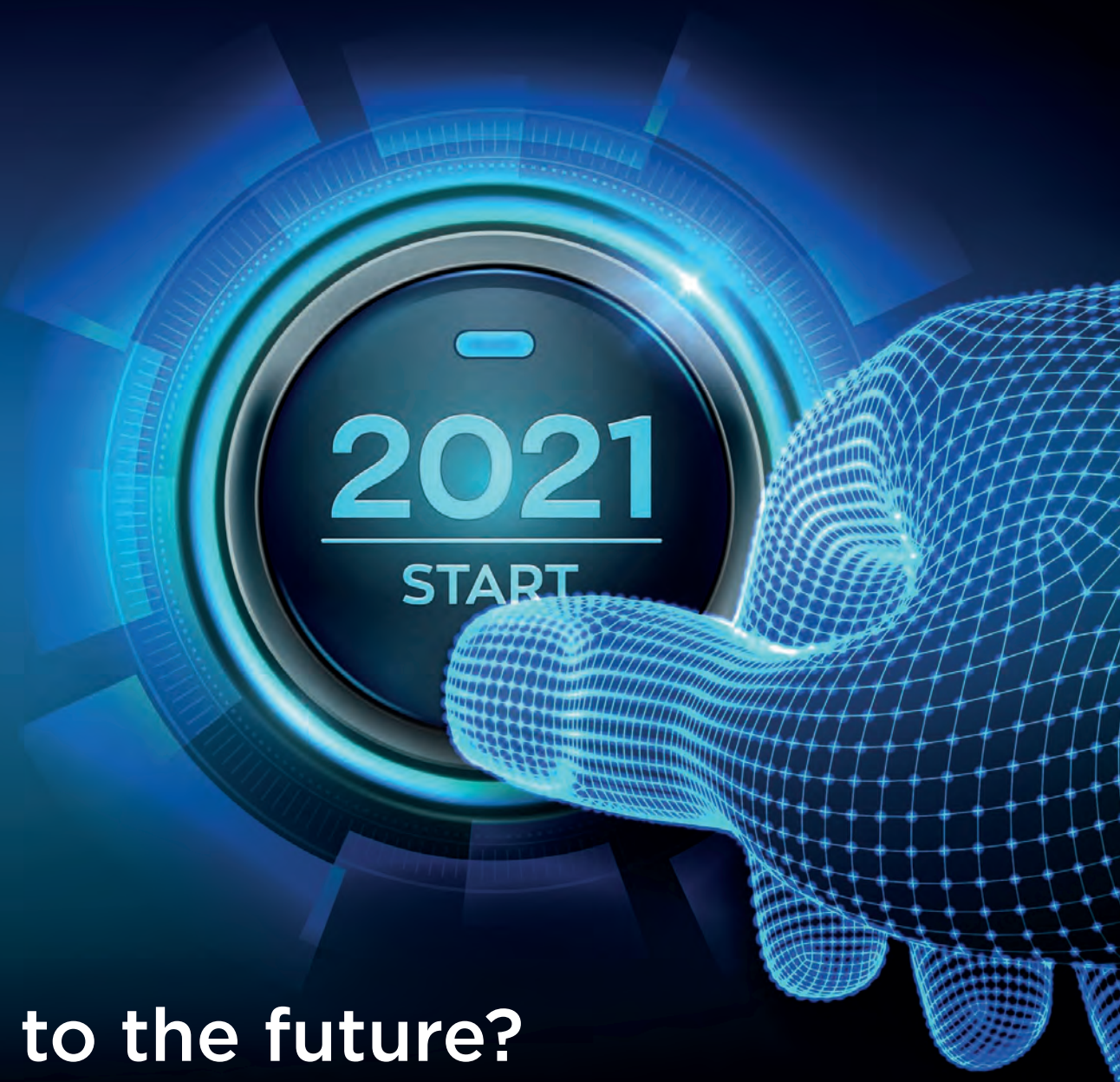




# INNOVISION

INSIGHTS + PERSPECTIVES



## Back to the future?

2020 saw IT disruption like never before. The big question is - what comes next? A return to the pre-pandemic world, or a new, hybrid normal, combining the best of the old with the best of the new?

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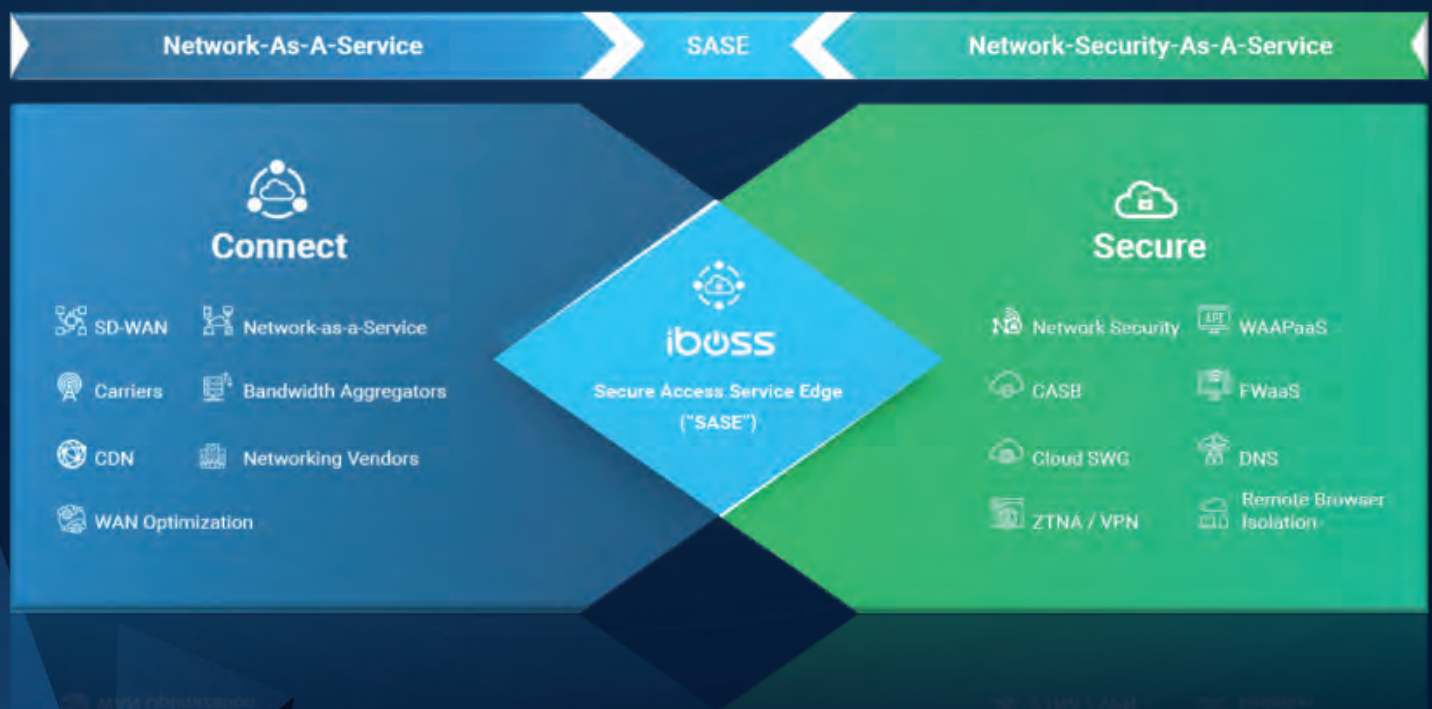
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# Editor's View

By Phil Alsop



## Welcome to Digitalisation World InnoVision 2021 – Part 1

WE'VE GATHERED TOGETHER over 70 contributions offering insights and perspectives on how technology is likely to develop over the next 12 months or so. In this issue, we are covering digitalisation in general, plus automation, cloud and customer service.

There's some 'flexibility' in terms of which contributions appear under which categories (in particular the contributions which cover several topics, hence the large number of 'digitalisation' articles!), but the important thing is that there's a whole host of valuable information contained within this supplement, so please enjoy reading it.

If there are key themes which emerge from the many viewpoints in DW InnoVision, these would be the need for flexibility, agility, speed and a focus on the customer experience (with the customer being both the internal and external users/experiencers of an organisation's IT infrastructure). The events of the past

12 months have demonstrated the need to be able to re-organise and re-focus the business, quickly and reliably. And, if necessary, to continue this process to respond to changes in demand as they occur. (To illustrate this 'new normal', DW InnoVision starts with some analyst observations, courtesy of Gartner).

Crucially, there is now a general recognition that the experiences of employees and end users are the driving force behind the shape of an organisation's IT footprint. Whether it's working from home, buying goods and services remotely or simply consuming digital content, expectations are universally high.

Hopefully, the contents of DW InnoVision will inspire you to ensure that innovation is very much a major focus for your organisation into the future – a future that remains uncertain – but full of opportunities!

**Part 2 of InnoVision will be published shortly!**

### **DIGITALISATION WORLD**

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BRIDGEWORKS WINS 6 AWARDS 2020

# Top performing enterprises prioritise innovation during the pandemic

Top performing enterprises are accelerating digital innovation and leveraging emerging technologies to come out stronger on the other side of the COVID-19 pandemic, which has arguably been the most significant “turn” in 2020, according to Gartner, Inc.’s annual global survey of CIOs

2021 WILL BE A RACE TO DIGITAL, with the spoils going to those organizations that can maintain the momentum built up during their response to the pandemic.

“Nothing, yet everything, has changed for the CIO,” said Andy Rowsell-Jones, distinguished research vice president at Gartner. “The support for remote work that the COVID-19 pandemic brought on might be the biggest win for CIOs since Y2K. They now have the attention of the CEO, they have convinced senior business leaders of the need to modernize technology, and they have prompted boards of directors to accelerate enterprise digital business initiatives. CIOs must seize this moment, because they may never get another opportunity like it.” The 2021 Gartner CIO Agenda survey gathered data from 1,877 CIO respondents in 74 countries and all major industries, representing approximately \$4.7 trillion in revenue/public-sector budgets and \$85 billion in IT spending.

**Survey Reveals Four Ways CIOs Can Seize the Moment**  
 The 2021 Gartner CIO Agenda survey revealed four ways in which CIOs can make a difference both in digital business acceleration and in long-term agility: win differently, unleash force multipliers, banish drags and redirect resources.

## Win Differently

CIOs can help the enterprise anticipate the increasingly digital interactions expected by customers. Seventy-six percent of survey respondents said that demand for new digital products and services increased in 2020, with even more respondents (83%) reporting that it will increase in 2021.

“This is a watershed moment for CIOs,” said Mr. Rowsell-Jones. “There is no going back to the way business used to be.” The survey uncovered two areas of customer digitalization where top performers\* are significantly more aggressive than typical performers: the use of digital channels to reach customers and achieve citizen engagement, along with the rate of introduction of new digital products and services. Nine out of ten of the top performers are pursuing digital channels, and almost three-quarters are introducing digital products faster. Organizations that have increased their use of digital channels to reach customers are 3.5 times more likely to be a top

performer than a trailing performer. “Those at the top have gone all-in on digital business, and they have developed the capabilities to allow them to do it,” said Mr. Rowsell-Jones.

## Unleash Force Multipliers

Respondents were asked to characterize certain changes related to enterprise IT leadership trends as a result of the pandemic. Roughly 70% of CIOs deepened their knowledge of specific business processes to advise the business, and the same proportion did more to measure and articulate the value of IT.

“Although the COVID-19 response appeared to be a simple exercise of deploying PCs, it created profound opportunities for CIOs,” said Mr. Rowsell-Jones. “CIOs were able to refocus IT leadership around digital business acceleration and remodel the enterprise’s core technology. At one point or another, every CIO got a chance to shine during COVID-19.”

## Banish Drags

The survey found that CIOs can help accelerate digital by systemically seeking out and eliminating drags (e.g., detrimental supplier performance during COVID-19). While most respondents reported they were behind in sales volumes during the pandemic, only 29% of top performers reported a decrease in sales volume versus 45% of typicals and 62% of trailings. However, there were still a few areas that stood strong: Respondents reported increased performance for new business initiatives, acquisitions, cost competitiveness, and employee productivity (see Figure 1 on page 8).

“Although revenue took a big hit, CIOs decided to fight back rather than go into a defensive crouch,” said Mr. Rowsell-Jones. When asked about shifts in demand, 58% of top performers reported an increase in demand from new post-COVID customers versus 49% for the typical group and 37% for those trailing.

## Redirect Resources

Survey respondents projected a 2% IT budget increase for 2021, on average – slightly down from the 2020 survey (2.8%). In order to direct investments and people toward new business



Figure 1: Shift in Enterprise Performance Due to COVID-19  
(% of Respondents)

Source: Gartner (October 2020)

priorities in the Renewal phase, top performers are leaning into this shift more than typical or trailing performers, with 63% of top performers stating funding for digital innovation has increased and only 52% of typical performers reporting the same. Organizations that have increased their funding of digital innovation are 2.7 times more likely to be a top performer than a trailing performer.

“Top performers got a head start because their CIOs faced fewer constraints,” said Mr. Rowsell-Jones. “They were more likely to secure additional IT funding to support experimentation than their typical and trailing counterparts.”

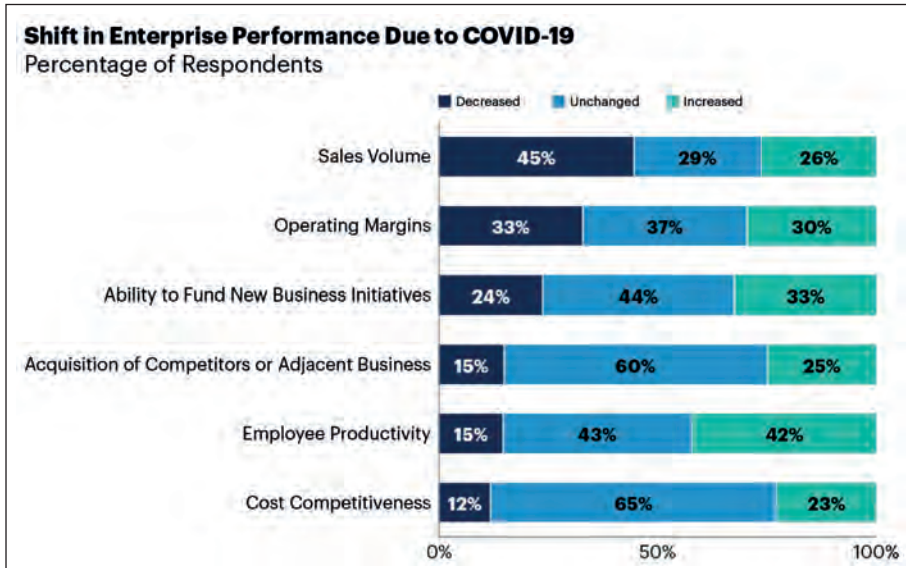
CIOs are Continuing to Prioritize Cybersecurity Investments CIOs reported investment shifts toward technologies that support digitalization. With the opening of new attack surfaces due to the shift to remote work, cybersecurity spending continues to increase. 61% of respondents are increasing investment in cyber/information security, followed closely by business intelligence and data analytics (58%) and cloud services and solutions (53%).

“Last year, I told CIOs that success in 2020 meant increasing the preparedness of both the IT organization and the enterprise as a whole to withstand impending business disruption,” said Mr. Rowsell-Jones. “This truth came at enterprises full force with the COVID-19 pandemic. In 2021, CIOs must build on the momentum they created for their enterprises and continue to be involved in higher-value, more strategic initiatives. The better CIOs perform for the business, the more the business will ask of them next year.”

### 70% of customer service and support employees want to continue working from home

Seventy percent of customer service and support employees want to continue to work from home (WFH) at least once a week after the pandemic ends, according to a survey by Gartner, Inc. In September 2020, Gartner surveyed 5,000 employees, including 550 customer service professionals, and found that service employees who traditionally did not have many opportunities to WFH are now used to it and like it, and they wish to continue in some capacity once the pandemic is over. This is in line with most service leaders who believe WFH is here to stay post-pandemic. Eighty-one percent of service leaders believe between 30% to 80% of their workforce will primarily be working from home two years from now.

“As service leaders weigh the future of their work from home programs, they’ll have to balance their own visions for the



future with employee wishes,” said Lauren Villeneuve, advisory director in the Gartner Customer Service & Support practice.

“A key factor should be the impact it has had, and will continue to have, on the employee experience. Leaders will want to understand which focus areas should be prioritized and which should not as they decide where to invest in and optimize their work from home programs.”

Customer service and support leaders working on long-term post-COVID-19 WFH strategies should consider the following:

**Culture:** Since the mass shift to working from home, many service leaders report growing concerns for the future of their company culture. However, Gartner data indicates WFH has posed less of a challenge to organizational culture than anticipated. In fact, most customer service employees who work remotely say organizational culture has remained the same – and most of those who do think it’s changed actually say it’s improved since the shift to WFH. Service leaders should continue to monitor culture within their own organizations but may want to consider investing time and resources elsewhere.

**Collaboration:** While employees affirm WFH hasn’t negatively impacted culture, it has impacted collaboration. Service employees say they are collaborating less frequently since transitioning to WFH. While service leaders have invested in collaboration technologies, they should make sure they also create opportunities for collaboration, model collaborative behavior and reward collaboration when it occurs to ensure the technology is used.

**Career development:** Pre-pandemic biases against remote employees now seem particularly unfounded given employee performance has largely remained consistent throughout the pandemic. While the vast majority of service employees continue to WFH, this presents less of an issue. But if managers hold these beliefs once some employees return to the workplace, they could create a barrier to career progression for employees who choose to continue working from home. Service leaders should work to uncover why these biases exist and closely monitor managers who manage remote employees or hybrid teams for signs of bias.



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# DIGITALISATION

A range of views covering a whole range of technologies and trends, all of which are key components of a successful digital transformation strategy



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# Four tech predictions for 2021: The year low-code automation goes mainstream

IF WE LEAVE 2020 having learned nothing else, all businesses should now be aware of their operational resilience. No longer just a buzzword for enterprises, leaders in almost every corporate on the planet have been grappling with the reality of developing mission-critical digital applications and implementing new infrastructure at lightning speed to plug resilience gaps.

COVID-19 has revealed the chinks in what some businesses considered iron-clad armor, leaving businesses to develop tools to equip their employees and customers in the face of a changing legislation and global trade landscape, evolving regulations, and shifting customer expectations. 2021 shouldn't be seen as an easier ride. Change is becoming constant, and speed and agility are of the essence; operational resilience is

the new order of the day.

In light of that continuing need for speed, here are my top four predictions for the year in tech:

### 1. Low-code becomes the new cloud disruptor

It has taken twenty years for organisations to stop categorising themselves simply as "cloud companies." Now, cloud computing is the first and primary business model. Cloud disrupted traditional IT roles and shifted major IT infrastructure from home-grown NOC (Network Operation Centers) to the large cloud providers such as AWS, Google and Microsoft Azure.

In similar fashion, low-code is challenging the traditional developer role and the creation of home-grown custom software solutions. No longer will organisations invest in large development teams to build complex custom software. Low-code will displace traditional development in the same way cloud displaced the NOC.

According to Gartner, by 2023 over 50% of large enterprises will have adopted low-code as a strategic tool for app development. Instead of being recognised as a niche developer tool, it will come to be seen as an important mechanism for meeting a wide range of enterprise needs, from enabling citizen development to powering complex business process automation.

### 2. The demand for automation will force the "modern workforce" to integrate

In 2020 many looked to deploy RPA bots and AI services. 2021 will see organisations looking to scale those technologies and realise the full value





of their investments by unifying the modern workforce with “hyperautomation” – keeping humans in control.

Hyperautomation is simply an integrated and holistic view of automation - using low-code to develop applications faster by unifying AI, bots and people with data in the same workflow. Working together, these emerging technologies can help organisations create new business automations at a rate never known before and extend those automations across a greater number of touch points. Over a year ago, Gartner published an early report entitled “Move Beyond RPA to Deliver Hyperautomation” that challenged organisations to look beyond simple RPA automations. As we begin 2021, many organisations are starting to heed this call and look for greater efficiency and agility through hyperautomation.

### 3. AI gets cheaper and more accessible than ever before

Much like cloud, the capabilities of AI are better understood now and sought after from businesses across all industries. Software vendors and AI services continue to strip the complexity out of operationalising AI and, using low-code development, it is easier to adopt than ever.

As the AI market grows, competition means costs are driven down and elements of AI will become available to smaller enterprises. At the same time, high-value uses of AI, such as Intelligent Document Processing (IDP) will spread further,

saving organisations hours of “man hours” on mundane paper processing tasks and unlocking better operational efficiency.

### 4. Increased use of AI creates more data privacy tensions

While data privacy has been a hot topic for many years now, the increased use of AI will ensure it remains a top concern in 2021. Data is the lifeblood of AI services. Without a steady stream of data, AI becomes less reliable and useful. 2021 will continue to highlight this natural tension between providing high-quality AI while protecting data and client privacy.

From this, GDPR and other data privacy laws will be an even greater concern in 2021. We have already seen the first major GDPR ruling in 2019 when British Airways was fined £183 million for poor security controls on customer data. With COVID-19 driving even more business online in 2020, we should expect even higher profile data privacy cases to result in major fines in 2021. Additionally, looking past the current state of US politics, it is likely 2021 will see the introduction of new and globally impactful US regulations on data privacy and use of AI services. Technology is constantly evolving and businesses need to keep pace. While the pandemic has thrown a spotlight on gaps in operational resilience, AI tensions and problems with existing workflows, it has also presented an opportunity for low-code to really shine. Low-code and Hyperautomation will prove to be the mechanism for sustainable transformation and operational resilience as we continue to traverse this “new normal.”



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## Mansour Karam

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# Digitalisation 2021: prepare for any eventuality, survive any events with IBN taking the lead

AT THE CONSUMER END of the technology industry that are many 'hits' that bubbled under for decades before becoming overnight sensations. Last year's mass exodus of the workforce from office to home is a case in point. The IT industry pushed remote offices and collaboration for decades – video-conferencing was invented in 1950 and BT tried to persuade us to 'Telecottages' in the 90s. It is only 'events', such as the COVID pandemic, that really close the deal.

Nobody can predict 'Events'. When they do take place, the speed of developments calls for emergency services - digital transformation performed at speed, over-achieving while under duress.

We can predict with a high level of certainty that 2021 will be a year of flux and the engine of digital transformation will be fine tuned by the latest technologies – Intent Based Networking (IBN), SONiC and new disciplines such as AI Ops, Data Ops and Security Ops.

Applications and experiences speak to the public. Operations translate those wishes and speak to the machines. The machine to machine (M2M) conversations will grow quickest of all in size and complexity.

Remote working and Conferencing, like all applications and experiences, are at the top Layer of the Digital Stack, where IT meets the public.

Deep down in the bowels of The Stack are the uncelebrated foundation technologies that make it all work. These are complicated concepts which use Artificial Intelligence (AI) to keep pace with the changes on the network. IBN uses sophisticated techniques to work out every connection that could ever be set up on a network. Every conversation, between every user on any gadget, with any field on any database in any

hosting centre, is sacred. The experience quality is linked to the integrity of the conversation as it traverses apps, interfaces, syntaxes, transport and storage. Ensuring the integrity of those conversations as they traverse every network node, every link, as networks constantly evolve, is beyond the capacity of human resources.

Another important foundation will be Software for Open Networking in the Cloud (SONiC) because it will push for standardization and close the compatibility gap. This tech was devised by Microsoft engineers to meet their requirement to massively scale their networking infrastructure at the core of their cloud services. They met this requirement by embracing

Open Networking. Microsoft open sourced the network operating system (NOS) that is used in its cloud computing service, Azure and created a devoted community of partisans on Github. So it has a powerful undertow of supply and enormous demand put on by the digital industry.

### What apps and experiences will IBN, AI and SONiC cater for in 2021?

The Zoom boom that ushered in more remote networking and conferencing will continue apace. Events will create volatility in global economies with a powerful influence on critical industries such as financial services, insurance, retail, and transportation. Which in turn drives the need for continued investment in the networking layer, as well as continued investments in device management and Cybersecurity. Cybersecurity Ventures reported a 600 per cent rise in attacks on cloud services from every guise of criminal enterprises. Meanwhile, with a world shortage of 3.5 million security experts predicted for 2021, so many of these duties will be trusted to software, including RPA and Artificial Intelligence.

But it's all going to be going off at the Network Layer.



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## Technology predictions for 2021

IMPACT OF COVID-19 seen as many organisations consider how technology impacts teams as they continue to work from home.

Brightsolid, the hybrid cloud managed service provider, has outlined its technology predictions for the coming year. The company predicts that as a direct result of COVID-19 and the changes it has created within workplaces nationally, technology deployments over the coming 12 months will be more focused on improving user experiences rather than that of advanced technologies such as AI or IoT.

Brightsolid believes that the following five areas are ones to watch over the coming 12 months:

**Rise in cloud-based services** – The pandemic has created an opportunity for many businesses to move several aspects of their business into the cloud. Certainly, this year, the introduction of cloud services within businesses has accelerated more than anyone could have expected. Gartner estimates that an additional \$15 billion (£11.5 billion) has been spent on cloud services globally this year compared with 2019. However, rather than being infrastructure-led, cloud deployments have been people-led to enable teams to work from home. As the world is likely to continue working from home next year, we don't expect this spend to slow down.

**IT organisations will change** – All organisational structures will rapidly change due to more consistent remote working, and interdisciplinary teams will form organically around who they collaborate with, rather than traditional functional teams, which will increasingly influence organisational structures. IT teams have long been touted to move not only towards becoming more

interdisciplinary anyway as solutions cut across traditional lines (IoT for example combines network, hardware, software, data), but towards being more embedded in broader business units and thus focussed on business outcomes. As the cloud rises and the placement of workloads, into different cloud models based on the workload feature, becomes more the norm, IT teams will naturally form around these disciplines. So, instead of network or architecture teams/workloads within the IT department, we'll have teams focussing on SaaS, and dynamic and static workloads.

**Employee home communication personalisation** – In a pre-2020 world, as organisations were primarily office based, decisions were made for the benefit of the majority based there. With the significant shift to remote working this year, organisations must now consider providing a more personal

approach when it comes to IT. IT departments must not only create environments to suit an employee's existing home set up, but also in how they work while at home – as this could be very different from when in the office. From more flexibility in terms of hours to home office setups, organisations must be ready to respond to and support employees' bespoke requests – and have the back-end infrastructure in place to support very agile needs. While it's likely that 5G won't impact



on consumers next year, it is the direction of travel and so organisations will need to start planning for this in 2021 and consider how it might benefit them in a remote working world.

IT security will be more important than ever – As we have seen, the security landscape has changed significantly because of people moving to work from home. With data from the National Cyber Security Centre recently highlighting that a quarter of all cyber-attacks in the UK this year were Covid-related, organisations need to ensure they have clear security processes in place. These must not only address the protection of data and infrastructure, but also that of the employee. By reviewing access management rights across the organisation, only specific people must be granted the ability to make changes to sensitive platforms internally. Additionally, staff need to be clear on how to deal with a suspected malware attack. Should the pandemic continue for a long time to come, and with it remote working, we are only going to see cyber security attacks rise and businesses and employees must be ready to manage these accordingly.

Disaster Recovery must evolve – As with IT security being a priority, as we continue to work remotely, organisations must address what this means for their disaster recovery plans. As businesses become less concerned about location as a direct result of people working from home, the office as the primary

company location may become a thing of the past for many. With this decentralization comes a rise in the use of disaster recovery in the cloud. Organisations must consider how to mitigate the on-premise conundrum and utilise the cloud as a backup in case of a disaster rather than relying on DR racks in the office.

Vicky Glynn, Product Manager at Brightsolid who created these predictions, commented: “Technology has been a saving grace for many businesses this year, from accelerating remote working and video conferencing to the digitisation of many businesses that had no online presence pre-pandemic. As we move into 2021 this will continue at pace, but we will also see a more refined approach to technology innovation internally – moving from advanced technology implementations to projects that will focus on enhancing the user and customer experience.

“Across every change an organisation is making now, they must consider if they are using the right building blocks for the long term. While this year has been incredibly unpredictable and there is a vital need for often very reactive implementations to address specific needs, businesses must also ensure that the pandemic doesn’t create a black hole in their infrastructures. While it is likely be some time until we get back to some level of normalcy, we must also work as a collective to be prepared for that time – no matter when it arrives.”












