findings revealed that:

## Employee happiness and mental health need to be prioritised:

- 62 percent of employees say they are happier when working remotely
- Mental health support is a particular area of need – only 44 percent of employees thought their organisation was effective at supporting mental health needs when working remotely. However, the data showed that employees at organisations that had implemented a mental health support program were more satisfied with their work, had more energy at their job, and were more likely to remain at their current organisation for a long time
- Employees in the high remote work satisfaction group, compared to their counterparts in the low satisfaction group, were more likely to feel good about their company (89 percent vs 52 percent), feel that their job inspires them (90 percent vs 57 percent), and be satisfied with their work overall (95 percent vs 65 percent)

## The correct policies and documentation must be created and communicated:

- Half of the decision-makers surveyed said that their organisations have a formalised flexible work program in place, however less than one percent meet all the specifications of Forrester’s tenets of a flexible work program
- Only 21 percent of employees say they can choose which work style works best for them
- Only 38 percent of employees say their organisation has documentation related to work styles and only



18 percent have read it. Employees who know the criteria are 2X more likely to experience remote work satisfaction

## The right technology enables seamless and secure employee collaboration:

- Technology decisions can’t be one-sided or driven primarily by cost-saving. 82 percent of decision makers say the ideal way to make a purchase decision is with equal input from HR and IT, however, only 51 percent of organisations are making technology decisions this way
- 81 percent of decision-makers say they are effective in ensuring personal privacy among remote and in-office workers, yet only 58 percent of employees are satisfied with their employers in this area
- IT decision-makers seem to see this gap as well. While 76 percent believe a strong remote work technology suite would improve compliance, only 58 percent believe their suite is doing so today, showing there is clearly room for improvement

Organisations should focus on what Forrester defines as the four key pillars of remote work: Structure, Culture, Technology and Compliance, in order to successfully implement flexible working and attract and retain productive, happy and diverse talent. The research suggests that embracing anywhere-work and focusing on these pillars can help businesses achieve high remote work maturity and ultimately improve employee engagement and satisfaction, strengthen productivity levels, achieve better customer experience, and reduce costs, which can even lead to increased revenue.

# Remote work is sending IT security budgets spiralling out of control

THE NEED for organisations to better manage and secure the devices and applications that employees are using to access corporate resources in the new Everywhere Workplace is a primary budget growth driver.

Ivanti has published the results of a survey, which revealed that IT security budgets are spiralling out of control as organisations adapt to the Everywhere Workplace. Almost all CISOs (92%) highlighted the need to deploy additional security measures to better enable and secure employees as they work from anywhere as the primary budget growth driver. Four in five (80%) CISOs also pinpointed the need to replace passwords with more secure forms of authentication.

The study, which polled 400 CISOs across EMEA, found that the average IT security budget last year was over €64 million, and 81% expect this to increase over the next 12 months. When pressed on the specific software solutions they plan to invest in during the next year, unified endpoint management (UEM) and biometric authentication solutions came out on top. Despite CISOs claiming that over two-fifths (41%) of their overall security budget was spent on UEM software in the last year, four in five (80%) said they expect investment in specialised UEM software to increase over the next year. This increase in investment is primarily to manage and secure the mass influx of devices attempting to access corporate resources

as employees work from anywhere. Seven in ten (70%) CISOs claimed that their organization's reliance on biometric authentication to enable remote access to business data would increase, with a quarter (24%) saying it would significantly increase. The heightened focus on biometric authentication is likely due to the significant growth in phishing attacks. According to Verizon's 2020 Data Breach Investigations Report, 22% of breaches in 2019 involved phishing, but 75% of organisations around the world experienced some kind of phishing attack in 2020. The top type of data compromised in these phishing attacks is credentials, including passwords.

By adopting mobile device authentication with biometric-based access, organizations can eliminate the primary point of compromise in phishing attacks. When asked how their investment in biometric authentication solutions would change compared to last year, 70% of respondents stated their investment would increase, while 22% said it would greatly increase.

Nigel Seddon, VP EMEA West, Ivanti said: "The emergence of the Everywhere Workplace has led to an explosion of remote devices attempting to gain access to corporate resources. This new distributed work landscape has created a huge headache for CISOs worldwide as the influx of devices has provided cybercriminals with multiple new vectors to try and exploit. CISOs need to ensure they have full



visibility into all devices trying to access their company network and then manage and secure those devices to the best of their ability. As a result, IT security budgets are spiralling out of control. To better manage IT and software spending, CISOs should consider implementing spend intelligence technology.

Spend intelligence provides insight into software landscapes and application spend across all IT environments improving operational speed, asset visibility, and can cut costs. Spend intelligence, coupled with a zero trust approach to secure digital assets from cloud to edge by verifying each asset and transaction ahead of permitting access alongside biometric authentication, will create a stronger security standard, improve the user experience, control IT security spend, and help remove pressure from help desks optimising IT environments."

## AI and Natural Language Processing

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# Integration threaten digital transformation

ONLY 37% of IT teams were able to complete all the projects asked of them last year, and are asked to complete 30% more projects this year.

MuleSoft reports that integration challenges continue to be a major roadblock for digital transformation initiatives. MuleSoft's 2021 Connectivity Benchmark Report found that IT teams are spending over a third of their time on integration projects, and custom integrations are costing large enterprises on average \$3.5 million\* each in annual labor. As digital initiatives accelerate, integration has emerged as a critical factor in the success and speed of transformation across industries.

"Organizations across industries have experienced a rapid shift toward interacting with customers and employees through digital channels," said Brent Hayward, CEO, MuleSoft. "Although most organizations are prioritizing digital initiatives, such as launching an e-commerce platform or increasing worker productivity, the research shows that data silos continue to hinder their capabilities to deliver on these key initiatives. Companies that empower their IT and business teams to easily integrate apps and data will be able to unlock the full capacity within their organization to drive innovation at scale and gain competitive edge." Based on a global survey of 800 CIOs and IT decision makers, the 2021 Connectivity Benchmark Report also highlights new challenges and opportunities for businesses as they navigate a digital-first world:

Increased demands pressuring businesses to deliver digital faster. The last 12 months have seen a profound shift in the way people work and how organizations operate. Employees and customers alike want seamless digital experiences and expect organizations to deliver on these experiences, faster.

○ **New initiatives to enable success from anywhere:** This past year, organizations relied on IT to support a rapid shift to remote working and the need for increased productivity and efficiency. Migrating apps to the cloud (51%), enabling remote working (48%) and automating

business processes (47%) were cited as the key initiatives that organizations are focusing on for 2021. They were closely followed by using IT to create a safe working environment, modernizing legacy systems, and integrating SaaS apps (each 45%).

- **When demand surpasses supply:** Demands on IT have increased massively. Organizations asked IT to deliver on average 30% more projects this year, a number that is constantly growing year-over-year (315 projects in 2021 compared to 242 projects in 2020). Only 37% of respondents say they were able to deliver all IT projects last year (compared to 41% last year).
- **Go digital or get left behind:** More than three-quarters (77%) of organizations say a failure to complete digital transformation initiatives will impact revenues over the next year.
- **The cost of "keeping the lights on":** IT is spending over two-thirds of their time (68%) on running the business, leaving little time for innovation and development of new projects.

## Integration challenges hold businesses back

Data silos remain a challenge for 90% of organizations (unchanged since last year's report). And almost 9 in 10 respondents point to integration challenges as a blocker to delivering on digital transformation. If this trend continues, it risks stalling key business initiatives for many organizations. Integration will continue to be a major area of focus as organizations look to connect and derive more value from their new and existing apps and data.

- So many applications, so little integration: On average, organizations use 843 individual applications. However, only 29% of these applications are integrated (a slight increase from 28% in the previous year), highlighting huge potential for organizations to drive change and deliver more connected experiences.

○ **Connected customer experiences remain a challenge to achieve:** Only 18% of organizations integrate end-user experiences across all channels, with almost half (48%) stating they have found it difficult to do so. However, for those organizations that have successfully



integrated end-user experiences, increased customer engagement (53%), business transformation (53%) and innovation (50%) have been the major benefits.

○ **Data-related roles have the biggest integration needs:** Outside of IT, data science (47%), business analyst (42%) and finance (42%) are the roles with the biggest integration needs. This highlights how business users and initiatives with a data focus are prime candidates for integration support.

## Empowering enterprise-wide innovation

Organizations recognize the strategic importance of integration to help achieve revenue goals and deliver connected experiences faster. To lessen the integration burden on IT and drive innovation and productivity, organizations are looking to drive reuse of existing integrations and empower the wider business to connect apps and data.

○ **Integration and API strategy is being led from the top:** More than two-thirds (69%) of organizations say they have a top-down approach to integration and API strategy. This is an increase from 63% last year, highlighting the growing importance of integration to achieving business goals.

○ **API reuse is a massive area of opportunity:** While most organizations (96%, up from 80% last year) are using APIs to build integrations and deliver new projects, best practices around API reuse remain an area of improvement. The reuse of code, APIs, and best practice templates has plateaued over the last two years. Organizations have on average 42% of such internal assets and components available for reuse. This is a massive area of opportunity as organizations leveraging APIs experience increased productivity (59%), self-service (48%) and increased innovation (46%).



# Riding the remote revolution

NEW LENOVO STUDY shows how you need to forget the office you once knew. One year after the global remote work revolution, the shift to work from home (WFH) and work from anywhere (WFA) is already resulting in profound effects on businesses' digital transformation as well as data security concerns. According to Lenovo's new Future of Work and Digital Transformation study, a vast majority of businesses (83 percent) expect to work remote at least half the time, whereas 60 percent of employees not only agree but are happy to do so.

These new findings are part of a global survey of more than 8,000 employees and IT decision-makers (ITDMs) across 14 markets from companies of all sizes on the impact of remote work, including job satisfaction, technology challenges and solutions conducted in early 2021.

Among the key insights is that workers have hit their stride navigating their new WFH lives. Most employees (83 percent) want a hybrid work model post-COVID, which businesses say are more than happy to accommodate because they know it's a way to drive employee engagement and attract new talent. Enabling remote work has meant a change in digital adoption, with an increased usage of personal devices for work; wider adoption of collaboration cloud and software; and a heightened focus on data security among IT functions across businesses of all sizes. The study also shows that trusted technology providers will need to play a key role in developing future digital strategies, while Device-as-a-Service (DaaS) is gaining traction among larger businesses to make it easier to provide employees with up-to-date technology devices and as a way to free up precious resources for more strategic priorities. "With businesses and their employees both optimistic about a future in hybrid work and remote collaboration, today's IT departments are faced with the rising resource costs of data security and compliance," said Gianfranco Lanci, President and Chief Operating Officer, Lenovo. "More than ever, businesses need reliable technology partners to fully manage their hardware, software and services to maximize value and boost security."

## Employees overcome remote work burnout and start embracing hybrid work

Contrary to initial concerns that remote work would lead to a rise in employee burnout within the first year of the pandemic, the Lenovo study showed that most workers have adapted remarkably well to WFH and WFA – 70 percent say that the flexibility leaves them more satisfied with their job overall. About 60 percent of surveyed employees now prefer remote work at least half the time, while over one-third want to WFH/WFA most or all of the time. This sentiment increases among workers in larger companies, with approximately two-thirds of those respondents in large companies preferring to work remote at least half the time. It's not unusual, particularly in large organizations, to be working with teams across continents and time zones, which make the physical location of an office less relevant for effective collaboration.

Employees nevertheless cite a number of challenges. Chief among them are slow or unstable Internet connections at home. Additionally, about half the employees in medium-sized businesses (50 percent) and small or very small businesses (42 percent) report delays or challenges in getting any kind of IT support when needed. Businesses may want to consider always-connected PCs with integrated LTE or 5G as a way to offer employees freedom from reliance on the home Wi-Fi network alone and to provide higher security. Smarter devices, services and software solutions that can self-diagnose and pre-empt IT issues can also help small businesses that don't typically have a robust IT support team.

With 90 percent of workers surveyed still wanting the option to go into the office to connect with colleagues and 56 percent saying they are more productive at home, it's clear that the role of the office will be changing. The office is no longer the place where work gets done; it's evolving into a place where one can connect and collaborate while leaving deep work for focused time at home.

## The blurring lines of workers' personal and professional digital devices show how we work

Remote work has also led to a new suite

of digital hardware, software and services solutions. One's collection of devices and technology for work has become increasingly personal and collaborative. Employees are increasingly leaning into the use of their personal devices such as laptops, smartphones and tablets for work, with 79 percent of employee respondents saying they're now using their smartphones for work-related tasks such as voice and video calls, email and work chat. When it comes to PCs, technologies such as AI-based noise cancellation during calls, webcam privacy shutter for when the camera's not in use, eye care for displays' natural low blue light and better device cooling all rank as the top smart device features across employees of all business sizes. However, workers aren't taking enough advantage of company programs to finance their technology purchases.

While 80 percent of IT departments reported they are willing to cover purchases of work-related equipment, sometimes as little as 22 percent of employees have used these policies. Unsurprisingly, collaboration cloud and software tools for needs like videocalls and simultaneous document collaboration are now essential for a whopping 97 percent of employees. Almost two-thirds of respondents also say that these tools help improve productivity and efficiency.

## Innovation first, security always – There's no digital transformation without digital security and services

With the increasing use of remotely-connected cloud and collaboration tools – where even smart home devices may increase risk to company data as employees log on from home – data security has understandably jumped to the forefront of IT considerations and is now the number one priority for digital transformation.

This concern is putting a growing strain on IT department resources. ITDMs feel more prepared for another pandemic than against data threats. Data security and compliance are now siphoning the most time and money from IT functions, while most large and medium-sized companies already subscribe to an IT security service.

# Remote working one year on: three-quarters of employees feel worse, but hybrid working here to stay

SURVEY OF REMOTE EMPLOYEES also reveals a generational divide in working conditions, with almost half of younger employees working in shared spaces at home.

Remote workers are still struggling with distracting working environments, stress and an 'always-on' culture after a year of working from home, new research has revealed. Egress' Remote working: one year on report found that three-quarters of remote workers reported feeling worse as a result of long-term working from home, with almost over one-third (39%) feeling more stressed. The research also revealed a significant generational divide, with 66% of millennial and generation Z workers reporting feeling either tired, stressed or under more pressure at work, compared with 34% of baby boomer and Gen-X employees.

The study, independently conducted by Arlington Research on behalf of Egress, interviewed 500 IT leaders and 3,000 remote-working employees in the US and UK across vertical sectors covering financial services, healthcare and legal. Key insights include:

- Three-quarters (73%) of respondents report feeling worse overall as a result of long-term remote working
- 66% of millennial and generation Z remote workers feel more tired, stressed or under more pressure, compared with only 34% of baby boomer and generation X employees
- Almost half (48%) of millennial and generation Z remote workers are still working from a shared space, compared with 33% of baby boomers and generation X
- Employees' communication habits have changed, with 85% of employees sending more emails and 77% using video conferencing tools more frequently than before the pandemic
- 43% of respondents were full-time office-based before the pandemic, and just 28% plan to return full-time once the pandemic is over
- 68% of workers plan for some degree of flexibility, with just 5% of



current remote workers planning to stay permanently remote once their office reopens

After a year of working from home, many employees are still putting up with the same makeshift offices they set up in March 2020. Almost half (48%) of younger workers reported working in a shared space, compared with one-third of their baby boomer and generation X counterparts. Overall, just 28% of remote workers have solo access to a home office.

Remote working has inevitably changed how employees communicate, with increased reliance on digital tools. Email is the preferred channel, with 85% of employees reporting that they're sending more of them than when they were based in the office. The pandemic has also seen the rise of video conferencing, with 77% of employees indicating that they're using tools like Zoom more now too. While 43% of respondents were based in the office full-time before the pandemic, there's been a clear shift in attitudes towards flexible working. Just 28% of respondents are currently planning to return to the office full-time once that option becomes available. Hybrid working was the most popular choice,

with 68% of remote workers indicating that they'd like a mixture of office and remote working. Just 5% of remote workers plan to work from home full-time in the future. When it comes to returning full-time, there's a clear generational divide, with 35% of millennials and generation Z employees planning to return full-time, compared with just 22% of their baby boomer and generation X counterparts.

Richard Mortimer, Chief People Officer at Egress, comments "For those who have been working from home for the last year, there have been significant changes to a typical working day. For many remote workers these findings will contain lots of familiar points – many have experienced increased work pressures, stress and distractions during this period, and for younger employees in particular, challenges around shared workspaces can be particularly difficult.

While for some employees, remote working has been a welcome break from the office and the daily commute, for others it has been a different story. With many organisations now contemplating what the future looks like in terms of returning to the office, it's important that all employees' voices are heard."



# The Hopeful CIO?

A STUDY from Lemongrass finds that enterprise IT leaders are aggressively moving their legacy business systems to the cloud despite various challenges. Lemongrass, a leader in helping enterprises migrate and run their SAP systems on Amazon Web Services (AWS), has completed a study on the goals and challenges of enterprise IT leaders who have moved legacy systems onto cloud infrastructure.

A key takeaway from the survey, which was completed in January by 150+ IT Directors or above in companies with IT budgets of at least \$1 million annually, is that enterprises are anxious to achieve the many business, technical and financial benefits of moving legacy systems to the cloud. However, the road to migrating and running legacy systems on cloud infrastructure can be rough for companies that fail to plan ahead.

According to a 2019 report from ResearchAndMarket.com, the global application transformation market is expected to grow from \$9.7 billion in 2019 to \$16.8 billion by 2024. Per the report, the market is being driven by the need companies have for “a robust and agile environment to increase scalability and efficiency in the existing business landscape, (the) high maintenance cost of existing legacy applications and leveraging emerging technologies and increasing efficiencies of existing applications.”

The ResearchAndMarkets.com report aligns with the findings of Lemongrass’s study. Following are the primary themes and data points of the Lemongrass 2021 Legacy-to-Cloud survey:

## Data Access, Security & Cost Savings Motivate Cloud Migrations

A combined 77% of IT leaders responding to Lemongrass’s survey said their primary motivation for migrating legacy systems to cloud infrastructure was either a desire to secure data, maintain data access or save money. Optimizing storage resources and accelerating digital transformation were other top reasons given. Meanwhile, 78% of respondents said that IT management systems were the most likely legacy applications to move to the cloud,

while 46% said security and 39% said ecommerce.

## Security, People, Process & Cost Complicate Cloud Migrations

Considering the importance of data security, it’s no surprise that security and compliance were listed by 59% of IT leaders as the top challenge facing enterprises when moving legacy systems to the cloud. Meanwhile, 43% of respondents said migrations took too long, 38% said costs were too high, and 33% said a lack of in-house skills was the top complicating factor.

Regarding cost, 69% of respondents said the typical legacy-to-cloud migration cost between \$100,000 and \$250,000, and 57% of respondents said that somewhat or very rarely do these projects come in under budget. In terms of job skills, database integration experience was cited by 21% of respondents as the top skill required for performing legacy migrations, followed by experience with the chosen cloud platform (15%), previous migration experience (12%) and testing validation (also 12%). 68% of respondents said it was very or somewhat hard to find people with these skills, and 40% said migrations took at least seven months to complete.

## Employee Training & Data Security Are the Top Operating Challenges Facing Enterprises Once Legacy Systems Have Been Migrated to Cloud Infrastructure

42% of survey respondents said that difficulty training end users was the top challenge to using legacy systems now

running on cloud infrastructure. 40% said the top challenge was that security concerns had not been adequately addressed, 34% said the cloud platforms they had chosen did not work as expected, and another 34% said the top challenge to running legacy systems in the cloud was a lack of in-house skills. Meanwhile 50% said the top skill was database management, and 48% said programming. 71% of respondents said it was hard or harder to find these people.

## Lessons Learned: Migrating & Running Legacy Systems in Cloud

The top three lessons learned when migrating legacy systems to the cloud were 1) allow for sufficient time (54%); 2) dedicate sufficient financial and people resources (52%); and 3) ensure you have the correct people/skills in-house (52%). The top three lessons learned when running legacy systems on cloud infrastructure were 1) allow for sufficient time to manage the application (53%); 2) ensure you have the correct people/skills in-house (52%); and 3) ensure you achieve your business goals (46%).

“The survey findings are very consistent with feedback we receive from our customers,” said Vince Lubsey, CTO at Lemongrass. “Enterprises are anxious to reap the benefits of moving legacy systems to the cloud. They understand there are challenges but the benefits far outweigh the obstacles. The key to success is following best practices, proper training and time management. It also helps to have the guidance of an experienced partner to create the required cloud operating model.”



# Digital optimisation still a long way away

RESEARCH also highlights a new breed of organisation, the bold and brave, who view the pandemic as a chance to take advantage of market opportunities and to scale.