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**DIGITALISATION  
WORLD**



## Ash Finnegan

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# Collaboration and commercial agility

“NO ONE COULD HAVE PREDICTED the events of this year. The suddenness of Covid-19 has proven a great challenge for all organisations managing the complex transition to remote work and otherwise, new operational models. This pandemic has, of course, forced many great changes. For example, online and digital selling has had to become far more sophisticated to meet consumer behaviour and expectations. More importantly, the new working environment has drastically altered the way in which many companies conduct and go about day-to-day business.

“Whilst there is no certainty as to how the events of next

year will unfold, there have been some more noticeable and permanent industry shifts. Many leaders will have lessons learnt from the past few months and given their ongoing business challenges, the following will be major focuses for 2021 and the new business landscape:

### Digital transformation spending

“Whilst the pandemic has indeed accelerated many companies’ own business transformations, the majority of these strategies have either been reactive or forced out of necessity, with the focus of the board or C-suite executives being ‘how do we ensure our business can keep running?’ These businesses





are yet to establish an effective, proven digital transformation strategy that benefits the entire team and 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. No doubt, the sudden shift to remote working will have revealed many inconsistencies, ineffective processes and bottlenecks across businesses. Organisations will have quickly realised the importance of properly structuring data and streamlining day-to-day operations. The insight gained from over the last few months will shape businesses' contingency plans for next year.

"The post-Covid economy will no doubt require a digital-first approach to business and what we will begin to see next year is how companies can deliver their services more effectively, whether adopting more process automation to improve the customer experience or reconsidering their operational model as a whole. After all, they will have invested heavily in technology over the past year. It is likely leaders will look back at their investments and reconsider how these technologies might be utilised to better connect its people, make use of data and boost overall performance.

Further transformation is expected, however, leaders will be more strategic when delivering a company-wide transformation programme. In fact, these initiatives will likely be data-led with the hope of providing seamless connectivity for their teams and removing any unnecessary procedures or processes between departments. Digital transformation will instead focus on further integrating and unifying systems and, of course, improving overall business performance.

### Collaborative technologies

"A major outcome of this year is an acceleration of the adoption of collaborative technologies. As reported by IDC, the worldwide communications and collaboration market has grown year on year. However, in the second quarter of 2020 it has seen a 12.4 per cent growth alone \*, as more and more employees become accustomed to the new working model. With the benefits of collaborative technology becoming increasingly clear, it is likely that throughout 2021, there will be further adoption of cloud-based and mobile solutions.

"After all, with employees continuing to work remotely for the foreseeable future, businesses will no doubt have to adopt a 'smart-office' strategy, that is, establish a fully connected enterprise – it is inevitable. Ultimately, this will involve eliminating silos, further integrating processes, and embracing digital. Throughout this year we have seen a significant rise in videoconferencing, virtual brainstorming, and business meetings, which has enabled teams to work together more effectively on projects, with visibility – knowing the status of important items and what stage they are – becoming more important.

"In doing so, organisations can execute a far more successful business model, befitting the new normal. Throughout next year, we will see the accelerated adoption of technologies that, not only streamline business processes and maximise workflow efficiency, but ultimately enable further collaboration between the workforce.

### The importance of commercial agility

"Covid-19 has proven innovation and embracing change is vital in today's ever-changing business landscape. Many organisations have had to reinvent themselves and reconsider their business model and will likely continue to do so well into next year. Building technical solutions and applying technology around the most important processes will be essential to businesses' recovery, and customers will have great expectations ahead of the new year.

"Therefore, technology providers will also have to reconsider and tailor their current product offering, in order to provide solutions to customers' ongoing challenges, and flexibility will be key. Being able to pivot easily and adapt commercial offerings will prove vital in the coming months. Service providers can be expected to build more technical solutions tailored to specific customer needs, which may even require working closely with another provider. These partnerships will be of the upmost importance as providers try to get to grips with customers' challenges, matchmaking them with the right technology regardless of who it is, to ensure that they deliver the right business outcomes they need."

\*<https://www.idc.com/getdoc.jsp?containerId=prUS46903720>

The post-Covid economy will no doubt require a digital-first approach to business and what we will begin to see next year is how companies can deliver their services more effectively, whether adopting more process automation to improve the customer experience or reconsidering their operational model as a whole

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# How technology will help shape 2021

IN A YEAR that has brought unexpected uncertainty and change, technology has been a vital part of how people, businesses and broader society has responded. As we look to next year, many of the technology-driven changes seen this year will solidify and become the foundation for long term transformation.

We saw the fast technology-driven reaction to the challenges in our Dell Technologies Digital Transformation Index results, with 72 per cent of UK organisations stating they had fast-tracked some digital transformation programmes in 2020. Looking to next year, IT priorities will continue to be focused on enabling remote learning and working while ensuring operational resilience and agility through their core systems.

These priorities will drive hybrid cloud operating models spanning public, private and edge environments to allow rapid scale and management of IT anywhere and everywhere. Answering this desire for agility, we will see an emphasis on consumption models, with organisations consuming IT in the same way as public cloud services - orderable and scalable on-demand with a few clicks. As-a-service models provide more flexibility and less complexity allowing IT choices that will help organisations to be ready for whatever comes next.

Underpinned by robust and secure architectures, this flexibility will power new ways of working and living. And as we all continue to learn and adapt, the technology we use to stay connected and be productive will do the same. We'll see, for example, Artificial Intelligence combined with hybrid cloud and 5G connectivity in computing devices to create more seamless, intelligent and hassle-free user experiences. Imagine, for example, a PC that can learn how you like to collaborate with your teams and can proactively launch the right software, or even a system that knows when you do – and don't – want to be on camera.

Building on this evolution for edge computing devices, there will be an increase in data-powered smart applications that require highly distributed data workloads that are managed and analysed in real-time at the edge. Distributed technology infrastructure will be faster and easier to deploy and, combined



with hybrid cloud and powered by 5G, these systems will help organisations to quickly spot trends. They will be able react fast, ultimately creating new data-driven approaches in areas like e-commerce that will fuel growth.

An increasing emphasis on the edge creates an even greater urgency for telecommunications operators to accelerate 5G to help bridge from edge to the cloud. Thinking about 5G as the digital fabric for data-driven services will herald a shift to an open, software-defined and industry-standard approach to connectivity, helping to realise the potential of wireless connectivity. Consider SK Telecom, for example, which has partnered with Dell Technologies to accelerate its 5G wireless network rollout using a multi-access edge computing (MEC) architecture, allowing it to decrease application latency on its network services to under 10 milliseconds.

While 2020 has brought change, it has also highlighted to everyone – from young to old, start-up to multi-national – how technology can help us to stay connected, be productive and to build connections with one another. I am hopeful that we will take all we have learnt this year and use it as the foundation for progress in 2021 as we continue to care, learn and work remotely.

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# AI, cloud and data

## 1. AI-Enabled Data Fabrics will become widespread

The COVID pandemic has made evident the need to accelerate the delivery of useful and trusted data to business decision makers. Conventional analytics architectures can take weeks or even months to react to new types of data requests in today's complex data environments. That is why many companies are turning to more agile data integration technologies, like data virtualisation, which can shorten these times drastically.

In 2021, we will see how this trend is consolidated as a comprehensive data strategy. Many companies will implement data fabrics - an architectural pattern which prioritises agility in the delivery of trusted, real-time data to the business. In addition, AI technology will be further incorporated in data fabric architectures to automate steps such as data discovery, performance optimisation and workload management. This will further increase automation and agility by leveraging the maturity reached by AI technology in the last few years.

## 2. The focus on Cloud Architectures will shift from Migration to Integration

During recent years, most companies have started their journey to the cloud. According to a recent survey by Denodo, more than 60% of companies already have several projects in cloud and 25% are cloud first. The COVID-19 pandemic has accelerated this trend, reducing dependency on local data centers even further.

So far, the focus has been on migrating the data and systems needed for implementing new use cases. Whilst quite successful, this approach has generated significant technical debt, as the new systems are only loosely connected to the rest of the IT infrastructure. Also, on-premises systems are not going away anytime soon, with less than 10% of them being decommissioned.

In 2021, the focus of cloud projects will shift to integration. Building a unified infrastructure to access and manage data across multiple locations will become a priority. The traditional integration approach of consolidating all data in the same location is no longer feasible because of the large data volumes involved and the diversity of the data processing mechanism.



Therefore, companies will turn to logical architectures such as the logical data warehouse or the logical data fabric, which were designed from their inception to deal with data distribution.

## 3. The monetisation of data will increase even further

Effective use of enterprise data for strategic decision making has been a key priority in all big companies over the last few years. As a consequence, companies have created high quality datasets and a sophisticated technology architecture to manage them and expose them to consumers.

The COVID pandemic has only emphasised the importance of having accurate, detailed data in order to drive sensible decisions. Since many big companies own high-value, unique data and services, the next logical step is reusing this infrastructure to offer them to third-parties.

For instance, we are already seeing telecommunications companies selling geolocation data, financial institutions selling information about financial assets valuation or real-state companies offering housing statistics. This trend will be significantly accentuated during 2021 in all major industries and also in public institutions.

From the technology standpoint, this will involve higher demand for the technologies involved in creating and exposing data as a service, like GraphQL, Data Virtualisation and/or API management tools.



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# Tech opportunities in a post-COVID-19 era

### **TRemote business will open up new, unexpected use cases for wearables and mixed realities**

The unprecedented working environment created by the pandemic has propelled technologies like assisted reality (AR) forward beyond proofs of concept, opening up new, perhaps less obvious, cases and demonstrating the potential of wearables in driving collaboration amongst remote teams.

Smart glasses provide a vehicle for interactive remote communication through document retrieval, workflow instructions and real-time data capture – bringing people face-to-face, so to speak. COVID-19 has provided a unique opportunity for business leaders to re-assess and re-imagine their need for a traditional four-walled office, paving the way for 2021 to be the year that digitally savvy businesses double down on smart technologies to enable remote business. We'll even see businesses who have not yet imagined using wearables start to experiment with the technology.

### **Mobile edge computing will reach more sectors**

Edge computing has continued to gain significant traction in recent years, yet it's this coming year that we'll finally see where this technology can bring real benefits. While public 5G is still years away from mainstream adoption, Forrester sees immediate value in private 5G – a network dedicated to a specific business or locale like a warehouse, shipyard, or factory.

This technology is here now and is ready to drive edge computing in 2021. The evolution of 5G and mobile edge computing technology will also provide a platform for enterprise wearable technologies to really come to the fore. Smart glasses allow field workers to carry out tasks hands-free, while still having access to the information and tools they need. With mobile edge computing solutions acting as the gateway, smart glasses are a natural next step and close to becoming mainstream for frontline and field-based workers.

### **2021 will bring quicker proof of concept to roll out**

This year we've seen business pivot to deal with a great deal of changes in the face of COVID-19. A fifth of businesses have dialled up investment in digital transformation initiatives,

with many making the impossible happen overnight or taking decisions in a matter of days rather than months. In this extraordinary time, businesses have learnt how to adapt, and progress more quickly than ever expected. As we move into 2021 and beyond, we expect this trend to come with us as businesses continue at an accelerated rate of learning. Yet while proof of concepts for new technologies will be much quicker from experimentation to roll out phases, businesses will need to keep an eye on three key factors: data security, scalability and usability.

### **2020 has highlighted the need for accelerated automation in 2021**

Unsurprisingly, 2021 will see a new and changed workplace, and technology will be needed to support it. Automation has been on the business agenda for years now, but as social distancing rules remain in place going into 2021, automation and robotics will likely become a core competence of multiple sectors in the foreseeable future. However, in an effort to push out automation during the pandemic, many businesses have found themselves patching failures that have arisen since. In 2021, Forrester predicts that up to 30 per cent of businesses will ramp up their focus on quality by better planning and testing their automation before deploying it in production or exposing it to employees.

### **IoT in healthcare will continue to increase, but not without stumbling blocks**

The global IoT healthcare market is expected to grow to \$188 billion by 2025, at an annual rate of 21 per cent. While IoT in the medical sector has been on prediction lists for some years now, it will see a renewed importance in 2021. A number of people stayed home in 2020, leaving long-term illnesses untreated. In 2021, the rise of telemedicine and remote diagnosis will see healthcare professionals able to proactively monitor, support and provide care for these patients' health at home. Consumer interest in wearable health devices, such as ECG and blood pressure monitors, will accelerate as patients appreciate insight into their own health and the ability to share data with their doctor remotely, for an instant health evaluation. That said, IoT infrastructure, a lack of industry expertise, and security will remain a challenge.

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## 2021 predictions – it's all about adapting

2020 was a game of two halves. As the pandemic bit and lockdown began, it was all about reacting – to our need to work flexibly, to the demand from our customers for laptops, headsets, remote access solutions. For our customers, it meant learning to trust their staff to be productive outside of an office environment. In the second half of the year, it became about planning for the hybrid office lifestyle – security and management of devices on an ongoing basis, facilitating access to data, helping to digitise paper processes when people were no longer in the office.

If “reacting” was the theme for 2020, we expect 2021 to be all about “adapting”.

With Brexit on the horizon and no immediate end to restrictions on movement and social distancing here for the foreseeable continuing to impact sectors such as retail and hospitality, we expect our customers to be watching their IT spend very carefully.

Adaptation will take many forms – whether adapting procurement strategies to leasing, asset buy-back and similar initiatives to mitigate cash flow concerns, or adapting to long-term remote working by rationalising property needs. Efficiency is the holy grail of the IT function but expect it to be squarely in the sights of the business management in a way never seen before. With every pound needing to be justified, IT teams will need to become skilled in the art of articulating business cases and return on investment.

Pressure will mount on making do with what you have, whether sweating assets longer or driving more value out of existing investments. It is easy to consider this a negative, but if you've made an investment in an ecosystem such as Microsoft 365, there is a lot of untapped opportunity.

Teams has been the big winner from the lockdown as a conferencing and messaging platform, but Microsoft's investments in the Power Platform and “democratising” low-code application development mean many organisations have the tools for digital transformation at their fingertips, without necessarily realising it. Add this extensibility to features such as Shifts, Tasks by Planner & To-Do, Bookings and Power BI,

and the SME can have an ecosystem of building blocks coming together to build an SM-ERP.

One of the real success stories of 2020 for eacs has been the implementation of cloud-accelerated NAS solutions to enable customers to work from home with an office-like file server experience. For one customer of ours working in the design industry, this has allowed them to close some satellite offices and re-invest the cost of the property and facilities charges in the cost of change.

We expect to see more and more of these types of stories emerging in 2021; unfortunately we also expect to see a raft of security breaches as organisations pay the price for having continued to try and adopt a perimeter-based security model. Identity focussed security solutions will be big in 2021, with presence in the office no longer a consistent factor of authentication, and we are already seeing success with our SD-WAN vendors who are offering “SD-HOME” solutions for mobile and remote working.

Finally – with remote/hybrid working being the norm, endpoint management systems not geared up for off-network management, and difficulties in managing this new security model, perhaps 2021 will finally be the year of VDI. We have already seen a big uptick in interest in Citrix and Windows Virtual Desktop in 2020 in response to the pandemic, and we only expect this to continue in 2021. Microsoft in particular are betting big on this, with the upcoming Cloud PC as the next evolution of this technology and this is beginning to spark a resurgence in interest in thin client technology, whether dedicated devices or innovative solutions such as Lenovo's CloudDesktop On The Go offering, which turns a BYOD device into a corporate managed endpoint for the duration of the session.

Employers will need to balance trust with productivity, and this is a difficult line to tread carefully as the backlash from privacy campaigners to Microsoft's “productivity monitoring” features demonstrated. One thing is for sure – 2021 will keep IT teams on their toes, challenge them in new ways and above all expect them to be agile – and, of course, adaptable.

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# Four areas that will need traceable time in 2021

ACCORDING TO FORBES, the best resolution for success in the new year is to stop being late. Just ask those who manage busy servers. Because servers deal with thousands of transactions every second, the audit trail can become extremely chaotic if a server's time is out by even one millisecond.

To make sure they're on time, firms have historically maintained their own grandmaster clocks and satellite receivers. But as businesses urgently adapt to an era of unprecedented digital acceleration, many are looking for services that offer them more. More security. More flexibility. More for their money. As a result, network-delivered time synchronization tools are set to

dominate the timing market. As Richard Hoptroff, Founder and CTO of Hoptroff, explains, there are four main areas that we can expect to see impacted by smarter traceable timing solutions in 2021.

### 1. Digital dependence will take us to the Edge

Lenin once said, "Sometimes nothing happens for decades, then decades happen in weeks." That happened in 2020. New technology paradigms – working from home, ditching the business trips – are a better work/life balance, lower cost for businesses and better for the environment. Covid-19 forced technology adoption that would have otherwise taken decades.





Central business districts will need to re-invent themselves; we'll need better digital communications from the home; hotels and cafés will need to accommodate hot-deskers. All of this will require pushing traceable data beyond data centres to "the Edge" – our homes, our coffee shops, our cell phones.

## 2. Trust in Data

Rocketing digitalisation means a rocketing concern about the use of digital data. In the next year, global leaders will focus on this question: how can we make data more trustworthy? A recent report by the UK's Geospatial Commission emphasised that to use data to benefit British industry, it must first prove to be reliable. As the government collects enormous quantities of data from distributed locations, it is vital to prove the time and location of these virtual events.

Traceable Time as a Service (TTaaS) is one solution that synchronises your time and places an accurate timestamp on every piece of data that is transferred across a server so that it is traceable back to UTC and verifiable on a time log. This ensures that your data is in an accurate sequence when it is stored in a central database. This level of precision is essential when you're playing with public trust. It only takes one mistake to obliterate the conceptual value of data.

## 3. Resilient Infrastructure

2020 threw us the biggest curveball of our lifetimes, but that doesn't mean there aren't others to come. I predict that 2021 will bring a loss of confidence in Global Navigation Satellite Systems (GNSS) for the delivery of time and position data.

We have become dependent on GNSS; power distribution, cell-phones, Satnav – you name it. All derive their information from satellite timing signals. But in 2020, monthly attacks occurred across different global industries. This creates huge issues, as much of our critical national infrastructure cannot function in the event of GNSS failure.

We originally developed TTaaS to reduce the costs of time synchronization for financial services. But it has an unexpected



benefit: it is resilient to the threat of GNSS failure and can provide accurate time even in the event of satellite outage.

## 4. Cloud Migration

According to Nomura Instinet's respected biannual CIO 'Spending Survey', 68% of global CIOs now state that "migrating to the public cloud and/or expanding private cloud" is a top driver of IT spending, in contrast to 48% last September. The slow migration to cloud-based solutions has suddenly accelerated because it doesn't just cut costs: it makes our lives more workable when we have to work remotely with a pared-down task force. But tracking 'where' and 'when' are not easy in the cloud. Cloud providers are reluctant to provide this kind of traceability because it disrupts their economies of scale and offer of security. Because TTaaS delivers time through a network, it is well-positioned to be the prime choice for providers seeking to make their offering more robust for new customers.

## Looking to 2021

This year has been one of mass adaptation, as we have all had to respond to Covid-19 on personal, business, and societal levels. Decades of change are happening in weeks. The aftershocks and structural changes will take a year or two to settle down but enabling that change is essential for the success and security of all.

Traceable Time as a Service (TTaaS) is one solution that synchronises your time and places an accurate timestamp on every piece of data that is transferred across a server so that it is traceable back to UTC and verifiable on a time log

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# Technology predictions for 2021

2020 HAS BEEN a tumultuous year, to say the least! Along with the healthcare system, the global economy was turned upside down, and the beliefs that we held true in 2019 have been completely shattered. Now that several vaccines have been announced, and we see the light at the end of the tunnel, let's see what technology has in store for us in the next year.

While several industries like travel, tourism might not recover so soon, other industries like eCommerce, Fintech, amongst others have proliferated. These are some of the industries and verticals which will definitely thrive in 2021.

### 1. #FutureOfWork

Work from home has become the 'new normal', and people are getting used to it, actually enjoying it even more, given that they are spending less time on the commute and more time with their families. Although work from home definitely has its disadvantages, and some people find it difficult to cope with, the trend is here to stay nonetheless. Fundamentally, the pandemic has altered the way people think about "work" in the information age, and although people will start going back to their offices next year, they are most likely going to continue working in a hybrid manner with more flexibility for the workforce.





Although small events and meetups might resume again, large scale gatherings at conferences are unlikely to convene in the year 2021, given the reluctance of people to travel long distances or meet large groups unnecessarily. Virtual events and webinars are still going to continue well into 2021, even if the vaccines are deployed on a large scale across the globe.

## 2. Fintech

With the advancements in digital payments, wallets, neobanks and the payment infrastructure in general, the Fintech industry will continue on an upward trend, with more innovative infrastructure being built that supports the payment rails required for the exploding online retail and the eCommerce sector. While companies like Stripe are already raising private capital at unprecedented valuations, other startups that provide digital insurance, and banking infrastructure are also raising well beyond the US\$ 1 billion valuation mark. This trend is likely to continue and accelerate as more and more people continue to pay online and through the digital infrastructure.

## 3. Decentralized Finance (DeFi)

Blockchain, and especially Ethereum, has always been in the search of the “killer app”. While ICOs seemed to have been the promised utility for blockchain, they were soon marred with several scams and failed projects. The latest trend in this year has been DeFi, and it will continue to grow more over the next year. This year saw DeFi reaching and breaking records in terms of TVL (Total Value Locked), reaching almost US\$ 14.3 billion, according to the industry site defipulse.com. The yield provided by the top protocols on their decentralized loans also reached several hundred percent.

Although DeFi saw this tremendous growth in the user adoption as well as the protocols being created, this growth is most likely going to slow down and stabilize in the next year. As the protocols and the users mature, the absurd yields being realized by these platforms will taper down and start approaching more reasonable rates, albeit still beating the non-crypto fiat markets. DeFi is also poised to become mainstream and provide more value to the users by going beyond the over-collateralized loans, which mainly serve as a mechanism for traders to hedge their bets against the volatile crypto assets.

## 4. Non-Fungible Tokens (NFT)

While DeFi has been the darling of the crypto industry in this year, and will continue to remain so in the next year, one cannot overlook the slow but steady rise in the use cases and projects



using NFT (Non-Fungible Tokens). NFTs usually represent real-life rare and valuable items on the blockchain. For example, a valuable painting, from say, Picasso, can be tokenised on the Ethereum blockchain for 1000 tokens. These 1000 PCTs (Picasso Tokens), in turn, can be sold to the individual buyers in chunks. So, a buyer can say, buy 1/1000th of the Picasso painting and hold it in their portfolio. Not just digital art, but NFT tokens also encompass digital land, gaming assets (think second life) and several other rare items from the real-world. The transaction volume for NFT assets is on an upward trend and will continue to rise in 2021.

## 5. Central Bank Digital Currencies (CBDCs)

In June 2019, Facebook announced Libra, a stable digital coin initiative, backed by a multi-currency basket. After that announcement, the central banks doubled down on their efforts and seriousness to explore sovereign digital currencies backed one-to-one to the national fiat currencies. Since then, according to the latest survey published by Bank for International Settlements (BIS) in January 2020, more than 50 central banks across the world, are engaging in some sort of research or development for CBDC. While major economies like China and Sweden are already testing out their own versions of CBDCs, other countries like the Bahamas have already launched CBDC to the masses.

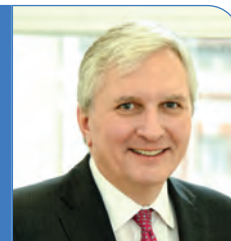
This trend is likely to continue, and accelerate even further in 2021, especially given the news that Libra could launch their currency as early as January of next year. There is still a long way for CBDCs to gain mainstream adoption, but several initiatives, think tanks are springing up all across the globe, and several dozens of companies, including the giants like Accenture and IBM are ramping up their workforce to stay at the forefront of this innovation. While CBDCs most certainly won't be available to the general public next year, we will definitely see a rising number of companies and startups coming up with offerings for virtual currencies.



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### Year in review:

## Four key business learnings for 2021

2020 HAS SEEN the global business landscape fast evolve into something no one could have anticipated before COVID-19. Traditional ways of working have been turned upside down as we continue to work remotely. We've had to adapt fast to a highly volatile environment in order to ensure business continuity, adapt to multiple lockdowns, and continue innovating in the face of an economic recession.

Digital transformation has undeniably been the watchword for success throughout all of this, and as we look to the year ahead, this will underpin most business strategies in the new future of work. However, the pandemic has also led to a number of significant other changes that are likely to remain permanent.

In this article, I reflect on four of these, the lessons we've learnt and how this will impact companies of all sizes as we transition into 2021 and beyond.

#### Building trust is key to employee experience

As we navigated a sudden shift to a new remote working model, leaders were tasked with creating loyalty and confidence among stakeholders – their employees, customers and ecosystem partners – in a completely unfamiliar virtual environment.

At the same time, productivity measures and KPIs are being overhauled as we moved from lag indicators and traditional feedback mechanisms to outcome-based performance metrics.



Forrester predicts remote work will rise to 300% of pre-COVID-19 levels, and consequently we will need to remain transparent and overcommunicate with all employees wherever possible. Seeking out stories of anyone in the organisation who is going the extra mile can be a breath of fresh air and reason to spread positivity. Equally, I encourage my leadership team to address employees directly wherever possible instead of focusing on mass emails or communications. This concept of building trust will be increasingly important as companies adopt advanced technologies and ask their staff to adapt accordingly. Many employees are being asked to change direction; don't ask them to do it blindly.

### Organisational models have become fluid

Before COVID-19, most organisations operated on an annual planning cycle, with management collectively deciding on strategies, budgets and operating plans once a year and minor amendments between this. However, the radically changed circumstances now call for new forms of leadership, new ways of working, and new operating models.

This year, we have seen networks instead of silos, flattened structures instead of hierarchies, and speed over precision. Existing operating models no longer effectively address the challenges this crisis presents. The agile methodology, with its focus on empowered frontline teams and clear outputs, will be fundamental to any future business structure. Agile shouldn't be limited to technology teams only – sustainable and optimal benefits will most likely be realised if the entire organisation is on the journey. This means that rather than making period reviews of a static plan, we should adopt dynamic resource allocation, with a tolerance of ambiguity and a culture of constant testing and iteration.

### Risk management is paramount

The effort to maintain operations during COVID-19 made cloud computing a winner of 2020, and organisations that have delayed making the move to the cloud in the past have had to rapidly up-skill in response to challenges to their business model. Digitally agile firms are adapting to the ongoing crisis more successfully, and it is highly likely that we will see a new cloud-first model become the standard.

As a result, security strategies and practices have been tested like no other. Malicious actors have used discontinuity of IT operations as an opportunity to attack systems and exploit weaknesses. And while cyber risk is often thought of more in terms of technological vulnerabilities, it is often the human dimension that leads to breaches – particularly in the new remote working model, where bad actors have leveraged human-centric tactics, such as phishing, to open the front door. It will be vital

for cybersecurity to be included in both the dialogue and actions of C-level executives to make business continuity and crisis management plans fit for purpose, backed by the right resources and investments.

### Business with a green lens

As companies make decisions about where and when to cut costs and where to invest in response to COVID-19, they need to start using a green lens to make sure that their strategy also enables them to lower their carbon footprint. Before the crisis, many corporations had already been stepping up to greater environmental and social responsibilities. Now, as we embark on the recovery phase of the pandemic with an emphasis on sustainability, concerns about climate change are intensifying. We've seen significant interest in advanced technologies that reduce emissions in hard-to-abate sectors, and initiatives that help CEOs reach a net-zero future. Interestingly, while companies have seen resiliency and financial benefits from cloud computing, sustainability is also an outcome of switching from on-premise. Greater flexibility, better server utilisation rates, and more energy-efficient infrastructure make the public cloud often preferable to enterprise owned-data centres.

### Looking to the year ahead

This year, business resilience has been tested to the limit. COVID-19 has exposed the fragility of day-to-day routines, and we've had to adapt at pace to stay afloat. As we look to the future, the lessons we've learnt this year have been invaluable. Technology has played a critical role and without it, many more organisations would have been devastated by the pandemic's impact. Equally important, however, has been the need for organisations to build on trust with employees, embrace more agile structures and show greater concern for the wider environment. Continuing to embrace these initiatives into 2021 and beyond will help us ride out the waves of uncertainty and shape the next generation of business.



## Nigel Seddon

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# How can IT leverage lessons from this year to prepare for 2021?

THIS YEAR has shown business leaders that anything can happen, and global events can have a huge impact on how organisations function. Budget cuts, staff fluctuations and workplace shifts can disrupt business operations and hamper success, if one isn't prepared. IT infrastructure is the backbone of any productive business, and IT teams have been under immense pressure over the past nine months – what with the suddenly remote workforce, shrinking resources and the need to increase profitability to navigate the crisis. As a result, they have been leaning heavily on MSPs and resellers during this time – resulting in 2020 being a great year for the channel. Channel partners that can facilitate IT support, security and remote access will be in high demand over the next year.

### Channelling security

Security in particular will be a key spend for 2021 and, in fact, many CEOs are now driving this spend due to the expanding cyber threatscape we're now experiencing, especially if it garners visible ROI or reduces long term costs. Business data is being accessed on personal networks and devices and endpoints are becoming more vulnerable as a result, meaning compliance will be crucial going forwards. As many businesses aren't planning to return to the office until mid-2021, IT and channel partners must find a way to manage the security risks of remote working and unsecured devices and ensure all technologies are appropriately patched and up to date. While flexible working isn't a new concept, with many people travelling for work before the pandemic, IT must now manage this situation without employees ever being connected to the corporate network. Saying that, a fluid approach to working between the home and office is likely to be the preferred approach. This leaves room for channel partners to work with enterprises to solidify the infrastructure that enables their employees to work remotely, much of which was implemented in a rush back in March.

### Eye in the sky

Looking ahead, cloud will be a key technology over the next 12 months, partly thanks to its subscription-based pricing

model. Many IT companies are even putting incentives in place, rewarding sales teams and channel partners for selling subscription-based cloud products, due to the fact that this model provides recurring and reliable income during a tricky financial situation.

It is also attractive to enterprises, not only because cloud is a trending technology and one that is hugely beneficial in the remote world, but because it offers the opportunity to invest in innovative tech without a single up-front cost. We're seeing more and more customers adopting a cloud-first strategy and this will only grow in 2021.

### Invest in success

As difficult as it may have been to adapt to the COVID-19 curveball thrown this year, companies can derive learnings from these challenges – namely, that arming IT workers with the right tools, processes and technologies is fundamental to adapt, grow and thrive in this new way of working. This includes tools such as hyper-automation, that augments basic automation with AI and ML.

With the fluid workforce set to continue into 2021, businesses can leverage hyper-automation to proactively, predictably and continuously self-heal, self-secure devices and self-service end-uses, guaranteeing personalised and consumer-grade experiences for employees, customers and consumers alike. While it may seem inadvisable to invest in new tech whilst budgets are tight, it's crucial to adapt and evolve with the new IT landscape in order to survive.

As IT complexity and appetite for new and innovative technologies grows simultaneously, demand for managed service providers will only continue to increase. For example, the ability for partners to provide a managed cloud infrastructure without burdening in-house IT and security staff will be invaluable for businesses as they enter 2021 – being able to rely on a trusted MSP will be a welcome relief for IT staff and decision makers alike.



## Madhav Durbha

Group VP at LLamasoft, powered by Coupa

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# Managing the level of risk

“WHILE A COVID-19 vaccine is expected to be rolled out before the turn of the year, it will take time for it to reach entire populations. As a result, we will likely see some COVID-19 disruptions and lockdown measures continue into 2021. Even beyond that, disruptions caused by Brexit and other geopolitical tensions are always on the horizon. The truth is, there will always be disruptions in this never normal world we inhabit.

“As a result, the level of risk in 2021 will remain elevated and will be part of the new normal. What I anticipate will change is businesses’ resiliency to these risks and disruptions.

CFOs are taking an increased interest in how supply chains can support business growth and reduce financial risk. The financial implications of supply chain disruption or inefficiency can be huge, with over 80% of a company’s costs tied up in the supply chain.

“To manage this risk and improve efficiency within the supply chain, uptake of technology will undoubtedly accelerate and as such many organisations, large and small, are accelerating their digital journey. Where technology such as AI, machine learning and digital twin was once seen as a ‘nice-to-have’, it is now essential to set the winners apart, a theme that was highlighted in a recent survey of retail industry executives by RSR Research.

To become truly resilient in the supply chain, optionality is key. Using a supply chain digital twin, which acts as a virtual representation of a business’ supply chain, businesses can model a wide range of possibilities to ensure they can assess and prepare for any disruption they can imagine. Probabilistic models and simulation technology tied to financials will play a pivotal role.

“One industry where improvements will be imperative is healthcare and life sciences. This is an industry which is lagging behind others such as FMCG or High Tech in terms of supply chain technology adoption. Yet, it will be an industry the world is relying on more than ever in 2021.

With a vaccine all but confirmed for 2021, the vaccine makers in collaboration with governments and private entities will have

to make sure that the vaccine can be accessible to most of the world’s population at the earliest opportunity. Besides this, disruptions caused by COVID-19 also elevated the weak links within the pharma supply chain in general. Unless there are vast improvements in 2021 and the digital adaption for the industry is accelerated, this will prove immensely challenging.

“Going into 2021, technology will also help companies achieve their sustainability objectives. In 2020, we saw a number of companies pledge to become carbon neutral by 2025 and beyond. To make this a reality, businesses must create a supply chain which is both shorter and more circular.

Currently, within the supply chain, one of the greatest contributors to air pollution and CO2 emissions is transportation and many companies are still failing to incorporate sustainability into their supply chain decisions. Consumers are becoming less tolerant to this and many will not shop with businesses that are not prioritising the environment.

“Speaking to businesses, we are now seeing a greater desire to achieve end-to-end visibility across the supply chain to identify vulnerabilities and risk. By achieving this as a first step, businesses will be able to more accurately identify inefficiencies which contribute to increased CO2 emissions, for example, excessively long transportation routes or sub-optimal warehouse locations.

“With these insights, businesses can then utilise the latest technology to optimise their supply chains and ensure they are both shorter and more circular. Will 2021 be the year we see huge change on this front? Probably not, as it’s a long process and most businesses are just starting their journey.

However, businesses will have to be showing consistently positive results by 2025 if they are going to convince investors and customers that they will reach their sustainability targets.

“In 2021, whether it’s to become more risk resilient or achieve their sustainability objectives, we will see a huge rise in the implementation of technology such as digital twin technology, AI and machine learning, particularly within the supply chain.”

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## Looking to the future

In this piece, some of the most innovative leaders of the technology industry share their views with us on what the year ahead might hold.



**Joshua Zerkel, Certified Professional Organizer and Head of Global Engagement Marketing, Asana**

"When the UK was plunged head-first into remote work in March 2020, business leaders did what they needed to do. They gave employees the tools they would need to survive in a fully remote

environment. However, this has now put us in danger of fuelling app overload. Our data shows employees at enterprises are using 10 apps for remote work, switching between them 25 times a day. This has consequences. Due to switching between apps, 27 percent of workers miss messages and actions, and 25 percent end up duplicating work.

In 2021, business leaders should take a critical eye to the tech stack deployed to help teams cope with the rapid transition to remote work. A lot of those tools, like Asana, Zoom and Slack will stay in place to support workers in distributed work. But ensuring employees know the purpose of each app they are using, and how they are using it is vital to keeping teams aligned and avoiding 'work about work' (such as searching for information and duplicating work) in 2021."



**Iggy Bassi, CEO and Founder, Cervest**

"2020 has been a year unlike any before. Almost every industry across the globe has been thrown into disarray by the effects of COVID-19. With this, politicians, scientists and business owners have been forced to focus their efforts on the pandemic, in turn pulling their efforts away from the battle against the climate crisis.

The new year will see a renewed, stronger spotlight on how organisations take responsibility for their climate security and the measures enforced to tackle risk, as the pandemic has brought a new impetus to overall risk frameworks, especially climate. So much so, we expect 2021 to see the first company declaring a goal that all its major business or financial decisions will factor climate into them. Measures are already being put in place to pave the way for this, for example the UK chancellor's recent announcement to make climate-related financial disclosure fully mandatory by 2025.

=The recent Biden win has already had the world speculating as to whether the US will re-enter the Paris Agreement, which would have an extreme influence on accelerating the demand for climate intelligence.

Regardless, each country's climate actions for 2021 and beyond will become more visible through their Nationally Determined Contributions (NDCs). More businesses will look to seek outside consultation to remain compliant with new guidelines, and enterprises will start to make radical changes to business operations and investments as a result of gaining access to new intelligence on physical and financial climate risk.

We also anticipate seeing an uptick in sustainable investments, as investors continue to hold organisations accountable for their transparency, adherence and action around climate risk. Equally, the move towards 'Paris-aligned' investing will see a rise in acquisitions within the climate risk space as its importance becomes ever more clear. Unlike the shock factor COVID-19 caused, we already know climate risks are happening. It will be those businesses who actively show improved financial disclosure on their climate security who will be the ones to attract investment in 2021 and years to come."



**Michael Sentonas, CTO, CrowdStrike**

Complex geo-political situations may lead to a ban on certain consumer technologies. Over the last couple of years, we've seen significant damage done to relations between Western nations and China and Russia. To prepare for the worst-case scenario in this coming year, the UK, US and their allies will be

making stronger decisions on where critical or widespread technology is imported from, even going as far as to boycott certain technologies.

In 2021, we'll likely see these decisions spread even further from government and enterprise technology to everyday consumer technology. Public-facing applications and services are increasingly at risk, as adversaries are eager to use any exterior gaps and weaknesses as initial footholds."



**John Morrison, SVP of International Markets, Extreme Networks**

"As a result of the ongoing pandemic and the related increase in remote work, organisations are going to focus even more on their networks in 2021. After all, they are an organisation's lifeblood, especially during uncertain times.

But one of the main challenges for many companies next year will be that they need their network infrastructure to continue delivering optimal performance despite the inevitable budget cuts and resource constraints that the fallout of the global pandemic and the resulting recession will create.

Network-as-a-service will emerge as one of the key enterprise IT and network connectivity trends of 2021 as it provides organisations with a cost-conscious solution to ensuring consistent connectivity. It also offers companies the flexibility to expand or reduce network services on-demand depending on business needs, without sacrificing performance.

2021 will be the year where many companies start to move away from investing in physical network infrastructure and instead consider outsourcing some or all network operations and management by committing to the network-as-a-service model."



**Darren Guccione, CEO, Keeper Security**

"In 2021, we should expect to see the continued proliferation of ransomware and distributed-denial of service (DDoS) attacks as organisations continue to face a prolonged period of remote working. The pandemic exposed mass ill-preparedness across numerous

industries, and the onslaught of cyberattacks will continue to hit unprepared businesses hard. In fact, 44% of UK businesses experienced a data breach in 2020, so it is likely that things will get worse in 2021 before they get better.

It is imperative that organisations of all sizes have a full security plan in place to protect themselves against the growing number of cyberattacks. Next year, businesses will increasingly look for ways to keep their online credentials and - more broadly - their sensitive data secure. 2021 will see a rise in organisations investing in highly-secure Identity Access Management solutions that, critically, use zero-knowledge encryption and, ideally, offer a cloud-powered security vault that protects the most sensitive data in the event of a breach."



**Sergei Anikin, CTO, Pipedrive**

"The past year has been catalytic in helping even the most conservative of industries embrace technology. The onset of the pandemic caused an abrupt halt to traditional ways of working and this trend is set to continue well into the new year and beyond, not least because local lockdowns and social distancing

measures are unlikely to be a thing of the past anytime soon. The demand for innovative solutions has risen due to the impact of COVID-19 and is set to reach even higher levels in 2021. It is finally giving industries the motivation to invest in digitalisation and automation.

As a result, a virtuous cycle will form: with the surge in demand comes more willingness to use online services and a better understanding of the utility of digitalisation, which in turn increases trust in technology and drives its deployment across all industries. In addition, the acceleration of even more streamlined and effective solutions will supercharge the process, leading to a sustained rise in technological development and business success. In 2021, we can expect to see even more daring, outside-the-box concepts aiming to solve any challenge the new year brings."



**Spencer Tuttle, VP of EMEA, ThoughtSpot**

"2020 was a milestone year for tech IPOs: we saw the largest software IPO in history (despite not being profitable), and the disparity between the IPO market and the global mid-pandemic economy has never been greater.

With this, the number of software IPOs isn't expected to buck the recent trend and decrease in 2021, and the same can be said for cloud stocks. I expect tech companies to only become more confident in their decisions to go public as we move into the new year and the most sought-after listings of next year are likely to be the ones in the cloud space as investors continue to see high value in cloud stocks

With remote work looking likely to stay well into 2021 and COVID-19 acting as a catalyst for cloud adoption, software companies' valuation is also likely to maintain significant growth.

As a result, I believe that this is simply the best place for investor capital to flow. ThoughtSpot launched our first SaaS offering this year and it will certainly be a critical move to our future IPO strategy and timeline."

With remote work looking likely to stay well into 2021 and COVID-19 acting as a catalyst for cloud adoption, software companies' valuation is also likely to maintain significant growth



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## Megaport 2021 predictions



### Eric Troyer, CMO

**CIOs Will Take Steps to Reduce Reliance on Public Internet**  
For IT teams, 2020 was all about enabling remote work amid an unfolding crisis. Heading into 2021, the focus will shift to optimizing highly distributed remote work to improve productivity.

As employees sheltered in place, the internet proved crucial in the nearly instantaneous mass shift to remote work. Gartner forecasts that spending on cloud services will grow 18.4% in 2021 to total \$304.9 billion, up from \$257.5 billion in 2020. Yet CIOs are recognizing that the public internet is not a long-term option for connecting to and between mission-critical cloud services: it doesn't deliver the reliability, performance, and security needed for complex cloud applications and workflows, hindering productivity.

To address this, organizations will take further steps to shift as much company traffic onto direct private connections to their cloud services to improve user experience as much as possible. This will be critical in sectors with more demanding networking requirements, such as financial services, digital media, and healthcare, among others.

### Employee migration reshapes the edge

The distribution of how data flows has been upended by the widespread shift to remote work and will force organizations to continually reevaluate and redefine their networking and edge computing strategies. The pandemic has spurred many people to migrate away from the major cities, which means businesses will need to figure out how to support their distributed workforce with their existing infrastructure. As such, we'll see more of a focus on tier 2 and tier 3 cities like Nashville and Minneapolis, compared to the emphasis on cities like San Francisco and New York pre-pandemic.

### C2C connectivity barriers crumble

Cloud-to-cloud connectivity has been too complex for most IT teams to manage. That's rapidly changing. Widespread availability of reliable, low-latency cloud-to-cloud connections will give CIOs much more flexibility at a time when uncertainty is the norm and agility is imperative. For example, an enterprise can now store data in low-cost storage on one cloud, such as AWS or Google Cloud, and connect it to their Oracle or other high-performance ERP systems in another cloud, reducing costs while delivering the needed performance and capabilities.

### Network and cloud automation will alleviate some pressure on IT teams

Remote work environments are straining IT teams that also face budget constraints. Organizations will increasingly focus on automating their cloud workflows to optimize processes, alleviate their overloaded IT teams, and minimize the need for manual adjustments that often lead to errors and downtime (such as turning capacity up or down). Meanwhile, service providers will leverage new automation capabilities such as broad API integrations with SD-WAN technologies to retain customers, grow their ecosystem and increase customer value.



### John Veizedas, VP Engineering & Product

**Private Networks Will Help Secure a Dispersed Workforce**  
Due to the pandemic and remote work, enterprise data is now flung to the wind. Companies will aggressively move more traffic off the internet and onto private networks to increase security as well as

performance and reliability, eliminating the worry of a potential compromise.

### Don't forget the machines: IoT transforms networks

While everyone has been focused on the shift to remote work, IoT has continued its rapid expansion. In 2021, organizations will take a more holistic view of their networking strategy to support IoT and M2M environments to eliminate data siloes and make the data more accessible wherever needed.

### Oil & Gas Industry

Oil and gas companies, for example, are looking to feed field telemetry data, often siloed in data centers, into the cloud, but it has to do so in a reliable, secure way.

### Transportation / Automotive industry

Autonomous vehicles are coming. In Las Vegas, Lyft has given over 100,000 paid autonomous rides with backup drivers. And the trucking industry continues to experiment with autonomous transport trucks in areas of West Texas and Arizona. Connected cars and autonomous vehicles will require new and vastly more flexible approaches to networking to accommodate the constant flow of telemetry data in motion. Ultimately, networks that support connected and autonomous vehicles will need to be near ubiquitous and reliable. To get to that point effectively, the auto industry will develop their telemetry networks once, but then look to deploy them anywhere or everywhere.

## Retail industry

Retail has well-established telemetry networks for their point-of-sale solutions. But the pandemic has completely upended the industry. Retailers will be shuttering stores, expanding others and evolving their business models as we continue to face down the pandemic and eventually start to emerge from it. Introducing greater agility and flexibility into their network infrastructure will be essential to survival.



### Misha Cetrone, VP Cloud Product

Cloud-to-Cloud Connections Spur Multicloud Supernova

It's no surprise, the shift to the cloud will continue at full speed, fueled by remote work. A recent Gartner survey, for example, indicates that almost 70% of organizations using cloud services today plan to increase their cloud spending in

the wake of the disruption caused by COVID-19.

While the hyperscalers will continue to dominate, we'll also see a growing field of specialized cloud providers focused on niche services such as high performance computing. On top of this, vastly easier cloud-to-cloud connectivity – something that has traditionally been very complicated – will open up new opportunities to mix and match clouds, allowing IT organizations to maximize performance while gaining more

control over their cloud spend. This will trigger rapid expansion of multicloud environments, particularly among smaller and mid-sized organizations that previously lacked the internal technical resources to make cloud services interoperate effectively.

## The edge gets edgier

Remote work is forcing big changes across IT – that holds true networking and cloud strategies as well. With employees working from anywhere, cloud providers next year will put more resources at the edge in tier 2 and tier 3 markets, positioning data and SaaS applications closer to users. This combined with wider NFV deployment, simpler private line provisioning and end-to-end automation will provide further relief to IT teams working to deliver secure, reliable and predictable service to more widely dispersed users.

## Rethinking data center connectivity

While the pandemic has accelerated the shift to the cloud, a lot of essential enterprise applications still live in data centers and can't easily be migrated to the cloud. When most users were sitting in offices. But it's a completely different story in a world where remote work at scale is the norm. In the coming year, IT teams will need more flexible data center connectivity and adopt virtualized desktops to connect remote workforces to these applications in a way that's more secure and delivers the performance needed to provide a workable user experience.



## Ian Fairclough

VP, EMEA, MuleSoft

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# The rise of the 'digital-ready culture' and 'citizen integrators' MuleSoft outlines its trends to watch in 2021

IN 2020, the pace of digital transformation accelerated dramatically as organisations raced to deliver new IT projects in response to the COVID-19 pandemic. The ability to engage with customers and employees through digital channels has never been more essential. As we enter the new year, many organisations will begin to rethink their IT operating models to keep up with this faster pace of innovation. MuleSoft, provider of the world's #1 integration and API platform, has outlined the trends that will shape these emerging operating models and IT priorities in 2021:

### The rise of the 'digital ready' culture

In 2021, organisations will need to embrace a 'digital ready' culture. This means investing in new service delivery models to ensure they can meet and serve their customers across their preferred channels and on their own terms. The ability to become more agile and innovate rapidly will be critical as organisations come under pressure to quickly roll-out new digital capabilities and provide customers with the services they expect.

A growing number of organisations will embrace the best practices of API-led connectivity to enable the reuse of existing digital capabilities and accelerate the delivery of new IT projects. Organisations, such as insurance company Generali UK, are already demonstrating the value of this approach. By exposing its capabilities and data through APIs, Generali UK created dozens of new services using the same functionality. This dramatically accelerated its digital transformation roadmap because its teams did not have to begin projects from scratch every time.

### Customer journeys will be more automated

Next year, organisations will face more pressure to address customer queries, resolve their problems faster, and simplify the

digital experience. As a result, we'll see more efforts to automate parts of the customer journey through capabilities such as self-authentication, which enable customers to get through to service teams faster.

Organisations need to break down silos between their systems and applications to make this possible, allowing them to draw out and use customer data to automate processes. We'll see more organisations using APIs to integrate their applications and unlock data to create a single view of the customer. With this in place, organisations will be better positioned to meet new expectations for a seamless customer experience.

### Technical debt will need to be reduced

The immediate challenges of the pandemic forced organisations to launch new digital products and capabilities rapidly. This led many to opt for a quick method of connecting systems and data, often using point-to-point integrations. However, this isn't sustainable over the long term, leading to tight couplings between systems that limit agility and delay future innovation.

2021 will see organisations looking for ways to reduce the technical debt they've amassed in the short-term by embracing API strategies. APIs create a loose coupling between applications, data, and devices, so organisations can become composable enterprises. This allows changes to be made quickly to create new capabilities, without impacting existing integrations or the functionality of digital services.

### Citizen integrators will join the innovation charge

As well as shortening the timeframe in which organisations had to deliver new digital capabilities, the pandemic led to a massive increase in the number of projects organisations needed to complete. In the UK alone, organisations saw the number of





projects in their pipeline increase on average by a fifth (21 percent). It's becoming increasingly difficult for IT departments to meet the rising demand for digital innovation with the finite resources at their disposal.

In 2021, we'll see the rise of 'citizen integrators' as organisations empower non-technical teams to deliver their own digital innovation, without needing to write a single line of code. This will be driven by the use of APIs; enabling organisations to re-imagine their digital assets as a network of reusable capabilities that anyone can use to compose new digital services, without specialist skills.

### Organisations will be more data-driven

The ability to offer personalised experiences has been essential during the last 12 months. With customers' circumstances changing dramatically throughout the pandemic, organisations have needed to adapt and respond to their needs, to show empathy, and be ready to help in new ways. Those that can harness customer data to power personalised experiences have been best placed to succeed.

As this continues in 2021, data analytics will become increasingly important. However, analytics is only effective when it's fuelled with a complete set of data that reveals the context behind a trend or insight. Organisations will therefore prioritise their API strategies as they seek to connect their applications and systems effectively, and draw information from a variety of sources to maximise the value of their data.

"If 2020 has taught us anything, it's the importance of being prepared," said Ian Fairclough, VP, EMEA Customer Success at MuleSoft. "Digital transformation has been high on the agenda for years, but few of us could have imagined that the demand for digital initiatives would have increased so dramatically in the last 12 months. In 2021, we'll see organisations explore ways of developing their resilience to future challenges through greater use of APIs. Doing so means they can set themselves up to become agile enough to handle the immediate effects of a crisis, but also to power the long-term innovation and connected experiences that customers increasingly value."

With customers' circumstances changing dramatically throughout the pandemic, organisations have needed to adapt and respond to their needs, to show empathy, and be ready to help in new ways

## Prahlad Koti

Partner at Netcompany

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# 2021 will be the year of technological detox

THE UNPRECEDENTED NATURE of 2021 is a given. Just 12 months ago we could never have predicted the turbulence that would come from an invisible foe, or its implications in terms of technological progress. For progress at pace has to be the defining characteristic of the year that was, and technology has sat at the heart of the UK's fight against the pandemic; and will no doubt play an increasingly large role in its recovery.

While predictions are about the future, much of what is coming has already been decided by the events of this year. As technologists we must heed the lessons, look out for the speed bumps ahead and build technology that will bring sustainable good.

### Digital citizen services will continue to grow, but watch out for roadblocks from digital inclusion

Public sector technology has long been defined by big transformation, that often took too long and cost too much. This year, transformation that we all thought would take three, four, or even five years happened within a matter of weeks or months. Digital has been the answer to nearly every utterance of "what do we do now". If we can find any positives from this year, then one has to be the great strides we have made in public acceptance and uptake of digital or citizen services.

As we look towards 2021 public digital service delivery is going to continue to change the way we interact with government, as more of us are comfortable using digital. Where previously government was hesitant, it now has a heritage of successful digital services from which to build. However, there are two things any government should be careful about; the first is privacy concerns and the second is digital inclusion. The gulf between 'digital-haves' and 'digital have-nots' will widen next year, as uptake of digital services has not been balanced across all age groups and cohorts. It must be a priority for the Government next year to bring more people on its digital journey, which in turn will make it easier to roll out new services.

### Small and nimble, over big IT

Another positive to come out of 2020 has been that we have all learnt that big is not necessarily beautiful. Earlier this year

government spend with SMEs was just under 30 per cent of all procurement, and there is every hint that government will continue to beat the SME drum. While the entire IT industry stepped up, many of the most successful IT solutions this year (especially solutions developed in response to Covid-19), were delivered by small, nimble suppliers with the energy and agility to react to evolving situations. While I'm not saying that big IT cannot be nimble, it's encouraging to see a renewed focus on small and innovative IT again, and I hope to see that run into next year, to the Government and public's benefit.

### Big change forces big transformation, but what about the technical debt?

We have seen in the last year how our industry can react and deliver good solutions quickly. The challenge for the government, is that this is only the tip of the iceberg. The IT solutions being built today will largely just get us out of the starting blocks. Brexit will bring about change across nearly every part of Government. From how we import and export, travel, work and regulate or differentiate ourselves on a global platform. There will be big change over the next four to five years with technology underpinning everything.

But there will be a debt to pay for change, at pace. We've already seen that play out this year on a massive scale as we've risen to the challenge of providing solutions to the pandemic. When faced with an immovable milestone, understandably, a pragmatic approach is needed to get the job done. Or the solution delivered only meets 50% of the requirement, because its end goal changed. While we can't, and shouldn't, stop progress, we have to acknowledge that many of the solutions built for the pandemic, and for Brexit transition are not sustainable.

Over the next 12-24 months we will have to evolve everything we've done this year. A lot of the systems and solutions will be nugatory or will need a re-think. So, a "permanent beta mindset" must be the principle by which government operates IT. Fail to do that and we'll be left with a patchwork of solutions without the cohesion necessary for world-class modern citizen services.

## Greg Ouillon

Chief Technology Officer, EMEA, New Relic

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# 2021 trends for the enterprise

## The composable enterprise – modular, microservices, integration

More and more, analysts – including those from Gartner – are emphasising that we don't know when the next crisis will hit or what the next opportunity will be. Businesses need to have a highly modular architecture where they can take key components of their business processes, stitch them together, and reorganise them quickly to react to a new situation.

Say a business needs to create a new click-and-collect process quickly. It needs to understand what components are required, integrate them quickly, and reshuffle them as needed. It's about understanding the key Lego blocks if you will and having the ability to understand – in a very agile way – new processes by having end-to-end visibility across all microservices and modules. This signals the end of monitoring as we know it, because no components of these composable architectures will be sufficient to monitor and understand what's really going on in a company.

## Ubiquitous computing – end-to-end visibility is the new imperative

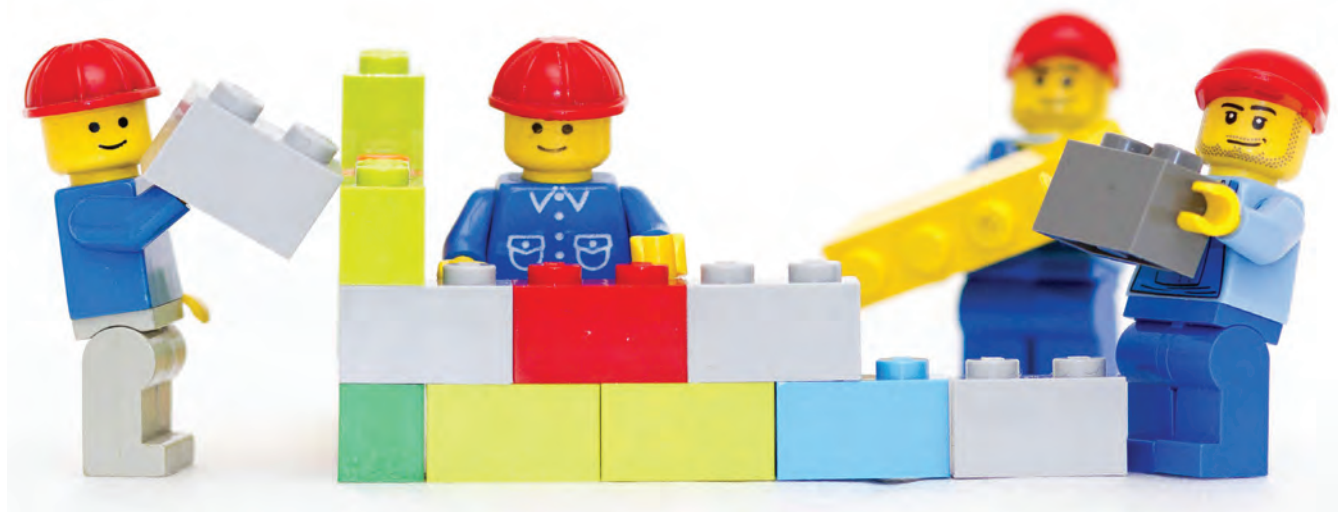
There is a very strong push for ubiquitous computing and the digitisation. There is also a trend to redeploy a certain level of

edge computing architecture to adhere to domestic regulations. The pendulum is swinging back to the idea of redeploying computing at the edge, creating a new imperative for end-to-end observability. Businesses should be able to monitor, observe, and understand their architecture, whether they deploy on-premise, in the cloud, at the edge, or through the browser/device.