One year since the onset of the pandemic, organisations globally have undergone major transformations as they seek to strengthen resilience, increase agility and deliver greater efficiencies. In the UK and Ireland, 90.0% of business and IT leaders agree COVID-19 has caused significant changes to their operating processes, while 89.0% say it has accelerated their digital transformation strategy. These are the findings from NTT and the release of its 2021 Global Managed Services Report.

Changes to operating processes, along with digital transformation acceleration have presented organisations with an opportunity to reimagine their technology strategies and how it aligns to the business. 92.4% of technology teams globally agree their overall technology strategy is aligned, either fully (49.8%) or partially (42.6%) to the organisation's business strategy needs. This highlights how IT teams have become more responsive to organisational demands. Similarly, it has pushed business stakeholders to fast-track services and solutions already held by IT, such as enabling a distributed workforce, to a far wider audience.

However, despite greater strategy alignment, some disconnect in priorities exists between the business and IT. Globally, 69.9% of operations teams believe the need for a technology strategy that drives business efficiency opportunities is crucial, yet only 48.0% of IT teams agree. Further, 69.6% of operations teams globally consider speed and agility a key component of technology strategy, in contrast to only 53.4% of IT teams.

Damian Skendrovic, Executive Vice President at NTT Ltd. comments, "The unprecedented challenges that COVID-19 has impressed upon businesses has forced the issue of business and IT alignment into the limelight. And there is still work to do

to ensure core organisational priorities are understood by all. IT is under an immense amount of pressure to deliver against present requirements, while concurrently planning for future delivery and innovation. With technology and agility front and centre of the business conversation, alignment of priorities is no longer optional, it is critical for the sustainability and resilience of the business."

## **Bold, brave and resilient**

As global organisations seek to strengthen resilience, the research highlights significant differences in approach. While some consider cost optimisation as a way of creating greater resilience, others are focused on being bold and brave. They view the pandemic as a chance to take advantage of market opportunities and to scale, with 33.8% globally pivoting technology focus to achieve this.

Interestingly, this figure rises to 41.7% if an organisation currently has at least three-quarters of their IT managed by third parties. While if an organisation has little to none of their IT managed by a third party, the percentage drops significantly to just 25.7% prepared to pivot focus.

NTT client, ISG's vision is to become the world's most dynamic construction services company, delivering places that help people and businesses thrive. To deliver on this vision, they need to be continually bold and brave.

"As we consolidate our position as the world's most dynamic construction company, we need to optimise the ICT organisation to focus on delivering new digital products and data-driven value. By working with NTT Ltd., we have full strategic control and operational visibility but can entrust the automation and operation of Microsoft Azure-based workloads to them."

"While not all organisations view disruption as an opportunity, one-third have adjusted course because they see a chance to do things better and take advantage; particularly in relation to enabling a more distributed workforce and innovative technologies," says

Skendrovic. "Bold and brave businesses are approaching resilience in a new and innovative light; and trusted technology partners are helping them achieve this." Present needs, future delivery – at speed The research also highlights how embracing emerging technologies and the ability to automate and deploy innovation at speed as key strategies underpinning the future of business success. And while, in the UK and Ireland, 87.0% of business and IT leaders agree emerging technology is crucial for their technology strategy, only two-fifths (40.0%) believe they have the technology available to meet the organisation's immediate objectives.

This brings to light the conundrum faced by many global organisations. The need to balance present needs, while also investing in technology and process modernisation to capture opportunities to scale and evolve – in short, to be bold and brave.

"Rapid change has been forced onto IT teams. And while business stakeholders expect to exercise a degree of agility in execution – IT is saddled with managing their own challenges. From managing vendor complexity, which further extends to integrating disparate systems, along with emerging technologies and legacy infrastructure; through to budget constraints and a lack of skills to keep pace with business demands," says Skendrovic.

As speed to market becomes a primary competitive differentiator, optimising digital transformation efforts is critical. Organisations who showcase the characteristics of being bold and brave are 50% more likely to optimise their digital transformation efforts and partner with managed services providers for over half of their IT support.

Reducing the mounting infrastructure administration pressure on IT teams by embracing a DevOps culture and platform automation, allows IT to optimise transformation efforts by focusing on innovation, and ultimately results in better Mean Time to Repair (MTTR) and cost-optimisation, as well as the delivery of continuous improvement across the business.



# Elsevier report shows we are on the brink of a second quantum revolution

**REPORT HIGHLIGHTS** increase in quantum computing publishing and shows all industries must prepare now for disruption.

Elsevier has published the findings of a new research trends report tracking emerging trends in quantum computing, based on research and analysis conducted in Scopus. Scopus uniquely combines a comprehensive, curated abstract and citation database with enriched data and linked scholarly content. The report discusses how quantum computing has dominated headlines in recent years – from Google's 53-qubit quantum computer "Sycamore" achieving quantum supremacy, to multibillion-dollar initiatives around the world to develop quantum technology. Quantum computing and broader quantum technologies have the potential to impact everything from cybersecurity to weather forecasting to drug development once the technology comes into fruition, and is likely to leave companies not exploring it way behind.

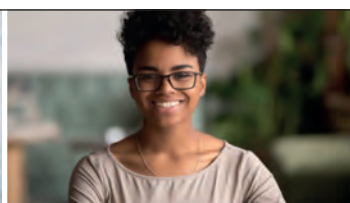
Since 1994, there has been a steady increase in quantum computing research, resulting in over 48,000 publications; from 2015 onward there has been a much steeper rate of publication.

"Quantum computing and, more generally, quantum technologies are high-risk, high-reward research. It is increasingly seen as of strategic national importance with national investments by government in the US, the European Union, China and Japan to mention a few, as well as from collaborative industry initiatives like the Pistoia Alliance Community of Interest. Early use cases may be seen in the near term in areas like optimization, financial modeling and drug development. If, or when, applications truly take off it will be much harder for firms who didn't 'get in on the ground' to understand the technology or use cases to catch up," commented Dr. Anders Karlsson, Vice President of Global Strategic Networks at Elsevier. The report also found that the 10 institutions with the highest publication

output are located in China, France, Canada, the US, the UK and Singapore. The Chinese Academy of Sciences shows particularly high productivity. The majority of author affiliations are academic and governmental research institutes. Whereas, private sector enterprises, including Nippon Telegraph and Telephone, IBM Thomas Watson Research Center, Google and Microsoft Research, appear further down the list.

The report also highlights some of the major milestones in quantum computing that have emerged in recent years, concurrent with the faster pace of research developments:

- 2012 – A group at University of Bristol factored the number 21 with Shor's algorithm.
- 2017 – D-Wave Systems announced the first sale of its D-Wave 2000Q quantum computer.
- 2020 – Google accurately simulated the binding of hydrogen chains and isomerization of diazene using Sycamore.



## DW ONLINE ROUNDTABLE

**BASED** around a hot industry topic for your company, this 60-minute recorded, moderated zoom roundtable would be a platform for debate and discussion.

**MODERATED** by an editor, this online event would include 3 speakers, with questions prepared and shared in advance.

**THIS ONLINE EVENT** would be publicised for 4 weeks pre and 4 weeks post through all our mediums and become a valuable educational asset for your company

**Contact:** [Jackie.cannon@angelbc.com](mailto:Jackie.cannon@angelbc.com)








# IT employee increase to help accelerate digital initiatives

Fifty-five percent of CIOs plan to increase their total number of full-time employees (FTEs) in IT across the course of 2021, according to a recent survey\* from Gartner, Inc. They will predominantly focus staffing growth in the areas of automation, cloud and analytics platforms, and support for remote work.

“THE CRITICAL ROLE IT played across most firms’ response to the pandemic appears to have had a positive impact on IT staffing plans,” said Matthew Charlet, research vice president at Gartner. “The initial pessimism around the 2021 talent situation that many CIOs expressed mid-2020 has since dwindled.”

Among the CIOs surveyed, the need to accelerate digital initiatives is, by a large margin, the primary factor driving IT talent strategies in 2021. This is followed by the automation of business operations and increase in cloud adoption.

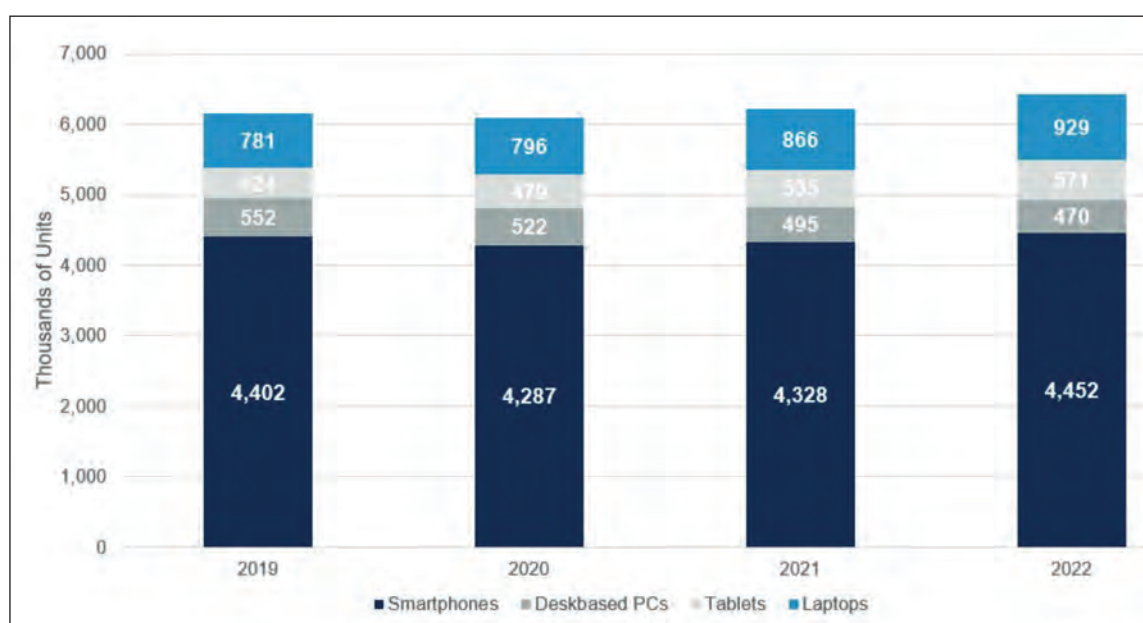
Overall, CIOs are much more likely to expand FTEs in newer, more-emerging technology domains. Growth in security personnel is necessary to reduce the risks from significant investments in remote work, analytics and cloud platforms. Data center, network, systems

administration and applications maintenance are the most likely areas to see staffing decreases due to the shift towards cloud services (see Figure 1).

“While CIOs plan to hire more staff in several areas critical to meeting changed consumer and employee expectations, most will not be able to meet their planned talent strategy goals without also upskilling or refocusing their existing teams,” said Mr. Charlet.

Global devices installed base to reach 6.2 billion units  
The number of devices (PCs (laptops and deskbased), tablets and mobile phones) in use globally will total 6.2 billion units in 2021, according to Gartner, Inc. In 2021, 125 million more laptops and tablets are expected to be in use than in 2020.

“The COVID-19 pandemic has permanently changed



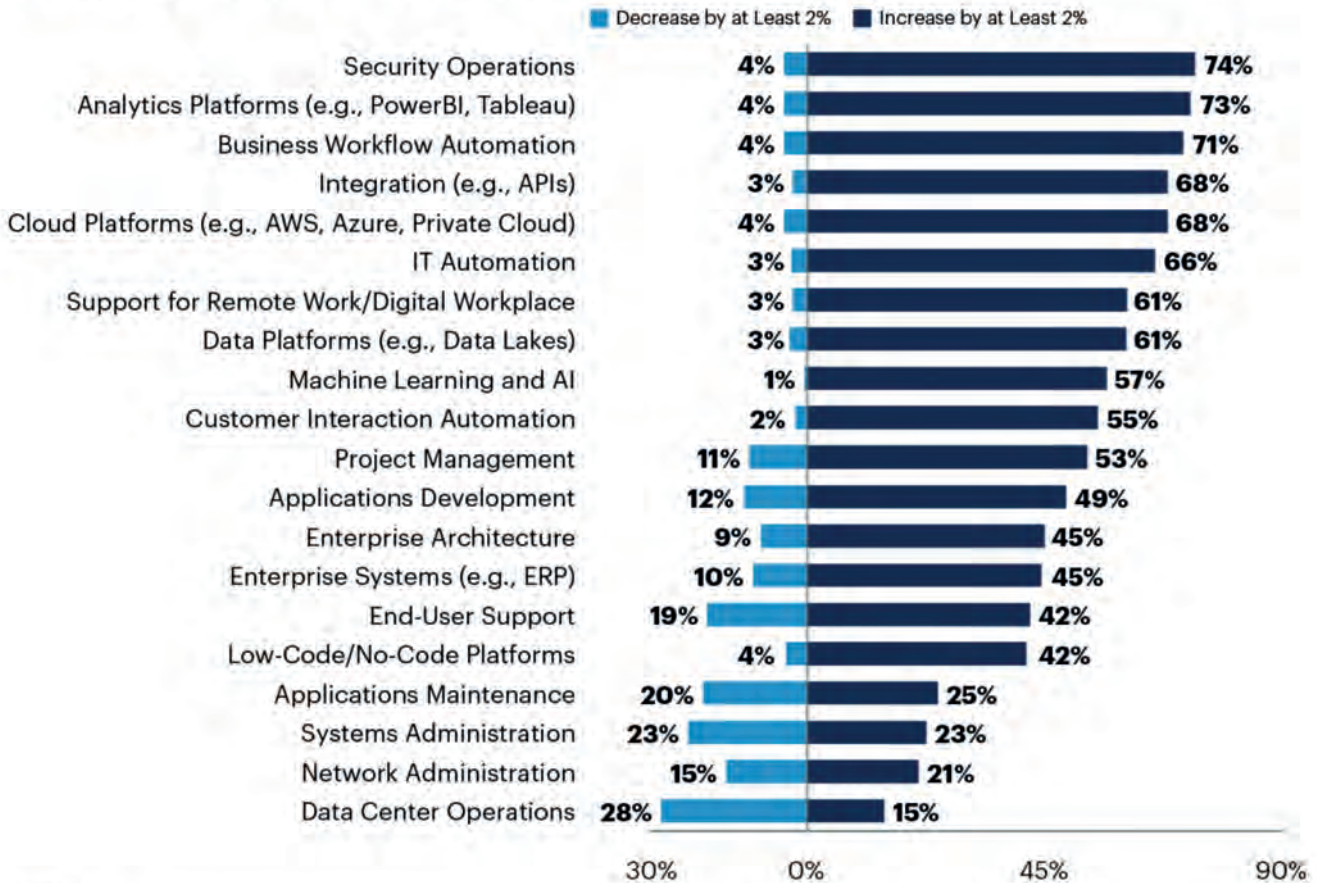
Installed Base of Devices, Worldwide, 2019-2022 (Thousands of Units)

Source: Gartner (April 2021)



## Expected 2021 IT FTE Change in IT Activities

Percentage of CIOs Who Plan to Increase or Decrease Staffing



n = 184

Source: 2021 Gartner CIO Talent Planning Survey

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device usage patterns of employees and consumers,” said Ranjit Atwal, senior research director at Gartner. “With remote work turning into hybrid work, home education changing into digital education and interactive gaming moving to the cloud, both the types and number of devices people need, have and use will continue to rise.”

In 2022, global devices installed base is on pace to reach 6.4 billion units, up 3.2% from 2021 (see Figure 1). While the shift to remote work exacerbated the decline of desktop PCs, it boosted the use of tablets and laptops. In 2021, the number of laptops and tablets in use will increase 8.8% and 11.7%, respectively, while the number of deskbased PCs in use is expected to decline from 522 million in use in 2020 to a forecasted 470 million in use in 2022.

Smartphone Installed Base Set for Upturn in 2021 Users’ confidence is returning in the smartphone market. Although the number of smartphones in use declined 2.6% in 2020, smartphone installed base is on pace to return to growth with a 1% increase

in 2021. “With more variety and choice, and lower-priced 5G smartphones to choose from, consumers have begun to either upgrade their smartphones or upgrade from feature phones,” said Mr. Atwal. “The smartphone is also a key tool that people use to communicate and share moments during social distancing and social isolation.”

The integration of personal and business lives, together with a much more dispersed workforce requires flexibility of device choice. Workers are increasingly using a mix of company-owned devices and their own personal devices running on Chrome, iOS and Android, which is increasing the complexity of IT service and support.

“Connectivity is already a pain-point for many users who are working remotely. But as mobility returns to the workforce, the need to equip employees able to work anywhere with the right tools, will be crucial,” said Mr. Atwal. “Demand for connected 4G/5G laptops and other devices will rise as business justification increases.”

Figure 1.  
Expected 2021  
IT FTE Change  
in IT Activities

Source: Gartner  
(March 2021)

# Top 10 trends for security and risk, and data and analytics

Security and risk management leaders must address eight top trends to enable rapid reinvention in their organization, as COVID-19 accelerates digital business transformation and challenges traditional cybersecurity practices, according to Gartner, Inc.

IN THE OPENING KEYNOTE at the recent Gartner Security & Risk Management Summit, Peter Firstbrook, research vice president at Gartner, said these trends are a response to persistent global challenges that all organizations are experiencing.

“The first challenge is a skills gap. 80% of organizations tell us they have a hard time finding and hiring security professionals and 71% say it’s impacting their ability to deliver security projects within their organizations,” said Mr. Firstbrook.

Other key challenges facing security and risk leaders in 2021 include the complex geopolitical situation and increasing global regulations, the migration of workspaces and workloads off traditional networks, an explosion in endpoint diversity and locations and a shifting attack environment, in particular, the challenges of ransomware and business email compromise.

The following top trends represent business, market and technology dynamics that are expected to have broad industry impact and significant potential for disruption.

## Trend 1: Cybersecurity Mesh

Cybersecurity mesh is a modern security approach that consists of deploying controls where they are most needed. Rather than every security tool running in a silo, a cybersecurity mesh enables tools to interoperate by providing foundational security services and centralized policy management and orchestration. With many IT assets now outside traditional enterprise perimeters, a cybersecurity mesh architecture allows organizations to extend security controls to distributed assets.

## Trend 2: Identity-First Security

For many years, the vision of access for any user, anytime, and from anywhere (often referred to as “identity as the new security perimeter”) was an ideal. It has now become a reality due to technical and cultural shifts, coupled with a now majority remote workforce during COVID-19. Identity-first security puts identity at the center of security design and demands a major shift from traditional LAN edge design thinking.

“The SolarWinds attack demonstrated that we’re not doing a great job of managing and monitoring identities. While a lot of money and time has been spent on multifactor authentication, single sign-on and biometric authentication, very little has been spent on effective monitoring of authentication to spot attacks against this infrastructure,” said Mr. Firstbrook.

## Trend 3: Security Support for Remote Work is Here to Stay

According to the 2021 Gartner CIO Agenda Survey, 64% of employees are now able to work from home. Gartner surveys indicate that at least 30-40% will continue to work from home post COVID-19. For many organizations, this shift requires a total reboot of policies and security tools suitable for the modern remote workspace. For example, endpoint protection services will need to move to cloud delivered services. Security leaders also need to revisit policies for data protection, disaster recovery and backup to make sure they still work for a remote environment.

## Trend 4: Cyber-Savvy Board of Directors

In the Gartner 2021 Board of Directors Survey, directors rated cybersecurity the second-highest source of risk for the enterprise after regulatory





Gartner Top Security and Risk Management Trends, 2021. Source: Gartner, March 2021

compliance. Large enterprises are now beginning to create a dedicated cybersecurity committee at the board level, led by a board member with security expertise or a third-party consultant.

Gartner predicts that by 2025, 40% of boards of directors will have a dedicated cybersecurity committee overseen by a qualified board member, up from less than 10% today.

### Trend 5: Security Vendor Consolidation

Gartner's 2020 CISO Effectiveness Survey found that 78% of CISOs have 16 or more tools in their cybersecurity vendor portfolio; 12% have 46 or more. The large number of security products in organizations increases complexity, integration costs and staffing requirements. In a recent Gartner survey, 80% of IT organizations said they plan to consolidate vendors over the next three years.

"CISOs are keen to consolidate the number of security products and vendors they must deal with," said Mr. Firstbrook. "Having fewer security solutions can make it easier to properly configure them and respond to alerts, improving your security risk posture. However, buying a broader platform can have downsides in terms of cost and the time it takes to implement. We recommend focusing on TCO over time as a measure of success."

### Trend 6: Privacy-Enhancing Computation

Privacy-enhancing computation techniques are

emerging that protect data while it's being used — as opposed to while it's at rest or in motion — to enable secure data processing, sharing, cross-border transfers and analytics, even in untrusted environments. Implementations are on the rise in fraud analysis, intelligence, data sharing, financial services (e.g. anti-money laundering), pharmaceuticals and healthcare.