The way organisations look at the end-to-end chain is fundamental, and is yet another sign that this is the end of monitoring in its current form. Businesses will not be able to understand how their apps or processes behave if they only monitor the cloud. They must have a holistic, end-to-end view, and they need to automate the deployment of end-to-end observability into their development and delivery pipeline.

## Going beyond just application visibility

More and more, businesses understand the value of knowing the state of their IT applications and business together in real-time. With business intelligence and analytics (considering all the mediation and aggregation taking place), IT teams might only be able to tell that something has gone wrong two days after the fact, but need answers in real-time. Observability is an enabler of the real-time operation of a digital business, and





indeed the wider business on a holistic level. For example, if a retailer sourced information such as weather data and inputted it into their observability platform, that could enable the company's IT team to accurately measure how the weather impacts customer demand.

### Digital everything and omni-channel driven by COVID-19

COVID-19 has placed unprecedented pressure on businesses large and small to digitise. We will see a huge appetite among enterprises to digitise even more processes and realise omni-channel capabilities. Digital is not an option. It is a new land with new competitive rules and roles, and businesses that win will be the ones with the best digital experiences and the most responsive sites.

COVID-19 has also changed benchmarks as we once knew them. Businesses that may have once prided themselves on having twice as many shopfronts as their competitors no longer have that advantage. COVID has redefined the boundaries of what it means to serve, delight and acquire customers over the competition.

The pandemic has also accelerated the expectation of consumers to enjoy seamless omnichannel experiences. Consumers want to freely mix online and offline purchases, including booking trips, selecting and trying products, purchasing goods and having them swiftly delivered.

This requires front-end and back-end processes, comprising in-store, online, stock management and supply chains, to work seamlessly together. The successful execution of these omni-channel experiences requires an end-to-end view of the business that observability natively supports in real-time.

### Open source ever-expanding, and the open source conundrum

Open source is everywhere. It's essential. It's part of the fabric of the modern developer. But at the same time, it creates a conundrum for CTOs. They end up with a zoo of open source tools, design patterns and architectures, and are left wondering how they can bring some standardisation, efficiency, and consistency into the mix. Observability is the answer. With observability, you can use open source with confidence. You have clear visibility across all your tools, while maintaining the freedom to move your data as you please.

### What will be the key trends for DevOps in 2021?

What are the key trends in DevOps that IT teams need to be aware of for 2021? Greg Ouillon, Chief Technology Officer, EMEA at New Relic offers his thoughts.

### DevSecOps and the rise of ADR (Application Detection and Response)

While DevSecOps has adopted many of the agile processes of DevOps practices, there are some key differences. In security, teams develop code, applications will read the code

and potentially detect vulnerabilities. The code will then go into a sandbox where it will be tested for vulnerabilities once more. This development cycle empowers developers to build secure applications, and there is a strong role for observability here in two ways: observability will help businesses detect vulnerabilities by changes in behaviour, and it will also help to detect anomalies and issues in code in production. The goal here is early detection, preferably in your staging environment but also if vulnerabilities slip through the cracks on production.

A lot of businesses are becoming interested in using observability as one of the tools to manage security vulnerabilities. In the field of cybersecurity, there has been a lot of investment in network security, network detection, and response, as well as employee and endpoint detection and response. But with the move towards containerisation and continuous deployment where production code can be shipped hundreds of times per day, cybersecurity cannot be across all the changes that are going out the door.

There is a big question around whether observability will become Application Detection and Response (ADR). Instead of just detecting issues like a drop in throughput, or an increase in latency for example, will observability, with the assistance of machine learning, start to help you detect attacks and vulnerabilities?

### Total experience and user centricity

Analysts are now starting to talk about the total experience as the reflection for an obsession for user-centricity. Cloud is great because it gives businesses scale, resiliency, availability and geographic reach, but what it doesn't provide, on its own, is the end-to-end view of how to delight end-users and customers. It's not practical to observe your architecture, APIs and front-end in silos. Businesses need to understand how the pieces interact and talk to one another – they need to have a total mastery of the end-to-end experience. There are still a lot of customers who have completely different teams managing the performance of the front-end and the back-end without an end-to-end view. If businesses have a disjointed view, then they don't know what's happening to their customers.

### AI and the augmented SRE

It doesn't yet make sense to say that AI will replace humans in the next five years in software reliability engineering. There is too much variability in use cases, configurations and architectures. Humans remain absolutely central to the equation. What AI is going to do however, is augment SRE teams so that they can make sense out of their very complex architectures.

With thousands of microservices, hundreds of releases per day, and hundreds of thousands of containers, there's no way that the human eye can cope with that level of complexity. AI is not just a 'nice to have' when it comes to proactive detection and incident intelligence. It is really about businesses equipping SRE teams with the tools they need to do their job effectively.

## Karl Bream

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# 2021 – Time to trend positive

LOOKING FORWARD to 2021, we must also reflect a little on this past year. In its tragic cost to life, economy and society, it also re-set many aspects of our industry. It impacted business continuity and created new enterprise security challenges. It stretched supply chain and logistics capabilities to the limit, and set the stage for a digitally transformed future.

### Business continuity prioritized

The pandemic put business continuity center stage. Historically, a CIO's to-do list consisted of ensuring appropriate and robust back-up systems were in place, along with disaster recovery and cyber-resilience – but now, their list just got a lot longer, because the company is also working from home. Instead, CIOs have devised new policies and plans in real time. And going forward in 2021, the business continuity priority will comprise setting policy and approaches for a routinely dispersed workforce. That means decentralized asset management, guaranteeing secure connectivity and software deployment across a virtual enterprise. In addition, on a practical note, in certain industries business continuity will mean that physical tasks in mission-critical operations such as maintenance, manufacturing and healthcare will need to be performed remotely, as we adapt to working at a distance.

### Cybersecurity – a top priority

Dispersed workforces also meant more network traffic, and open season for cyber threats with DDoS attacks up by 50 percent. With broadband now an indispensable service, network infrastructure defense is mission critical to business and government operations. In 2021, proactive, agile and cost-effective detection and automated mitigation are vital to safeguarding service provider infrastructures and services. So, all vendors need to double down on securing their infrastructure. From our perspective, that means “security by design” is a priority. (And it's something that is appreciated by our private wireless customers, who welcome the higher levels of security on offer.) Connectivity needs to be the strongest link in the cybersecurity chain.

And, fueled by reports of vaccine research and supply chain hacking, cybersecurity is also witnessing a growing threat to industrial processes such as manufacturing, distribution, supply chain and logistics. Protecting these processes will also be high on the 2021 security agenda.

### Supply chain intelligence

While the highest praise in 2020 must go to healthcare professionals and emergency services, the unsung hero of our industry has been the supply chain. From sustaining international manufacturing and managing huge, instantaneous swings in demand from healthcare, supermarkets and home delivery – supply chain and logistics have answered the call. Learning from this immense swathe of demands, we will see enhanced layers of prediction and intelligence built into logistics systems. Intelligence will center on IoT in the supply chain, across products, channels, warehousing and more. All components will integrate intelligence into infrastructure.

### Network edge evolution

To help fuel intelligent operations, the year 2021 will mark the next steps in digitalization and automation as we move inexorably toward Industry 4.0. With the evolution from 4G to 5G bringing greater reliability, lower latency and improved asset control performance, we will also see a convergence of networking and the edge. To operate in real time, data needs to be processed locally at a speed required for IoT use cases such as robotics and automation. Connecting assets at the edge will not only deliver new levels of efficiency and productivity, but it will also accelerate OT and IT convergence. Marrying these technologies is a huge step forward in advancing IIoT and enabling use cases to increase and diversify. Anticipate the ecosystem aggregating capability at the edge for high-speed interoperability, connectivity and Industry 4.0 in the new year.

### Digital transformation accelerated

And while flexibility and resilience were the watchwords for keeping industrial processing, manufacturing, supply chain, logistics and retail going in 2020, it ultimately highlighted where companies stood in terms of their digital transformation. It's reasonably argued that organizations well advanced in digital transformation were better positioned to cope with the challenges the pandemic presented. In response, companies lagging in their transformation will move to catch up and embed digitalization into operations.

So, we go into 2021 with optimism. Painful and difficult as 2020 was, it likely accelerated positive trends in our industry, and will ultimately prove to be a catalyst for a more connected, secure and smarter way of living and doing business.

[www.ntt.com](http://www.ntt.com)

## NTT 'Future Disrupted' predictions for 2021: the transformative impact of COVID-19 on society

Disruptive trends will ensure that digital transformation is an imperative for businesses

NTT LTD. Has published its 'Future Disrupted: 2021' technology trends predictions. Based on the critical technology trends forecasted to drive change, combined with key insights from NTT's experts, the trends serve as a guide for businesses looking to seize on the opportunities and benefits that these technologies bring.

The disruptive technologies, which are forecast beyond 2021, reflect the impact that the COVID-19 pandemic has had on accelerating the digital transformation of society. NTT believes there are five key disruptive technology trends that hold promise to help businesses realise safety and security, support sustainable growth and reduce environmental loads:



All-photonics networks (APNs) will power global communications: APNs will enable end-to-end, information transmission between the terminal and the server and will allow us to operate an ultra-low power intensive sustainable communications environment.

Cognitive Foundation (CF) technology will connect and control everything: the centralised management and agile allocation of ICT resources will provide the ability to integrate various sensor information - voice, video or other - to support IoT initiatives.

Digital twin computing (DTC) will enable predictive analytics by integrating the real and virtual worlds: DTC will test different environments by freely copying, combining and exchanging various digital twins of 'things' and people. This information will be integrated into applications such as traffic congestion prediction systems and can make accurate predictions in the field of disease control.

The evolution of the 'citizen developer' and robotic process automation will reshape businesses: Low-code/no-code platforms built to enable anyone to create business applications using their company data - will be a significant differentiator for businesses. The 'citizen developer' approach is also utilising robotic process automation to automate certain business processes, allowing employees to spend time on higher-value work.

Quantum and edge computing will usher in a new era of computing: More computational work could be done locally at the edge, rather than in the central cloud which can cause delay. For example, a car's computer vision system would process and recognise images immediately rather than sending that information to the cloud for verification.

While these disruptive technologies are on the horizon, in the nearer term, these trends are driving the need for digital





transformation as they enable businesses to deliver superior, more connected, seamless and positive customer and employee experiences. In fact, because of this, NTT predicts that digital transformation in 2021 will be an imperative for businesses, not a choice.

As revealed in NTT's 2020 Intelligent Workplace Report, a positive employee and customer experience (EX & CX) will be the foundation on which business strategies are built in the future. This is supported by further NTT research – 2020 Global Customer Experience Benchmarking Report – in which 70.5% of organisations cited improved CX as the top factor driving their digital transformation.

Commenting on the predictions, Andy Cocks, Chief Go-to-Market Practices Officer at NTT Ltd. says, "In 2021, we predict that CX success will depend on whether you have a data-driven and well-documented strategy in place. The immense amounts of customer data that most organisations access, capture and manage from multiple sources are only set to grow in the year ahead."

Andy continues, "Automation will also play a critical role in employee experience initiatives. NTT predicts to see advances

in and adoption of robotic process automation, machine learning and AI. Employers are having to think hard about optimising for employee wellness and safety. Identity, data and analytics, collaborative tools, security and automation will become the foundations for enhancing employee experience and, importantly, employee wellness."

Lastly, cybersecurity must underpin everything that is implemented as its impact on both customer loyalty and employee wellbeing will intensify moving into 2021.

NTT's Intelligent Workplace Report also indicated that 83.2% of organisations have completely re-thought their security to accommodate new ways of working brought about by the pandemic.

Training on new applications and new ways of working seems to be low on the agenda (in place for just 42.8% of organisations), which presents a high level of risk. Informing employees about updates to security policies, and completing security awareness programs, how these will support them in their day-to-day activities – regardless of location – and what is expected of them is paramount to ensuring the desired employee behavior, and, importantly, their buy-in, on cybersecurity issues.

## Rob Tribe

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# Tech Futures: From the coalface to the north face

Rob Tribe, VP, Systems Engineering, EMEA, Nutanix, offers his thoughts on the shape of technology development in the months ahead.

HAVING STARTED OUT as a technical specialist before the millennium, I've seen platform-level developments shake up the way we use devices from the server to the smartphone, with many of those changes being wide-ranging and positively disruptive.

Having worked at the coalface of customer deployment, I now have the responsibility to work in a C-suite team tasked with tackling some of the biggest technology challenges that IT teams face.

With the aftermath of the last 12-months behind us, the days and weeks ahead for many of us represent something like an ascent of the North Face i.e. a climb through the toughest most wind-battered precipices we have ever encountered. So what

can we expect in the near and immediate future and how big an ice-axe are we actually going to need?

### Cloud-native clarity

As we settle into the post-pandemic new normal, IT departments will look for greater adaptability and flexibility in their infrastructures. This really can be an epiphany moment for the adoption of cloud-native tools at all levels. As tech practitioners now look to technologies that unlock applications from physical locations, the use of abstracted and virtualised cloud-native applications and data services has the potential to grow, in a predominantly hybrid cloud world.

The effects will be felt for both 'traditional' applications as well as for modern applications that are born in and of the cloud. Some work will be required to migrate, refactor and reengineer, but the efforts involved will pay dividends in the short, medium and long term.

On an intrinsically related theme, our IT functions will continue to need to provide for security, business continuity and disaster recovery for all applications, including cloud-native applications.

They will look to vendors who can unify these capabilities across clouds and across both kinds of applications. You'll hear the terms 'seamless experience' and 'single pane of glass' overused in hyped-up tech publicity materials, but there is a meaning to be gleaned here, i.e. unified accessibility and insight really does matter.

### The no big bang theory

The trend towards moving applications to public cloud service providers will continue. More organisations will start to more strategically analyse their application and data estates and be







able to define which elements of their workloads are the most likely to benefit from higher flexibility and extended services options in public cloud.

But there are caveats here and we shouldn't expect public cloud services to be a cure-all.

Some organisations will inevitably find that some of their traditional pre-cloud applications take an inordinate amount of refactoring and rewriting, which can make any shifts cost prohibitive. Technologies that allow for a more phased refactoring will likely prevail.

### Mainstream AI, automation & autonomy

If there is perhaps one new 'darling' among the tech developments we've seen drive platforms and tools over the last 18-months and more, it is the use of Artificial Intelligence (AI) and Machine Learning (ML).

When we add Deep Learning (DL) and neural network intelligence to AI-driven Robotic Process Automation (RPA) and the software 'bots' that will shoulder our most repetitive workplace tasks, we will be able to elevate people's workflows to focus on high-value activities in every industry.

AI will help in all types of process and operational planning as it analyses business data and provides predictive analytics. However, it will remain a tool to guide decision making rather than being something that takes our world to a fully autonomous existence. The robots are getting smart, but we humans are still in control and things should stay that way for the foreseeable future. Whether it's the exposed North Face that we tackle first as we enter 2021 and scale its technology challenges, or whether we take a slightly kinder if perhaps more circuitous route around some of the easier foothills first, the summit is essentially worth striving for. The view from the top will be worth it, I promise.

When we add Deep Learning (DL) and neural network intelligence to AI-driven Robotic Process Automation (RPA) and the software 'bots' that will shoulder our most repetitive workplace tasks, we will be able to elevate people's workflows to focus on high-value activities in every industry



## Bryan Catanzaro

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# A greater industry focus on conversational AI, AI-as-a-Service and 5G

**AI AS A COMPILER:** “As AI training algorithms get faster, more robust and with richer tooling, AI will become equivalent to a compiler — developers will organize their datasets as code, and use AI to compile them into models. The end state of this is a large ecosystem of tooling/platforms (just like today’s tools for regular software) to enable more and more non-experts to “program” AIs. We’re partially there, but I think the end state will look very different than where we are today — think compilation in seconds to minutes, not days of training. And we’ll have very efficient tools to organize data, like we do for code via git today.”

**Conversational AI:** “Chatbots might seem like so-last-decade when it comes to video games designed to take advantage of powerful PC graphics cards and CPUs in today’s computers. AI for some time has been used to generate responsive, adaptive or intelligent behaviors primarily in non-player characters. Conversational AI will take gameplay further by allowing real-time interaction via voice to flesh out character-driven approaches. When your in-game enemies start to talk and think like you, watch out.”

**AI as a Service:** “Companies that are reluctant to spend time and resources investing in AI, whether for financial reasons or otherwise, will begin turning to third-party providers for experimentation. AI platform companies and startups will become key partners by providing access to software, infrastructure and potential partners.”

**Transformational 5G:** “Companies will begin defining what “the edge” is. Autonomous driving is essentially a data center in the car, allowing the AI to make instantaneous decisions, while also being able to report back for training. You’ll see the same thing with robots in the warehouse and the workplace, where there will be inference learning at the edge and training at the core.

Just like 4G spawned transformational change in transportation with Lyft and Uber, 5G will bring transformational deals and capabilities. It won’t happen all at once, but you’ll start to see the beginnings of companies seeking to take advantage of the confluence of AI, 5G and new computing platforms.”





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## Laura Baldwin

President at O'Reilly Media

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# What 2020 taught us Where 2021 is taking us

Laura Baldwin, president at O'Reilly, takes a look back at 2020 and discusses the tremendous impact it will have on business decisions, leadership, keeping pace with technology, and the rise of AI democratisation throughout 2021.

### Driving business success in 2020

2020 was, without doubt, not the year any of us had planned for. It challenged us personally and professionally, but we also learned a lot. I wish I could offer some highly complex insight about what success looked like in 2020, but in reality, it all came down to transparency, collaboration, and drive. Those three simple things working in conjunction with one another are my biggest takeaways from this year.

Like many other organisations, O'Reilly went through a very tough time in March when we saw the pandemic's effect on in-person events. We made a decisive call to shutter our \$35M events division, which eliminated 75 jobs and forced us to re-examine our entire business. These were wonderful colleagues

whom we lost, with years of working relationships with those who remained. That's hard, particularly for a company of our size. We handled it the only way we believed we should – with transparency. We explained the rationale behind the decision, allowed our employees to ask hard questions, and addressed them head on. We grieved together, but we all understood it was the only way to survive as an organisation.

Collaboration – working jointly with others in an intellectual endeavour – was my second big takeaway from 2020. When we closed our in-person events division, the entire O'Reilly team worked together to bring our renowned events online, and we did it in an astounding 10 days. All of our normal processes changed due to the personnel reduction, and there wasn't a single employee who didn't contribute to rebuilding our systems and processes to handle the shift to digital events. It was impressive to watch, and it was a level of collaboration I had never seen before.

And lastly, drive. O'Reilly is a mission-driven company and always has been. Our number-one operating principle requires us to ask at every turn, "Is it best for the customer?" Even after losing colleagues, our team drove themselves above and beyond to satisfy our customers and make sure O'Reilly itself survived the pandemic to continue our mission. Sheer determination and drive were behind that. And it's what has helped us not only survive 2020 but potentially thrive in it. As we move into 2021, we'll need these three qualities to be rooted even more deeply in our everyday work in order to capitalise on what's next.

### The winners of 2020

For the past few years, we've been hearing about AI and other





new technologies that are going to change the world. Instead, 2020 revealed the importance of technologies that enable people to work together, to serve their customers, and to collaborate – tools for remote work like Zoom, Slack, Microsoft Teams, and Google apps. In the end, 2020 proved that people augmented by technology is the way to win the technology game.

### Good leadership is always good leadership

The way one leads teams is the same whether they're remote or in an office. Transparency, empathy, setting expectations, and high goals resonate most with team members in either setting. One thing that does require more work is making sure the conversations that happened serendipitously at the water cooler still happen virtually.

Don't forget that your employees are human. Make sure your video calls aren't all about work – ask your people how they're doing, how their families are doing, and how work is going. You have to consciously take the time to do that on a video call. Whether you go back to an office full time or never see the inside of a cubicle again, continue focusing on what you do best. The company has goals to meet and customers to serve, so break it down to that level. I call it first principles. It's outcomes you want, and they're not determined by the location of the people working to deliver on them. Just be sure to have good tools in place to encourage collaboration, and that everyone understands your fundamental business hasn't changed (even if you might have tweaked your delivery method).

### AI democratization

Now is the time to move forward with innovation. We need to stop discussing working remotely and get back to innovating. Much of what's happened in the past few years around AI is cloud-enabled solutions that give every company access to AI tools, like AutoML. This democratizes AI capabilities, empowering organisations of all sizes to take advantage of its value.

Corresponding with this is the price of high-level technical talent. While new employees with leading-edge expertise are something large organisations can afford to invest in, that's not a reality for most businesses. You can't hire new talent to take on all your technology endeavours. Rather, you must rely on your existing teams to stay current. But simply training them on a new technology isn't enough. It's vital to provide them with the tools to help them upskill and reskill in order for your organisation to continually progress.

In 2021, I'd encourage organisations to get informed about what AI features are already available to them and not be afraid to learn how to use them. Smaller companies can't be expected to hire someone every time they want to embrace a new technology – and they don't have to.

### Keeping pace with technology

Technology continues to move at the speed of light, and companies need to keep pace to stay relevant. 2021 will be no different.



The biggest change is that learning is no longer a “step away for a week and come back” exercise. There's too much on your team members' plates to miss concentrated work time. And technology is moving too fast - waiting four months for a conference to give them the answers they need right now just doesn't make sense. They must be able to learn in quick bursts of knowledge that help propel their immediate projects. This is why O'Reilly believes in learning to do, not just learning to learn. It's not about consuming a four-hour video, but rather about empowering someone to get help and move forward while in the flow of work. It's a game changer for enabling the tech worker of today – not just of the future.

Ultimately, no one expected this year to go how it did. But organisations must remember that they can pull through it. Transparency, collaboration, and drive. Put them to work in conjunction with your first principles and you can confidently move forward, innovate, and make smart decisions to push for a better tomorrow.

2021 will be hard for many organisations trying to get back to normal. But getting back to normal shouldn't be the top priority. Focus on the first principles of taking care of your customers and employees and meeting your corporate goals, and there's no doubt you'll be able to succeed in the end.

Now is the time to move forward with innovation. We need to stop discussing working remotely and get back to innovating. Much of what's happened in the past few years around AI is cloud-enabled solutions that give every company access to AI tools, like AutoML

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# How the world of work and IT will evolve in 2021

TECHNOLOGY has indeed been a lifeline for companies throughout this year. In 2021 we will see a continuing trend for the high valuation of tech and digitised solutions in the workplace, wherever that may be.

But keeping these tools online and available doesn't just happen by magic. For a business to run problem-free and enable employees to do their job efficiently, a proactive approach to technology monitoring can help to catch issues early and nip them in the bud.

### IT management changes in 2021

In terms of changes for IT in 2021, with the likelihood of remote working being still very much the norm, we'll see a lot more proactivity from the user's side when it comes to troubleshooting IT problems.

Companies must empower remote workers to do their due diligence and resolve issues with tools at their own disposal when possible. Users can use a web portal to access office systems to see if internal systems are up and running – people can gain their own sort of monitoring literacy.

In addition, with security in IT for 2021, companies need to ensure that there's absolutely no options other than good behaviour when it comes to cyber safety. Default systems that people utilise, with BitLocker encryption, cloud secure systems, and encryption on SharePoint spaces for working on live documents, can all ensure that it's almost impossible to not be secure.

### The biggest frustrations with IT for 2021

In 2021 we'll likely see a continuation of frustrations around remote working issues. From surveying IT users in 2020, we've found that by a country mile the biggest challenge was connectivity issues for employees working from home. Second to that was access to video conferencing technologies. Remote workers are still likely to not have it right as many avoid best practice methods for the sake of speed.

Users are often not sorting out software updates on time and not investing in signal boosters to help with connectivity if

they're far away from a router; it's often quite hard to make users change bad habits like these.

### Cloud migration in 2021

The coming year will see IT leaders prioritising cloud virtualisation, meaning that the move to the cloud will stop being a one-time process. Cloud virtualisation is where IT sets up virtual servers, storage and operating systems for users. With this, IT can build apps and services for remote workers in a way to fit suitable virtual cloud platforms; it is an improvement on the traditional hardware-software relationship.

In addition, with cloud software, there will be a continued move towards convergence of Operational Technology (OT), IoT, Industrial IoT (IIoT) and IT. This is where the power and flexibility of IT can really make a difference to businesses relying on older or siloed systems – particularly in the monitoring space.

### 'Anywhere operations' in 2021

'Anywhere operations' are increasingly becoming the norm and we'll see this trend continue in 2021 as users call for increased portable functionality. Tech companies will soon provide this as a standard if they aren't already doing so.

IT admins, for instance, might want live updates on software monitoring on a smart wrist device; people want to be connected in the ways that suit them the most. We've moved a long way from the bulky IBM computer mainframes of the 1960s, so there's no reason for technology companies to fail in meeting new portability precedents.

### A summary of what's on the horizon for 2021

The continued focus on remote working will likely have a massive impact on how IT is managed in 2021 and beyond. We might eventually see businesses relocate offices out of urban centres as the overheads from keeping an inner-city commercial rental will be superfluous to needs.

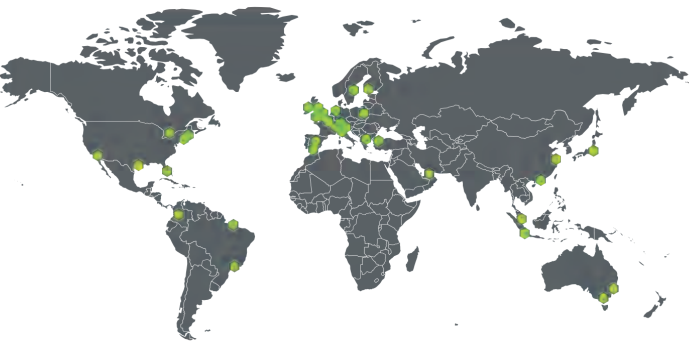
2021 will be an opportunity for IT teams to boost remote capabilities, reshape infrastructure and continue to keep business operations seamless for the benefit of remote working teams.



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## Phil Chambers

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[www.peakon.com](http://www.peakon.com)



# Three workplace predictions for 2021

Phil Chambers, CEO and co-founder of employee analytics and engagement platform Peakon, reveals his predictions for the workplace in 2021

NO ONE could have predicted the turbulent events of 2020.

This year has both accelerated existing trends and brought new ones to light. Amid such uncertainty, it might be foolish to put my name to any future predictions...

That said, 2020 has taught organisations countless lessons, and spurred positive action from employers worldwide. With these new learnings in tow, 2021 could become the year that many leaders start afresh – taking massive strides in building workplaces that really work for everyone, and driving business outcomes as a result.

With a data set of more than 50 million survey responses from employees in the technology industry, we at Peakon have unique insight into how employees worldwide are feeling right now, and the expectations that they hold for the future. So here's what I think will happen next...

### Diversity, Equity and Inclusion will leap up tech leaders' agendas

This year, the powerful Black Lives Matter movement spotlighted the need for organisations of all shapes and sizes to prioritise DE&I – and the tech sector certainly needs to take note.

Just 15% of the workforce comes from BAME backgrounds, while gender diversity sits at 19% compared to 49% for all other jobs.

Creating a more diverse workforce isn't just a moral must; it's a business imperative. Diverse teams perform better and are naturally better equipped to create products and solutions for diverse customer bases.

Tech leaders must also educate employees to spot biases in the 'intelligent solutions' they develop. This needs to be done before they reach the market – or we'll see a situation where technology just perpetuates entrenched prejudices. Asking employees to identify and call-out biases in their own organisations is a necessary step towards achieving this.