Gartner predicts that by 2025, 50% of large organizations will adopt privacy-enhancing computation for processing data in untrusted environments or multiparty data analytics use cases.

### Trend 7: Breach and Attack Simulation

Breach and attack simulation (BAS) tools are emerging to provide continuous defensive posture assessments, challenging the limited visibility provided by annual point assessments like penetration testing. When CISOs include BAS as a part of their regular security assessments, they can help their teams identify gaps in their security posture more effectively and prioritize security initiatives more efficiently.

### Trend 8: Managing Machine Identities

Machine identity management aims to establish and manage trust in the identity of a machine interacting with other entities, such as devices, applications, cloud services or gateways. Increased numbers of nonhuman entities are now present in organizations, which means managing machine identities has become a vital part of the security strategy.

## Top 10 data and analytics technology trends for 2021

Gartner, Inc. has identified the top 10 [data and analytics](#) (D&A) technology trends for 2021 that can help organizations respond to change, uncertainty and the opportunities they bring in the next year.

“The speed at which the COVID-19 pandemic disrupted organizations has forced D&A leaders to have tools and processes in place to identify key technology trends and prioritize those with the biggest potential impact on their competitive advantage,” said [Rita Sallam](#), distinguished research vice president at Gartner.

D&A leaders should use the following 10 trends as mission-critical investments that accelerate their capabilities to anticipate, shift and respond.

### Trend 1: Smarter, Responsible, Scalable AI

The greater impact of [artificial intelligence](#) (AI) and [machine learning](#) (ML) requires businesses to apply new techniques for smarter, less data-hungry, ethically responsible and more resilient AI solutions. By deploying smarter, more responsible, scalable AI, organizations will leverage learning algorithms and interpretable systems into shorter time to value and higher business impact.

### Trend 2: Composable Data and Analytics

Open, containerized analytics architectures make analytics capabilities more [composable](#). Composable data and analytics leverages components from multiple data, analytics and AI solutions to rapidly

build flexible and user-friendly intelligent applications that help D&A leaders connect insights to actions. With the center of data gravity moving to the [cloud](#), composable data and analytics will become a more agile way to build analytics applications enabled by cloud marketplaces and low-code and no-code solutions.

### Trend 3: Data Fabric Is the Foundation

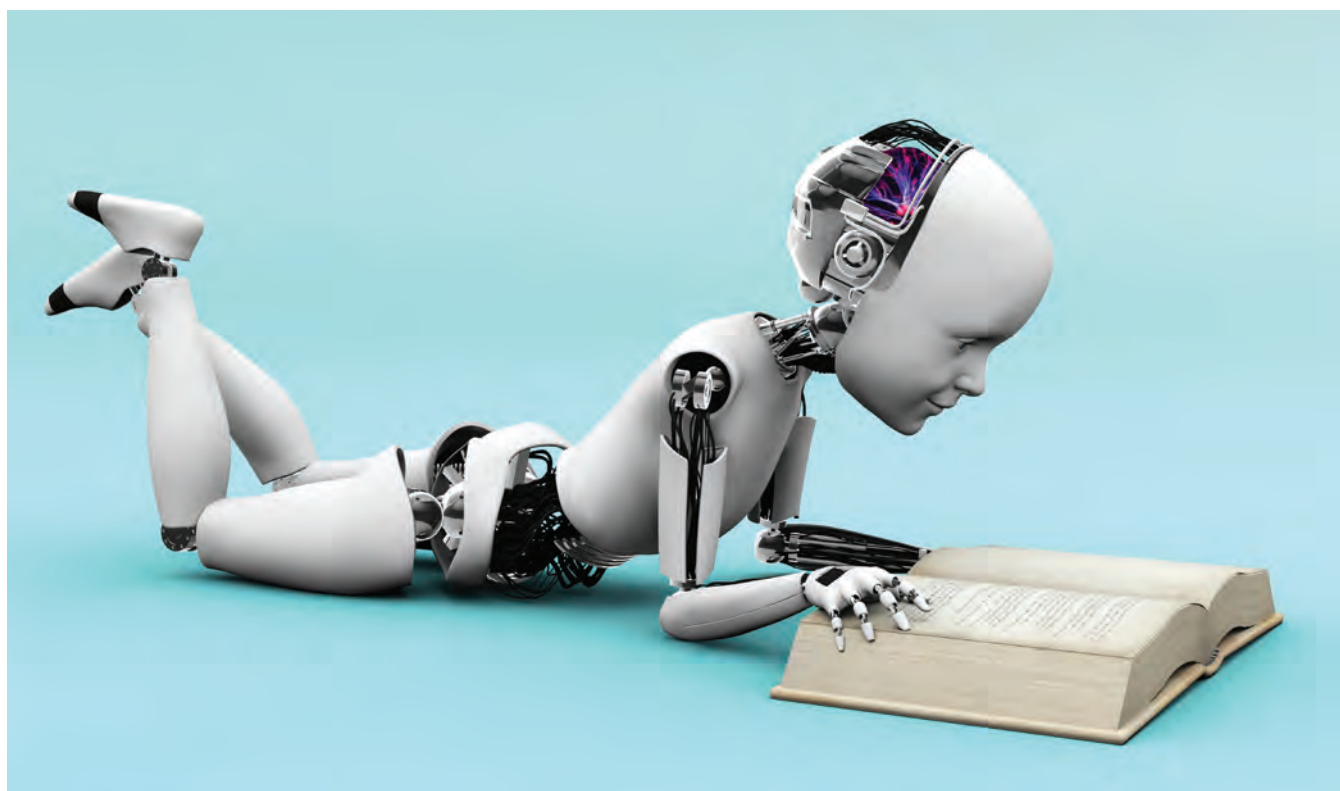
With increased digitization and more emancipated consumers, D&A leaders are increasingly using data fabric to help address higher levels of diversity, distribution, scale and complexity in their organizations' data assets.

The data fabric uses analytics to constantly monitor data pipelines. A data fabric utilizes continuous analytics of data assets to support the design, deployment and utilization of diverse data to reduce time for integration by 30%, deployment by 30% and maintenance by 70%.

### Trend 4: From Big to Small and Wide Data

The extreme business changes from the COVID-19 pandemic caused ML and AI models based on large amounts of historical data to become less relevant. At the same time, decision making by humans and AI are more complex and demanding, requiring D&A leaders to have a greater variety of data for better situational awareness.

As a result, D&A leaders should choose analytical techniques that can use available data more effectively. D&A leaders rely on wide data that enables





the analysis and synergy of a variety of small and large, unstructured, and structured data sources, as well as small data which is the application of analytical techniques that require less data but still offer useful insights.

“Small and wide data approaches provide robust analytics and AI, while reducing organizations’ large data set dependency,” said Ms. Sallam. “Using wide data, organizations attain a richer, more complete situational awareness or 360-degree view, enabling them to apply analytics for better decision making.”

#### **Trend 5: XOps**

The goal of XOps, including DataOps, MLOps, ModelOps, and PlatformOps, is to achieve efficiencies and economies of scale using DevOps best practices, and ensure reliability, reusability and repeatability. At the same time, it reduces duplication of technology and processes and enabling automation.

Most analytics and AI projects fail because operationalization is only addressed as an afterthought. If D&A leaders operationalize at scale using XOps, they will enable the reproducibility, traceability, integrity and integrability of analytics and AI assets.

#### **Trend 6: Engineering Decision Intelligence**

Engineering decision intelligence applies to not just individual decisions, but sequences of decisions, grouping them into business processes and even networks of emergent decisions and consequences.

As decisions become increasingly automated and augmented, engineering decisions give the opportunity for D&A leaders to make decisions more accurate, repeatable, transparent and traceable.

#### **Trend 7: Data and Analytics as a Core Business Function**

Instead of being a secondary activity, D&A is shifting to a core business function. In this situation, D&A becomes a shared business asset aligned to business results, and D&A silos break down because of better collaboration between central and federated D&A teams.

#### **Trend 8: Graph Relates Everything**

Graphs form the foundation of many modern data and analytics capabilities to find relationships between people, places, things, events and locations across diverse data assets. D&A leaders rely on graphs to quickly answer complex business questions which require contextual awareness and an understanding of the nature of connections and strengths across multiple entities.

Gartner predicts that by 2025, graph technologies will be used in 80% of data and analytics innovations, up from 10% in 2021, facilitating rapid decision making across the organization.

“Small and wide data approaches provide robust analytics and AI, while reducing organizations’ large data set dependency,” said Ms. Sallam. “Using wide data, organizations attain a richer, more complete situational awareness or 360-degree view, enabling them to apply analytics for better decision making.”

#### **Trend 9: The Rise of the Augmented Consumer**

Most business users are today using predefined dashboards and manual data exploration, which can lead to incorrect conclusions and flawed decisions and actions. Time spent in predefined dashboards will progressively be replaced with automated, conversational, mobile, and dynamically generated insights customized to a user’s needs and delivered to their point of consumption.

“This will shift the analytical power to the information consumer – the augmented consumer – giving them capabilities previously only available to analysts and citizen data scientists,” said Ms. Sallam.

#### **Trend 10: Data and Analytics at the Edge**

Data, analytics and other technologies supporting them increasingly reside in [edge computing](#) environments, closer to assets in the physical world and outside IT’s purview. Gartner predicts that by 2023, over 50% of the primary responsibility of data and analytics leaders will comprise data created, managed, and analyzed in edge environments.

D&A leaders can use this trend to enable greater data management flexibility, speed, governance, and resilience. A diversity of use cases is driving the interest in edge capabilities for D&A, ranging from supporting real-time event analytics to enabling autonomous behavior of “things”.

# Cloud computing can tackle CO<sub>2</sub> emissions

A new forecast from International Data Corporation (IDC) shows that the continued adoption of cloud computing could prevent the emission of more than 1 billion metric tons of carbon dioxide (CO<sub>2</sub>) from 2021 through 2024.

THE FORECAST uses IDC data on server distribution and cloud and on-premises software use along with third-party information on datacenter power usage, carbon dioxide (CO<sub>2</sub>) emissions per kilowatt-hour, and emission comparisons of cloud and non-cloud datacenters.

A key factor in reducing the CO<sub>2</sub> emissions associated with cloud computing comes from the greater efficiency of aggregated compute resources. The emissions reductions are driven by the aggregation of computation from discrete enterprise datacenters to larger-scale centers that can more efficiently manage

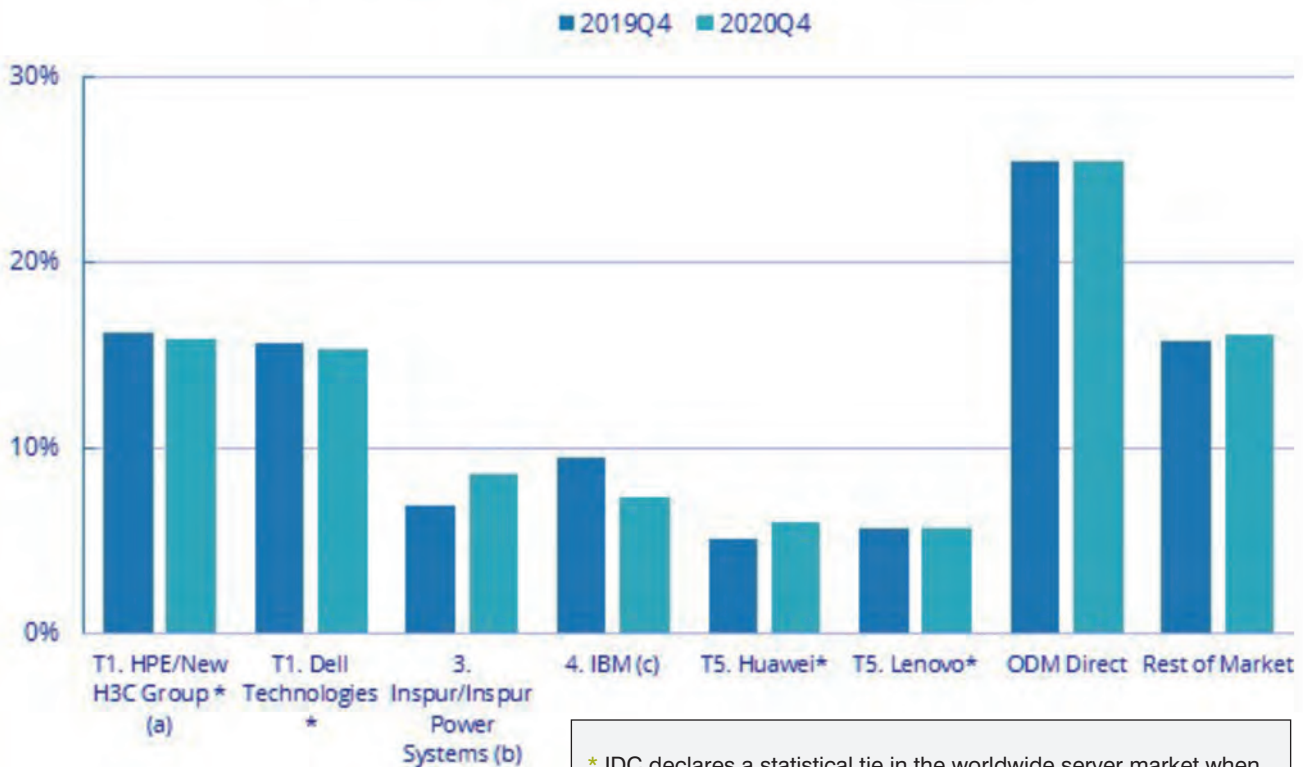
power capacity, optimize cooling, leverage the most power-efficient servers, and increase server utilization rates.

At the same time, the magnitude of savings changes based on the degree to which a kilowatt of power generates CO<sub>2</sub>, and this varies widely from region to region and country to country. Given this, it is not surprising that the greatest opportunity to eliminate CO<sub>2</sub> by migrating to cloud datacenters comes in the regions with higher values of CO<sub>2</sub> emitted per kilowatt-hour. The Asia/Pacific region, which utilizes coal for much of its' power generation, is expected to account





### Worldwide Server Top 5 Vendors, 2019Q4 vs 2020Q4 (shares based on vendor revenue)



\* IDC declares a statistical tie in the worldwide server market when there is a difference of one percent or less in the share of revenues or shipments among two or more vendors.

(a) Due to the existing joint venture between HPE and the New H3C Group, IDC is reporting external market share on a global level for HPE and New H3C Group as «HPE/New H3C Group» starting from 2Q 2016. Per the JV agreement, Tsinghua Holdings subsidiary, Unisplendour Corporation, through a wholly-owned affiliate, purchased a 51% stake in New H3C and HPE has a 49% ownership stake in the new company.

(b) Due to the existing joint venture between IBM and Inspur, IDC is reporting external market share on a global level for Inspur and Inspur Power Systems as «Inspur/Inspur Power Systems» starting from 3Q 2018. The JV, Inspur Power Commercial System Co., Ltd., has total registered capital of RMB 1 billion, with Inspur investing RMB 510 million for a 51% equity stake, and IBM investing RMB 490 million for the remaining 49% equity stake.

(c) IBM server revenue excludes sales of Power Systems generated through Inspur Power Systems in China, starting from 3Q 2018.

for more than half the CO2 emissions savings over the next four years. Meanwhile EMEA will deliver about 10% of the savings, largely due to its use of power sources with lower CO2 emissions per kilowatt-hour. While shifting to cleaner sources of energy is very important to lowering emissions, reducing wasted energy use will also play a critical role. Cloud datacenters are doing this through optimizing the physical environment and reducing the amount of energy spent to cool the datacenter environment. The goal of an efficient datacenter is to have more energy spent on running the IT equipment than cooling the environment where the equipment resides.

Another capability of cloud computing that can be used to lower CO2 emissions is the ability to shift workloads to any location around the globe. Developed to deliver IT service wherever it is needed, this capability also enables workloads to be shifted to enable greater use of renewable resources, such as wind and solar power.

IDC's forecast includes upper and lower bounds for the estimated reduction in emissions. If the



percentage of green cloud datacenters today stays where it is, just the migration to cloud itself could save 629 million metric tons over the four-year time period. If all datacenters in use in 2024 were designed for sustainability, then 1.6 billion metric tons could be saved. IDC's projection of more than 1 billion metric tons is based on the assumption that 60% of datacenters will adopt the technology and processes underlying more sustainable "smarter" datacenters by 2024.

"The idea of 'green IT' has been around now for years, but the direct impact of hyperscale computing can have on CO2 emissions is getting increased notice from customers, regulators, and investors and it's starting to factor into buying decisions," said Cushing Anderson, program vice president at IDC. "For some, going 'carbon neutral' will be achieved using carbon offsets, but designing datacenters from the ground up to be carbon neutral will be the real measure of contribution. And for advanced cloud providers, matching workloads with renewable energy availability will further accelerate their sustainability goals."

## European AI spending to reach \$12B in 2021

The International Data Corporation (IDC) Worldwide Artificial Intelligence Spending Guide estimates that spending on artificial intelligence (AI) will reach \$12 billion in 2021 in Europe and will continue to experience solid double-digit growth through 2024. Automation needs, digital transformation, and customer experience continue to support spending on AI, even in times when COVID-19 has impacted negatively on revenues for many companies.

"COVID-19 was a trigger for AI investments for some verticals, such as healthcare. Hospitals across Europe have deployed AI for a variety of use cases, from AI-based software tool for automated diagnosis of COVID-19 to machine learning-based hospital capacity planning systems," said Andrea Minonne, senior research analyst at IDC Customer Insights & Analysis. "On the other hand, other verticals such as retail, transport, and personal and consumer services had to contain their AI investments, especially when AI was used to package personalized customer experiences to be delivered in-store."

The COVID-19 pandemic did not end in 2020 and will have effects throughout 2021 and the years to come. COVID-19 has revolutionized the way many industries operate, changing their business processes but also the products, services, and experiences they deliver. Many non-essential retailers are still closed today due to strict lockdowns, meaning that retailers were forced to shift their focus from in-store AI toward AI-driven online experiences and services. Customers also had to adapt to a new reality, and that triggered their behavior to change. Shopping online is the new normal. For that reason, retailers are looking closely at use cases such as chatbots, pricing optimization,

and digital product recommendations to guarantee customer engagement but also secure revenues from digital channels.

The same is the case for transportation, an industry that has been heavily affected by COVID-19. With travel being restricted to essential reasons only and quarantine measures widely in place, many travelers have stalled or cancelled their plans, which has a strong impact on transportation companies' revenues. In 2020, transportation's focus has shifted from AI-driven innovation to cost-containment, at least until the industry recovers. For that reason, AI investments across transportation companies will grow below average this year.

## Server revenue grows 1.5% YoY

According to the International Data Corporation (IDC) Worldwide Quarterly Server Tracker, vendor revenue in the worldwide server market grew 1.5% year over year to \$25.8 billion during the fourth quarter of 2020 (4Q20). Worldwide server shipments declined 3.0% year over year to nearly 3.3 million units in 4Q20. Volume server revenue was up 3.7% to \$20.4 billion, midrange server revenue also increased 8.4% to \$3.3 billion, while high-end servers declined by 21.8% to \$2.1 billion.

"Global demand for enterprise servers was relatively flat during the fourth quarter of 2020 with the strongest increase to demand coming from China (PRC)," said Paul Maguranis, senior research analyst, Infrastructure Platforms and Technologies at IDC. "From a regional perspective, server revenue within PRC grew 22.7% year over year while the rest of the world declined 4.2%. Blade systems continued to decline, down 18.1% while rack optimized servers grew 10.3% year over year. Similar to the previous quarter, servers running AMD CPUs as well as ARM-based servers continued to grow revenue, increasing 100.9% and 345.0% year over year respectively, albeit on a small but growing base."

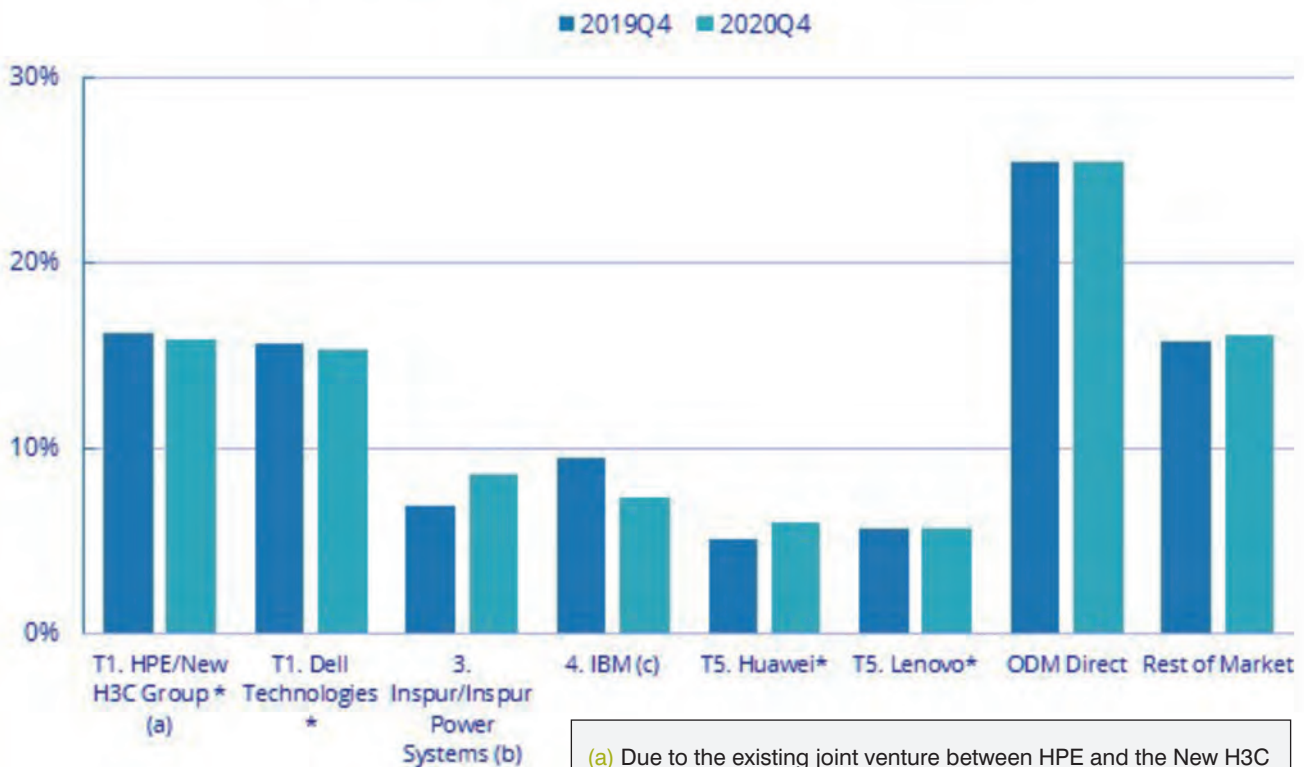
Overall Server Market Standings, by Company HPE/New H3C Groupa and Dell Technologies were tied\* for the top position in the worldwide server market based on 4Q20 revenues. Inspur/Inspur Power Systemsb finished third, while IBMc held the fourth position. Huawei and Lenovo tied\* for the fifth position in the market. In terms of server units shipped, Dell Technologies held the top position in the market, followed closely by HPE/New H3C Groupa in the second position. Inspur/Inspur Power Systemsb, Huawei, and Lenovo finished the quarter in third, fourth, and fifth place, respectively.

## Top Server Market Findings

On a geographic basis, China (PRC) was the fastest growing region with 22.7% year-over-year revenue growth. Latin America was the only other region with revenue growth in 4Q20, up 1.5% in the quarter. Asia/Pacific (excluding Japan and China) decreased 0.3%



### Worldwide Server Top 5 Vendors, 2019Q4 vs 2020Q4 (shares based on vendor revenue)



(a) Due to the existing joint venture between HPE and the New H3C Group, IDC is reporting external market share on a global level for HPE and New H3C Group as «HPE/New H3C Group» starting from 2Q 2016. Per the JV agreement, Tsinghua Holdings subsidiary, Unisplendour Corporation, through a wholly-owned affiliate, purchased a 51% stake in New H3C and HPE has a 49% ownership stake in the new company.

(b) Due to the existing joint venture between IBM and Inspur, IDC is reporting external market share on a global level for Inspur and Inspur Power Systems as «Inspur/Inspur Power Systems» starting from 3Q 2018. The JV, Inspur Power Commercial System Co., Ltd., has total registered capital of RMB 1 billion, with Inspur investing RMB 510 million for a 51% equity stake, and IBM investing RMB 490 million for the remaining 49% equity stake.

in 4Q20, while North America declined 6.2% year over year (Canada at 23.7% and the United States at 5.5%). Both EMEA and Japan declined during the quarter at rates of 1.1% and 6.3%, respectively. Revenue generated from x86 servers increased 2.9% in 4Q20 to around \$23.1 billion. Non-x86 server revenue declined 9.0% year over year to around \$2.8 billion.

### Unified Communications & Collaboration (UC&C) market soars

The worldwide Unified Communications & Collaboration (UC&C) market grew 29.2% year over year and 7.1% quarter over quarter to \$13.1 billion in the fourth quarter of 2020 (4Q20), according to the International Data Corporation (IDC) Worldwide Quarterly Unified Communications & Collaboration Q V iew. Revenue growth was also up an impressive 24.9% for the full year 2020 to \$47.2 billion.

How business was conducted changed dramatically in 2020 due to COVID-19, driving companies of all sizes to consider and adopt scalable, flexible, cloud-based digital technology solutions (e.g., Unified Communications as a Service or UCaaS) as part of their overall integrated UC&C solution. Vendors and

service providers also saw exponential growth in the number of video and collaboration end users in 2020. In 2021 and beyond, IDC expects worldwide UC&C growth will be driven by customers across all business size segments (small, midsize, and large) with interest especially in video, collaboration, UCaaS, mobile applications, and digital transformation (DX) projects. Some UC&C market specifics include the following:

- Hosted Voice/UC Public Cloud (UCaaS) grew 26.1% year over year and 6.8% sequentially in 4Q20 to nearly \$4.6 billion in revenue. For the full year 2020, public cloud UCaaS revenue increased 21.2% to \$16.4 billion.
- UC Collaboration (including video conferencing software and cloud services) increased 48.0% year over year and 5.1% sequentially to reach almost \$6.2 billion in revenue in 4Q20. For the full year 2020, UC Collaboration revenue increased 45.0% to \$22.1 billion.
- Revenue for IP Phones declined 20.4% year over year but grew 20.3% sequentially in 4Q20. For the full year 2020, IP Phones revenue declined 22.8% to \$1.9 billion. Shipments of IP Phones declined 23.1% year over year but increased 14.7% sequentially. For the full year 2020, shipments of IP Phones were down 22.2%.
- Enterprise Videoconferencing Systems (i.e., videoconference room endpoints) surprisingly increased 26.1% year over year and 36.5% sequentially to more than \$827 million in 4Q20. For the full year 2020, revenue increased 12.4% to almost \$2.6 billion.

“In 2020, COVID-19 caused many businesses and organizations to re-think their plans for leveraging digital technologies and accelerated interest in and adoption of solutions such as team collaboration, team messaging, videoconferencing, and UCaaS, among other technologies,” said Rich Costello, senior research analyst, Unified Communications and Collaboration at IDC. “In 2021, IDC expects positive growth numbers across these key UC&C segments to continue, albeit at slightly more modest rates.” From a regional perspective, the UC&C market saw positive numbers across the board in 4Q20 and for the full year 2020.

- In North America, UC&C revenue was up 3.1% quarter over quarter and 30.1% annually in 4Q20 to almost \$6.3 billion. For the full year 2020, revenue was up 26.1% to \$22.9 billion.
- Asia/Pacific (including Japan) revenue was up 14.9% sequentially and 36.9% year over year to more than \$2.4 billion in 4Q20. For the full year 2020, revenue was up 28.1% to almost \$8.4 billion.
- Europe, the Middle East, and Africa (EMEA) revenue was up 9.5% quarter over quarter and 23.8% annually in 4Q20 to \$4.0 billion. For the full year 2020, revenue was up 20.9% to \$14.3 billion.
- Latin America revenue increased 3.6% compared to 3Q20 and 27.3% year over year in 4Q20 to more than \$441 million. For the full year 2020, revenue was up 27.6% to over \$1.6 billion.

## UC&C Company Highlights

- **Microsoft's** total worldwide UC&C revenue was \$4.4 billion, up 3.5% sequentially and 41.9% year over year in 4Q20. For the full year 2020, Microsoft revenue was \$16.1 billion, up 46.0%, representing a 34.2% share of the worldwide UC&C market.
- **Cisco's** total worldwide UC&C revenue in 4Q20 was nearly \$1.3 billion, down 2.3% compared to 3Q20 and down 5.8% year over year. For the full year 2020, Cisco revenue was declined 4.6% to almost \$5.0 billion, representing a 10.5% share of the worldwide UC&C market.
- **Zoom's** total worldwide UC&C revenue increased 13.6% sequentially and a whopping 377.6% year over year to almost \$863 million in 4Q20. For the full year 2020, Zoom's revenue grew 333.4% to \$2.6 billion, representing a 5.5% share of the worldwide UC&C market.
- **Avaya's** total worldwide UC&C revenue was up 6.7% quarter over quarter and 25.3% year over year to \$353.5 million in 4Q20. For the full year 2020, revenue was up 14.8% to over \$1.2 billion, representing a 2.6% share of the worldwide UC&C market.
- **RingCentral's** total worldwide UC&C revenue grew 9.3% compared to 3Q20 and 31.3% annually to \$252 million in 4Q20. For the full year 2020, revenue was up 32.5% to \$899 million, representing a 1.9% share of the worldwide UC&C market.

The image displays a collection of award logos from various industry organizations, including BridgeWorks, DCS Awards, UK IT Industry Awards, SME news, The Data Acceleration Company, SDC Awards, and CorpToday. Each logo is accompanied by a brief description of the award category. At the bottom, a large orange banner with white text proclaims 'BRIDGEWORKS WINS 6 AWARDS 2020'.





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# DON'T PAY THE RANSOM

## How to recover from a ransomware attack



Everyone is petrified of ransomware attacks right now, and with good reason. The attacks have penetrated every sector, from academia to local government organizations, to manufacturing, healthcare, high tech and every other sector.

**BY BILL ANDREWS, PRESIDENT AND CEO OF EXAGRID**

THE RANSOMS that hackers demand have increased drastically in recent years, with the most audacious at over \$12M dollars (10 million Euros). Ransomware attacks occur all of the time, studies estimate that a ransomware attack is carried out every 14 seconds.

Ransomware disrupts the functionality of an organization by restricting access to data through encrypting the primary storage and then deleting the backup storage. Ransomware attacks are on the rise, becoming disruptive and potentially very costly to businesses. No matter how meticulously an organization follows best practices to protect valuable data, the attackers seem to stay one step ahead. They maliciously encrypt primary data, take control of the backup application and delete the backup data. The challenge is how to protect the backup data from being deleted while at the same time allow for backup retention to be purged when retention points are hit. If you retention lock all of the data, you cannot delete the retention points and the storage costs become





untenable. If you allow retention points to be deleted to save storage, you leave the system open for hackers to delete all data.

### How Do Hackers Get Control of Backed Up Data?

Often, hackers are able to gain control of a server on a network and then work their way into critical systems, such as primary storage, and then into the backup application and backup storage. Sometimes hackers even manage to access the backup storage through the backup application. The hackers encrypt the data in the primary storage and issue delete commands to the backup storage, so that there is no backup or retention to recover from. Once the backup storage is deleted, organizations are forced to pay the ransom, as its users cannot work.

### How Can Organizations Recover from a Ransomware Attack?

One of the best practices for data protection is to implement a strong backup solution, so that an organization can recover data whenever it is deleted, overwritten, corrupted or encrypted.

However, even standard backup approaches, such as backing up data to as low-cost primary storage or to deduplication appliances, are vulnerable to ransomware attacks. To eliminate this vulnerability, a backup solution needs to have second non-network-facing storage, so that even if the hacker deletes the backup they cannot reach the long-term retention data. If an organization is hit with a ransomware attack but their backup data remains intact, then the

organization can recover the data without paying a ransom.

### ExaGrid's Unique Feature: Retention Time-Lock for Ransomware Recovery

ExaGrid has always utilized a two-tiered approach to its backup storage, which provides an extra layer of protection to its customers, called Tiered Backup Storage. Its appliances have a network-facing disk-cache Landing Zone Tier where the most recent backups are stored in an undeduplicated format, for fast backup and restore performance. Data is deduplicated into a non-network-facing tier called the repository where deduplicated data is stored for longer-term retention. The combination of a non-network facing tier (virtual air gap) plus delayed deletes and immutable data objects guards against the backup data being delete or encrypted.

As ExaGrid monitored the growing trend of ransomware attacks, the backup storage company worked on a new feature to further safeguard its repository tier: Retention Time-Lock for Ransomware Recovery. This feature allows for “delayed deletes” so that any delete commands that might be issued by a ransomware attack are not processed for a period of time determined by the ExaGrid customer, with a default of 10 days that can be extended by policy. ExaGrid released this feature in 2020 and many of its customers have already successfully recovered from ransomware attacks.

Don't pay the ransom! Implement a solution that is designed to help your organization recover.



# How and when to adopt AI: Conga's digital maturity model

Now more than ever, digital transformation (DX) has become a strategic priority for every organisation.

**BY ASH FINNEGAN, DIGITAL TRANSFORMATION OFFICER, CONGA**



NAVIGATING what is currently the most complex business landscape to date, leaders have had to rapidly transform their operations in order to deliver their services remotely. In their panic, business leaders have invested heavily in the latest technological solutions to keep their organisations running. From artificial intelligence (AI) to wider automation, such as robotics process automation (RPA) and natural language processing (NLP) or machine learning (ML). Chaos has been the driver of change.

And over the past few months, whole departments have undergone the most intense and complicated transformation programmes their senior leadership teams have ever delivered, but that does not necessarily mean they have been well executed.

## How to approach automation – it is a process, not a race

Even before the pandemic, most companies would approach digital transformation projects all wrong. Many companies aspire to be disrupters, picking a technology and implementing it at speed. They want to adopt the latest AI programme and automate their business as fast as possible, with no real idea of how this will improve their services. These projects rarely result in success. In fact, according to Conga research, only half of all digital transformation initiatives of this kind are considered somewhat successful. Compared to Europe, where the success rate is even lower, only 43 percent of these programmes result in success.

The issue lies with how businesses approach automation in the first place. Many strategies are driven by the desire to use and incorporate the latest technology as opposed to identifying clear business goals or reconsidering their current operational model and where AI would be best suited. Covid-19 has only accelerated this issue. Whilst AI and automation

offer many competitive advantages, that does not necessarily mean they are easy to implement or deliver as part of a wider digital transformation programme. Too many business leaders are prioritising technology over strategy and simply do not understand what AI, or digital transformation for that matter, really is, can achieve and should drive.

Without stepping back and reviewing their current operational model, what works or what needs improving, how can leaders really understand whether AI is best suited to automate their business? Companies have essentially adopted 'transformational' technology without having any clear business objectives in mind or considering where this technology may be better placed to improve overall operability. If there are bad processes in place, that fail to deliver real business objectives or real commercial outcomes, automation will only accelerate this issue.

In reality, businesses need to establish clear commercial objectives, before adopting any disruptive or automation technology. It is crucial that companies first establish where they currently stand in their own digital transformation journey, by considering their own digital maturity.

## The digital maturity model – how to adopt AI

'Digital maturity' refers to where a business currently stands in its digital transformation journey. Before adopting any new technology or starting any transformation programme, and most importantly, automating areas of the business, companies need to take a step back and reconsider their current operational model. Given the speed at which businesses transformed last year, teams may have stumbled across a number of roadblocks and bottlenecks; the 'older' operational model likely did not translate well in the switch to remote

working. Complicated or unnecessary processes have more than likely limited the business' performance and stunted any commercial growth.

By taking a step back and reviewing their business, leaders will have a clear picture of the current state and what the next stage of their company's digital transformation journey should be, as opposed to simply guessing, or learning through trial and error. Only by identifying areas where there are operational issues or room for improvement, can businesses establish clear objectives and a strategy – then leaders can incorporate new technology such as AI and automation, to streamline their services and help them achieve these goals.

Once they have assessed their current maturity, leaders can accelerate the processes that work well and can add value to their business, instead of speeding up flawed processes or legacy systems. Automating a bad process doesn't stop it from being a bad process and, by this same logic, AI isn't a silver bullet or a 'quick fix' – rushing a transformation programme won't bolster company growth. By assessing their digital maturity and approaching automation in this methodical way, companies can improve their overall operability and streamline the processes that matter – that is, improving the customer experience, generating revenue, and managing key commercial relationships.

As companies progress along their digital transformation journeys, they will streamline processes, break down silos and enable cross-team working across departmental boundaries. The maturity model framework does not prescribe a linear change programme. It is vital that every stage, from foundation and core business logic, to reevaluating current systems, fine-tunes basic workflows to ensure any inefficiencies are removed from the overall business process. By the next stage, leaders can consider the possibility of further integration between systems, such as customer lifecycle management (CLM) or enterprise resource planning (ERP) to deliver more multi-channel management.

Only then can organisations enter the next stage of transformation. As processes are streamlined, cross-team collaboration

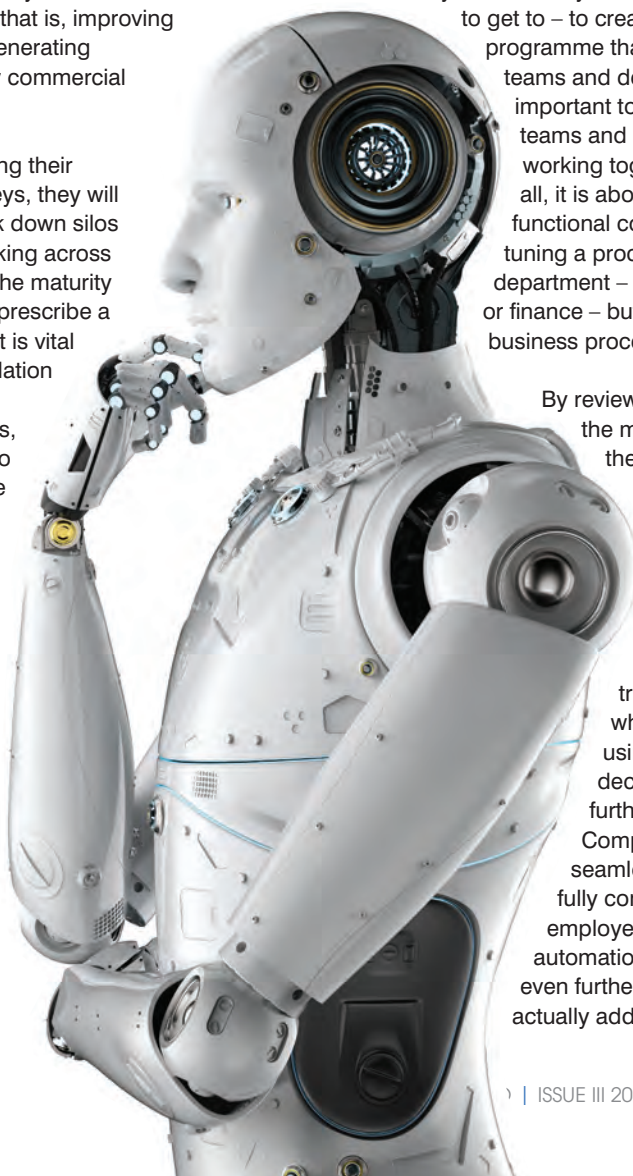
increases and leaders will begin to break down any departmental silos, establishing true data intelligence. Their operations will be seamless with end-to-end processes that inform decision-making. Following this, leaders can then perhaps consider further integrating their systems and exploring other areas to automation and AI across other areas of their businesses, because this is now clear to them.

### AI is only as good as the data provided

Businesses will proceed through these stages of digital maturity at different rates depending on the complexity of their structures, and how many roadblocks they encounter across the business cycle. No doubt some will have to go back several stages to tackle any issues regarding the business operability or efficiency. But by no means can leaders prioritise technology over strategy. If organisations think technology has all the answers and AI will solve all their problems, they are approaching transformation all wrong. Organisations need to optimise the business process; it needs to be frictionless from end to end before they consider adopting AI or any form of automation technology.

It is vital that businesses understand their digital maturity – where they are and where they need to get to – to create a transformation programme that actually aligns teams and departments. It's important to ensure that systems, teams and processes are working together smoothly. After all, it is about establishing cross-functional collaboration, not fine-tuning a process for a particular department – whether sales, legal or finance – but improving the overall business process.

By reviewing every stage of the maturity model for their organisation, from foundation (data transparency and business logic) to full system integration, leaders can take their business to a truly intelligent state, where they are actually using data to make decisions to allow for further business growth. Companies can create a seamless enterprise and a fully connected customer and employee experience, which automation can then accelerate even further. From here, AI can actually add real value.





# How innovation extracts value from invention

Invention is the creation of technology; innovation is how you use that invention to extract value.

**BY DR. COLIN PARRIS, SENIOR VICE PRESIDENT AND CHIEF TECHNICAL OFFICER, GE DIGITAL**



AS INDUSTRIAL COMPANIES move forward with Digital Transformation, the first question they need to ask is, “How do I build and implement solutions that provide the best and most lasting value?”