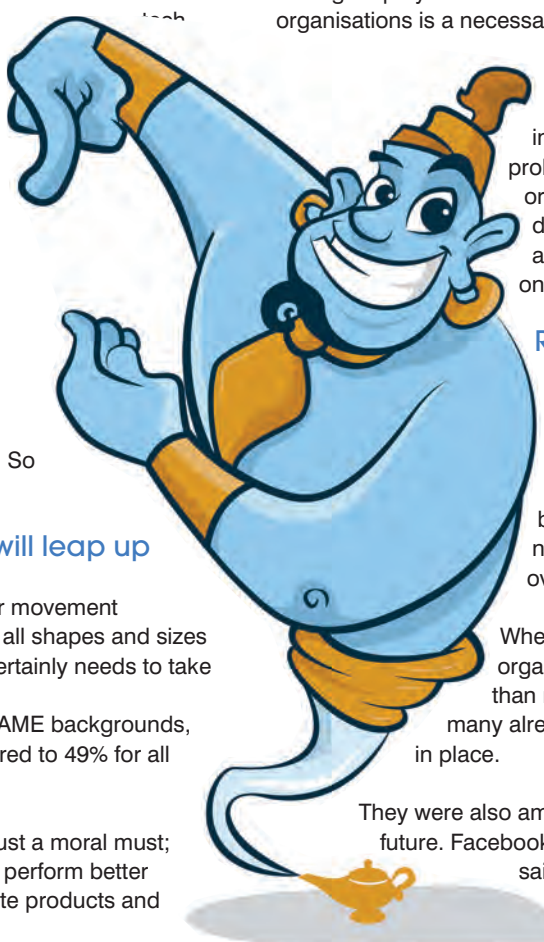
for tech organisations is that they are adept at handling data, which will be increasingly key in tackling the problem. In 2021 we will see many more organisations take a rigorous and data-driven approach to assessing DE&I, and building robust strategies based on the results.

### Remote working isn't going away, so workplaces will evolve

Spoiler alert: 2021 is not going to bring an end to remote working. The genie is well and truly out of the bottle, and there's no 'going back to normal' once the pandemic is finally over.

When the pandemic struck, tech organisations were in a stronger position than most to adapt to remote working, as many already had the technology infrastructure in place.

They were also among the first to commit to a remote future. Facebook, Twitter and Microsoft have all said that remote working will be a permanent option for employees. Google is also championing a



For as long as there have been offices, there have been office cliques. But just because businesses are moving away from that working model, doesn't mean we'll see the demise of office politics. Instead, it will mutate

hybrid approach, following internal studies which showed that employee productivity has increased thanks to home working.

This means that moving into 2021, the 'hybrid workforce' will continue to prevail, with companies leaning on AI-driven software, collaborative tools and other technology to make this approach work. The focus for HR and business leaders will now be on maintaining and strengthening organisational culture virtually, and ensuring innovation efforts don't suffer.

#### Office politics is dead; long live office politics

For as long as there have been offices, there have been office cliques. But just because businesses are moving away from that working model, doesn't mean we'll see the demise of office politics. Instead, it will mutate. While platforms like Slack provide the opportunity for voices to have an equal-footing, they also afford more room for voices to go unheard. Moving into 2021, complacency around employee visibility will not be an option.

Without the opportunity for in-person connection – from casual office chit-chat to an after-work drink – those who onboard remotely risk being ostracised from their peers. For managers this is particularly pronounced, since there are more hurdles when it comes to connecting and integrating with a pre-existing team in a digital-only space.

This is an issue where scale only exacerbates the problem; the larger the company, the larger the problem will present. Listening intelligently to your employees, and discovering the cracks where voices are being lost – that's how you avoid breeding division.

Tech organisations are used to ringing the changes. But as we go into 2021, business leaders need to think about how these changes impact their employees. While new ways of work are certainly working, there are areas of tension. Addressing these sooner rather than later will pay dividends in the long run.



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# A bumpy road ahead?

## 2021 - the year of digital transformation backlash

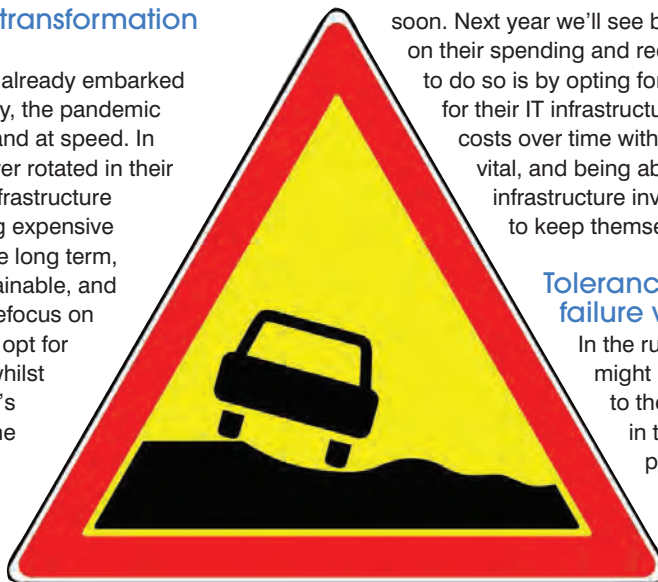
For those businesses that hadn't already embarked on a digital transformation journey, the pandemic forced them to overhaul their IT, and at speed. In the process, many companies over rotated in their technology choices, opting for infrastructure beyond their needs and choosing expensive solutions with vast capacity. In the long term, these choices may prove unsustainable, and in 2021 businesses will need to refocus on the medium-term, rebalance and opt for the solutions that fit their needs whilst remaining agile. In 2021 the CTO's role will need to adapt to being the 'renegotiator' – finding the best tuned systems for streamlined budgets.

## As ransomware peaks, back ups will offer the last line of defence

Whilst in many cases the pandemic has brought out the best in people, it has also brought out the worst in some. Hackers have taken advantage of the remote working phenomenon to catch users when they're vulnerable, leading to a number of unscrupulous attacks. As such, in 2021 we'll see a continued rise in devastating ransomware attacks, which will lead to organisations turning to backup technologies and services as their last line of defence. With sustained downtime being almost as expensive as paying the ransom, the speed at which systems can be restored is becoming increasingly important. As such, winning organisations will look to adopt backup solutions that ensure systems are back online within minutes or hours rather than days.

## Flexible consumption models will give organisations the breathing space they need to win

With so much uncertainty still upon us, it's unlikely that we'll see the majority of organisations relaxing their purse strings anytime



soon. Next year we'll see businesses keeping a closer eye on their spending and reducing overall costs. A key way to do so is by opting for flexible consumption models for their IT infrastructure. Having the ability to manage costs over time without a long term contract will be vital, and being able to avoid large and risky capex infrastructure investments will help organisations to keep themselves in the black.

## Tolerance for security and IT failure will drop even further

In the rush to digitise, organisations might not have given much thought to the complexity they were creating in their systems, resulting in costly periods of potential downtime. This problem has become increasingly unacceptable, and sustained periods offline are just as damaging to reputations as they are to bottom lines.

Despite the complexity organisations may have added to their own systems, in 2021 I expect total intolerance to downtime and security issues from customers, partners and employees.

## Forget containers – 2021 will be the year of the application

For several years containers have featured in my predictions, whether it be containers going mainstream or the rise of stateful container workloads. As this space further matures we see container granular solutions becoming important and application centricity becoming essential.

It's all about the business application; consistent and reliable day to day operation, encrypting its data, backing up the whole application not just its data and being able to freely move the application from environment to environment, datacenter to datacenter or cloud to cloud based on changing circumstance. Whether it's home grown or off-the-shelf, the focus is on the application.



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# Connecting to the modern workplace

WHEN COVID-19 first hit, it created massive business continuity challenges for most companies, across multiple sectors. As we enter 2021 and organisations continue to navigate through the pandemic, IT teams must look beyond legacy technology in order to be fully prepared for whatever lies ahead. Companies innovated rapidly and initial sprints enabled them to react to the immediate COVID-19 challenges. But systems were cobbled together quickly and they are not 'match fit' for our new ways of working. For companies without a fully integrated workflow system, the future of work will not arrive and soon, they'll fall behind.

Over the last year, businesses have been forced to innovate and evolve to survive the dramatic shift to remote working and adapt to the ensuing challenges of a disconnected workforce. But for all the promise of change, old habits persist. Digital transformation may have accelerated, but there is still a long way to go for most companies.

Research suggests that C-level leaders and employees have low confidence that they would be able to adapt to another major business disruption, as legacy technology continues to hold organisations back.

As many as 98% of UK C-level leaders admit to still using offline processes. Prior to the pandemic, managing the annual budget based on a decade-old collection of interlinked spreadsheets or controlling the call centre staffing rota on a photocopied template were bad habits. Today, they are critical weak points. There is a lot of work to be done around automating administration, interconnecting processes, and moving employees from siloed software to integrated workflows.

Fully embracing cloud-based software and applications will be crucial for companies that have not done so already. Those businesses that had previously embraced such tools found the pivot to remote working a lot more straightforward and digitally native companies have barely been disrupted. It's no surprise that businesses will increasingly look to adopt cloud-based applications in order to aid employee collaboration and connect the entire workforce.



In 2021, the priority for businesses should be creating an environment that allows employees to work faster and smarter, whether in the office or at home. Whilst digital workflow automation will play a big part in this transformation, the critical challenge for UK organisations will be balancing the immediate need for business continuity with the personal needs of their employees.

2020 has been a difficult year for a lot of people. Many have seen restrictions over the past several months, which look set to continue through the winter. Businesses need to lead with compassion and combine empathy with meaningful action to help their employees navigate the months to come. In this distributed working environment, how organisations handle the moments that matter, from when a hire joins to when they leave, not only determines talent retention but will also contribute to overall business continuity and success.

Given that remote working continues to be universally adopted, companies must act now to minimise the impact of another future major disruption as we head into the new year.

# 2021 predictions from a range of experts at SolarWinds

## Rethinking Multi-Cloud

The benefits of a multi-cloud strategy have been hyped significantly and include everything from flexibility and reliability to cost-performance optimization. But deploying data and workloads across multiple clouds shouldn't be an industry best practice. According to a 2020 IDG® survey, 55% of organizations use two or more public clouds, but 79% struggle to achieve synergy across their multiple platforms. Now and in the future, we'll see a growing number of companies rethink multi-cloud or consolidate around a single cloud provider.

With multi-cloud adoption, there's a lag between initial investment and deployment. Those who first started with a multi-cloud strategy may grow to realize how expensive and quickly complicated it can get, making the return on investment (ROI) questionable. It's expensive because it requires a high level of understanding for each target platform, a strong development team, an observability and monitoring focus, orchestration-first processes, nearly complete change automation, and more. For most businesses, there are also some lost cost opportunities because not all cloud providers offer the same services mix, especially for advanced services – and this is where things start to get more complicated. Businesses must develop and maintain advanced cross-cloud services in-house for anything not common to all target platforms.

As we see organizations rethink multi-cloud, they must also think about what success looks like. This usually depends on two "must-haves." First, businesses pursuing a multi-cloud strategy must either wield a high-performing, DevOps-focused team of IT professionals or have the budget to outsource multi-cloud engineering and monitoring to someone else. Second, they must have a well-researched case for why they believe multi-cloud will meet their business needs in the first place.



### Spokesperson: Patrick Hubbard Doing More with Less

According to Gartner, the abatement of revenue uncertainty in late 2020 will allow for the resurgence of more predictable IT spending by CIOs, but social distancing will continue through 2021, capping office capacity at 40%. IT teams will need to get

even more creative with how they're spending their money, with IT spending expected to decrease. Though organizations don't need to put digital transformation on pause, there will

be pressure for them to do more with less, leading them to focus on strengthening the tech already in place to optimize businesses. As a side effect, we'll see further accelerated growth in cloud adoption in international markets like EMEA and APJ.

As we try to adapt to the new normal, tech priorities will also continue to be shuffled around until we find the right balance. When it comes to network management, for example, the systems and infrastructure once business-critical (e.g., the fiber backbone running across the campus) are now secondary, while parts of the network once viewed as "nice to have" (e.g., client VPN connections for every employee) are now more than mission-critical – they're the essential tools of the business.



### Spokesperson: Sascha Giese The IT Help Desk Evolves to Service Desk

In 2020, we saw a sharp uptick in the number of inquiries being fielded through the IT help desk. This will continue in 2021, but as organizations explore how to drive efficiencies throughout the business, we also anticipate the IT help desk will further embrace

technology and streamline their operations to become a more central resource for all employee tech requests: the IT service desk.

Before the broader transition can begin, teams must put the proper infrastructure in place so they're able to sufficiently manage employees' systems. Organizations will then begin to look at how all factions and departments within the business can utilize the service desk.

By reviewing – and in some cases rethinking – their processes, we expect to see numerous businesses decide the IT service desk should become the central resource for employees so they can get the help they need, when they need it as remote working becomes the norm.

The IT help desk won't be responsible for owning all requests, but with their experience and expertise, they can suggest ways to automate, delegate operations, and encourage cross-departmental collaboration.

For example, where a technician would've traditionally coached a user through a one-off ticket like a password reset, automated classification and responses in IT service

management (ITSM) solutions will be put into place in 2021 to eliminate manual triage, make categorization more efficient, and lead to a faster resolution for the requester. For the more complex business practices like offboarding or hardware intake, IT teams will leverage their ITSM platforms to digitize the collection of information and automate changing access rights. Implementing these updates won't shift the onus from the IT help desk, but it'll help eliminate service silos and enhance visibility.



**Spokesperson: Liz Beavers**  
**Optimize Today's Tech for Tomorrow's Success**

According to Gartner, the abatement of revenue uncertainty in late 2020 will allow for the resurgence of more predictable IT spending by CIOs, but social distancing will continue through 2021, capping office capacity at 40%. Organizations will continue to employ the lessons they learned in 2020 – namely, investing in architectural agility up and down the stack.

Additionally, the adoption of new initiatives will be lower on the list of leadership priorities, so internal innovation will be key in maintaining distributed workforces. Keeping the organization alive and connected – both in terms of technology and regarding emotional engagement and enthusiasm – during the ongoing economic downturn will require IT teams to home in on existing technologies within the business and strengthen the skills required to keep them running optimally.

Of course, this isn't the first time this has happened. The technology we use to monitor and manage when it comes to networking has been more or less the same for over a decade. What's changed has been the sophistication of implementing and managing those techniques, along with the speed and variety of visualizations based on the data collected. What's changed recently is the opening of network infrastructure to automation. Because of this, monitoring and management tools are now expanding to help network engineers create,

manage, and monitor the scripts and tools used to create them, incorporating the best aspects of integrated development environments (IDEs) programmers have come to love and rely on. We'll see these shifts and evolutions continue in the future.

As we try to adapt to the new normal, tech priorities will also continue to be shuffled around until we find the right balance. For example, when it comes to network management, the systems and infrastructure once business-critical (e.g., the fiber backbone running across the campus) are now secondary, while parts of the network once viewed as "nice to have" (e.g., client VPN connections for every employee) are now more than mission-critical – they're the essential tools of the business.



**Spokesperson: Leon Adato**  
**The End of Automation Anxiety**

In 2021, we'll begin to see a reversal in the industry's "automation anxiety." With tightening budgets and other pandemic-induced operational challenges, organizations and tech teams will have no choice but to fully embrace automation to optimize

environments and reduce the time spent on monotonous tasks. This will include automating time-consuming tasks like workstation patching, configuration changes for network devices, compliance checks and remediation, server patching, and more.

This shift to automation will help reduce toil, improve processes, and prevent burnout – three scourges resulting from COVID-19. It'll also have a significant impact on the day-to-day role of tech pros. The extra time they'll finally have will allow them to be able to learn more skills and focus more on their career path.

One area primed for greater automation is the IT help desk. As monitoring and service desk integrations become more prevalent, tech pros will start the process of automating ticket assignments, asset updates, configuration management database (CMDB) updates, updates to customers, and more. This will not only keep monitoring and service desk systems

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and teams in sync but take menial tasks and delays out of the equation, allowing common issues to be resolved faster and saving the business time and money.



**Spokesperson: Chrystal Taylor**  
**Refocus on Full-Stack APM**

Though the move from on-premises to the cloud and hybrid IT was well underway before the pandemic, this transition was accelerated by COVID-19. In 2021, traditional IT professionals will have to rethink how to best manage apps as hybrid IT becomes the

new reality. One of the major challenges accompanying this is simultaneously managing legacy and modern applications. To do this effectively, tech pros will need to refocus efforts on implementing full-stack application performance management (APM) to best optimize their environments and resolve application performance problems faster and more efficiently. With integrated APM, application-level assessments such as root cause summary, response time, load patterns, and resource usage will make it easier to identify problems, allowing optimal performance and freeing up tech pros' time. In turn, this will lessen the impact on users and the bottom line, which will be the main business priority in a post-COVID world.



**Spokesperson: Adam Hert**  
**Double Down on Database Performance Management**

Let's face it: applications run the business – but applications run on data. Since 2006, the industry has been referring to data as the new oil. It's what gives businesses a competitive advantage, making the need to

protect and optimize its performance of the utmost importance to give the highest value back to the business. Visibility is critical because database performance is often where the experience goes wrong. In 2021, it's time to double down on database performance management.

Ensuring your database performance in the cloud is at least as good as it is in your data center is critical as IT organizations "lift and shift" more workloads to the cloud – something that's been accelerating since the workforce went remote. Otherwise, the digital transformation you expect to deliver for your business can suffer, bringing your business down with it. Because the database is critical to infrastructure and application performance, IT pros and business leaders have to strike the right balance for their organization's growth, and grapple with making their data perform its best, regardless of where it resides. And while many look at either the applications, or the infrastructure supporting them, the data management itself is a top priority.



**Spokesperson: Thomas LaRock**  
**The New Security Perimeter**

According to a recent survey, 20% of organizations have reported they've faced a security breach as a result of remote work. As remote work continues in 2021, employees will keep using work devices outside the office and at home, loading up personal

devices with business email accounts and company data and leading to a higher risk of a security breach. In the year ahead, it's imperative for businesses to extend the new cybersecurity perimeter outside the four walls of their physical offices.

Rather than managing devices internally, tech teams will need to shift responsibilities to managing people to stay one step ahead of an evolving threat landscape. Teams will need to work on closing the skills gap by educating and training more tech pros (and employees) to understand and mitigate cybersecurity threats. But this will need to go beyond on-the-job training – tech pros should be looking to gain security skills when they're studying at school and universities. Companies will want to ensure the security data scientists and/or third-party products deployed have a solid foundational understanding of the changing threats to business security.



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# Gaming to “eat the world” in 2021 – and watch out for Kubernetes, 6G, InsurTech and China enterprise apps too

ONLINE GAMING and esports is set for a breakthrough year in 2021 and will drive trends in user acquisition and user engagement that will resonate well beyond the gaming sector itself. Plenty of innovations seen in the gaming industry will be replicated and reutilised across many different sectors, including retail and financial services – driving a ‘gamification’ of the tech industry and beyond.

This expertise in driving user acquisition and retention has led to traditional companies looking to gaming for inspiration. As such, we predict that 2021 will see growing demand for marketing analytics platforms that are able to draw data from a range of digital sources to measure how people are using apps and engaging with marketing campaigns. One such company in our portfolio is Singular, which provides a platform that aggregates all of a marketer’s data into a single dashboard, allowing them to easily visualise and manage their data.

However, the end-user experience remains crucial, especially so in the world of online multiplayer gaming where platform performance is key. Another trend to watch, therefore, will be the rise of companies that can provide an ‘upgraded internet’ that can deliver an optimised fast-lane for gaming platforms. An example is Subspace, which is able to dramatically improve latency times and local network performance for gaming via a globally deployed infrastructure. Expect gaming companies to make network strategies a priority in 2021. 5G networks are now with us, so improving their performance and planting seeds for “6G” will be important in 2021. For example, one of our portfolio companies, Cohere, is today helping mobile operators by increasing spectral efficiency. This approach does to the network what Google did to the internet – making the internet searchable by mapping a mathematical model onto the location of all the information on the web. Similarly, Cohere makes a radio network predictable, scalable and high performance by mapping in a mathematical model to understand the information

about each mobile channel. Not only will this help operators with 5G now, but it opens the opportunity for Cloud RAN and provides some early frameworks for 6G down the road.

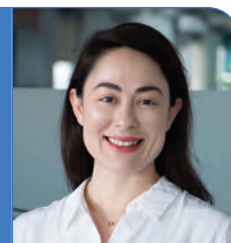
Away from gaming and 6G, we predict that Kubernetes will rise to dominate management of cloud native computing in 2021. The Google-developed open-source technology that helps with the deployment and management of containerised applications has only seen modest adoption in enterprises to date – but we expect that to change. As every company strives to become a data company, a cloud-native architecture driven by Kubernetes will become the standard thanks to its ability to scale app environments quickly and cost-effectively. Evidence of Kubernetes momentum can be seen in the recent acquisition of Rancher Labs by open-source enterprise software giant SUSE. Rancher Labs – an early adopter of Kubernetes – has created a platform that makes it easier for companies to set up and manage large Kubernetes environments and is used by more than 30,000 engineering teams worldwide.

Another sector to watch is InsurTech. The insurance market will continue to be disrupted, and we believe that will continue to accelerate in 2021 as InsurTech start-ups scale and big insurance firms move into the space. Expect to see new models such as ‘insurance on-demand’ – currently only accounting for a low single digit of share of the global insurance market – achieve significant consumer adoption in 2021. Companies to watch in our portfolio in this space include Corvus in cyber insurance and reThought in flood insurance. And, finally, keep an eye on fresh enterprise and B2B2C tech coming out of China. While a significant amount of China’s tech ecosystem has been focused on consumer apps in recent years, and we are seeing the opening up of credible growth and investment opportunities in areas such as cloud, network technology and AI. Several Chinese start-ups could have a breakthrough year in 2021, with the sector a significant focus of investor activity and IPOs.

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# Internet insights and more

## Internet Dependence Sends IT Back to School

2020 made us all critically reliant on Internet connectivity and for enterprises navigating the risks of outages, many learned the hard way that the Internet is a best effort network made up of thousands of distinct providers, operating on the honor system when it comes to routing integrity. This past year saw significant Internet disruptions, including several caused by BGP hijacking.

Although the biggest outage this year (which took down a good chunk of global traffic) wasn't caused by a BGP hijack, it led to service provider CenturyLink/Level 3 accidentally hijacking its customers' routes, causing widespread disruption. In 2021, we'll see Internet literacy become a hot commodity skill for IT practitioners so businesses can quickly identify and address issues in external networks that are beyond their direct control and reduce the risks of downtime.

## SD-WAN Gets Promoted to the Home Office

In 2021, as remote employees become a permanent fixture alongside (fewer) branch offices, more SD-WAN technology options will be rolled out for the home office. Security functionality has been a recent top priority for SD-WAN vendors, but we'll see a shift in gears as vendors become increasingly pressured to provide solutions that are scalable enough to deploy in every employee's home office environment.

Rather than solely relying on VPNs to backhaul or split-tunnel traffic, enterprises will start to adopt centralized solutions to manage and enforce policies that route employee Internet traffic securely, with optimal performance.

## FAANG will continue to sink its teeth into the Internet

This year, major software companies like Facebook, AWS and Google continued to make significant investments in Internet infrastructure projects including subsea cables like 2Africa and Grace Hopper. In 2021 and beyond, as online connectivity remains crucial to power consumer services and employee solutions, hyperscalers will expand into the role of connectivity leaders as they seek to provide better access to their services, which are increasingly powering much of the world's global online ecosystem.

## API Monitoring Cleans House

Demand for touchless features like voice-controlled activation and contactless payments skyrocketed in 2020. This type of functionality will only accelerate in the months to come, requiring extended visibility into the backend systems that power these new embedded applications and the API integrations that run them. IoT and "smart device" application performance becomes contingent on third-party API reachability and performance over the Internet and cloud provider networks. In 2021, end-to-end







monitoring capabilities, from backend to frontend, will become increasingly critical as touchless solutions become crucial in our everyday lives.

### Hyperscalers Hang 'For Rent' Signs on their Networks

2020 has dramatically reaffirmed the role of the Internet as the lifeblood of many organizations' operations. But the Internet is a complicated web of independent and interconnected service providers, any of which can impact the experience of users connecting to an application or site. As an alternative option and means of expanding monetization efforts, cloud providers and content delivery network (CDN) providers have been offering access to their private backbones with the promise of greater reliability and performance — for a fee. As uninterrupted digital experience continues to become critical to businesses, 2021 will see a growth in the number of companies that seek to avoid the vulnerabilities of the public Internet by paying for their own "private Internet."

### With the adoption of each new XaaS, collaboration across IT silos will increase

Cloud-based services are ubiquitous and with each new as-a-service solution, collaboration between traditionally-siloed IT teams will increase, as enterprises seek to maintain control of their digital experience.

Migrating apps and services to the cloud means taking on a complex set of external, interdependent services — requiring a new level of actual human collaboration, be it network engineers, app developers or security experts, to operate and manage them. Given that IT teams must operate in a highly collaborative way across functions, 2021 will see increased use of solutions that can serve as a common operating language across different IT domains. Monitoring technologies with cross-stack observability across external services will become part of the critical IT toolset, helping enterprise teams, and even external providers, quickly get on the same page to optimize and troubleshoot faster.

Cloud-based services are ubiquitous and with each new as-a-service solution, collaboration between traditionally-siloed IT teams will increase, as enterprises seek to maintain control of their digital experience

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# One step further across the next tech chasm

Chief analytics officer at enterprise data platform company TIBCO, Michael O'Connell, provides his compendium of technology industry predictions. He looks for a few prime movers, some key drivers and perhaps a couple of surprise packages.

ASK A FUTURIST or an IT evangelist when the 'next big thing' will happen and they'll typically tell you: roughly five-years. It often feels like half a decade is a reasonable projection period to expect the next major platform reinvention or paradigm shift.

Whether it's longer than five years doesn't always matter... and most people will have forgotten what they asked you in the first place by then. What is often more difficult is to pin down the major drivers that will be impacting our platforms, processes and devices in the 12-months ahead.

But 'difficult' never stopped a true technologist from tackling even the thorniest challenge, so let's provide a digestible compendium of some key trends driving technology forward. As we cross the chasm into 2021, what will we need to think about, and perhaps end up wearing as a t-shirt slogan once IT trade shows start up again?

### 1: AI Apps Platforms Will be the Bomb

Platforms combining API-led microservices and integration tooling, with data science, machine learning and visual analytics will continue to grow. Businesses need flexible building-block tooling to rapidly create packaged business capabilities and AI-infused applications to meet evolving business needs. Modern tooling for this purpose includes low-code, cloud-native app development tools, microservices event-driven design and integration, data science and visual analytics.

### 2: Hyperconverged Data Management and Analytics

The worlds of visual analytics, data science, data management and business process management are colliding as the quest

for business optimisation accelerates and the global pandemic brings future states into the digital present.

AI engines and software suggestion systems are driving this convergence - bringing automated data prep and machine learning into BI & analytics and data science working environments. The good news here is that automating routine tasks frees up time for innovation and business optimisation; and brings out the best of people and AI app tools working together.

### 3: AI-driven Software Automation

The automation of repetitive tasks has been a major focus in business process management (e.g. RPA), data science (e.g. AutoML) and analytics (e.g. AI Suggestion Engines) in recent years. Such automation greatly improves productivity of key resources like data scientists. It also broadens access to valuable software components for business users.

We are seeing pockets of this already in data science, which arguably has the most comprehensive workflow from data access, data prep, feature engineering, feature selection, model selection, explainability, packaging for deployment and visual analytics apps as targeted destinations.

### 4: GPUs Enter The Mainstream

Graphics Processing Units (GPUs) have moved far beyond graphics, and NVIDIA's acquisition of ARM for \$40B was a significant event in the world of GPU compute. ARM's CPUs are in billions of devices worldwide, providing NVIDIA with many targets for its deep learning technologies in edge scenarios. This will accelerate data management and analytics in edge devices from smartphones to broader IoT devices.

### 5: Video and image analytics in cloud-to-edge environments

The value of anomaly and defect detection close to equipment and abstracted in the connected cloud has been creating value for some time, especially in manufacturing and asset health surveillance areas. This will evolve into building block platforms for computer vision applications, with end-to-end deep learning workflows analysing image and video streams, connected to hi-res cameras.

### 6: Creative Combos Of In-Motion & At-Rest data

All data begins as events that arrive at many different velocities. We integrate data in event streams, monitor trends, make decisions and take actions on these data-in-motion. We also accumulate data from event streams into at-rest data systems, where we train predictive models and create visual analytics applications. Users consume these analyses at many different frequencies. Some of the most exciting and high-value use cases combine in-motion and at-rest data.