Wherever you are on your path to digital transformation, the goal is the same: make your business smarter, leaner, and more profitable. We can create new technologies; we can build powerful solutions and scale them like never before. However, if there is no clear path to value, no clear return on investment, all we are building is barriers. This is especially true in the world of industrial IoT, where innovation is often seen more as evolution than revolution. The risks are tremendously high.

One of the technologies that can make a difference for businesses in this transformation journey is the Digital Twin. A Digital Twin is a software representation of a physical asset, system, or process that is designed to detect, prevent, predict, and optimize through real time analytics. All of these industrial necessities cost millions to build and to fix, and if they stop working, they can cost millions in unplanned downtime. You don't get to fail fast.

Digital Twins are used to give us early warnings on equipment failures so companies can take actions early to maintain availability targets. These Twins provide continuous predictions so that we can get estimates on the on-going damage on a part, and



then have these parts ready when we do maintenance events. This is crucial in the industrial world as the lead time to some of the more critical parts are six to 18 months. Imagine the business impact if you did not have that critical part when you needed it. This is why many industrial companies stockpile these expensive parts and, therefore have high inventory cost. But what if these critical pieces of your business could help you even more? What if they could help you in a way that aided business adoption and reduced your business risk? What if they could protect themselves from outside threats? What if they could talk to each other? This is where Digital Twin technology is headed and what makes software mission critical today and tomorrow.

As we look to the future, one of the software technologies we will look to is called Humble AI. Humble AI is a Digital Twin that optimizes industrial assets under a known set of operating conditions but can relinquish control to a human engineer or safe default mode on its own when encountering unfamiliar scenarios to ensure safe, reliable operations. Humble AI affords a zone of data competency, which pinpoints where the digital twin model is most accurate and in which it is comfortable making normal operational decisions. If a situation is outside of the zone of competency, the Humble AI algorithm recognizes and redirects the situation to a human operator or reverts back to its traditional algorithm. Just as a trainee engineer might call their supervisor when faced with a new challenge, Humble AI escalates anything outside of its comfort zone.

A second technology is something we call Digital Ghost, a new paradigm for securing industrial assets and critical infrastructure from both malicious cyber-attacks and naturally occurring faults in sensor equipment. Much attention is given to a company's external firewalls, but some viruses can be accidentally spread by doing something as innocuous as using a compromised USB drive inside the network. A Digital Ghost uses a Digital Twin which understands both the physics associated with the asset and the operational states given the data from its operators and environments and can use this to detect when conditions on its sensors seem to be malicious. In this way it can provide early detection of any security issues that might occur and also provide a path to both detection and neutralization of the fault. A third interesting and forward-thinking technology is called "Twins that Talk." This is an emerging, and exciting, technology that gives machines the ability to mimic human intuition and react to evolving situations.

We're at a place where we've generated enough data and harnessed artificial intelligence applications to the point that Digital Twins can now "talk" to each other, learn from each other, and can "educate" other assets. Using neural network technologies (sponsored by DARPA) we have pilots that allow machines to generate their own language for communications.



A turbine or an engine, can "inform" other like machines by communicating the prior problems it has experienced and the symptoms associated with the issue. This information forms potential root causes for field engineers even before the problem has been diagnosed.

Here's an example of machines learning and communicating in the field: Imagine a number of wind turbines in the same geographical area being able to detect icing on their blades and understanding that this reduces the amount of electricity they can create. Not only would they be able to flag potential disruption, they'd be able to predict icing in the future by amalgamating contextual cues, weather patterns, and prior experience. These new and exciting innovative Digital Twin inventions allow us to build our capacity for business transformation. Humble AI helps create value by leveraging artificial intelligence technology. Digital Ghosts and Twins that Talk help accelerate value. These innovative technologies all provide insight that compels business to take actions that deliver the most value.

As we look to the future, one of the software technologies we will look to is called Humble AI. Humble AI is a Digital Twin that optimizes industrial assets under a known set of operating conditions but can relinquish control to a human engineer or safe default mode on its own when encountering unfamiliar scenarios to ensure safe, reliable operations

# Overcoming six AI challenges in 2021

**GURPREET PUREWAL, ASSOCIATE VICE PRESIDENT, BUSINESS**

**DEVELOPMENT, IRESEARCH SERVICES**, explores how organisations can overcome the challenges presented by AI in 2021.



2020 has been a year of tumultuous change and 2021 isn't set to slow down. Technology has been the saving grace of the waves of turbulence this year, and next year as the use of technology continues to boom, we will see new systems and processes emerge and others join forces to make a bigger impact. From assistive technology to biometrics, 'agritech' and the rise in self-driving vehicles, tech acceleration will be here to stay, with COVID-19 seemingly just the catalyst for what's to come. Of course, the increased use of technology will also bring its challenges, from cybersecurity and white-collar crime to the need to instill trust in not just those investing in the technology, but those using it, and artificial intelligence (AI) will be at the heart of this.

## 1. Instilling a longer-term vision

New AI and automation innovations have led to additional challenges such as big data requirements for the value of these new technologies to be effectively shown. For future technology to learn from the challenges already faced, a comprehensive technology backbone needs to be built and businesses need to take stock and begin rolling out priority technologies that can be continuously deployed and developed.

Furthermore, organisations must have a longer-term vision of implementation rather than the need for immediacy and short-term

gains. Ultimately, these technologies aim to create more intelligence in the business to better serve their customers. As a result, new groups of business stakeholders will be created to implement change, including technologists, business strategists, product specialists and others to cohesively work through these challenges, but these groups will need to be carefully managed to ensure a consistent and coherent approach and long-term vision is achieved.

## 2. Overcoming the data challenge

AI and automation continue to be at the forefront of business strategy. The biggest challenge, however, is that automation is still in its infancy, in the form of bots, which have limited capabilities without being layered with AI and machine learning. For these to work cohesively, businesses need huge pools of data. AI can only begin to understand trends and nuances by having this data to begin with, which is a real challenge. Only some of the largest organisations with huge data sets have been able to reap the rewards, so other smaller businesses will need to watch closely and learn from the bigger players in order to overcome the data challenge.

## 3. Controlling compliance and governance

One of the critical challenges of increased AI adoption is technology governance. Businesses are acutely aware that these issues must be addressed but orchestrating such change can lead to huge costs, which can spiral out of control. For example, cloud governance should be high on the agenda; the cloud offers new architecture and

platforms for business agility and innovation, but who has ownership once cloud infrastructures are implemented? What is added and what isn't?

AI and automation can make a huge difference to compliance, data quality and security. The rules of the compliance game are always changing, and technology should enable companies not just to comply with ever-evolving regulatory requirements, but to leverage their data and analytics across the business to show breadth and depth of insight and knowledge of the workings of their business, inside and out.

In the past, companies struggled to get access and oversight over the right data across their business to comply with the vast quantities of MI needed for regulatory reporting. Now they are expected to not only collate the correct data but to be able to analyse it efficiently and effectively for regulatory reporting purposes and strategic business planning. There are no longer the time-honoured excuses of not having enough information, or data gaps from reliance on third parties, for example, so organisations need to ensure they are adhering to regulatory requirements in 2021.

#### 4. Eliminating bias

AI governance is business-critical, not just for regulatory compliance and cybersecurity, but also in diversity and equity. There are fears that AI programming will lead to natural bias based on the type of programmer and the current datasets available and used. For example, most computer scientists are predominantly male and Caucasian, which can lead to conscious/unconscious bias, and datasets can be unrepresentative leading to discriminatory feedback loops.

Gender bias in AI programming has been a hot topic for some years and has come to the fore in 2020 again within wider conversations on diversity. By only having narrow representation within AI programmers, it will lead to their own bias being programmed into systems, which will have huge implications on how AI interprets data, not just now but far into the future. As a result, new roles will emerge to try and prevent these biases and build a more equitable future, alongside new regulations being driven by companies and specialist technology firms.

#### 5. Balancing humans with AI

As AI and automation come into play, workforces fear employee levels will diminish, as roles become redundant. There is also inherent suspicion of AI among consumers and certain business sectors. But this fear is over-estimated, and, according to leading academics and business leaders, unfounded. While technology can take away specific jobs, it also creates them. In responding to change and uncertainty, technology can be a force for good and source of considerable opportunity, leading to, in the longer-



term, more jobs for humans with specialist skillsets. Automation is an example of helping people to do their jobs better, speeding up business processes and taking care of the time-intensive, repetitive tasks that could be completed far quicker by using technology. There remain just as many tasks within the workforce and the wider economy that cannot be automated, where a human being is required.

Businesses need to review and put initiatives in place to upskill and augment workforces. Reflecting this, a survey on the future of work found that 67% of businesses plan to invest in robotic process automation, 68% in machine learning, and 80% investing in perhaps more mainstream business process management software. There is clearly an appetite to invest strongly in this technology, so organisations must work hard to achieve harmony between humans and technology to make the investment successful.

#### 6. Putting customers first

There is growing recognition of the difference AI can make in providing better service and creating more meaningful interactions with customers. Another recent report examining empathy in AI saw 68% of survey respondents declare they trust a human more than AI to approve bank loans. Furthermore, 69% felt they were more likely to tell the truth to a human than AI, yet 48% of those surveyed see the potential for improved customer service and interactions with the use of AI technologies.

2020 has taught us about uncertainty and risk as a catalyst for digital disruption, technological innovation and more human interactions with colleagues and clients, despite face-to-face interaction no longer being an option. 2021 will see continued development across businesses to address the changing world of work and the evolving needs of customers and stakeholders in fast-moving, transitional markets. The firms that look forward, think fast and embrace agility of both technology and strategy, anticipating further challenges and opportunities through better take-up of technology, will reap the benefits.



# Using the greater data ecosystem to drive great decision making

As the fallout from the COVID-19 pandemic continues to disrupt the majority of industries, its impact on supply chains has been nothing short of seismic. As teams continue to face increasing pressure to make the right decisions at the right time - squeezing every last drop of insight and information out of vast lakes of data is now more important than ever.

**BY WILL DUTTON, DIRECTOR OF MANUFACTURING, PEAK**



THE PHRASE 'data is the new oil' has framed a large amount of discourse in the twenty-first century. The statement, although contestable, does beg the question that should always follow: exactly what data are we talking about? These tricky times call for a new approach to data-driven decision making. There's now a real need for supply chains to focus on the greater data ecosystem, accessing wider sources of data and utilising it to its fullest capacity. While making effective decisions based on data from current systems, or by joining up a few previously-siloed sources across the organisation is becoming easier than ever – there's potential to go even further than this. The more data there is to play with, the more informed supply chain decisions will be. Here are four data sources that can help accelerate smart supply chain decisions:

## 1. Linking the supply chain with customer systems

The more systems that talk to each other, the better. Linking data from supply chain systems with customer systems, including behaviour data points, can help

understand the pain points that arise. For instance, this could be the customer's ERP system or even the logistics systems between the business and the customer. Taking consumer-packaged goods businesses and manufacturers as an example, with a better handle on Electronic Point of Sale (EPOS) and any other sell-out data from customers' systems, the business can better predict what demand is going to be like, and better understand their stock levels in order to help anticipate their own.

Factoring into account things like receipts data, what baskets are shoppers generally buying together, and how can this help better anticipate the groups of products that are going to sell together. This closer relationship with customers' systems allows the business to better serve them, increasing efficiency and anticipating demand fluctuations. Inherently it's all about creating more competitive supply chains which are more cost-effective, with better service levels and a more accurate view of demand.

## 2. Supplier data for efficiency

By leveraging data points from suppliers' systems, businesses can plan ahead in the most efficient way and execute an effective just-in-time (JIT) inventory management strategy, holding minimal assets to save cash and space whilst still fulfilling customer demand. By employing this methodology, businesses are able to understand when a supplier is going to deliver, to what location, and anticipate the arrival of goods and raw materials whilst also better understanding the working capital implications.

## 3. Using environmental data



Don't underestimate the power hidden away in external, non-industry related data sources and the impact it can have on supply chain decision making. Think about the ways a business can utilise, let's say, macroeconomic data to understand what could be driving issues connected to supply and demand. Yes, we immediately think of things like GDP, or maybe even exchange rates, but there is now a plethora of data out there, that may be more industry and company-specific, that helps predict demand or implications for business performance. In recent months, appropriate data feeds impacting the supply chain could be an increase in Covid-19 cases near a supplier, hampering their ability to operate as normal. Connecting these data points up to technology such as Artificial Intelligence (AI) could help understand the impact of these incidents with supply performance, and create accurate forecasts on the trends.

#### 4. Sharing data across the network with co-opetition

For many, the rule of thumb is not giving the game away to competitors, so this may seem a little pie-in-the-sky for many businesses at first. However, the benefits of sharing data with the industry and accessing competitor data sources can be enormous. The data of those providing similar products is at first harmless – but using it in the right way, to make intelligent decisions, will allow the business to gain a unique view of what is happening across the rest of the market. This ultimately leads to a better understanding of wider trends and the ability to make smarter decisions. With a mutually beneficial relationship with the wider network, a business can understand supply issues, and work with competitors or neutral parties to deliver better products and services to customers creating a form of 'co-opetition.'

#### Accessing the ecosystem requires digital transformation

Tapping into the greater data ecosystem and utilising it in decision making will be essential for supply chain teams to run smooth operations in disruptive climates. However, to truly unlock the potential this offers, a

central AI system is needed.

In the same way that business functions have their own systems of record, the ability to power decision making based on a wide range of data sources hinges on the introduction of a new, centralised enterprise AI system. Using AI gives teams the ability to leverage unlimited data points at scale and speed. Utilising AI in this manner, to make decisions that are both smarter and faster to supercharge teams. At Peak, we call this Decision Intelligence (DI).

Decision Intelligence results in being able to connect the dots between data points with AI, to prescribe recommendations and actions to make more informed commercial decisions across the entire supply chain. By feeding external data from the points above into both demand and supply planning systems, leveraging it with AI, enterprises can optimise that connection between these two core areas. Not only does it allow a better sense of demand with a higher degree of accuracy, but also enables a better understanding of how supplier and operations constraints are affecting supply – automatically making micro-adjustments to optimise the way demand is being fulfilled.



# Best practices for building an AI serving engine

One of the most critical steps in any operational machine learning (ML) pipeline is artificial intelligence (AI) serving, a task usually performed by an AI serving engine.

BY YIFTACH SCHOOLMAN, REDIS LABS CO-FOUNDER AND CTO



AI SERVING ENGINES evaluate and interpret data in the knowledgebase, handle model deployment, and monitor performance. They represent a whole new world in which applications will be able to leverage AI technologies to improve operational efficiencies and solve significant business problems.

## AI Serving Engine for Real Time: Best Practices

I have been working with Redis Labs customers to better understand their challenges in taking AI to production and how they need to architect their AI serving engines. To help, we've developed a list of best practices:

### Fast end-to-end serving

If you are supporting real-time apps, you should ensure that adding AI functionality in your stack will have little to no effect on application performance.

### No downtime

As every transaction potentially includes some AI processing, you need to maintain a consistent standard SLA, preferably at least five-nines (99.999%) for mission-critical applications, using proven mechanisms such as replication, data persistence, multi availability zone/rack, Active-Active geo-

distribution, periodic backups, and auto-cluster recovery.

### Scalability

Driven by user behavior, many applications are built to serve peak use cases, from Black Friday to the big game. You need the flexibility to scale-out or scale-in the AI serving engine based on your expected and current loads.

### Support for multiple platforms

Your AI serving engine should be able to serve deep-learning models trained by state-of-the-art platforms like TensorFlow or PyTorch. In addition, machine-learning models like random-forest and linear-regression still provide good predictability for many use cases and should be supported by your AI serving engine.

### Easy to deploy new models

Most companies want the option to frequently update their models according to market trends or to exploit new opportunities. Updating a model should be as transparent as possible and should not affect application performance.

### Performance monitoring and retraining

Everyone wants to know how well the model they trained is executing and be able to tune it according to how well it performs in the real world. Make sure to require that the AI serving engine support A/B testing to compare the model against a default model. The system should also provide tools to rank the AI execution of your applications.

### Deploy everywhere

In most cases it's best to build and train in the cloud and be able to serve wherever you need to, for example: in a vendor's cloud, across multiple clouds, on-premises, in hybrid clouds, or at the edge. The AI serving engine should be platform agnostic, based on open source technology, and have a well-known deployment model that can run on CPUs, state-of-the-art GPUs, high- engines, and even Raspberry Pi device.







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Dr Richard Stevenson is a seasoned science and technology journalist with valuable experience in industry and academia. For almost a decade, he has been the editor of Compound Semiconductor magazine, as well as the programme manager for the CS International Conference

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# Automated, vetted functionality and the potential of the composable enterprise

In a lot of ways, the economy is like a road; businesses are the drivers and customers are the passengers. And the vehicle propelling those organisations forward? Their IT architecture.

**BY NICK FORD, CHIEF TECHNOLOGY EVANGELIST AT MENDIX**



FOR MOST OF THE JOURNEY so far, businesses have been able to take a traditional approach to their vehicle maintenance: they would drive hard for a few years until the parts were well and truly worn down, by which point there were probably a few new upgrades available. Only then would that business pull their architecture in for a massive tune-up.

That's when IT department would conduct a complete overhaul, bring their infrastructure into the present day so it could chug along for another few years. This

would take a lot of time and more money, but since it only needed to happen once or twice every decade, the system worked. But not anymore. These days, business is highspeed – and new competitors are joining industries at ever more disruptive rates. And it's time to consider a new, more modifiable motor – and that's the composable enterprise.

## **Speeding IT up**

Any organisation that wants to stand a chance at continuing to successfully navigate the pot-hole



ridden path of the post-COVID world needs to become incredibly adaptable.

The pandemic may have wreaked havoc on the economy, but it has also accelerated the digitalisation of society even further. It has led to 54% of businesses to accelerate their digitalisation in a bid to support newly remote workforces and keep up with customers' rapidly changing needs, according to Mendix research. The scope of these digital transformation projects is just too large and time-sensitive for IT teams to build solutions for from scratch, like they used to – making the shift to a moving to a composable model so attractive.

If a firm can tack on new services, features and improve their customer experience when they need to, one application at a time, by reusing automated, vetted functionalities, they can dramatically lower their IT costs while also scaling-up their time to value. This is what it means to become a composable enterprise – having the ability to build solutions from best of breed. This means assembling solutions from a variety of vendors and all of them working seamlessly together.

### Low code path to high performance

This is where low-code platforms come into the picture. On a low-code platform, all the functionalities needed to build out a new application can be pulled from an existing library. These components can be dragged and dropped into a visual workflow, meaning app development doesn't even require coding experience. This reduces the burden placed on IT to be responsible for all digital transformation projects (as we can all probably agree, they have more than enough on their plates). So, businesses can rapidly assemble new business applications like their kitting out a custom car – an accessory at a time, each one a different functionality. And even though IT doesn't have to be directly involved in this app development by way of assembly, they still have an element of oversight as every part is made up of tried and tested functionalities that they've already approved/built.



But more than that, a low-code platform can be a bridge connecting non-technical staff and IT departments and giving them a common language. So, these teams can move closer than ever before and collaborate in new, more efficient and creative ways. Once a business is able to inspire collaboration at every level, empowering workers to create new innovations to both make their work lives easier and improve customer experience, it will have a chance of staying on track.

Because the iterative changes lead to incredibly adaptable IT infrastructures – perfectly geared for whatever conditions the world throws at them.

### From old banger to hot hatch

The age of the massive overhaul is over. The businesses holding pole position use all the information they can get their hands on to make incremental and iterative changes – without even needing to slow down.

So, if you're a driver of the old style, struggling to switch from your static IT architecture into a dynamic, composable enterprise, try starting with a shift to low code development. It may be the boost of nitro your organisation needs.

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# The difference between adaptability and agility

Here, Matt Parker, CEO of Babble, explains the inherent differences between adaptability and agility and why both are vital.



**BELIEVE IT OR NOT,** we're no longer tied to our desks, hooked up to our workspace via wires and telephone lines. The world of work is transforming, and smart businesses are making sure they're ahead of the curve. If business is booming, your staff are working tirelessly and phones are ringing off the hook, you might not notice a problem. But, before you know it, your old-fashioned way of working will be overtaken by swift, forward-thinking competitors, and, if 2020 showed us anything, it's that an ability to adapt is invaluable. The world around us isn't static – it's constantly evolving, and businesses must learn to change with the times.

Agile working connects people to technology that helps to improve effectiveness and productivity. Therefore, agility is defined by the way a business proactively evolves in order to thrive. Agility allows a business to realise its full potential through implementing new systems. As technology evolves and the way we work changes, businesses can't just stand still. Continuing a way of working because "this is how we've always done it" will get mediocre results and hinder a business's progress.

For example, a company that embraced agile working is Aquavista. The leading leisure and mooring supplier



that needed to implement a scalable cloud technology solution that would align to its rapid growth. To enable employees to operate efficiently and remotely, Babble deployed a fibre grade connection and a hosted telephony platform. These solutions facilitated agile working, reduced operational downtime, boosted productivity and ultimately enhanced customer experience.

Adaptability, however, is a business's ability to respond to these changes. Businesses must recognise the importance of both of these competencies. It's how prepared a business is to change or evolve its practices to overcome challenges or align with environmental changes.

Businesses should be able to adapt to new changes in a productive, positive way – with company culture emerging unscathed and business processes improved as a result. Maintaining business effectiveness through times of change will ensure a business can thrive, no matter what life throws at it.

Whilst "agile working" in a software development sense isn't wholly aligned with the term used when discussing business, there are some shared principles and key takeaways. Fundamentally, viewing change positively and approaching new processes with flexibility helps businesses adapt. Improving internal processes benefits the business, its staff and ultimately customers as the service provided is more effective.

Businesses need a unified vision and passionate leaders to ensure agile adoption. Problem solving with a positive, productive mindset will ensure successful agile transformation. It's all about understanding what currently works but being open to exploring what could work better.

Businesses must be both agile and adaptable in order to weather new storms and safeguard its future. However, achieving agility and adaptability is a fine balancing act. Constantly striving for change without strategic rationale may cause a business to flounder. You should always aim for the final goal, with a strong end result in mind and a clear idea of how you're going to get there.

Implementing change within a business can be a challenge. It's true that leaders can sometimes be too close to their own operational processes to be able to clearly see better ways to work, but partnering with a specialist such as Babble offers a unique advantage.

Flexible, scalable solutions ensure that a business can adapt to new challenges or changes in circumstance. As we've seen from the COVID-19 pandemic, there'll be times when businesses must adapt to new ways of working almost overnight. Think ahead by utilising an optimised network and deploying cloud-based communication tools to allow your business to work in an agile way. This results in maximum efficiency, maximum benefit to your customers and maximum business productivity.

Being agile requires business leaders to identify change and understand how it could impact the business. Seeking new opportunities and deploying the resources needed to secure these opportunities futureproofs a business and helps it succeed. Although it's worth noting that there's no set formula for agile working. Businesses can't follow a 'how to' guide for agility. Every business has its own way of working; its own processes. Identifying where there's need for change is unique across each business. However, ultimately, businesses that don't adopt agile working will stagnate as proactive, forward-thinking competitors take the lead. Don't just wait for new ways of working to become a necessity – take the initiative now.





# Digitalisation and the evolution of green data centres

Brian Johnson, ABB Data Center Segment Head, explores how digitalisation is shaping the evolution of green data centres, and provides a range of sustainable growth tactics for delivering cost and energy efficiencies.



IT IS A COMMON MISCONCEPTION that data centers are responsible for consuming vast amounts of the world's energy reserves. The truth is that data centers are leading the charge to become carbon free and are supporting members of their supply chains in achieving the same.

Even in the face of rapid digital acceleration, the vast proliferation of smart devices and an upward surge in demand for data, the data center sector remains a force for positive change on climate action and is well on course to fulfil its 'green evolution' masterplan. To be more specific, data centers are estimated to consume between one and two percent of the world's electricity according to the United States Data Center Energy Usage Report [1]. A recent study confirmed that, while data centers' computing output jumped six-

fold from 2010 to 2018, their energy consumption rose only six percent [2].

To better envisage just how energy efficient data processing has become, imagine that if the airline industry was able to demonstrate the same level of efficiency, a typical 747 passenger plane would be able to fly from New York to London on just 2.8 liters of fuel in around eight minutes.

## How has the data center sector reduced total energy consumption?

Using a range of safe, smart and sustainable solutions, ABB is helping its data center customers to reduce CO<sub>2</sub> emissions by at least 100 megatons until 2030. That is equivalent to the annual emissions of 30 million combustion engine cars.



Solutions include more energy efficient power systems innovations or even moving entirely to large scale battery energy storage systems which ensure reliable grid connectivity in case of prolonged periods of power loss.

These are obviously big budget changes, with impressive yields, but there is much more that can be done to harness the power of digitalization on a smaller scale.

### Making every watt count

The need for additional data from society and industry shows no sign of stopping, and it is the job of the data center to meet this increased demand, without consuming significantly more energy. Unlike many industries which wait for regulation before forcing change, the desire to offer a more environmentally conscious data center comes from within the industry, with many big players and smaller facilities too, taking an “every watt counts” approach to operational efficiency.

By digitalizing data center operations, data center managers can react to increased demand without incurring significant additional emissions. Running data centers at higher temperatures, switching to frequency drives instead of dampers to control fan loads, adopting the improved efficiency of modern UPS and using virtualization to reduce the number of underutilized servers, are all strong approaches to improve data center operational efficiency.

To understand this further, let us explore some key sustainable growth tactics for delivering power and cost savings for green data centers:

### Digitalization of data centers

One of the most recent developments has been the implementation of digital-enabled electrical infrastructure. Data center operators can take advantage of techniques to make their equipment more visible, efficient and safer. One development has been the use of sensors instead of traditional instrument transformers, which communicate digitally via fiber optic cables, reducing total number of cables by up to 90% vs traditional analog, and also use low energy circuits, which increases safety.

The resultant digital switchgear can then be manufactured, commissioned and repaired much more easily thanks to both the sheer number of cables and the intelligent nature of the connections. Other innovations allow circuit protective devices to be configured wirelessly, and even change their settings when alternate power sources are connected. Visibility into the electrical consumption is much easier with digital signals, and analytics are enabled with this “democratization” of the data stream. From this, insights can be gained to both increase efficiency, and tailor consumption based on specific business goals.

### Minimizing idle IT equipment

There are several ways data centers can minimize idle IT equipment. One popular course of action



A server cannot tell the difference between physical storage and virtual storage, so it directs information to virtualized areas in the same way. In other words, this process allows for more information storage, but without the need for physical, energy consuming equipment

is distributed computing, which links computers together as if they were a single machine. Essentially, by scaling-up the number of data centers that work together, operators can increase their processing power, thereby reducing or eliminating the need for separate facilities for specific applications.

### Virtualization of servers and storage

Undergoing a program of virtualization can significantly improve the utilization of hardware, enabling a reduction in the number of power-consuming services and storage devices. In fact, it can even improve server usage by around 40 percent, increasing it from an average of 10 to 20 percent to at least 50 or 60 percent.

A server cannot tell the difference between physical storage and virtual storage, so it directs information to virtualized areas in the same way. In other words, this process allows for more information storage, but without the need for physical, energy consuming equipment. More storage space means a more efficient server, which saves money and reduces the need for further physical server equipment.

Consolidating servers, storage, and data centers Blade servers can help drive consolidation as they provide more processing output per unit of power consumed. Consolidating storage provides another opportunity, which improves memory utilization while reducing power consumption. Some consolidation methods can use up to 90% less power once fully operational [3].

Big savings are also coming from moving to solid state disc drives (SSD) from traditional optical drives (HDD). While a bit more expensive, they're much smaller and energy efficient and can be done during an IT "refresh" cycle every 3-5 years or so.

### References

- [1] United States Data Center Energy Usage Report | LBL Sustainable Energy Systems
- [2] Cloud Computing Is Not the Energy Hog That Had Been Feared - The New York Times (nytimes.com)
- [3] Servers: Database consolidation on Dell PowerEdge R910 servers

### Managing CPU power usage

More than 50 percent of the power required to run a server is used by its central processing unit (CPU). Most CPUs have power-management features that optimize power consumption by dynamically switching among multiple performance states based on utilization. By dynamically ratcheting down processor voltage and frequency outside of peak performance tasks, the CPU can minimize energy waste.

### Distribution of power at different voltages

Virtually all IT equipment is designed to work with input power voltages ranging from 100V to 240V AC, in accordance with global standards and the general rule is of course, the higher the voltage, the more efficient the unit. That said, by operating a UPS at 240/415V three-phase four wire output power, a server can be fed directly, and an incremental two percent reduction in facility energy can be achieved.

### Adopting best cooling practices

Traditional air-cooling systems have proven very effective at maintaining a safe, controlled environment at rack densities of two kW to three kW per rack, all the way to 25 kW per rack. But operators are now aspiring to create an environment that can support densities in excess of 30-50 kW as demand for AI and Machine Learning increases, and at these levels, air cooling technologies are no longer effective.

That shouldn't be seen as a barrier though, with alternate cooling systems such as rear door heat exchangers, providing a suitable solution.

### Plugging into the smart grid

Smart grids enable two-way energy and information flows to create an automated and distributed power delivery network. Data center operators can not only draw clean power from the grid, they can also install renewable power generators within their facility in order to become an occasional power supplier back into the grid.

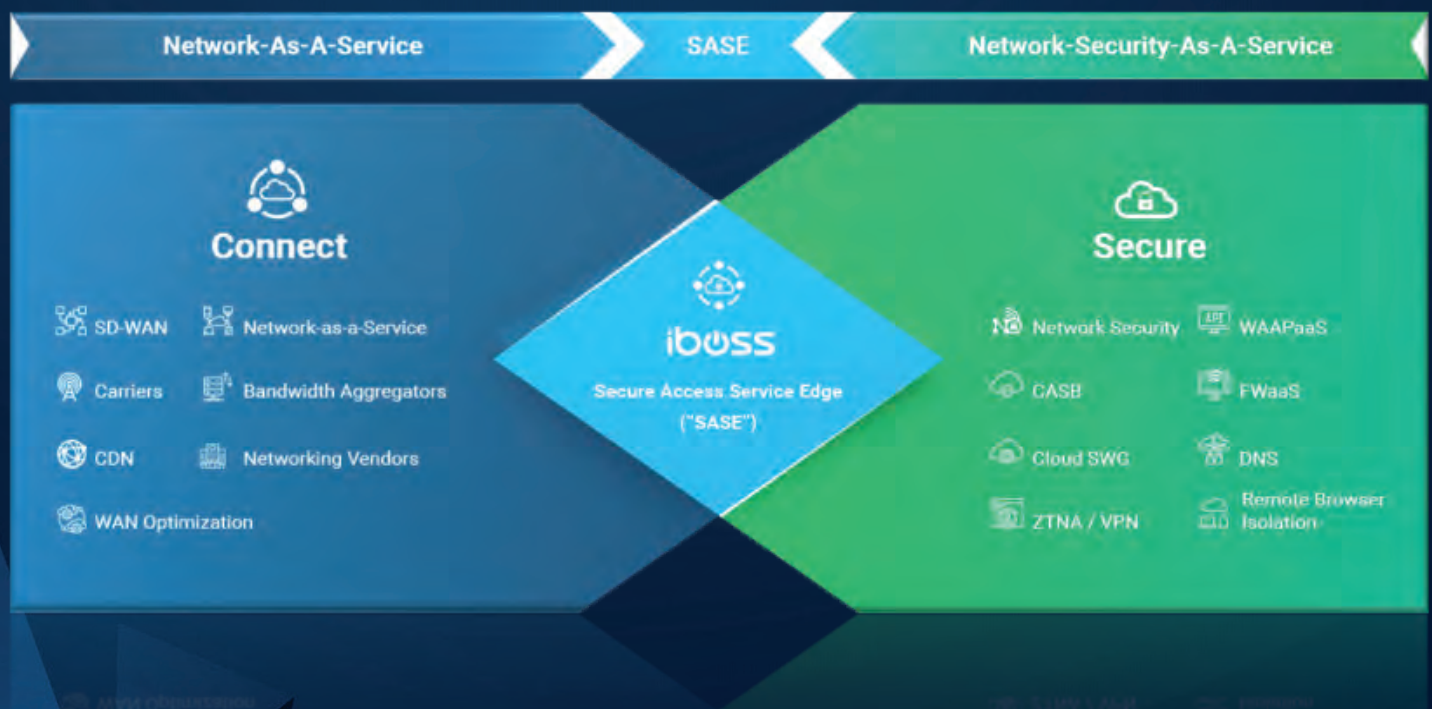
For further advice on safe, smart and sustainable digitalization tactics which support the green data center masterplan, visit <https://new.abb.com/data-centers>.





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# To embrace automation, businesses must build trust in technology

Automation is disrupting the very nature of how humans work. AI, cloud computing, bots, robots, cybersecurity and real-time data appear in headlines every day and have built a dual reputation as both a villain and a saviour; they disrupt industries, eliminate jobs and – yet – are also responsible for creating tremendous value.

**BY SHERIF CHOUDHRY, MANAGING DIRECTOR, BCG PLATINION**



**ACCORDING** to the World Economic Forum's Global Risk Report, automation – accelerated by COVID-19 – may displace 85 million jobs in the next five years. The report went on to warn that accelerating automation could even damage our efforts to build a digitally inclusive society, thus reinforcing the suspicion that automation may not be a force for good or improve lives as is often promised.

Perhaps the reality lies somewhere in between: automation is at its best when we put human needs at the heart of innovation - using technology as an enabler to improve society and create value. Then with creativity and ingenuity that's focused on behavioural change, we can use the technology as an enabling tool to create new value. And it is only through clear

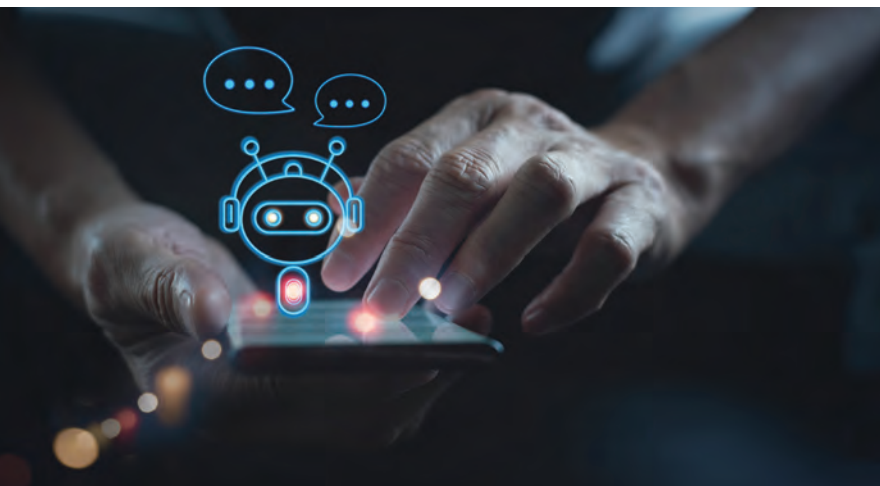
demonstration of this value that we can try to mitigate against the fear that automation exists simply to eliminate jobs.

## Making the case for automation

Alex Garland, writer and director of fiction AI film, *Ex-Machina* put it best when he said: "any major breakthrough, whether nuclear power or industrial revolution, contains latent danger and latent benefit, but it's up to us how we contain that." The same can be applied to technology.

When automation revolutionised the textile industry, new industries and jobs were created. Today, we engage with AI when talking to chatbots while we shop or pay our bills. And while chatbots have replaced call centre agents, help can now be offered to more clients around the clock and in many languages. For employees, the use of chatbots can create new and higher-value roles, such as those working with data to develop new customer offerings and support. This evidenced by a 2020 report by The World Economic Forum forecasted forecasting an upsurge in global AI jobs, with new jobs per 10,000 opportunities jumping from 78 to 123 by 2022.

When viewed through this lens, automation presents opportunities, but there is a need for organisations and governments to help employees and citizens understand what automation might mean for them and to slowly build trust. Organisations can be instrumental in this process, leading the way with strong change management programmes and investment into upskilling and reskilling.



### The role of the organisation

It is critical for organisations to communicate what the re-imagined future looks like before adopting these technologies. The 'why' and the future benefits needs highlighting at the very beginning of the change journey.



Too often, the story is lost in IT or marketing reports. After all, our behaviours inform the technology we use at work, and after time, the technology we use informs our behaviours in turn. Only with that understanding, can organisations begin to overcome the barrier to trust, and how they carefully navigate this change journey is vital to mitigate disruption to society.

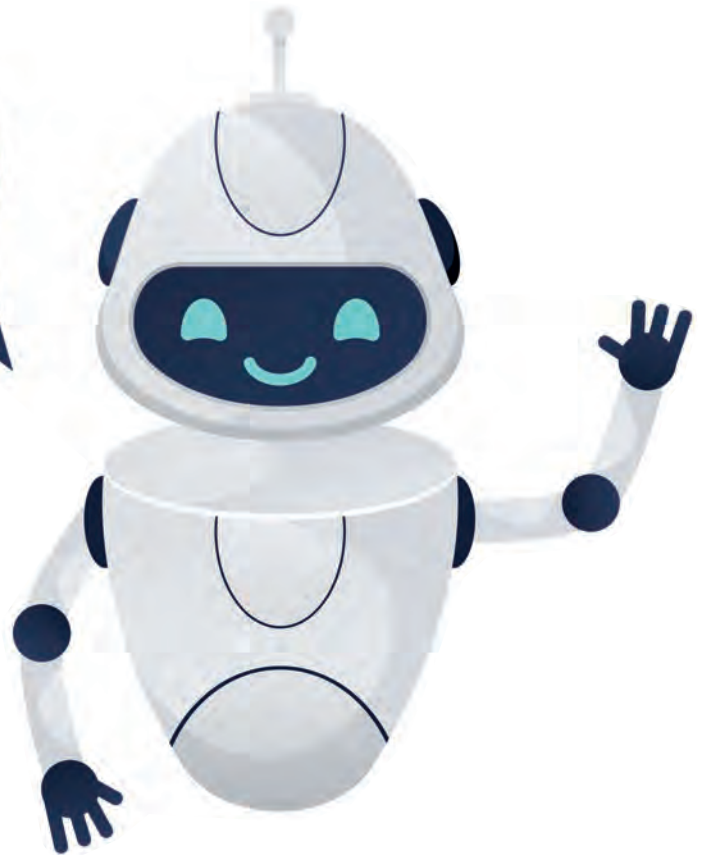
Here, organisations must recognise that the role of the Chief Digital Officer is a key one to take responsibility for the vision of a re-imagined future with new technologies and communicating its impact to the workforce.

### The solution is bionic

It might feel impossible to design and implement new technology, but a bionic approach changes this. Bionic combines the best of human expertise, data and technology to create a resilient organisation that's able to take advantage of technology - in an ethical way - and win in the new reality.

Of course, this kind of planning is easier said than done: technology changes in significant ways every six to twelve months – and realising how those changes will impact ways of working and society is a key strategic function of businesses. Think of all of all the emerging technologies: Robotic Process Automation, the Internet of Things and Artificial Intelligence (AI). For organisations to adopt, design, implement and operate these technologies requires new talent and updated skills. They need people who can use these technologies to develop new areas of value for the business – an act that will subsequently create additional new roles and bring in yet more people.

Clearly businesses need to take a more human-centred design approach to their services and products. Any strategy must be built on a blend of human expertise and technology capabilities. This is something that only comes from clear strategy and purpose, one that creates a roadmap to an outcome via a connective tissue of people and IT. This is bionic approach is the backbone of future success – one that allows an organisation to response to change and uncertainty quickly, and, ultimately, to grow.



### Aligning ambitions and driving change

The responsibility to ensure automation benefits employees and society at large, in a safe but effective way, sits with governments and businesses.

While at a grassroots level, digital literacy in schools is largely happening in the developed world but it also important for emerging countries to counter the digital divide. Business and governments, for example, could work together to better support education systems across all parts of the world, ensuring future generations are taught how to harness continually evolving technology and be energised by its potential to create new societal value. For those entering the workforce, the case for automation should be based on the tangible returns for business, employees and society. Yet those already within the organisations must not be left behind, Investment in digital upskilling and reskilling, training, all while communicating the benefits of technology and automation consistently is vital. Not only will this help to build trust, but also ensures that the benefits of technology are realised and risks mitigated.

When automation does inevitably render jobs redundant, businesses should never lose sight of the human factor, being ready to step in and re-skill employees in new areas. Indeed, we suggest that the future roadmap of an organisation should look not only at shareholder value, but employee and societal value driven by human-centric design thinking.



# Recovering from 2020:

## How digital transformation will be essential for sports in 2021

2020 was a difficult year for everyone, with a huge number of industries suffering thanks to the pandemic. This was certainly the case for the sports industry, which saw reliable sources of revenue, such as ticket sales and food and drink at stadiums, decimated.

**BY LARS RENSING, CEO OF ENTERPRISE BLOCKCHAIN SERVICE PROVIDER PROTOKOL**



AS WE MOVE INTO 2021, the situation seems to be easing, but teams will still find it hard to recover from the losses of 2020 without investing in digital transformation.

To recuperate lost revenue from the past year, digital innovation and transformation is going to be essential for teams who want to create new streams of income and increase engagement of fans in the absence of live game attendance. There are a number of ways clubs can do this, and those that innovate sooner will be more likely to survive in the long run.