### 7: Convergence of Data Science with DevOps, ModelOps

Working from home in the pandemic has accelerated collisions and collaborations between teams of data scientists, DevOps and model ops developers - to get data science apps into production. We will see this convergence accelerate, as Model Ops continues to grow; and we will see a ML Engineer persona emerge.

The immediate tech future is certainly bright. There's no doubt that we're about to witness another whole group of platform-level innovations, updates, integrations, enhancements and



augmentations. After all these architectural innovations have played out and reached some level of maturity, roughly when will the next big thing come around the corner? Oh, I'd say about five years.

### 8: JavaScript and visual analytics

The maturation of JavaScript as a design and development environment has been phenomenal and will accelerate in 2021. Whether you are working on the front-end with JavaScript, apps and frameworks with React, Angular and vue.js, desktop apps with Electron.js, or backend with Node.js, JavaScript is the ticket! One area of creative innovation is the use of JavaScript as a specification design and rendering engine for visualisations. Open source environments, specifications, engines like D3 and Vega; and commercial kits like highcharts and tom sawyer; will engage large and growing communities.

AI engines and software suggestion systems are driving this convergence - bringing automated data prep and machine learning into BI & analytics and data science working environments. The good news here is that automating routine tasks frees up time for innovation and business optimisation; and brings out the best of people and AI app tools working together



**Michael Wood**  
CMO at Versa Networks  
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## Moving on from a monumental year

“2020 HAS BEEN a monumental year in shifting the way businesses operate. With a complete change in day-to-day business operations, businesses who did not previously embrace cloud, mobility, and new digital technologies were forced to quickly adopt new strategies to survive. Concurrently, business agility has become almost synonymous with digital transformation – that is, the process of employing new technologies to modernise or even revolutionise how a company does business – because new methods of working and network infrastructure prove just as, if not more, efficient than traditional methods. In 2021 businesses will increase investment in digital initiatives to drive business agility, improve productivity, and increase revenue. These are five important trends that you should make sure you are ahead of for 2021.

### SASE adoption increases 100X

As the most comprehensive networking and security trend to hit the world of cybersecurity for Enterprises in the last two decades, Security Access Service Edge (SASE) is primed to become an essential IT framework for bringing

together networking and security for organisations looking for consistency, flexibility, and high-performance. Unlike Zero Trust Network Access (ZTNA), SASE which goes beyond simply software defining the network perimeter enables organisations to deliver uniform and ubiquitous security, networking, and business policies to every user, application, and device consistently via the cloud or on-premises.

In 2021 SASE becomes an essential strategic initiative, design approach, and implementation standard for Enterprise network and network security deployments around the globe. Users can seamlessly access all their provisioned cloud and on-premises applications anytime from anywhere with a well-architected SASE solution.

After completing extensive due diligence, organisations will adopt SASE solutions delivered through a fully integrated single software stack that does not rely on service chaining or connecting multiple functions or services together. Businesses who use a single, integrated SASE software solution will see consistent policy implementation, granular visibility and control, reduced attack surfaces, dramatically lower latency, and unprecedented application performance. SASE will see an astronomical 100X increase in adoption in 2021 because of its benefits, integration, and ease of implementation.

### The cloud explodes

Cloud adoption has been steadily growing over the last decade. 2020 was one of the biggest tests of the cloud and became a bright spot for those businesses operating with a cloud-first imperative reaping the lion's share of the rewards. Organisations were able to scale and adapt their business models by leveraging the cloud because they leveraged the multitude of choices for SaaS applications, hosting alternatives, and high-speed cloud backbones for public cloud application hosting.

Organisations have been redefining their application, hosting, and IT strategies in 2020 to become cloud native which will continue into 2021 and result in an explosive shift to the cloud.



New businesses will be born, existing cloud-first organisations will accelerate, and those who continue to ignore the shift will be left behind in 2021.

### 50% of employees continue to work-from-home

If 2020 has proved anything, it is that Work-from-Home (WFH) is a trend that is here to stay. Businesses who have operated seamlessly, efficiently, and profitably using the transition to a WFH model with their employees realise that this way of doing business can be a permanent option.

Large organisations like Google, Microsoft, Salesforce, and Twitter have already announced that they are now allowing employees to work from home for the long term or even permanently. In 2021, more companies will follow suit with the direction of allowing employees the option to work from home. This forced experiment has shown that productivity can be maintained or even increased, collaboration can continue or improve, and establishing and measuring metrics is possible with remote employees.

With Work-from-Home becoming a mainstay, employees will continue to need seamless Voice over IP (VoIP), Unified Communications, collaboration, and video applications while enabling cloud and on-premise security and performance. In addition: business critical applications hosted in the cloud or on-premise, together with SaaS application such as Salesforce and Office365, must have proper security policies that are enforced uniformly so that sensitive data is not leaked into the wrong hands.

Businesses will need to continue to invest in WFH solutions that can efficiently connect distributed users with distributed applications without compromising on security or user experience. By the end of 2021 50% of employees will continue to work from home for a portion of time or permanently. By the end of 2021 businesses will begin to see tangible financial benefits resulting from competitive wages and lower office expenses.

### Unified Communications usage continues to rise

In 2020 video collaboration and Unified Communications as a Service (UCaaS) have been the expected forms of communication for one on one and group meetings. As more employees Go-To-Office (GTO) and others continue to work from home, video collaboration will become the DeFacto standard for meetings inside and outside of the office.

In 2021, UCaaS will continue to be a driving factor network transformation because these services are delivered to business offices and homes via the Internet which is a best effort network. There is a need to prioritise this traffic by type and provide mitigation for packet loss, jitter, and delay using error-correcting



technologies, dynamic jitter buffering, and link steering mechanisms that deliver a better user experience. Secure SD-WAN creates an expectational experience for video, VoIP, and UCaaS while steering this traffic over the highest capacity, lowest latency link for superior performance. The availability of technologies such as Secure SD-WAN will drive increases in UCaaS in corporate conference rooms and homes.

### 5G demands boosted in security

In 2021, many industries will be ideally situated to roll out the new wave of fifth generation (5G) mobile-network technology. With 5G technology comes several advances including peak speeds up to 10 Gbps combined with ultra-low latency connectivity and a new wave of opportunities around Smart Manufacturing, Augmented Reality / Virtual Reality (AR/VR), IOT, Next-Gen Analytics, connected devices and gaming will appear. These new opportunities come with challenges around security, connectivity to existing infrastructure, and ensuring that SLAs are met which will be exacerbated by the increase in the number of connected devices, locations, and data sources.

With the adoption of 5G, businesses will rely heavily on technologies such as Secure SD-WAN and SASE to be application aware, deliver inherent security, and become transport agnostic. By doing so, businesses blend their traditional network solutions with their mobile solutions. Secure SD-WAN will simplify management across this expanding 5G footprint, boost security and reliability across on-premise, cloud and the edge, provide flexible network topologies with a fully distributed architecture across the cloud and edge, and leverage application aware routing and intelligent traffic steering. Ultimately, a secure 5G network will provide end-to-end visibility into an application and deliver security and network insights for an organisation's mission to digitally transform their mobile-network infrastructure."

## Nate Howe

Director of Transformation Strategy, Zscaler

[www.zscaler.com](http://www.zscaler.com)



# Businesses need to keep adapting their digital strategies into 2021

DUE TO THE NATURE of 2020, organisations all across the world have had to learn to adapt to new ways of working and implement new types of technology, with extremely limited experience and nearly no time for planning and testing as the pandemic fell on the world so quickly. As we look forward into next year, and the new flexible 'work from anywhere' idea most likely to be prominent across all businesses, Nate Howe, Director of Transformation Strategy at Zscaler, discusses what he thinks will be the biggest changes in 2021.

### ● IT will garner the accolades it deserves

It has taken a while, but IT is now getting the recognition it deserves from both business leaders and end-users. That may be the result of the pandemic, during which IT played a central role in keeping businesses operating, thereby propping up the global economy and ensuring it could continue to function. It also became very clear in 2020 that the majority of businesses across all industries needed to adapt their digital strategies to improve business resiliency. To achieve this resiliency, in 2021 and beyond, IT will have a greater voice in influencing business decisions at the board level than ever before, as companies race towards the next generation of industry 5.0 and 6.0.

### ● Connectivity as a service and user-friendly security

The pandemic has catalysed the movement to automate processes – whether they're business practices, industrial applications, or consumer uses – to reduce costs and risks. This shift means that connectivity as a service will be a key technology demand next year. Moreover, within that connectivity, consumers will expect bells and whistles on top of the services that legacy infrastructure could not provide, including enhanced security, user-friendliness, and increased control.

It's not just going to be businesses looking for these advantages – even grandma and grandpa will want built-in security and ease-of-use when purchasing a new home internet connection. We may not yet see connectivity become as simple as flicking on a light bulb or turning on a tap – but going forward, there will be a growing demand for completely frictionless provisioning

of secure and easy-to-use connectivity for businesses and consumers alike.

### ● Businesses will need to adapt their infrastructure or pay for it later

While trying to adapt quickly to 2020's challenges, many decisions taken to ensure businesses could continue to run have involved the quickest, cheapest, dirtiest options possible. For example, many businesses favoured immediate functionality over security. Unfortunately, we will continue to experience the ramifications of those decisions into the next year. In fact, we're already seeing it, with cybercriminals relentlessly attacking all industries. Failure to prevent these attacks can lead to data loss, fines, ransomware payments – and ultimately – higher costs for businesses. Given today's economic climate, many businesses will be unable to make large overhead payments. Thus, next year will be about taking stock and figuring out the best way to do more with less, while operating in the most efficient and effective way possible.

### ● A widespread shift from remote access to universal secure access

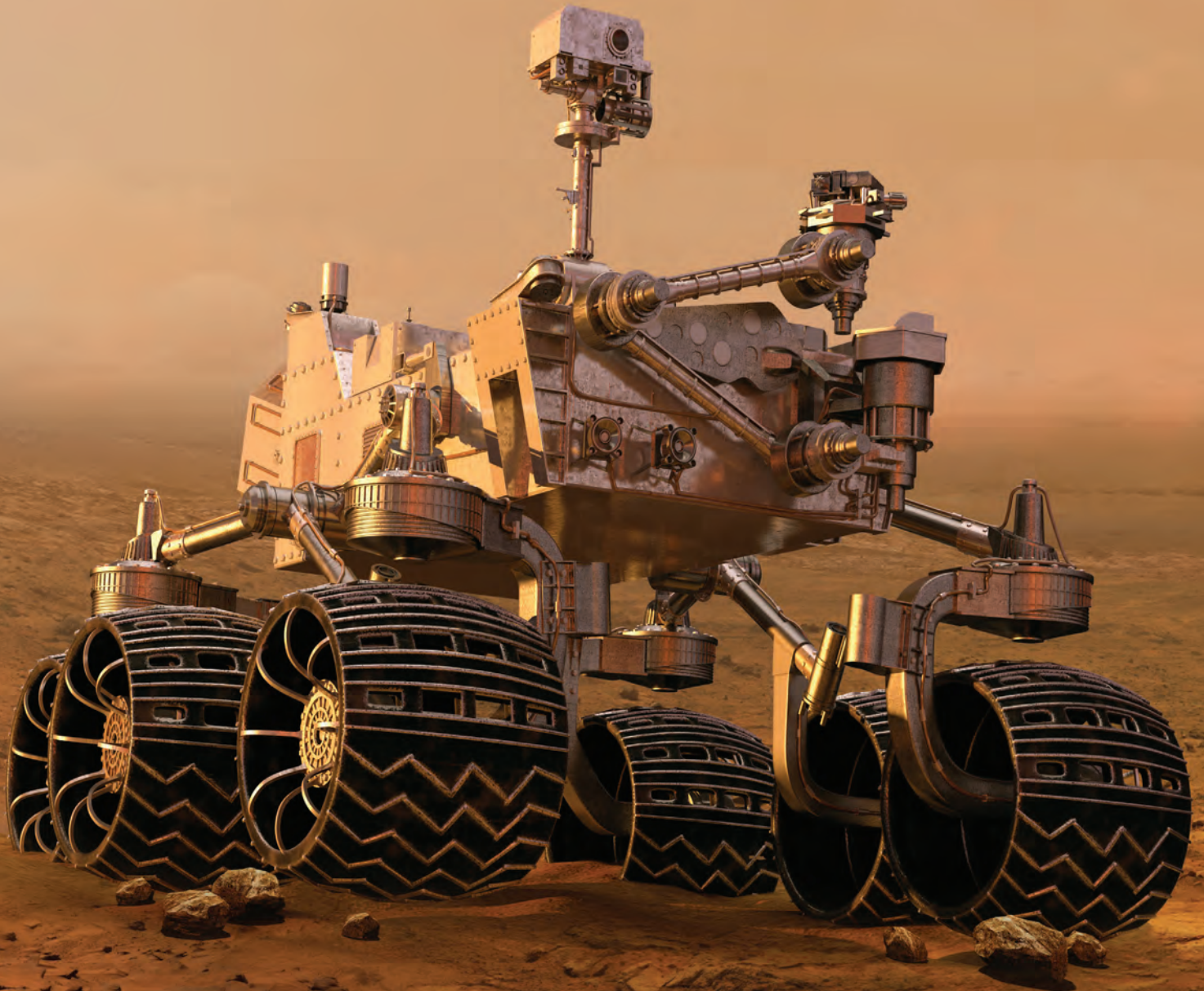
When remote users access applications, their user experience should be the same as they would get in the office. Whether working from the company headquarters, a home office, or at a café, employees need seamless and secure access. So far, companies have been clinging to the technologies used to provide access to applications in the office while using different solutions for remote access—solutions that impede the user experience and increase security risks.

It is safe to say that working from one set location will never be the norm again. The shift to remote work imposed by the pandemic has proven that employees can work productively from any location. What matters is that employees can rely on seamless and secure connectivity regardless of their location. Therefore, going forward into 2021, businesses should ensure that they are able to replace remote access with a consistent, secure access policy that applies wherever the user works.





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## Maxime Vermeir

Head of Customer Innovation, ABBYY

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# Five lightbulb moments for executives in 2021

## Executives will take a strategic approach with RPA

"Executives will finally realise RPA is not a strategic initiative. RPA has proven to be a useful tool for automating manual tasks to increase speed and productivity, and there is expected continued uptick for it in 2021. However, enterprises went at it too fast and added RPA to a lot of projects that didn't deliver the value they expected. One of the most challenging aspects of RPA is it isn't smart. It will repeat broken processes and it cannot process unstructured content, which makes up 70% of enterprise content.

"Executives are now realising they need to take a more strategic approach with RPA and have a complete understanding of how their processes work overall and have data behind their decisions that validate the value RPA will deliver before they start any initiative. Additionally, equip RPA software bots with cognitive skills that makes it able to comprehend any form of content."

## Executives will realise the difference between desktop automation and true enterprise transformation

"Automating the tasks that workers used to perform from their desk was often the beginning of digital transformation initiatives. However, the disruptions enterprises encountered during COVID highlighted there's a big difference between automating manual data entry and digitally changing how entire processes are executed. True enterprise transformation involves not just automating tasks and processes for the sake of automation, but using advanced technologies to understand how people, processes and content interact together and completely re-engineer how they work together."

## Executives will realise that optimising workflows is a necessity

"Leaders will finally realise they need to better understand

and optimise their workforce. There have been a myriad of productivity and collaboration tools introduced to help employees conduct their work faster, but is it really improving their workflow? Sixty percent of employees say they deviate from set processes to successfully complete them. Understanding how employees complete their tasks within the programs and systems they use, and how it impacts other workflows and business outcomes will be a priority in 2021 as leaders reimagine how work is done."

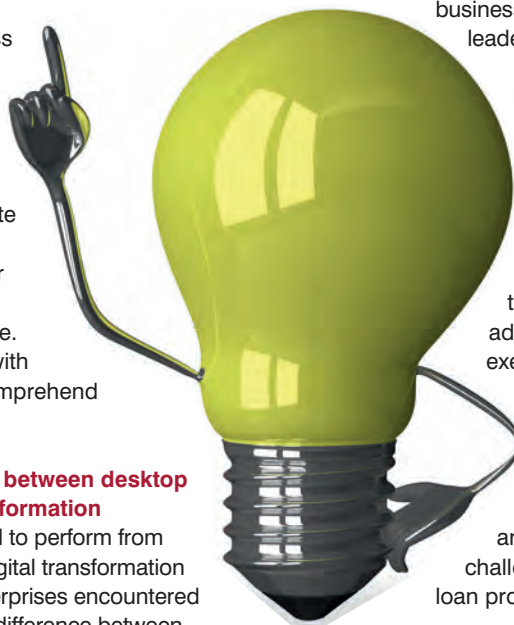
## Executives will drive forward robot colleagues in the workplace

"Executives will finally realise their business teams are capable of working with AI and equip more workers with their own software robot to augment their daily work. Any task or process that is content-heavy will benefit from adding a robot to automate, streamline and execute work faster and more accurately.

This will be made possible with a new breed of low-code software solutions and marketplaces where companies can obtain specific AI enabling skills for their robots, like reading, understanding and reasoning, to solve common business challenges such as invoicing, onboarding and loan processing."

## Executives will combine data and analytics with process automation

"Executives will finally realise their data can do more than they think. Rather than inputting and accessing data at the end of processes or on an as-needed basis, content will be an active stream of critical information fueling processes and decisions in real time. Combining enterprise data with business analytics and process automation platforms, leaders will have an end-to-end view of their interconnected processes and a greater understanding of the health of their organisation."





## Jonathan Crane

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# What's all the hype around hyperautomation?

WHILE ROBOTIC process automation (RPA) has been the hyped technology of the last few years, its potential is ultimately limited and will never drive genuine business transformation. With enterprises increasingly recognising its finite opportunity, next year we are likely to see a large uptake in hyperautomation: a powerful blend of robotic process automation (RPA), intelligent business management software and artificial intelligence (AI) used to automate processes in a way that is more impactful than standalone automation technologies.

We also can't ignore that 2020 has seen more people working from home and more business occurring through digital channels than ever before. What were once tech-phobic businesses have since been forced to move services online – or face possible collapse. Against this backdrop, we've seen a huge increase in demand for software services; particularly for

tools that facilitate remote working, video conferencing, CRM and ERP.

Businesses will start harnessing hyperautomation that can stitch these systems together, so they can all work seamlessly. The process by which enterprise systems are integrated and automated end-to-end under one unified platform, hyperautomation enables businesses to take advantage of the continuing expansion of digital services, such as AI and cloud, whilst streamlining operations across business areas such as finance, sales, IT and HR.

As one of Gartner's top tech trends for next year, hyperautomation will support organisations to bounce back after a tough year, enhance operational efficiency and empower employees to focus on revenue growth and expansion. Hyperautomation has the ability to revolutionise a company's workforce productivity.

The sophisticated combination of disconnected technologies massively expands an organisation's automation capability, so that mundane, repetitive tasks can be automated at scale.

This means that employees can focus on tasks that are both valuable for the business and fulfilling for the worker.

As we move into 2021, the most successful enterprise deployments of hyperautomation will be where solutions are built to mirror human intelligence: combining digital emotional intelligence with natural language understanding to make automation a natural part of our working lives.





**Craig Hayman**

CEO at AVEVA

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## THE POWER OF FOUR: Digitization, Automation, Sustainability and Data

TECHNOLOGY has become deeply embedded in almost every facet of modern-day life and plays an intrinsic role for many businesses across the globe. Digital transformation is enabling organizations, particularly in the industrial sector, to enhance their capabilities, and increase their returns across their assets and operations. The use of the Industrial Internet of Things (IIoT) through real-time analytics has had a profound impact, by improving response times to potential issues and minimizing possible damage to the environment, which has resulted in the avoidance of costly unscheduled shutdowns, while improving profits.

As we look ahead into 2021, four key technology predictions stand out for the Industrial sector. First, digitization will continue to spread and mature within organizations – connected IIoT will go deeper and wider across the core of many businesses. Second, Artificial Intelligence (AI) and Machine Learning (ML) enabled technologies will continue to automate processes to deliver improved performance and agility. Third, there will be greater focus on sustainability as businesses look to become cleaner and more efficient in their use of natural resources. Fourth and not least, businesses will look to unlock critical insights from data.

### Digitization will deepen and cloud usage will mature

Digital capabilities strengthen resiliency. 2021 will pave the way for further digital transformation within industrial sector organizations. Across industries, business leaders are also turning to technologies such as AI and 3D modelling to understand their production processes and plans. To adjust to an environment where the supply of raw materials is volatile and demand for end products is focussed on the essentials, businesses must understand their production facilities better than ever before.

Cloud is not necessarily a pre-requisite for digital transformation, but an enabler. Cloud technology accelerates time to value, increases collaboration, and reduces costs. What's been

evident in 2020 is that a cloud platform allows organizations to consolidate data from multiple sources into a central location for improved transparency and accessibility – at any time, any place and from any secure device.

The current crisis is accelerating the use of cloud and data in increasingly sophisticated ways to help provide visibility and certainty into operations. The adoption of analytics is said to be one of the greatest drivers of digital transformation, as businesses seek greater data-driven insights.

Data acts as a source of truth that aids teams to focus on the critical factors that determine business resilience. There has also been a fundamental shift in mindset: customers now understand where they need to get to and how quickly they need to get there. In an age where time is progressively of the essence, an increased focus on digital transformation and data-driven insights will be a game changer.

### Automation will pick up pace

According to Gartner, "By the end of 2024, 75% of enterprises will shift from piloting to operationalizing AI, driving a 5x increase in streaming data and analytics infrastructures." Boosting augmented data management systems with AI, will also help to optimize and improve operations. Examining large samples of operational and historic data will become the norm.

We will also see AI applications increasingly being supported by devices and sensors connected through the IIoT. The combination of IIoT and AI has begun the next wave of performance improvements, especially in the industrial sector.

Furthering this automation, AI uses the historical IoT data to analyse trends which can help in streamlining and improving the supply chain process through cutting-edge solutions such as AI-driven operations scheduling. This provides recommendations to humans as to the optimal scheduling sequence, substantially reducing error and inefficiencies.

## Sustainability will be embedded within businesses

Sustainability is a journey beginning by measuring where organizations are. Digitization is the natural first step for a fact-based approach. This data allows complex businesses to develop a meaningful strategy and execute it on the ground.

Industry 4.0 will help to bring information together to build a digital twin that allows organizations to optimize sustainable processes. If we take the energy sector, in the past few months jet fuel consumption dropped dramatically, however energy consumption overall remained relatively stable, and electricity demand grew. Electricity remains the most efficient way to distribute energy around the world. In manufacturing in comparison, many companies' supply chains could not flex at the same pace as the world was changing. Moving forward, these companies will pivot to use local suppliers to meet specialist requirements and with lower emissions.

The industrial development is crucial for economic growth, eradicating poverty and employment creation. However, increasing resource-use efficiency and enhancing technological innovation offers real opportunities to reduce costs, increase competitiveness and employment. The industrial sector, although late to the digital transformation process, has a unique opportunity to lead the way in making a significant impact to the planet.

## Data repositories will acquire memory

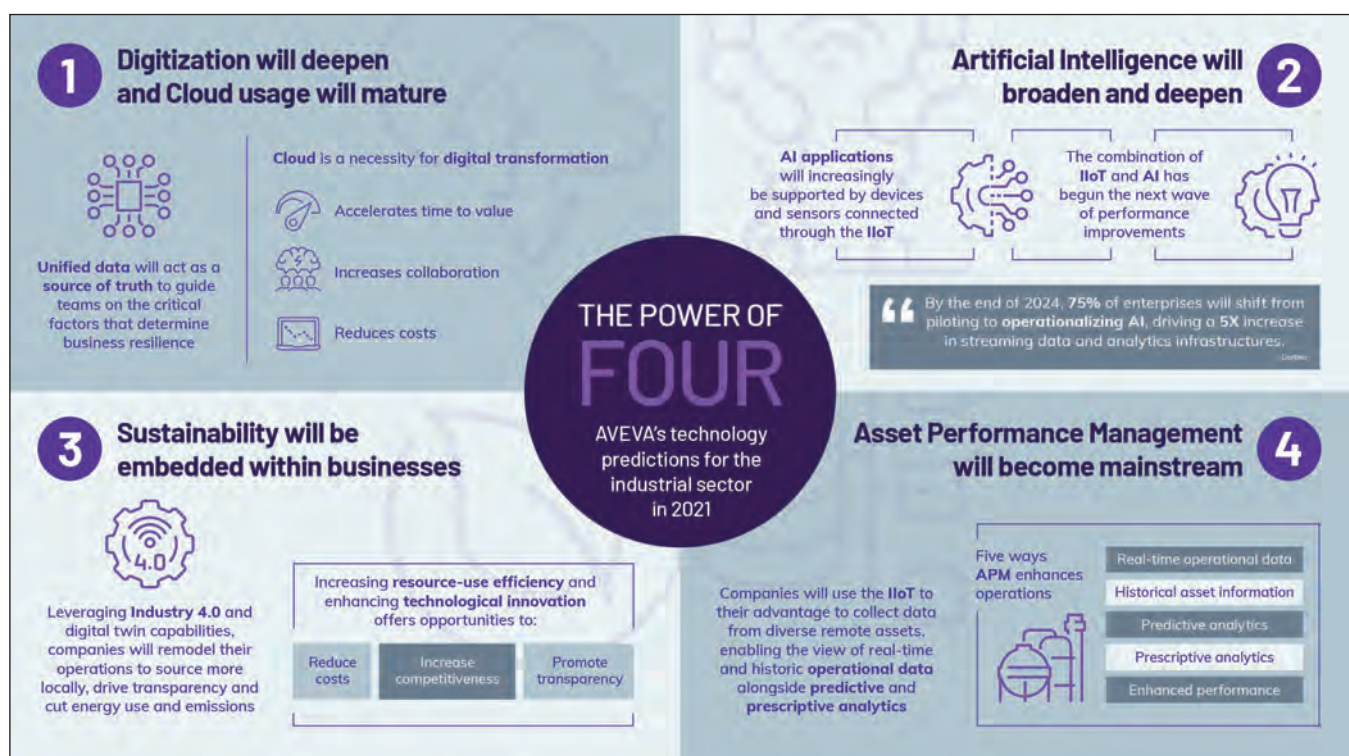
The adoption of data analytics is said to be one of the greatest drivers of digital transformation, as businesses seek greater

data-driven insights. Data acts as a source of truth that helps teams focus on the critical factors that determine business resilience. Businesses are acutely aware that they must become more resilient by using technology.

Companies are using IIoT to their advantage to securely connect, and collect data from diverse remote assets, channeling information to advanced operational applications, and closing the loop by feeding key business applications. This helps to enable optimization, asset management, enhanced analytics, and modelling/simulation – and this ultimately means improvements in business efficiency across the entire operations.

This has been particularly true for the industrial sector, where data has had a significant impact in five key areas:

- Real-time operational information** is increasingly being used to understand what is happening in real-time and enables the condition management of asset and operations lifecycles. For example, a dashboard displaying the vibration frequency of a rotating asset such as a turbine during operation provides real-time understanding of the asset operational behavior and state.
- Historical operational information** helps organizations to understand what has happened in the past to create intelligence around operational behavior of assets. Through operational trends, display of KPIs and dashboards, you can create abstracted views of operational states. For example, a graph may be displayed on a dashboard showing the





turbine's past vibration frequency during operation. This can be compared to the real-time vibration frequency, creating intelligence on the asset's long-term operational trends.

- Predictive analytics** is used for what-if type modeling. Integrating real-time and historical data enables your team to assess potential outcomes of operational states and behaviors, even accounting for tertiary variables. Deterministic or non-deterministic models can then be applied for open-loop simulation and predictive analytics. For example, you can now estimate how long a piece of equipment can run before it requires inspection or is predicted to fail.
- Prescriptive analytics** describes what's needed to optimize asset and operations lifecycles. Scenario-based guidance is created and delivered through learning elements and closed-loop algorithms to enable your team to calibrate planning and scheduling across the entire enterprise value chain. For example, using a unified supply chain model, scenario-based calculations can be used to optimize maintenance schedules and performance, minimizing impact to your operations.
- Enhanced safety** is achieved through a combination of connected IoT devices, augmented and virtual reality technology, which provide real-time operating procedures and key messages to operations personnel, reducing human error for performing specific tasks.