Although live games have started up again for most sports, attendance is still limited or prohibited. This means that although fans can watch their teams from home, they may feel disconnected from the action. Sports teams can help to improve their engagement with fans watching from home by exploring new viewing experiences enhanced by digital transformation. For example, clubs can use virtual

reality technology to create 'cheer' and other reaction buttons for supporters, which can be used during the match to celebrate with the players.

These reaction buttons allow fans to feel included in the action, as if they were watching the game at the venue. Clubs can also offer fans a whole new range of viewing angles - putting cameras on the players and even the balls - to further engage them remotely. This allows fans to feel more engaged with the action, letting clubs leverage their remote fanbase and encourage viewing numbers.

Just improving game viewing isn't enough though. Teams need to be able to engage their fans without games, in order to make up for the losses of last year. Teams also need to be able to attract a younger, digital-native audience, as well as tap into eSports' audience. This is where blockchain technology comes in. Blockchain can be used to create alternative revenue streams for sports teams, something which



will be crucial this year. Perhaps the most popular of blockchain's offerings for sports is in the creation of fan tokens.

A number of prominent clubs, such as FC Barcelona and Dynamo Kyiv, had been investing in these tokens even before the pandemic to broaden their offerings and create innovative ways for fans to engage digitally. Blockchain-based fan tokens can be purchased by fans or earned when they complete certain actions, such as interacting with their club or other fans on social media. The tokens can then be exchanged for exclusive rewards, from VIP events to early merchandise access. Fan tokens solutions not only engage fans in the absence of game attendance, but also allow sports teams to tap into a larger and more global fanbase, even when game attendance returns. These tokens have already been proving extremely popular, and more and more clubs are looking to adopt them. For instance, FC Barcelona's first round fan tokens sold out in under two hours, at a value of \$1.3 million.

Another innovative way that blockchain can be used to engage fans and make up for the losses of 2020 is in the creation of digital collectibles and trading cards. Like fan tokens, digital trading cards and collectibles can be purchased by fans, creating a new stream of revenue for teams hit hard by the pandemic.

Digital trading cards also let fans from all over the world play with each other, establishing a more connected global fanbase that teams can capitalise on. In the same way, unique digital collectibles are an inventive way to simultaneously engage younger fans and increase revenue. This is something that



has already been successful - the NBA's Top Shot digital collectibles sold \$2.3 million worth of NFTs in 30 minutes this year. What's more, these digital trading cards and collectibles are underpinned by blockchain technology, ensuring that they cannot be replicated, forged or destroyed, making them a better investment for teams and more attractive to dedicated fans.

We may certainly see the situation for the sports industry improve this year, but that in itself won't be enough to make up for 2020's losses. Teams that need to recuperate from last year need to diversify their offerings through digital transformation. Only through this kind of innovation will teams be able to get back on track. Investment in digital transformation and creative thinking around fan engagement will not only allow clubs to survive the fallout of 2020, but will also earn the participation of a younger fanbase, diversify revenues and successfully monetise international fans.





## Schrems II: DPAs in Germany begin compliance checks - other jurisdictions soon to follow



Schrems II enforcement is getting off the ground in Germany, highlighting the serious and urgent need for companies to begin steps towards compliance.

**BY GARY LAFEVER, CEO &  
GENERAL COUNSEL AT ANONOS:  
LAWFUL BORDERLESS DATA.**

A DISCUSSION between German Data Protection Authorities (DPAs) at their joint Datenschutzkonferenz (DSK) meeting highlighted the next steps of a Schrems II Task Force: DPAs, led by Hamburg and Berlin, will begin initiating enforcement measures.

Most notably, the Hamburg DPA will conduct random checks on companies to determine whether or not they are in compliance with Schrems II requirements. This highlights the high priority of Schrems II concerns for Boards and C-Suite Executives, as investigations and enforcement actions in other jurisdictions are likely to follow soon. Another indicator of increased pressure in other jurisdictions comes from NOYB – European Center for Digital Rights, the non-profit privacy organisation founded by Max Schrems. In a questionnaire sent to numerous companies in 2020, NOYB asked:



If you send personal data to the US, which technical measures are you taking so that my personal data is not exposed to interception by the US government in transit? Thirty-three companies received this questionnaire as part of NOYB's "Opening Pandora's Box investigation", but very few were able to respond satisfactorily. It is clear that enforcement actions and compliance pressures are coming from both regulators and privacy organisations, highlighting the urgency of Schrems II compliance. In a recent webinar on "Briefing the C-Suite & Board of Directors on Schrems II Risk Exposure", 83% of respondents responded "No" to the following question: Would your company be able to answer a similar question from NOYB regarding the technical measures you have in place to comply with Schrems II?

This response indicates a high level of unpreparedness for Schrems II compliance. However, other than invalidating the Privacy Shield treaty for EU-US transatlantic data flows, the Schrems II ruling does not represent "new law", but rather clarifies requirements under the EU General Data Protection Regulation (GDPR) passed in 2016. Under the GDPR, the fundamental rights of individual data subjects must be protected. The Schrems II ruling clarifies GDPR requirements for protecting EU personal data by leveraging technical measures when data is in use.

Until now, most organisations have focused on protecting data when it is at rest or in transit, but that approach is no longer sufficient. Organisations that are found not to be in compliance with Schrems II may therefore not be in compliance with the GDPR generally. The court in Schrems II ruled that the appropriate relief for noncompliance is injunctive termination of processing, rather than the assessment of penalties – highlighting the potential for immediate material disruption to business operations. This shifts the burden of proof onto data controllers in order to regain the right to process their data.

Since there is no grace period, compliance became mandatory immediately on 16 July 2020, the date of the Schrems II court ruling. Now, over six months later, organisations must evaluate whether the technical controls they have in place will be sufficient to overcome claims of non-compliance. Given that the European Data Protection Board (EDPB) has already released preliminary recommendations on how to comply with Schrems II, not taking action is a high-risk strategy.

**Action Plan** In Germany, the recent Data Protection Report from law firm Norton Rose Fulbright recommends that "companies with headquarters in Germany or with affiliates operating from Germany should be aware that they might receive a questionnaire from their regulator [and] should prepare for how they might respond". More specifically, they note that German DPAs engaging in random questionnaires or compliance checks will expect companies to already be taking steps

towards complying with EDPB recommendations for Schrems II.

For those outside of Germany, companies should also take steps to comply with EDPB recommendation before DPAs in other jurisdictions begin to take stronger enforcement measures or privacy organisations initiate new investigations. Finalisation of EDPB guidelines and new Standard Contractual Clauses (SCCs) are projected to occur near the end of March 2021, leaving companies with few options if they are investigated and found to be non-compliant. Briefing Boards and C-Suite Executives and reviewing and procuring relevant technology may take several months at a minimum; even companies that have already started the work necessary to comply with Schrems II may be found to have responded too slowly. Taking steps to implement technical measures to protect data is critical, and companies with lower risk tolerances should take steps immediately. Companies electing not to take action now should document their decision-making process for evaluating the risk of noncompliance as well as the consequences of terminated data flows and interruptions to business operations.

Given that the European Data Protection Board (EDPB) has already released preliminary recommendations on how to comply with Schrems II, not taking action is a high-risk strategy

Schrems II webinar participants were also asked about this potential outcome, namely: If your company was told to halt processing and/or data transfers, what would be the immediate impact to your business? 89% of respondents in the "Briefing the C-Suite & Board of Directors on Schrems II Risk Exposure," characterised the results of terminated processing as "catastrophic" or "serious" to their operations. All companies are urged to consider the potential impacts on their own businesses in the face of potential enforcement action. It is critically important that, throughout this process, companies understand that they must implement new technically-enforced "Supplementary Measures" to support Standard Contractual Clauses (SCCs) to comply with Schrems II requirements. Merely updating SCCs without implementing new technically enforced "Supplementary Measures" is not enough.

Without appropriate technical measures to protect data when in use - not just when at rest and during transit - compliance will not be achieved. As enforcement actions draw increasingly near, companies should not wait to find out what happens in Germany before taking action themselves.



# Three reasons the security industry is protecting the wrong thing

Why is it that the security industry talks about network security, but data breaches? It's clear that something needs to change, and according to **PAUL GERMAN, CEO, CERTES NETWORKS**, the change is simple.



FOR TOO LONG NOW, organisations have been focusing on protecting their network, when in fact they should have been protecting their data. Paul outlines three reasons why the security industry has been protecting the wrong thing and what they can do to secure their data as we move into 2021.

**Reason One: They're called data breaches, not network breaches, for a reason**

Looking back on some of the biggest data breaches the world has ever seen, it's clear that cyber hackers

always seem to be one step ahead of organisations that seemingly have sufficient protection and technology in place.

From the Adobe data breach way back in 2013 that resulted in 153 million user records stolen, to the Equifax data breach in 2017 that exposed the data of 147.9 million consumers, the lengthy Marriott International data breach that compromised the data from 500 million customers over four years, to the recent Solarwinds data breach at the end of 2020,



over time it's looked like no organisation is exempt from the devastating consequences of a cyber hack.

When these breaches hit the media headlines, they're called 'data breaches', yet the default approach to data security for all these organisations has been focused on protecting the network - to little effect. In many cases, these data breaches have seen malicious actors infiltrate the organisation's network, sometimes for long periods of time, and then have their pick of the data that's left unprotected right in front of them.

So what's the rationale behind maintaining this flawed approach to data protection? The fact is that current approaches mean it is simply not possible to implement the level of security that sensitive data demands as it is in transit without compromising network performance. Facing an either/or decision, companies have blindly followed the same old path of attempting to secure the network perimeter, and hoping that they won't suffer the same fate as so many before them.

However, consider separating data security from the network through an encryption-based information assurance overlay. Meaning that organisations can seamlessly ensure that even when malicious actors enter the network, the data will still be unattainable and unreadable, keeping the integrity, authentication and confidentiality of the data intact without impacting overall performance of the underlying infrastructure.

### **Reason Two: Regulations and compliance revolve around data**

Back in 2018, GDPR caused many headaches for businesses across the world. There are numerous data regulations businesses must adhere to, but GDPR in particular highlighted how important it is for organisations to protect their sensitive data. In the case of GDPR, organisations are not fined based on a network breach; in fact, if a cyber hacker were to enter an organisation's network but not compromise any data, the organisation wouldn't actually be in breach of the regulation at all.

GDPR, alongside many other regulations such as HIPAA, CCPA, CJIS or PCI-DSS, is concerned with protecting data, whether it's financial data, healthcare data or law enforcement data. The point is: it all revolves around data, but the way in which data needs to be protected will depend on business intent. With new regulations constantly coming into play and compliance another huge concern for organisations as we continue into 2021, protecting data has never been more important, but by developing an intent-based policy, organisations can ensure their data is being treated and secured in a way that will meet business goals and deliver provable and measurable outcomes, rather than with a one-size-fits-all approach.

### **Reason Three: Network breaches are inevitable,**

### **but data breaches are not**

Data has become extremely valuable across all business sectors and the increase in digitisation means that there is now more data available to waiting malicious actors.

From credit card information to highly sensitive data held about law enforcement cases and crime scenes, to data such as passport numbers and social ID numbers in the US, organisations are responsible for keeping this data safe for their customers, but many are falling short of this duty. With the high price tag that data now has, doing everything possible to keep data secure seems like an obvious task for every CISO and IT Manager to prioritise, yet the constant stream of data breaches shows this isn't the case.

But what can organisations do to keep this data safe?

To start with, a change in mindset is needed to truly put data at the forefront of all cyber security decisions and investments. Essential questions a CISO must ask include: Will this solution protect my data as it travels throughout the network?

Will this technology enable data to be kept safe, even if hackers are able to infiltrate the network? Will this strategy ensure the business is compliant with regulations regarding data security, and that if a network breach does occur, the business won't risk facing any fines? The answer to these questions must be yes in order for any CISO to trust that their data is safe and that their IT security policy is effective.

Furthermore, with such a vast volume of data to protect, real-time monitoring of the organisation's information assurance posture is essential in order to react to an issue, and remediate it, at lightning speed. With real-time, contextual meta-data, any non-compliant traffic flows or policy changes can be quickly detected on a continuous basis to ensure the security posture is not affected, so that even if an inevitable network breach occurs, a data breach does not follow in its wake.

### **Trusting information assurance**

An information assurance approach that removes the misdirected focus on protecting an organisation's network and instead looks at protecting data, is the only way that the security industry can move away from the damaging data breaches of the past. There really is no reason for these data breaches to continue hitting the media headlines; the technology needed to keep data secure is ready and waiting for the industry to take advantage of.

The same way that no one would leave their finest jewellery on display in the kitchen window, or leave their passport out for the postman to see, organisations must safeguard their most valuable asset and protect themselves and their reputation from suffering the same fate as many other organisations that have not protected their data.



## Stopping a data retention crisis

Armed with significant enforcement powers, regulators continue to grow bolder and more confident in taking enforcement action in support of data regulation and the protection of citizens' digital information.

**BY MARK KEDDIE, GLOBAL DIRECTOR OF PRIVACY, VERITAS TECHNOLOGIES**



WHILE SOME DATA REGULATORS have adopted a more sympathetic tone on account of businesses' continued struggle with COVID-19, others have shown no such leniency with multi-million Euro fines. For multinational business, the challenge of knowing what data you have, and how to manage it compliantly so as to avoid becoming the next data disaster headline remains a Board risk.

Data breaches are often viewed as being sensationalist and frequently contentious in nature and yet the scope of what constitutes a data breach remains poorly understood. Consequently the most seemingly innocuous risks such as data retention, can emerge as the unexpected root cause of regulatory failure.

Consider the dark data the business didn't realise it had, or the personal data it had forgotten to delete after selling off a part of the business. Maybe it's the poorly enforced data retention strategy that's resulted

in personal data being stolen by cybercriminals from an unsecured, forgotten server. A data breach that originates from poor data retention practices can be just as difficult and costly to manage as the more headline-grabbing cybersecurity incidents that we've become all too familiar with.

Businesses need clarity across their entire data estate to be confident that they are meeting their regulatory obligations, but without the tools that automate data classification and deletion policies, the process of classifying and deleting data can be extremely resource-intensive.

### **An unknown quantity**

A combination of historic best practice, a fear of deleting data and the growing availability of large-scale cheap storage, means employees, IT staff and data managers can mistakenly believe that they're doing the right thing by storing 'everything' without a real



understanding of the data that they are retaining. The resulting data bloat can have real consequences when it comes into conflict with newer regulatory and legal obligations.

Many industries, like the banking sector for example, have established requirements to retain data for set periods of time which have become ingrained in the consciousness of long-term employees. However, regulations like GDPR dictate that data should only be held for as long as required for its original purpose and offer individuals the 'right of erasure'. It is unsurprising then that businesses are confused around what they can and should keep – and for how long – often choosing to ignore the issue, keep all their data and quietly forget about the risk.

With data sets becoming more complex and increasingly challenging to manage and secure, the risk of data retention is becoming omnipresent. The growing popularity of hybrid multi-cloud environments – where data is stored across both private on-premise networks as well as a range of cloud environments – means data can exist in multiple, often disparate, locations in an organisation for years to come.

It's a situation that's exacerbated if deletion or categorisation of that data is delayed or ignored, with much of it simply forgotten and going 'dark'. The most recent research from Veritas found that half (52%) of an organisation's data, on average, can be classified as dark – meaning that the person who's managing it, doesn't know what it is, or may not know it exists. Dark data quickly loses its strategic value and evolves instead into a data risk. Unknown volumes of dark data mean an increasing likelihood of data incidents with the potential for breaches, fines and reputational damage. Just how confident can a business be that there it knows where all its data is and how that impacts its compliance obligations?

### Insight and automation

Organisations need a fresh approach to data management. It can no longer be treated as a low-priority, back office function. A new approach requires both operational and cultural changes across organisations, but it also demands ownership and accountability if the compliance risk is to be effectively mitigated.

Every board member or departmental head today is, in their own way, a chief data officer, accountable for their business unit's data. That means setting a proactive tone from the top that every business leader and data owner should take a principal role in defining the data deletion strategy, resolving the management challenges that frustrate them and providing employee education to meet data retention policies.

To enable this, businesses must maintain their focus and improve data visibility by adopting tools that help organisations see what data they have and where. With these in place, better-informed decisions can be made on what data to keep and what to delete. Deploying tools to automatically label data on upload, limiting error and improving future accuracy can reduce risk with data set to expire after a pre-defined period of time and within regulatory obligations. This prevents unclassified and vulnerable 'dark' data from building back up again over time.

Careful data management, clear policies and tools for classification and deletion are all central to meeting regulatory compliance. To execute it effectively, a business must give its employees the insight, confidence and control over the data they handle, and enable them with the right tools and technologies. By encouraging data responsibility and implementing new automation capabilities, they can cut through the fog and find a safe path through the regulatory landscape.





# How can an organisation assess innovation success?

Innovation can be difficult to judge, but a strategic framework will help judge progress.

**BY PETER SKYTTEGAARD, SENIOR RESEARCH DIRECTOR, GARTNER**

DEMONSTRATING the value of innovation is challenging. The exploratory nature of innovation means that organisations have to measure something where business outcomes are not fully known or guaranteed and where the path to success is often unclear. In many cases, innovation also has auxiliary goals such as stronger employee engagement, culture change or increased organisational energy by doing something new and different. These results are also difficult to measure.



There is also a timing challenge. The time lag between the original innovation investment or activity and its eventual outcome can be very long. This can make

it virtually impossible for executive leaders to assess the value of innovation and intervene with adjustments to the program when things don't go as planned. To better assess the business value of innovation, executive leaders should set clear goals and select a combination of input, process and output measures to track progress while the innovation program is being undertaken.

## **Determine Business and Innovation Goals to Create Clarity in Your Innovation Initiative**

Designing good innovation metrics starts with an understanding of the organisation's business goals.

To demonstrate business value, organisations need to be clear on what they are innovating for. Are they pursuing incremental innovation to improve existing business? Are they looking for radical ‘moonshot’ innovation in entirely new business models? Or are they simply validating the possibility or potential of an idea before the organisation invests heavily in it? For example, if an organisation’s business goals are related to better customer experiences, they may set an innovation goal to improve customer involvement in ideation and set a “benchmark” key performance indicator (KPI) against which to track this engagement. This can be measured much earlier by, for instance, measures on customer-submitted innovation ideas. Executive leaders can also measure “failure rate.” This can include good outcomes that are not originally planned, or endpoints, which advise the business not to invest in an innovation idea as early exploration disproves the perceived benefits. A lesson from an experiment that didn’t go as expected is a good outcome that can be measured much earlier than the realised value of a successful new product.

For even earlier measures, executive leaders should look for leading indicators on “inputs” to the innovation process. Some of these can be easy-to-quantifiable inputs, such as budget spend or time dedicated, but executive leaders should not limit themselves to just these kinds of metrics. More “fuzzy” factors such as organisational culture are at least as important indicators for the innovation success as the hard numbers. When deciding the innovation metrics, organisations should consider factors of their current culture that can inhibit or nurture the innovation efforts, such as the level of risk acceptance in the organisation. Then, include these measures when setting KPIs for the innovation program, even if these measures are more subjective.

Defining good innovation metrics is not just about aligning to business goals and demonstrating value – innovation measurement has many jobs. It helps you determine resource allocation, prioritise activities, signal importance and tell the team what they can be held accountable for.

Setting a goal for customer involvement in innovation is a strong signal to the innovation team and stakeholders that the organisation is focusing on customer value in its innovation program. Defining KPIs for “good failures” demonstrates to the team that failure is acceptable and that it is OK to take risk.

### Step 1: Innovation inputs

In this category, tangible, objective inputs such as employees assigned and funding. But these hard measures cannot stand alone. Large organisations, sometimes, kill innovation unconsciously because their steady-state, business as usual activities – those that drive the current money-making campaign – are generally hostile to doing things differently, even if they can achieve a superior outcome.

As a result, it is beneficial to anyone interested in innovating to create a culture that is open to innovation – one of the key themes of this year’s IT Symposium/Xpo. And since culture is important, it should be monitored and measured.

Cultural metrics measure the:

- Amount of creative space given to individuals (time)
- Individuals’ innovation inclination (interest)
- Level of predictability the organisation is comfortable giving up (risk)
- Ability of the organisation to change its ways in the name of innovation (learning)

An uncomplicated 1 to 10-point scale (where 10 is high and 1 is low) to assess these four questions can yield a good picture of the culture’s health. By nature, they are subjective, not objective, but that is OK. They act as surrogates early in the game for a more objective measurement of results.

**Step 2: Innovation process** The health of the innovation process is measured along with the team’s productivity. Innovation process metrics are a leading indicator of innovation outcomes. They take into consideration the number of ideas, the time taken for the ideas to get through the process and the number of innovations that resulted in improvement over the past 12-month period.

### Step 3: Innovation outputs

The most important measure is the quality of the innovation itself. It is, however, a lag indicator and can often take years to co-relate the innovation project, its deployment and its ultimate benefit to the business. Measurement criteria include the level of success of the delivered innovation after three years. If this isn’t possible, quantitative analysis should be done, such as the number of people who have adopted the innovation, financial benefits or the achievement of operational efficiencies.

It’s also important to include metrics that measure what was learned from failures. Many times, a failed outcome points to a leading indicator such as governance, team, culture or process, and provides insight into what can be changed for the next time.

### Conclusion

Even though innovation measurement is challenging, do it anyway. Measure in three areas: innovation inputs, innovation process (a valuable leading indicator of outcome) and innovation outcomes (a lag indicator, but what pays for the whole innovation process).

When doing so, be prepared to mix objective hard numbers with subjective measures such as feeling and morale. Before starting the process, be clear about the reason for innovating, how the organisation will know that it has innovated and what will be done to change as a result of what has been measured.





# Accelerate your automation journey with a Centre of Excellence

An automation CoE is the essential foundation needed to successfully launch automation initiatives, and, in doing so, becoming a business that thrives within the ever-changing and challenging business environment.

**BY VIJAY KURKAL, CEO, RESOLVE**



AUTOMATION has been at the heart of technological progress as far back as the first industrial revolution. In 1733, John Kay's revolutionary invention of the flying shuttle increased weaving speeds and changed manufacturing forever. The fourth industrial revolution, also known as Industry 4.0, began in 2010 and ushered in an era focused on digitisation and virtualisation fuelled by IT automation. In fact, digital transformation and IT automation are inextricably linked, and success with both requires organisations to embrace a digital-first mindset.

Businesses have turned to digital transformation over the last few decades to cope with a variety of challenges. The last twelve months in particular have seen an incredible acceleration in these initiatives in response to the challenges posed by the pandemic.

IT teams faced a new set of demands as workforces became remote and digital channels became the lifeblood of our personal and professional lives. Digital transformation has also been driven by astronomical growth in data volumes.

According to a recent IDC report, data volumes increased from 2 zettabytes in 2010 to 59 zettabytes in 2020, with claims that this figure will reach 175 zettabytes by 2025. More data means more insights, better predictive capabilities and further business optimisation, yet these volumes of data are overwhelming and require new solutions, like automation and artificial intelligence (AI), to make sense of all that data.

Businesses that invest in automation and AI will reap the rewards with rich analytics that drive agility and innovation, enabling them to not only endure constant global changes, but to thrive in our current environment.

Not surprisingly, strategic leaders are looking for ways to quickly advance their organisations' automation maturity. It is no longer enough to simply automate repetitive tasks. Companies must be innovative in what and how they choose to automate.

As organisations move from automating simple processes and achieving quick wins, to hyperautomation scenarios that can handle more complex use cases and advanced integrations, part of the challenge is properly assessing the full scope of automation's capacity. With so many promising opportunities for optimisation, it is difficult to know where to begin. Introducing an automation Centre of Excellence (CoE) is not only an essential part of the journey, but the very foundation from which to start building.

### What is an automation Centre of Excellence?

A Centre of Excellence brings together a cross-functional group of experts who are dedicated to deploying, scaling, and leveraging a specific technology (or group of technologies). Their sole focus is to improve business outcomes by leveraging that technology to its maximum potential, and ensuring that it is being utilised in an innovative and successful way, which also complies with corporate governance and compliance standards. To form an automation Centre of Excellence is to guarantee this technology is tested, analysed and brought into operation effectively and efficiently.

In practice, a CoE establishes the overarching automation strategy and framework, develops the operating model, and ensures the appropriate skills are in place to support the strategy. The very existence of the CoE also signifies an organisation's dedication to automation and can foster the culture required for automation to succeed.

### Scaling and optimising automation with metrics

Measuring, sharing, and communicating the value of automation is critical for the long-term success of your automation initiatives and is a core responsibility of

the Centre of Excellence. Illustrating automation ROI secures the cross-functional support required to scale, from the C-suite members who control the purse strings to the practitioners who are in the automation trenches.

Adopting a data-driven approach also enables a CoE to identify where automation can be leveraged to provide the best business benefits, including areas for quick wins. Tracking and reporting on key metrics, such as hours saved, cost savings, and improvements in service delivery, can be done at a granular level for each automated process. These metrics offer visibility into which automation candidates should be prioritised next for the greatest gains. And, of course, aggregating these metrics across the entire automation ecosystem measures the overall impact of automation on business outcomes.

There are many additional KPIs that can be tracked as indicators of automation success, going well beyond costs and hours. Examples include mean time to repair (MTTR) problems, call volumes, the number of incidents or requests handled solely by automation, or the time required to complete service requests.

Customer satisfaction and employee happiness are also important metrics for many organisations. An automation Centre of Excellence should develop a committee to determine which KPIs are most important based on business goals and dynamics, and then develop a baseline for each one in order to show demonstrable improvements post-automation.

### Cultivating collaboration and culture

Fostering a culture of automation is critical for automation initiatives to succeed, and every CoE member should be prepared to take an active role in driving the cultural shift. The CoE bears responsibility for creating an environment where new ideas can flourish and that prioritises innovation, cultivates collaboration, inspires participation, and offers employees new opportunities.

Within a CoE, collaboration and unity are key tenets. Siloed thinking and competitive departmental rivalries must be avoided at all costs; working together towards a positive result should be the central focus. From here, it is possible to achieve a company-wide sense of collaborative culture and ensure there are enthusiastic automation ambassadors within every department.

An automation CoE is the essential foundation needed to successfully launch automation initiatives, and, in doing so, becoming a business that thrives within the ever-changing and challenging business environment. Gartner predicts that 69% of routine work currently completed by managers will be fully automated by 2024, making it clear that automation is here to stay and will continue to play an integral role in digital transformation. Do not get left behind.





# The best of both worlds:

## Making the most of your Hybrid IT strategy



Living through ‘unprecedented times’ is nothing new for organisations. Businesses have always had to deal with highs and lows and adapt accordingly. The pandemic has shown that the flexibility to maximise or minimise the impact of planned or unplanned opportunities or threats is vital.

**BY CHRIS HUGGETT, SENIOR VICE PRESIDENT, EUROPE & INDIA, SUNGARD AS**

HYBRID WORKING and hybrid socialising will be in place for the foreseeable, and many predict that a hybrid working model will remain even when life goes back to ‘normal’. Hybrid IT, on the other hand, isn’t new, but adoption, having increased for the last few years, has seen a boost as companies look for the answer to safeguard against future disruption.

Put simply, Hybrid IT is the mixture of IT infrastructure platforms – legacy on-premise and private/public hybrid clouds – that an enterprise uses to satisfy its application workload and data needs. It is the perfect solution for companies that demand agility, scalability and an OPEX cost model of the cloud, but want consistent performance and control of security, compliance, and costs long term. Hybrid IT is about deciding which workloads should be deployed to the cloud, and which should run on a company’s infrastructure. So how do organisations decide what goes where?

### Gaps in cloud compliance

The move towards greater use of the cloud has followed growing concerns on the management



and protection of data. Cyber threats are continuing to evolve and accelerate, and the skills required to defend against are becoming more complex. Regulations such as the GDPR bring additional rights and safeguards for individuals, but the move towards cloud IT could expose a compliance gap – especially for organisations that handle personal data. Organisations that host their data on-premise in local storage systems should be in a position to identify the location of most, hopefully all, of their data, quite quickly and those that host data elsewhere could have concerns over not knowing where the data is stored.

However, one of the challenges with public cloud adoption are the skills required to build and maintain it. Do organisations have the skills to ensure that data that is stored on-premise is secure and compliant? For many organisations, meeting compliance and regulatory requirements can be easier to achieve using private clouds. Just because organisations have outsourced their data storage, it doesn't mean they can outsource responsibility for compliance, however. Organisations must ensure third-party cloud providers meet current standards and show due diligence. Complying with laws such as the GDPR and penalties for breaches fall squarely on the organisation, so assessing any gaps in compliance is key.

### Performance enhancing infrastructure, but at what cost?

As an organisation considers infrastructure options, it doesn't need to choose only one model. The best approach is often a combination of clouds and infrastructures to best meet the requirements of the business. One approach, often referred to as 'own the base and rent the spike' addresses cost and performance requirements. A common scenario for organisations to experience is spikes in demand, such as sales events that drive increased traffic but still require consistent performance. A public cloud Infrastructure-as-a-Service (IaaS) environment provides the agility and scalability to rapidly accommodate these demand spikes. Traditionally this is addressed by scaling out a web or application tier during these spikes and contracting outside of such periods.

Conversely, public cloud, as well as some multi-tenant private cloud offers, are usually a pay per use model, meaning an organisation pays for the infrastructure it rents only for the time it is being rented. Renting IaaS capacity can be very cost efficient, when compared to throwing money at the problem and purchasing hardware, as you are not investing in unused capacity outside of demand spikes. Owning the base on the other hand is about calculating the capacity needed to securely support the steady state outside of demand spikes, and procuring the capacity and associated hosting, such as buying servers, networking on storage to be hosted on-premise or in a collocated data centre. This is a relatively simple exercise for existing applications, but when there are new applications to be deployed how much capacity does



an organisation need? One simple way of addressing this is to rent capacity in the cloud and then evaluate the utilisation and performance needs of that application, then procure the resulting requirements and deploy it on company owned infrastructure. This approach can very quickly identify the true capacity and performance needs prior to committing to a large capital outlay. Not applying this approach, however, can result in significant overprovisioning. Analysis of customer purchased capacity and performance, compared to what is actually used, often shows significant levels of over provision, which is all wasted investment. Buying the base provides organisations with the peace of mind that they are meeting their predictable needs, while renting the spike accommodates the unpredictable.

When adopting clouds, the on-premise IT footprint is reduced. However not all workloads are suitable for cloud deployment, meaning there are often legacy systems that need accommodation, and maintaining an on-premise hosting for a smaller footprint does not always make economic sense. Many organisations recognise the benefits of utilising a co-location facility to meet the needs of legacy workloads, because they offer advanced hosting and support capabilities with resilient power cooling and networking that would simply be over-kill to deliver on-premise for a smaller set of workloads. Many organisations can then repurpose on-premise hosting environments into more productive space.

### The best of both worlds

The benefit of the 'own the base, rent the spike' scenario is that it ensures maximum cost-efficiency, performance, security, and reliability, with the least risk of lost revenues and customers. In essence, it's the best of both worlds, which, of course, is what hybrid IT is all about. The success of a business isn't just about one application, one workload or one environment. It's the ability for all applications and workloads to reliably work together within or across multiple environments and to always be available. Today, that's what keeps a business moving forward.

# DCA Data Centre Commissioning SIG

An introduction from DCA CEO Steve Hone



As the Trade Association to the Data Centre sector the DCA understands that it is imperative that key issues affecting the sector have a point of focus. The DCA SIG's (Special Interest Groups) / Working Group regularly come together over shared interests to discuss issues, resolve problems, and make recommendations.

Outcomes can result in best practice guides, collaboration between group members, participation in research projects, this includes clarification and guidance for decision and policy makers. Members find these groups are a great way to ensure their opinions and views are considered in a positive and cooperative environment.

The DCA currently facilitates nine Special Interest or Working Groups. DCA members can join any of the groups and contribute find out more here: <https://dca-global.org/groups>

The Data Centre Commissioning Special Interest Group (SIG) All buildings undergo commissioning or tenant checks prior to the new owners taking possession or new tenants moving in, these checks ensure that all building systems (fire, security, environmental and IT systems) are working and meet

the required specifications; in a mission critical facility such as a data centre these IST checks are of paramount importance. The Data Centre Commissioning Special Interest Group (SIG) has therefore been formed to increase awareness of the best practices which should be adopted to mitigate risk of failure and optimise the chances of project success.

Items under discussion in the last meeting included:

- Election of a Chair
- Suggestions of suitable experts to join the group
- Ways the group can work
- A Best Practice Guide

At present group members include representatives from:

- Hillstone
- Rentalload
- HeatLoad
- Critical Facilities Consulting
- Carbon3IT
- Acton Consulting
- Operational Intelligence

To request to join this group please contact the DCA - [mss@dca-global.org](mailto:mss@dca-global.org)

## How many load bank companies does it take to write a datacentre commissioning best practice guide?



The Datacentre Alliance also welcome other brands of loadbanks

**BY PAUL SMETHURST, SIG COMMISSIONING GROUP ADMINISTRATOR, PREVIOUS TEMPORARY CHAIR AND LONG SERVING LOAD BANK COMPANY OWNER**

DATACENTRES have a long history of load bank dependency. This can be traced back to an era where datacentres were called computer rooms.

Today we call load banks heatload, but the benefit of load testing remains the same and so do the challenges of making sure everything runs according to the commissioning plan.

Under the guidance of the Datacentre Alliance, three European load bank companies have put any differences aside to form a DCA Special Interest Group of Datacentre Commissioning.

With a wealth of experience spanning collectively more than 50 years of load bank power testing and supplying many hundred datacentre tests across the globe, we have created a unique

opportunity to create a best practice guide for testing datacentres.

To publish a non-partisan best practice guide we have extended the group to include veterans of UPS System design and manufacture, Commissioning Agents and datacentre industry experts from within the DCA membership.

However, the 3 load bank companies,

## Hillstone Loadbanks

est. UK 1989; datacentre load bank design, manufacture, rental & IST delivery from 2007, covering datacentres in all 5 continents

## Mafi Mushkil / Heatload

est. UK 2002; from a standing start delivering load banks for Lloyd's Bank first datacentre in the UK to delivering heatload across the industry year on year

## Rentaload

est. France 2016, The delivery of load banks for datacentres in Europe has been an evolving success

will without doubt, contribute from all the experience we have all gathered being in and around data halls white spaces, over the past 15 years.

## To rent or to buy? Now that's an expensive decision.

Without doubt the decision to rent or to buy is a datacentre Marmite question.

From the project delivery perspective, the decision to buy or to rent load banks becomes a circular cost discussion.

'Get it wrong and the consequences will financially break the delivery program.'

With level 5 Integrated System Tests having many multi-dimensional factors, the Best Practice Guide will explore fundamental project issues and help avoid datacentre testing from going wrong.

## When datacentre testing goes wrong!

A datacentre IST using hair dryers Datacentre load bank companies retain a passion and a pride of being part of an industry that holds such importance to the modern world.

While 2020 was really a strange year in so many ways the creation of the DCA SIG Commissioning Group would in normal times raised questions such as:

- Why do we need a best practice guide for commissioning?
- Why do we need three small independent load bank companies creating a best practice guide to use their load banks?
- Why do experienced commissioning agents need to advise on how to do their job?

In 2021 we have a great opportunity



to deliver the best practice guide to help further promote the DCA and deliver a knowledge transfer to the next generation of up and coming datacentre professionals.

From the load bank perspective, the guide will breakdown the different stages of datacentre testing and will explain where testing can go wrong and why cost cutting and the use of 'alternative equipment' - such as hair dryers, might not always be the best idea!

## The DCA best practice guide - needs you!

The progress made so far in 2020 Collectively we have held meetings, we have utilised the excellent DCA stand at Datacentre World exhibition, ran video conferences, and created the framework for starting the Best Practice Guide.

In 2021 the opportunity to join in and help on this guide is open to everyone.

We do however have a couple of conditions that we would like to caveat;

- The DCA is a not for profit industry trade organisation and membership helps Steve Hone deliver the year on year success that the DCA is today.
- The best practice guide needs contributors, people that want to share experiences and help write the guide in a non-partisan way.

The objective for 2021 is, now that we are all video conferencing experts, to achieve at least the release of a draft guide onto paper, but this needs time, effort and collective cooperation.

**Load banks** - an industrial electrical heater, used for testing UPS Systems, Gensets, Batteries and Busbars in datacentres

**Heatload** - a smaller load bank with electrical connections to busbar tap-off boxes

**Server Simulator** - 19" rack mounted heatload devices, used in IT cabinets prior to server deployment

**IST (Integrated System Testing)** - Level 5 commissioning of all mechanical cooling systems and electrical infrastructure supporting the datacentre white space.

## The Best Practice Guide will cover decisions such as:

Size of facility	vs	Stage of electrical fit out
Project Planning	vs	Commissioning timeline
Risk of load bank availability	vs	Investment and asset maintenance



# The time of virtual and remote commissioning for data centres is coming!



BY DAVID GUEDES, SALES DIRECTOR, RENTALOAD

THE COVID-19 global pandemic had a huge impact on all our lives, including our way of working. All sectors of activity have had to adapt and opt for a remote way of work - in order to comply with the measures announced by the government but also in order to continue their activity during shutdowns and lockdowns.

Unfortunately, the impact of this new reality has been felt across all industrial sectors of the global economy, including the construction industry.

One of the biggest effects of this situation, has been a large increase in the number of people working from home all over the world. This was made possible thanks to the Cloud & Data Centre industry.

Indeed, Data Centres are the core infrastructure that allows virtual workforce to remain productive, while away from the office. Big cloud players and global IT companies are spending billions on building and equipping new Data Centres in order to meet this huge

demand of teleworking. This is not easy in these rather troubled times. It becomes challenging for the owners of these infrastructures to manage constant moves, adds and changes all over the world. Let's not forget that many owners of critical sites have restricted on-site access as a result of global and local guidance around social distancing. This means it has become difficult to perform some commissioning tasks which require site visits, face-to-face contact and functional testing. A new form of commissioning is becoming more prominent - virtual and remote commissioning! Contrary to what one might think, this new form of commissioning has a lot of advantages.

## Before identifying the benefits, do we know exactly what commissioning is?

According to the National Conference on Building Commissioning here is the closest definition of total building commissioning: « systematic process of assuring by verification and documentation, from the design

phase to a minimum of one year after construction, that all facilities perform interactively in accordance with the design documentation and intent, and in accordance with the owner's operational needs, including preparation of operational personnel ». This is what Commissioning is all about.

The verification of the correct functioning of a new Data Centre is also made possible thanks to virtual tools. Many operators can still, in this situation, perform virtual inspection of their critical assets with tools that provide visibility into cooling, power, network, security and other functions. They can see virtually what works and what doesn't (including "faults"), they know what they need to improve next to increase the performance of their data centre. We know these digital solutions help to reduce the number of personnel on site as well as the duration of tests (up to 30% time saving). Which is very positive in this COVID-19 period!

The Uptime Institute (the global Data Centre certification centre) recommends by the way that facilities use remote monitoring, remote management and remote automation software when it's possible. As for the industry insiders, they report that after using these systems, the results of virtual and remote commissioning have exceeded all expectations this year. A very positive outcome!

These solutions seem to be validated and recommended by professionals for Data Centres to the extent that they are efficient and meet a need.

**SMART Connected loadbanks for successful virtual and remote commissioning!**



Loadbanks are used in the Commissioning phase to demonstrate the proper functioning of the electrical and thermal infrastructure of a new Data Centres and to validate the good adequacy between the construction and the original design. They can provide firm validation!

Connected loadbanks also exist to optimize significantly the "Test & Commissioning" phase of Data Centres. They are increasingly used by these infrastructures, particularly to limit the number of people on site during this period of global pandemic.

**Rentaload**, the leader of IST Commissioning solutions in Europe offers SMART & Connected loadbanks from 0,5 kW to several MW to the Data Centres industry (the first fleet of connected loadbanks in Europe). Rentaload allows Data Centres to carry out tests in a different way, closer to the current reality and very efficiently.

These smart & connected loadbanks can be remotely controlled by a computer

- up to 200 loadbanks at the same time which limits the number of people on site and saves time. Instead of pressing 200 buttons individually you only have to perform 1 manipulation via the computer. These connected load banks will also collect specific measurements both electrical and thermal of the IT room.

The virtual commissioning, thanks to the connected loadbanks, provide more recorded data than we would have had with the traditional process which is a considerable advantage for the end customer. These measurements are recorded and processed, then forwarded to the end customer in a full test report.

These reports collect data to support conclusions of final commissioning reports. They provide real added value during testing and help to optimize the performance of the Data Centres and limit possible risks.

- Connected loadbanks appear to be the future of data centres commissioning: reducing on-site personnel, reducing test duration (up to 30%), saving money, checking

data centre equipment and installations, collecting & recording data and finally drawing up a final commissioning report for the end customer

**That's why we talk about « Virtual & Remote Commissioning »!**

**A new vision on how testing Data Centres**

For more information or for all IST Commissioning projects in your Data Centre you can contact us at:

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You can also download for free our Commissioning Guide on rentalload's website : [www.rentaload.com](http://www.rentaload.com) as well as our White Paper

*[Load banks and Data Centre](#)*

*[Commissioning : tips, field notes and best practices!](#)*



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