### Be bold, reflect and evolve

Uncertainty is here to stay, as well as the possibility of a resurgence of Covid-19, the length and depth of the economic downturn, trade wars, oil price fluctuations and so forth, so businesses must take lessons learned from uncertainty and create their new normal.

What lessons have we learned from 2020? Businesses require intelligent software to address industrial pain points for value creation, productivity improvement, insight discovery, risk management, and cost optimization. With the right technology,

businesses can be incredibly agile to manage costs, boost efficiency and avoid costly mistakes. The combination of digitization, automation and data driven insights, with a focus on sustainable business can be a key differentiator and a propelling force to help ensure businesses meet their goals of today and tomorrow.

## CASE STUDIES

### Digitization and resilience

The industrial world is currently progressing through the accelerated transformation cycle that retail and finance experienced ten years ago. AVEVA is working with leading companies in energy, manufacturing, infrastructure and pharmaceuticals to increase operational efficiency, unify their data and connect their teams to realize industry 4.0. Companies like BP is working with AVEVA to optimize their value chain using predictive analytics, enabling them to accelerate decision making from weeks to hours, while enhancing energy-efficiency and performance.

Others like Schneider Electric's smart factories or Danone or ENEL in Italy use AVEVA's software to enable remote working and to ensure that they can flex their supply chains to continue to produce food or deliver secure power during the lockdown period.

### Cloud and connected workers

Cloud and AI, both underpinning our commitment to help customers and industries shape a more sustainable future. More customers making the pivot to the cloud in response to lockdown, and over the past two years we have ramped up our portfolio capability in the cloud, from operating information analysis to complex engineering visualization, using big data and the power of Industrial IOT. AVEVA is partnering with strategic allies like Schneider Electric and Microsoft to deliver innovative capabilities, such as our partnership with Wood, which brings together ourselves, Microsoft and Wood to create a revolutionary new Industry 4.0 platform.

AVEVA is also working with customers to enable continuity of work with flexible cloud-based functionality. For example, it helped ENEL to deliver semi-autonomous plant processes, thanks to the digital twin enabled by AVEVA software. Earlier this year ENEL also transitioned almost 30,000 of their Italy-based workers to remote working overnight.

### Sustainability

Although much has been written about the difficulties that companies have faced in dealing with the global pandemic, the unforeseen changes have benefitted the sustainability of industrial. A good example here is Henkel, a manufacturer which produces brands like washing liquid Persil. To support their customers and align with their sustainability commitments Henkel built an AVEVA digital backbone that connects their global operations in the cloud. That's 3,500 sensors in each site providing 1.5 billion data points to meet fluctuating demand while reducing energy usage. To date, they have reduced their environmental footprint by one third by using less energy, less water and producing less waste.





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## Ross Bennett

Digital Transformation Lead, Ciklum

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# LEARN FROM MISTAKES OF OTHERS: tips for getting Automation right in 2021

ROBOTIC PROCESS AUTOMATION (RPA) can be a game-changing solution for organisations seeking to maximise efficiency. By relying on powerful digital tools to automatically carry out routine tasks, companies that choose to take advantage of automation can significantly improve operations and performance throughout their enterprise.

It's not all roses and unicorns though. Many organisations have found that automation programmes fall short of their promises and expectations. In instances where significant benefits have not been readily realised and RPA programmes are not fully scaled, organisations may be burdened with a sense of buyer's remorse.

In this article, Ross Bennett, Digital Transformation Lead from Ciklum, discusses the implementation of RPA, common mistakes and industry learnings that can help organisations maximise their 2021 ROI.

### RPA Expectations and Reality

RPA solutions are at the forefront of automation tools. By using "robots," also known as digital workers, RPA tools make it possible for software to interact with technology/user interfaces just like humans. Rather than having a human user to navigate a graphical user interface to input and record data and work through repetitive tasks, RPA tools can easily (sometimes complemented by computer vision, OCR and other machine learning technologies) carry out these tasks - much faster, more accurately and more efficiently.

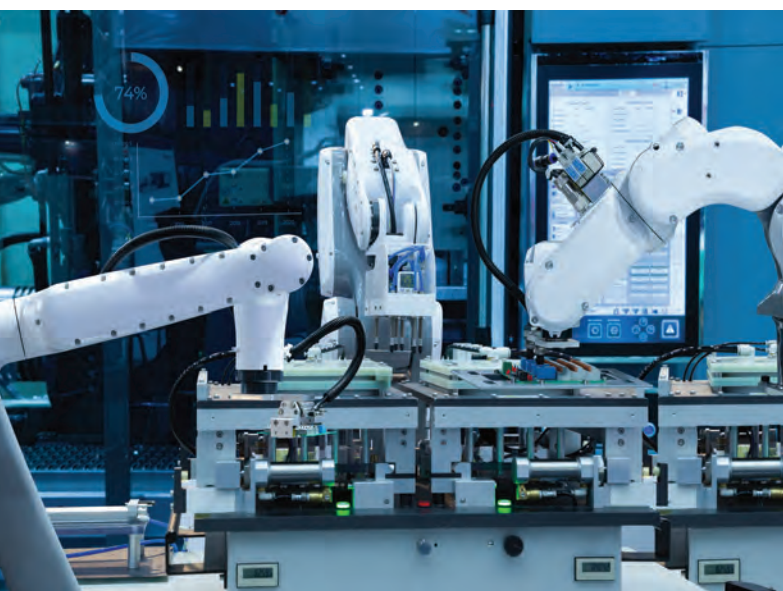
However, here are several common pain points among organisations that have failed to successfully deploy automation programmes. HFS Research has found that only 13% of automation programmes have been fully scaled up and industrialised, while another research found that 44% of business leaders are dissatisfied with their RPA programmes. Gartner has predicted that 40% of organisations will experience RPA 'buyer's remorse' by 2021.

Although it may seem as if these numbers paint a grim picture of the potential of RPA, the success or failure of RPA programmes depends heavily on the buy-in and execution of the technology within the entire organisation. Organisations that end up dissatisfied with RPA may not have taken the right approach when conceptualising and deploying the programme, resulting in a solution that delivered less-than-desired results.

### How to make RPA a friend

In the years of delivering early stage to scaled automation implementations across a wide range of industries and business, we have seen a series of common factors that contribute to the success or failure of an organisation's implementation of automation.

Here are 10 key takeaways from organisations implementing RPA programmes to help shape any company's future automation journey:



### 1. Secure buy-in and sponsorship

The lack of buy-in and sponsorship from leadership teams often leads to siloed projects and inconsistent delivery. Sponsorship from the leadership team is key to the success of an automation programme. All business, technology & support functions should be made aware of the automation projects and should be incentivised to support wherever needed.

### 2. Determine the correct operating model

Select the right operating model for your business and organisation - ensure right governance and controls in place to scale. Develop an automation playbook to drive consistent and well-defined approach to discovery and delivery.

### 3. Have a clear vision and expectation for automation

There should be a clear vision and objective for the programme and how it is expected to perform in the short to medium term (with well defined KPIs and success metrics). Clear communication at all levels is the key.

### 4. Identify the correct processes for automation

Automating the wrong processes will inevitably lead to disappointment in the results of the programme. Ensure you look at processes holistically from simplification and elimination point of view and then automation. Identify the right automation candidates and don't force RPA to fit any problem. It will not.

### 5. Understand the long-term benefits of RPA

Holding a narrow view of the benefits offered through an RPA programme can undervalue the project's long-term impact. Have a balanced scorecard approach to indicate people/employee, process, customer and financial benefits. Ensure benefits are validated and updated post implementation (real-time value and insights from the control room).

### 6. Be prepared to deliver with speed

Have a pod-based structure to ensure you drive focussed automation processes every few weeks (consistent methods). Adopt agile principles and planning, object re-use and relevant project management principles to drive delivery at pace.

### 7. Build automation capabilities

Define the components of your Centre of Excellence and where they sit within the organisation. Plan around capability build, recruitment and retention. Train business and create ambassadors/advocates within functions and areas who could organically motivate people to adopt automation in their operations.



### 8. Manage and maintain bots

Focus on creating a Command Centre to maintain and manage and continually improve the bots in production. Have the right support structure for incident and change management as processes and underlying systems will change in the future and the bots should be adapted quickly to the new environment.

### 9. Prepare teams for technical readiness

Make sure your technical support teams are bought in and ready to support the ramp-up of automation processes. Define upfront the infrastructure needs and architectural principles to allow the programme to scale.

### 10. Deploy automation intelligently

Infuse complementary technologies along with RPA to maximise benefits. Ensure your CoE is evolving and ready to adopt and support new emerging technologies.

### Contemplation before Automation

While no two businesses are identical, most organisations seeking to implement automation programmes face similar challenges. By understanding the common RPA challenges companies typically face and struggle with, organisations can be better prepared for 2021 and deploy automation programmes successfully.

These industry learnings not only ensure that automation programmes are well-adopted and well-constructed but also help organisations avoid failing to meet specific expectations that may not have been realistic or achievable. After all, clever business leaders learn from the mistakes of others, right?

Make sure your technical support teams are bought in and ready to support the ramp-up of automation processes. Define upfront the infrastructure needs and architectural principles to allow the programme to scale



**Ky Nichol**

CEO, Cutover

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## 2021: Automation by Design

IN A TIME OF PREDICTIVE ANALYTICS and AI, we thought we had a certain element of future proofing covered. Enter 2020. As we have all shifted into the world of remote working and digital operations, we have been pressured into an accelerated pace of innovation and adaptability in the face of uncertainty, where the only real constant is change itself. As we look into 2021, the interesting element here will be if and how organisations continue to maintain this pace.

This year therefore presents a difficult challenge in terms of predictions. In a world now punctuated with zoom meetings, digital operations and remote working, could we see any advances on the coveted holographic projections such as the one R2-D2 projected of Princess Leia in the 1970s? Probably not, no. Are we edging closer to the Matrix scenes of Agent Smith desperately trying to find the encryption codes so that he can access the zion mainframe to escape the matrix? That might be a way off, too.

What remains certain is the interplay between human and machine only needs to get stronger, to deliver on the potential it holds for future development and innovation. I'll break that down into three main themes:

### Visibility

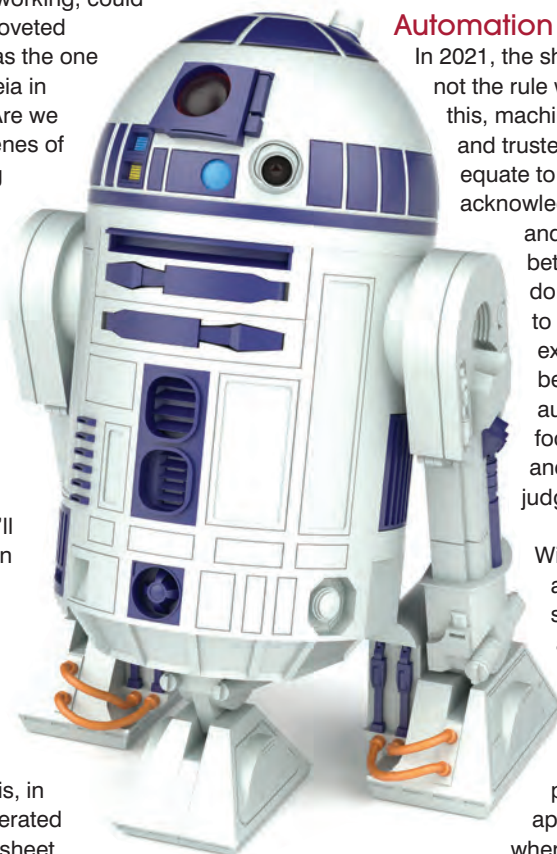
The financial services industry is heavily regulated, with FCA enquiries demanding complete accountability of a process from start to finish. This, in many cases, might mean moderated phone calls, numerous spreadsheet

analysis and fact finding, conversation trails and dot connecting. We see the need for a more visible version of events that can provide a fully visible audit trail, preventing additional work, and potentially cost of responding to regulatory enquiries. In the advent of the pandemic, the shift to virtual working has made this even more important. With interactions, processes and transactions conducted across the globe from people's home offices and living rooms, businesses still need to be able to provide a full account of activity to maintain compliance. Observability is key to this, and will become an important differentiator in 2021.

### Automation by design

In 2021, the shift to human involvement as the exception, not the rule will really start to take hold. In order to achieve this, machine automation needs to be smarter, integral, and trusted by those who leverage it. That doesn't equate to the dystopian view of a robot takeover, but acknowledges that there are some repetitive, manual and in many cases high pressured tasks that are better performed by machines. Machines that don't have 'bad days' and that aren't susceptible to human error. To achieve faster and smarter execution of work, human involvement needs to be the exception, not the default state. Machine automation allows teams the opportunity to focus on what they do best: creative, innovative and collaborative tasks; those requiring judgement and grey areas to be evaluated.

With the aid of machine learning and automation, we can build a more responsive structure able to alert us to bottlenecks and issues well before they occur. The reputational and financial risk of downtime is ever growing, especially in the financial services industry and so the ability to factor any possible failures into planning and process will become foundational. I saw this approach during my time in the space industry, where critical events heavily relied on machine





involvement, and it makes me question why this approach can't translate to other industries. We still fundamentally need people involved in processes, but for those nuanced and creative decisions required whilst the machines do the rest.

### Orchestrator of orchestrators

Automation is an instrumental driver of technology and business decisions, data insight, continuous delivery and business benefit. We are now seeing strategies designed to drive efficiencies and unlock the potential of workforces beyond the expectations of machine-led processes. Implementing automation is challenging at the best of times, but in 2021 it will move beyond the remit of technical teams and pervade the entire organisation.

What's therefore needed is a better architecture to maintain governance, control, visibility and toolset autonomy. In effect,

this is the 'mission control' of a business, being an enterprise layer infiltrating the full organisation and centralising automation channels. This, more simply put, is the orchestrator of orchestrators. Think in terms of the conductor of an orchestra - they pull together every member, every instrument, or every piece of technology, in agreed sets of activity and coordination to perform a beautiful piece of music, or optimise automation in a given process. Culture is central to this, and companies in 2021 will need to find a way to join up multiple tools and build flows of work across them that permeate the organisation.

We know from 2020 that predictions are a dangerous game. None of us really know what 2021 will hold, but the one thing we have learnt from 2020 is how to prepare and respond to surprises. A responsive, orchestrated and observable automation strategy is central to that.

I saw this approach during my time in the space industry, where critical events heavily relied on machine involvement, and it makes me question why this approach can't translate to other industries. We still fundamentally need people involved in processes, but for those nuanced and creative decisions required whilst the machines do the rest

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# Don't believe the hype: AI alone won't change your business in 2021

ARTIFICIAL INTELLIGENCE (AI), and its components such as Machine Learning (ML), Natural Language Processing (NLP), Analytics, and Conversational chatbots and voice assistants are going to play an increasingly important role in business evolution throughout 2021. While the pandemic caused many tech initiatives to stall or be cancelled, AI projects have continued to gain business traction.

As Forrester Vice President and Research Director, Srividya Sridharan, points out "enterprises need to find a way to safely, creatively, and boldly apply AI to emerge stronger both in the short-term and in the long-term." AI capabilities have too much on offer to be ignored and tapping into these mean companies can speed up existing processes, reduce overheads, and create sustainable competitive advantage.

To understand why AI adoption shows no signs of slowing down, it is worth taking a deeper look into one particular

industry: financial services. Despite its incredibly strict regulatory environment, AI usage in the financial services sector has continued to accelerate.

### Adding value in financial services

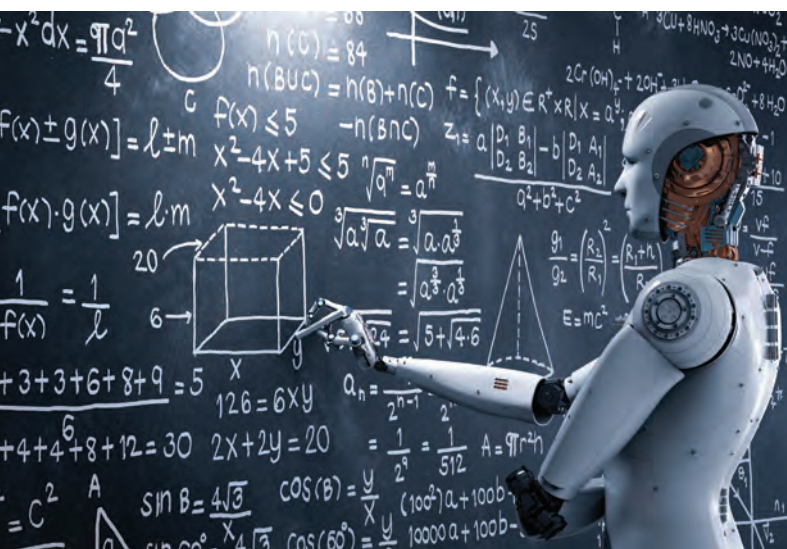
Business loans provide a great case for how AI can deliver value to financial services. Let's look at the most current example – the introduction of Government-backed loans to support businesses affected by the pandemic. The big rise in application volumes and consequent increase in business customers to service have put new demands on many financial lenders, yet here AI is proving helpful for application processing and customer servicing at scale.

First of all, AI is already playing an important role in reducing and preventing financial crime. By using supervised learning algorithms to discover data patterns, warning flags can be raised, and suspicious behaviours identified and investigated much more proactively. In 2021, this will not only help prevent fraud but also reduce the potential for fines and disruptive investigations that can result from fraud cases.

Secondly, with AI solutions banks can use their existing, vast data lakes to create tailored contact and collection strategies, suited to an individual borrowers' needs. For instance, analytics can be used to identify customer preferences and to predict the best time, channel, and approach to drive engagement and ensure settlement. At a time when business customers are under huge levels of stress, account servicing enhancements that AI can identify will make the difference in building a positive customer relationship.

### Unlocking the value of AI

While AI has a lot to offer it should not be seen as a silver bullet that can easily solve every business problem alone. In truth, AI projects can be stressful and difficult to manage. What's more, the outcomes from an AI project are never binary, and





expectations within the businesses need to be managed to avoid disappointment.

To increase the chances of success, it's important that projects don't use the AI technology just because it is available but focus instead on the issue the business needs solving. After all AI is a tool, it is a means to an end, it needs to be used to drive specific business outcomes rather than be the outcome itself.

To harness the full benefits of AI the organisation will need to do more than implementing the technology. This should be supplemented with a robust education and awareness programme, organisational change management, outcome tracking, and expectation setting. It is also important that project leaders remember that training AI models requires considerable amounts of data and time before true benefits appear. Those running AI projects must factor this into their plans to make sure AI projects don't over promise and under-deliver.

It is clear, AI offers businesses a set of transformative technologies. Aligning these capabilities to business goals will help guarantee projects succeed in 2021. Yet, while AI will continue making headlines in 2021, business leaders cannot get caught up in the hype that could risk derailing otherwise successful ongoing projects.

To harness the full benefits of AI the organisation will need to do more than implementing the technology. This should be supplemented with a robust education and awareness programme, organisational change management, outcome tracking, and expectation setting



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## Nathaniel Spohn

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# 2021 to herald the rise of DataOps

THROUGH THE TURBULENCE of 2020, companies that have thrived are those that have remained agile, continuously adapting based on changing customer needs and demands. To do this effectively, such businesses have refocused their attention from infrastructure and applications to the very lifeblood of their organisation: data.

As technology has become an ever-more indispensable part of our lives, processes have migrated online – a phenomenon that was not wholly unprecedented, albeit certainly accelerated by the pandemic. Although organisations may have had to rush to acclimate to the new normal, digitalisation has in fact offered an opportunity to take advantage of the wealth of data and data sources newly and readily available to them and use it to innovate.

However, there are two major challenges when managing data:

### 1. Big data is diverse

Organisations are drowning in all sorts of data, relating to the many different aspects of business. For example, companies might be focusing on transactional data one day and predictive analytics the next. Plus, a degree of subjectivity will always be involved depending on who is creating, managing and interpreting the data, making it more difficult to derive objective, overarching decisions.

### 2. Relevant insights need to be gathered in real-time

Big data is not just diverse, but constantly changing. For business intelligence to be relevant, time is of the essence in receiving and analysing the data, especially during rapidly shifting business climates. But, according to a recent report by Dimensional Research, 41 percent of data analysts surveyed said they have used data that is two months old or older. Analysts need access to data as quickly as possible, before the insights it reveals become obsolete.

### Creating relevant, agile business intelligence

To solve these challenges, data-driven organisations have found it necessary to practice agility when collaborating on and automating data pipelines, and DataOps has developed as a result. In a similar way to how the now well-known DevOps seeks to break down silos between developers and operations teams, DataOps is a discipline about promoting a collaborative

data management practice for the integration and automation of data flows across the business, for data managers and data consumers alike.

It's the data itself that can reveal customer behaviour and sentiment, especially during an uncertain period. This year more than any other, businesses have developed the need for a system that collects data from all sources and integrates it for immediate analysis. The ability to leverage data from all sources in real-time will give businesses the richest insights and empower them to uncover business intelligence that points to timely, impactful decisions. Implementing such a system will allow organisations to optimise business intelligence and adapt and innovate at the velocity demanded by the current digital economy.

What's more, collaboration between engineers and analysts can thrive as a result. Dimensional Research also reported that more than 60 percent of data analysts said they wasted time waiting for engineering resources several times each month, and overall spend just 50 percent of their time actually analysing the data due to inefficiencies in the process. As they inevitably will spend less time finding, fixing and stabilising the data and more time actually analysing it, automating data pipelines gives data analysts much more time to extract value, allowing them to make better business decisions and help the company remain agile while driving revenue. It also presents an opportunity to democratise data and business intelligence, allowing for better communication throughout the entire business regarding customer behaviour and decision-making rationale.

### DataOps for a competitive edge in 2021

Creating repeatable processes unique to an organisation's data challenges has provided companies with the means to bridge the gap between data collation, analysis, and the implementation of intelligence, where business workflows and the accompanying data flows have worked in real-time unison. Reducing the end-to-end cycle time of data analytics, DataOps is not just a buzzword to look out for next year but a practice likely to become increasingly more commonplace amongst enterprises, essential as it is to participating in the world of real-time business intelligence and future-proofing businesses against the still uncertain landscape of 2021 and beyond.

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## 2021 and the digital twin

The 2020 COVID-19 pandemic represented a watershed moment in testing the resilience of global technology companies.

HIGH-TECH MANUFACTURING COMPANIES were presented with a 'perfect storm' of challenges: shrinking budgets and a severely reduced and displaced workforce resulted in limited opportunity to innovate and stay competitive, with many businesses still trying to recoup their losses.

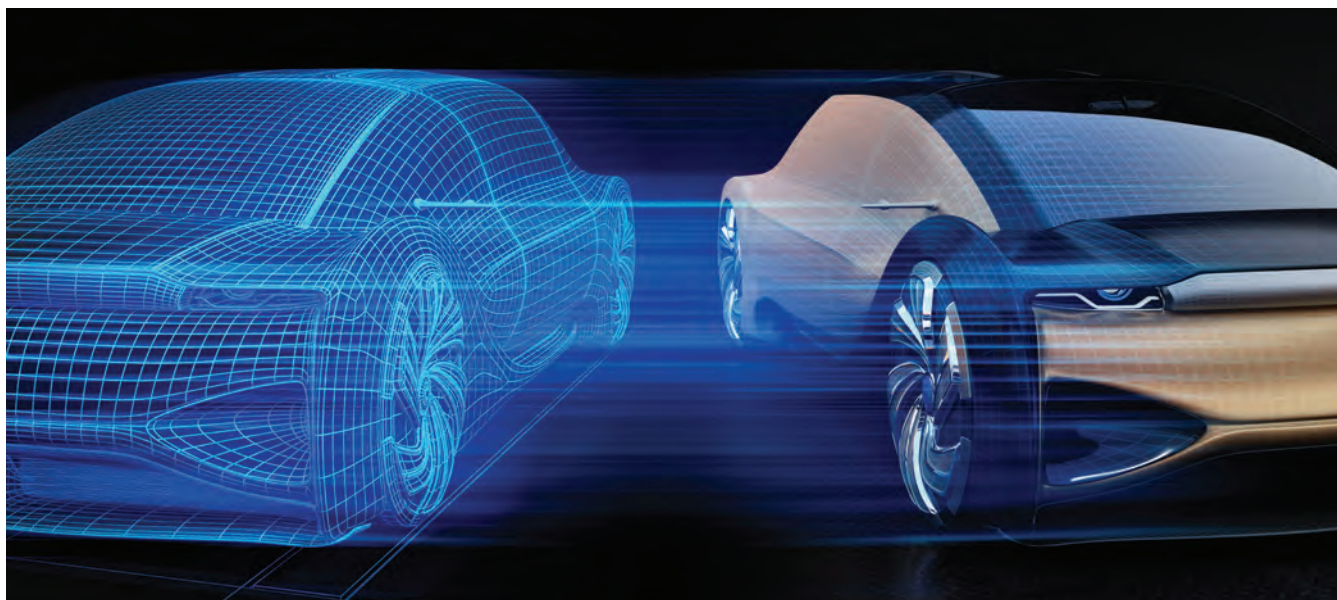
Many wonder what next year will hold as the high-tech manufacturing sector gets back on its feet, and from what we at Hexagon have seen, this pandemic-induced industry crisis was the final proof for digitalisation. In particular, I have seen a demonstrable uptick in demand for artificial intelligence-enhanced end-to-end simulation solutions, as well as increased interest in high-fidelity virtual prototypes, commonly known as Digital Twins.

Digital Twins enable fully simulated testing and analysis of a product across its entire lifecycle. They have long been

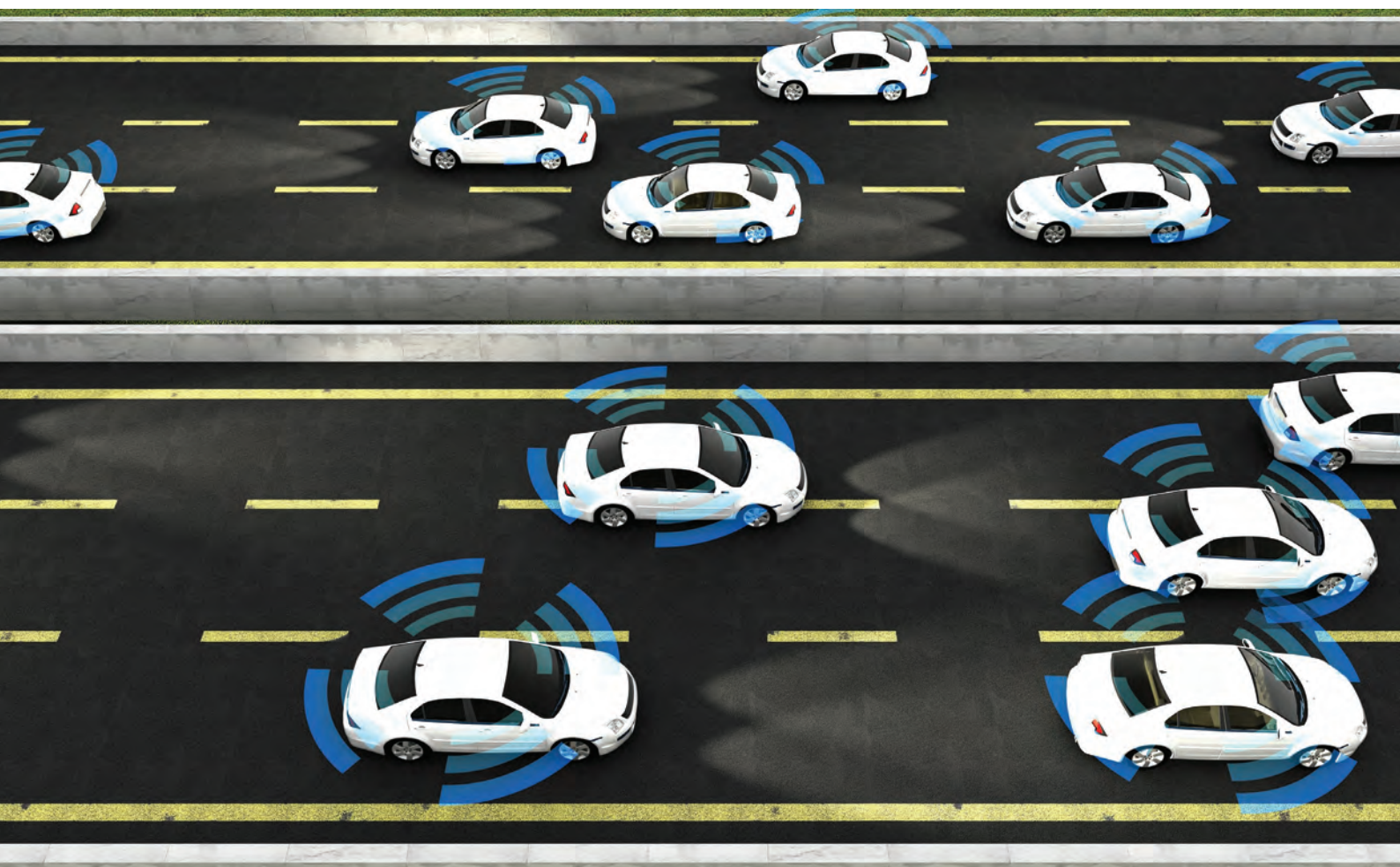
promised as a key component of Industry 4.0, but for various reasons have not managed to enter widespread use. This year, however, those early adopters to AI-enhanced simulation I mentioned are the ones currently recovering the quickest, so next year I very much expect to see a rapid growth in their application.

Connecting the dots between computer-aided engineering, AI and Digital Twins in 2021 will enable these tools to start to become the core of the development process in earnest. The greatest impact of increased AI-enhanced Digital Twin take-up will be particularly felt by companies that currently do not have a great deal of means: those hit hard by the recession, and SMEs.

AI will help them run their testing simulations faster and more efficiently, helping them innovate at a more rapid pace and compete with businesses with more resource. At the same time,







the manufacturers' Digital Twins will enable them to complete the circle – feeding post-production data back into the process and exponentially increasing the technological leaps between generations.

For a concrete example of how this could be applied to a product, take the development of an autonomous vehicle. A Digital Twin can help produce a system that is infinitely better trained, in a fraction of the time. The manufacturer can feed an AI model with virtual testing data of an autonomous Digital Twin car, exposing it to billions of scenarios that cannot realistically be covered by physical tests. Then, once the vehicle is operational, its Digital Twin counterpart continues to be fed with data on where its design can be improved, which an AI can then extrapolate and feed into future systems.

With the help of these tools, 2021 will see the first true democratisation across the design engineering field. We will start to see the playing field levelled between large and small manufacturers alike, as well as across workforces, with AI helping to speed up the development of tools that allow non-CAE experts to use sophisticated simulation capabilities.

Businesses will be empowered to increase employees' productivity, optimise the computational resources required for the simulations, and improve the product design process

through new insights, saving cost and time – a crucial consideration for many companies under intense pressure to innovate faster than ever.

It goes without saying that the key to the acceptance of these tools will be as seamless a transition as possible. AI and Digital Twins can be intimidating prospects, particularly for companies strapped for resource, or wrestling with legacy workflows.

That is however exactly why I advocate for its introduction. It can solve these very issues, and the reason we at Hexagon have seen such an increase in demand is because we carry open, agnostic solutions, bringing value without compromise so that our customers are empowered to deploy these new tools to whatever extent fits their existing processes best.

The shift in attitude that we saw this year – recognising that AI-enhanced Digital Twins could be much simpler to introduce than expected, with eminently worthwhile benefits – bodes extremely well for the year to come.

In essence, I predict that from next year onwards we will start to see a continuous loop of increasingly sophisticated insight across the high-tech sector, with AI and Digital Twins helping it move away from the long-held 'build it and tweak it' approach and heralding 2021 as the start of the Digital Twin age.



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## David Semach

EMEA Head of AI and Automation, Infosys Consulting

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# 2021 predictions for AI & automation

A LOT HAS CHANGED IN 2020 – more than we could have ever imagined. In the world of technology, that rings true, and we can expect the acceleration of technology adoption that we saw this year continue well into 2021. The impact of the pandemic on businesses will be lasting.

This year, we've seen a lot of industries and disciplines turn to AI and automation in their hour of need – such as finance, HR, and supply chain. There was more urgency than ever before. Urgency to meet revenue targets, meet margins, and make efficiency gains, at a time when these sectors were under more stress than ever before. As a result, we've seen lots of companies quickly digitise, and start introducing AI and automation into their business to solve problems that needed

urgent solutions. We're now years ahead of where we were in early 2020 – but this doesn't show signs of slowing down. In fact, digitising is no longer enough. Businesses need that additional layer of intelligence that AI and intelligent automation can bring.

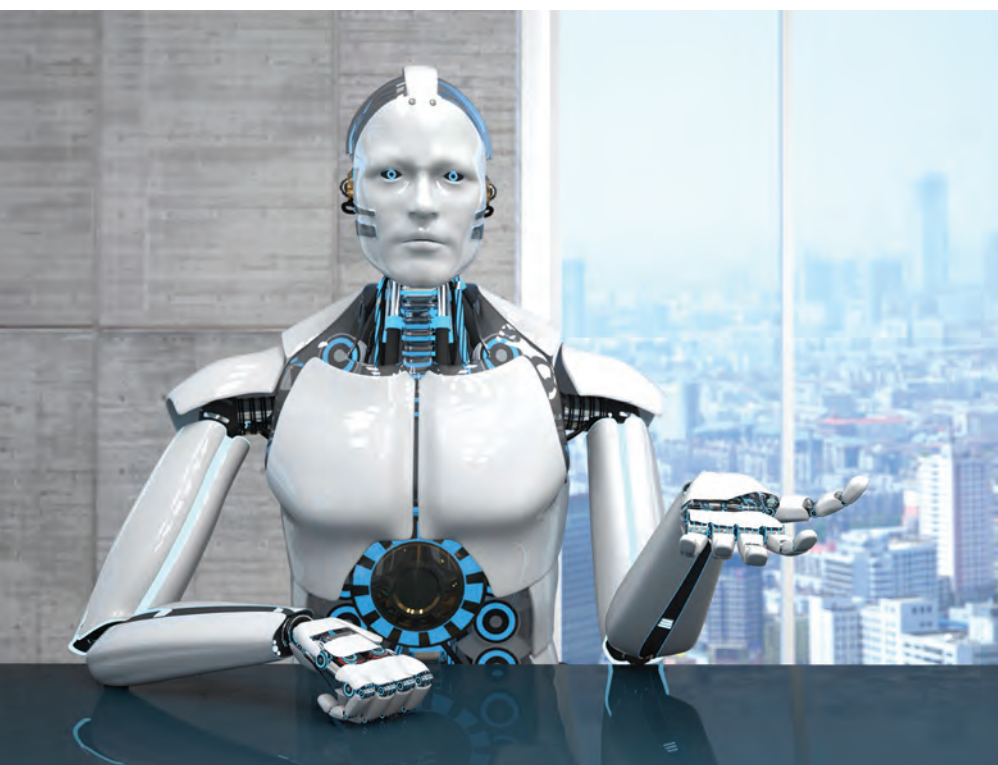
In 2021, I have three key predictions for how this will take shape:

### 1. Death of the chatbot, rise of the humanoid avatar

Once heralded as the next frontier in customer experience, and widely used by retailers, banks, and online marketplaces, chatbots can no longer provide the level of service the modern consumer wants. Particularly after a year spent largely in our own homes, more than ever, we're all craving human connection. What's more, we've all experienced chatbots who

were no help at all – prone to error, many have to speak to someone on the phone anyway. Where chatbots fall short, AI-driven humanoid avatars can do much, much more. In 2021, we will see the first early adopters of this technology, like banks, universities, and retailers, bring their AI avatars to our screens.

For customers, this might mean logging on to do your online grocery shop, and being met by a friendly avatar who can run through the latest deals, point you in the direction of ingredients, and actually act as a 'personal shop assistant' – far beyond what chatbots are capable of. For businesses, there are many benefits beyond customer experience: opportunities to cross- and upsell, the ability to answer queries to relieve the burden on customer services, and even train customers on new products or services. Humanoid avatars and conversational AI will be a major trend next year, and it will help brands build lasting relationships with their customers.







## 2. Data science is the new decision-maker

In Fortune 500 companies, when senior executives make decisions, it's typically based on past events within that company – plus some manual forecasting on what might happen next. This might include demand for certain products in certain regions or projections of revenue across business units, for example. In a post-COVID-19 world, this is no longer enough of a basis to make decisions.

Next year, we'll see a huge move towards using AI and data science to make predictions for the future, as Forrester also predict, enabling business leaders to make informed decisions based on much more data than they ever have before. With datasets going back years – and the need to look at external data like weather records, demographic changes, or government policies – it's only possible to really leverage all of this data with machine learning and AI as a helping hand. Moreover, machine learning algorithms learn from themselves over time, meaning accuracy continues to grow with each new piece of data that's added. This gives execs a completely new view of their business, enabling them to see correlations and make predictions they couldn't before, which will help them propel their business forward.

## 3. Laggard industries become AI leaders

Sectors like supply chain, logistics, HR, and finance have long been known for relying on manual, paper-based processes – and for lagging behind their more forward-thinking counterparts. The pandemic changed all that. Now, we will see businesses move operations to a 'handsfree' model, to future-proof themselves through innovation.

In supply chains, for example, this will take shape by injecting AI and automation throughout logistics processes and operations. Look at warehouse management: inbound and outbound processing, returns, inventory management, and more were all done by hand. Now, AI can take over, selecting the right pallets and classifying them for a production order, entirely automated.

'Handsfree' operations will also enable senior teams to work in predictive mode – to predict future trends and events within their supply chain – and even prescriptive mode, where AI can recommend solutions and advise on the best course of action. Here, AI and automation can enable logistics leaders to weather any potential storms.

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## Tej Redkar

Chief Product officer at LogicMonitor

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# Observability gets real

THE ABILITY to observe what's happening across the entire business—not just across networks and servers—is key. In theory, observability has the power to bring together the customer experience and digital infrastructure into a single framework. And in 2021, observability will start to become real, shining a light on all data sets that are highly relevant for the business.

### 2: Next-gen monitoring systems will accelerate digital transformation

Enterprises will start to become far more mature in their digital transformation as they move more workloads to the cloud and increase the pace of application development. And because of this digital maturity, they will need next-generation monitoring platforms. In the past, monitoring tools and platforms were very siloed. That worked fine for old-school datacentre environments, but it doesn't cut it for today's digital businesses. That's why enterprises will need more sophisticated yet easy-to-use monitoring tools that give them full-stack visibility into networks, cloud, servers, and more with a single, unified view.

### 3: Kubernetes will emerge as a new standard

Kubernetes has really come of age over the last several years. In 2021, this open-source platform for managing containerised workloads will mature even further, becoming the de facto standard for deploying microservices and building applications.

### 4: Business skills will be in hot demand among IT teams

Of course, hard technical skills like data analytics and algorithmic coding are paramount. But, in 2021, IT organisations will also increasingly look for team members with business skills. The reality is that the digital economy is evolving at warp speed, so IT organisations need forward-looking thinkers who can see where the market is going and make the necessary adjustments to stay ahead of the game.

### 5: Automation is everything

In 2021, automation will be all-important. The entire DevOps lifecycle will need to be automated—from building the application, to testing of application, to the deployment and operation of the application.

### 6: AI is the future of work

Any job that is manual and operationally focused is at the risk of getting automated by AI. In 2021, enterprises will work toward optimising their environments and tools via AI, so employees can add value to the business rather than doing mundane work. AI's job is all about saving time. And going forward, every innovation will be focused on saving time so that employees can contribute to more strategic initiatives in the business.

### 7: 5G will transform remote work

With the advent of 5G networks, mobile devices will be able to upload and download data at speeds similar to or even better than wired networks. That will transform remote work because mobile devices will be so much more powerful. Take remote video calls, for example. Right now, there are bandwidth constraints that regularly impact the performance and quality of these calls. With 5G, however, these kinds of services will be seamless, turning the concept of "office anywhere" into a reality.

### 8: Some technologies will fade away

Successful technologies come in two types: Those that help you save time and those that help you waste time. TikTok is an example of the latter. It's the ultimate time-wasting machine, but not in a bad way. If you're standing in line at the grocery store and don't have anything to do, TikTok can be a useful diversion, providing you with instant entertainment. When a technology no longer helps users either save time or waste time, that's when it becomes obsolete.





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## AR predictions for 2021:

The amplification of commerce, AR and VR converge and visual search

2020 BROUGHT UNPRECEDENTED change to the way we live and work. Businesses were especially hard hit by the global pandemic, with many forced to adapt not only to ensure the safety of their employees, but just to survive.

The drastic changes to normal working life brought about by COVID-19 have meant many technological innovations we

have been used to over the last few years - from exciting new consumer devices to the emergence of practical business software - have been put on hold. In its place, however, organisations have started thinking outside the box, using existing technologies such as augmented reality (AR) in new and innovative ways to boost sales and increase customer engagement.





While we hope 2021 won't be as disruptive as the previous 12 months, the trend of using existing technology in new ways will shape the coming year - especially for those looking to better utilise AR.

With that in mind, here are my top 2021 predictions for the AR industry:

**AR will become the joining force between social and commerce**

The closure of physical stores up and down the country has caused many retailers to look to AR technology as a way to better engage customers and boost sales. As part of this, we have started to see retailers recognise the influence of social media to help sell their products. Examples include the Shopify partnership with TikTok, which will help to expand Shopify's reach to a younger audience and drive sales, and also the recent launch of Instagram Shopping.

2021 will see social and commerce converge closer through the use of AR, specifically virtual try-ons, the creation of virtual shop fronts and branded social filters - a prediction which isn't hard to picture when the brands investing in AR are already seeing huge benefits. For example, eBags.com reported a 112% increase in conversion on 3D/AR enabled products and HomeDepot saw conversion rates of customers who engaged with its AR feature around two to three times higher. Retailers will join up influencer marketing with this, allowing influencers to share virtual try-ons with their followers, encouraging engagement with the AR technology, as well as increasing sales.

**The convergence of AR and VR**

As a technology, AR is constantly evolving and I believe that ultimately AR and virtual reality (VR) will blend together. Hyper realistic AR isn't currently possible, as the bandwidth connections needed to download heavy 3D models from the cloud aren't yet available. This issue is likely to be solved as we move towards the implementation of ubiquitous 5G networks and start to see the emergence of smart cities (along with IoT and sensors) - something which will facilitate AR/VR convergence.

While this convergence isn't necessarily going to happen in 2021, moves will be made towards it next year, specifically when it comes to wearable devices. When looking at the recent developments in wearables - such as Oculus Quest 2 and the



AR glasses from makers such as NReal, Microsoft and Magic Leap, plus upcoming ones from Apple, Facebook and Snapchat - we know, in all likelihood, AR/VR glasses aren't too far away.

2021 will see the wearable devices we already have refined. As technology evolves, hard drive chips will shrink, glasses will become more fashionable and comfortable to wear. Innovators could then turn their attention to VR/AR contact lenses, something a few tech companies - including Mojo Vision and Samsung - are already investing in patents for.

**Increased spend on visual search**

The future of content consumption is set to change, with the focus of 2021 being on the development of visual search. While visual search - where a consumer can point their phone, AR headset or contact lenses at something in their environment, like a product in a shop, and receive instant information about it - won't be fully developed for a few more years, 2021 will see increased tech spend in the space, specifically from tech giants. There are plenty of examples of big technology behemoths spending lots of money to make visual search a reality.

Snapchat announced an integration with Amazon in 2018 to deliver visual search and Google Lens has expanded to identify 15 billion items. We are set to explore even more of this next year - expect bigger investments, more integrations and a fight by these businesses to get ahead in the space.

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## Hendrik Witt

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# 2021: TeamViewer reveals upcoming tech trends

2020 TRANSFORMED OUR WORLD OF WORK. From sudden shifts to remote working, accelerated digital transformation projects and adoption of cloud infrastructure, to communication and collaboration going mainstream – no one will be returning to the same office they left before lockdown. With this in mind, we have outlined the biggest trends that businesses will experience in 2021.

### Remote Working 2.0

With restrictions still forecast for the coming months and another lockdown anticipated in the UK in the new year, remote working will remain the norm for many in 2021. However, as flexible and agile working continues, employees become more comfortable with using tools such as remote access to control operations.

For example, in the manufacturing sector, technicians and engineers will rely on remote access solutions to troubleshoot and fix machinery. Furthermore, increasingly popular solutions like predictive maintenance will allow systems and machines to be monitored and maintained before issues occur. This in return helps workers to combine tasks for on-site maintenance visits to limit them to the absolutely necessary. Particularly in industrial sectors, the implications of remote working has changed the face of operations completely and will be the lynchpin to the survival and growth of Industry 4.0 in 2021.

One example of how remote assistance has, and will continue to, support remote working is how it is supporting frontline workers to carry out tasks. For instance, telecom technicians can get AR-support while setting up telecom nodes with smart glasses showing them a step by step instruction to wire everything correctly.

Workers on-site could even get a live AR-support from more experienced or specialized co-workers if they run into trouble during the installation. This kind of remote assistance can superimpose digital information on reality and significantly boost productivity.



### The Hybrid Model

Remote working in 2020 has enabled organisations and employees to realise the benefits of a more flexible and agile setup. Looking ahead to 2021, many organisations will adopt a hybrid model, combining both remote and office working practices in the aim of reaping the best of both worlds. This will have a significant impact on the tools such as SaaS applications and remote access solutions, that workers depend on in order to remain efficient in a more flexible environment. As businesses return to the office or explore these hybrid arrangements, we will see them face new challenges when it comes to collaboration, performance and connectivity.

One key challenge will be connecting teams. With half the team in the same meeting room, while the other half is working from home, companies will face fragmented communication and stunted innovation and creativity over a virtual platform. This will cause businesses to look at technological solutions to bridge the gap created by a hybrid model and help replicate a physical meeting, no matter the location of the employee.



To aid this shift, the workforce will adapt to digital whiteboards, moderated meetings with break-out-sessions and the possibility to share media quickly or work together on it during the meeting. While in-person meetings have their benefits, a hybrid model will make interactive meeting and remote access technologies a necessity to maintain and sustain company culture.

### The future of collaboration is Augmented Reality

In 2021, business leaders will be looking to enhance communication and collaboration by adopting more sophisticated solutions such as the use of Augmented Reality (AR). Instead of replacing the whole environment with a virtual sphere like Virtual Reality (VR), AR will enhance the way we communicate by bringing information into an employee's field of view in real-time. For example, if an employee needs IT support when working remotely or on-site.

By connecting through video sessions on a smartphone, remote access tools will help IT technicians to identify the issue on the employee's computer or in the physical environment. The technician can then guide the person using AR on-screen to solve the problem. Take 3D object tracking, this enables the IT expert to annotate objects on the conference screen even as the person on the other end moves their smartphone camera. Thanks to AR, any issue can be solved quickly, remotely and well within COVID-19 restrictions. Ensuring that the workforce remains safe, secure and productive.

In 2021, we predict that remote working 2.0, AR and the hybrid IT model will be integral components of business survival. By taking the next step in remote working and adopting new technologies, organisations will really be able to not just continue 'business as usual', but use the new world of work as an asset for innovation, creativity and success.

By connecting through video sessions on a smartphone, remote access tools will help IT technicians to identify the issue on the employee's computer or in the physical environment



## Scott Dodds

CEO, Ultima

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# Ultima shares its 2021 predictions

WHEN THE CLOCK STRIKES MIDNIGHT on December 31st the UK's Brexit transition period ends and with it, the country's membership of the single market and customs union. What this means for UK businesses is still relatively unknown, but if reflecting on the past year is anything to go by, business resilience is going to be paramount. Many challenges were faced in 2020 for businesses of all types and sizes; Coronavirus didn't discriminate and sadly some sectors were hit disproportionately hard. For most businesses it was a steep learning curve but one that set IT operations off on a new digital trajectory – one that may have taken some years more had it not been for COVID.

To close off one of the most challenging years in our lifetimes, here are my predicted trends for 2021:

### Using software automation to 'keep the lights on'

Across our customer base we've seen a desire to strengthen legacy infrastructure to ensure that 'keeping the lights on' is not the sole focus of attention and cost. By using the latest software automation technologies businesses can create more resilient infrastructures and the focus can be switched to innovation and integration; which is the most valuable currency for any business.

### What's next for automation?

Automation is a powerful vehicle in advancing the technical capabilities of workforces. We've seen automation simplify

cloud ownership and operations when it comes to migration, maintenance, upgrades, capacity changes, auditing, back-up and monitoring. Cloud is now an option for businesses of all types and sizes with hybrid configuration now the norm for mid-market and larger enterprises. Increasingly we are seeing a shift to container orchestration using Kubernetes as well as serverless services enabling companies to better automate deployments and scale rapidly while controlling costs across multiple public cloud platforms

But what's next for automation? We're rapidly advancing the possibility of enabling all businesses, whatever their size, to benefit from an automated datacentre with the application of software-defined managed services and technologies like Robotic Process Automation (RPA) and machine learning.

As we enter a new revolution in how businesses operate efficiently and remotely, every piece of data must be handled and used appropriately to optimise its value. The datacentre is becoming a bit of a misnomer as all your data is distributed around your infrastructure across on-premise, IAAS, PAAS, IOT and Edge systems. Your data management and storage therefore needs to span all these modern technology platforms, managed efficiently and securely with a blend of autonomous services and software. Not only are they required to efficiently manage increasing amounts of data, more complex machines and infrastructures, the key is that they will also be able to generate



valuable business insight and actions from their data more quickly. Fully autonomous hybrid data centres, mixing public and private clouds, will support traditional and next-generation workloads which can be automated to be self-healing, self-managing and fully optimised. The infrastructure management software will take most actions itself with no or little assistance or human intervention required. Like autonomous vehicles, the possibilities for automation are never-ending; it's always possible to continually improve the way work is carried out.

### UK and global economic impacts

Our status as an independent trading nation is sure to be a turning point yet again, but one thing's for sure; if we focus our efforts on embracing more automated technology infrastructure correctly over the next few years it will make the UK more competitive and more resilient to the challenges and opportunities ahead.

user ever needing to know about them, bringing about a more productive, agile and motivated workforce. will also depend on a business' ability to demonstrate a strong culture of support; both from a technology perspective and a personal wellbeing perspective. Businesses need to perform successfully whilst managing a distributed workforce; this comes down to infrastructure, hardware, software and effective training and support.

### Taking a proactive approach to security challenges

The pandemic has given rise to many more online threats when compared to 2019. According to Google's Transparency Report, over 2 million phishing websites have emerged since the start of 2020 – an increase of 19 per cent. The UK's National Cyber Security Centre (NCSC) reported that it responded to 723 incidents in the period from September 2019 to August

The demand for efficient ways of replicating office support through technology in a remote working economy will continue too. CFOs have saved money from remote working, and they are unlikely to give away those gains and employees also like the flexibility

To jump the upcoming economic hurdles and to give businesses the best possible footing and with employees returning from furlough, companies need to keep cash in their business. Vendors need to continue to support customers in whatever way they can. At Ultima, we've had to be flexible in our billing, not charging for services that aren't currently being used to help where we can. Companies signing up to complex, inflexible contracts are a thing of the past - IT services need to be provided on a flexible, consumption-based billing model.

### Efficient remote working

The demand for efficient ways of replicating office support through technology in a remote working economy will continue too. CFOs have saved money from remote working, and they are unlikely to give away those gains and employees also like the flexibility. There is no doubt that the flexible workforce is here to stay and most companies will allow for the right levels of social interaction back in offices with an ability to work remotely without reducing efficiency and collaboration.

Giving employees secure and agile ways of working by accessing company data from home is what the cloud has always promised. With the cloud, any IT problems can be handled remotely, which hugely benefits the efficiency of an organisation.

Furthermore, the automation capabilities on offer with cloud computing services mean that maintenance, security and support requirements can be effectively managed remotely. Issues across multiple devices are automatically linked, diagnosed and can be fixed in the background without the

2020 - a 10 per cent rise on the previous period. Coronavirus provided a massive opportunity for threat actors to use the global emergency to their advantage. The sudden move to remote working made workers vulnerable to attack as they got use to new ways of working. Legacy infrastructure and poorly managed systems provide weak links to exploit, making it easier to breach corporate defences. Scammers are also finding increasingly inventive ways of stealing sensitive information through phishing and ransomware attacks.

As a result, security is going to be a big issue in 2021 as organisations strive to secure themselves in a more future-proof style to harness the benefits of long-term remote working. Automation and machine learning, using pro-active MDR (Managed Detection & Response) security solutions can tackle these issues by analysing trends and creating alerts and actions when anomalies occur. By automating the maintenance, security and support requirements of the cloud, organisations will be better placed to manage their business-critical apps while reducing their overall threat footprint.

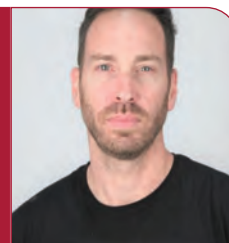
### Conclusion

The pandemic has forced digital transformation on a global scale; post-pandemic, we must not lose the benefits of this change. To make organisations as robust and resilient as possible, we need to stay alert to the operational challenges ahead yet recognise the great strides that have been made during 2020 despite the global emergency. I don't doubt that UK businesses will stand up to the challenges ahead and emerge from 2020 that much stronger and we in the IT industry needs to stand up with them.

## Noam Fine

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# 2021: AI and the future of smart unified communications

EVEN FROM NOW, it's becoming increasingly clear that 2021 will see the unified communications space grow smarter by the day. With analyst house Omdia predicting that the artificial intelligence (AI) market will expand six-fold to surpass \$100 billion by 2025, innovations in the UC space will include a greater emphasis on virtual contact centres and more intelligent meeting rooms, AI call analytics that allow assessment of customer sentiment in real time, and more.

### Unified communications smarten up

There is no doubt that in 2021 AI will increasingly be teamed with UCaaS offerings, giving platforms and users the capability to analyse large amounts of data which can lead to better business decisions. Employers will increasingly gain tools at their disposal that give employees their own personal AI

assistants, constantly responding with meaningful messages and insights across communications channels.

As the technology evolves, AI's predictive capabilities will likely be applied in new and innovative ways to deliver even greater operational efficiency through unified communications. For instance, in the transportation and logistics industry, AI-powered unified communications could help identify the best routes and predict shipment delays or other issues, and then automatically communicate with drivers to reroute them.

As more companies tap into their power to improve operational efficiency and the customer experience, the way people work and communicate will change. The use of voice assistants and chatbots is already growing and will continue to increase.





### AI driven virtual contact centres

Delivering excellent customer service goes beyond the physical walls of the contact centre. With the increased move to cloud-based contact centres where communications are concerned, there are no longer any excuses for requiring personnel to be physically located near contact centres. Agents will be increasingly empowered to service customers through a single interface from anywhere in the world.

AI enhancements will increasingly come as part of the virtual contact centre experience, and will form a big part of the draw. Effective output analysis of customer-agent engagements generated through AI tools will increasingly identify trends and patterns of frequent request and best practices to solve them. Gamification and automated workflows will revolutionise the role of the employee, providing them with an increased feeling of empowerment over their interactions with customers and reducing their load where it can be done.

### Agent augmentation

In contact centres, increasing the use of AI for agent augmentation purposes will speed up the path to delivering such experiences by revealing relevant information and steps to take for agents before they ever answer a call. Developing effective agent augmentation strategies will be important to make full use of this approach so that AI can deliver CRM and sales data about a customer in a streamlined manner to an agent.

AI driven agent assistant functions will enable agents to have access to relevant, contextually-driven information on demand. This will enable agents to deliver an enhanced customer experience that delivers when it counts, from anywhere in the world. This will require the hiring of employees previously atypical to the sector from conversation designers to automation engineers and beyond in order to deliver a more contextual conversation and an enhanced customer experience.

The phasing out of physical endpoints will also accelerate as many are under the impression that desktop phones and other

restricted devices will no longer be used as frequently - the move to remote working has done much to drive this viewpoint. More employees want to be mobile, and desktop phones and hardware physical endpoints hinder their ability to do that.

Organisations must always be agile and ready to adapt to changes in the market, but we've learned in 2020 that agility is key to survival. Keeping a grasp therefore on advancements in AI and smart UCaaS in 2021 should be a priority for all enterprising IT decision makers.

## Comment: Businesses must take an agile approach to new technology in order to meet customer expectations

**Omar Javaid, President, API Platform at Vonage**



2020 has proved beyond any doubt that businesses must be agile to not only survive but thrive. Across all sectors, the pandemic has forever changed and elevated the way businesses interact with customers requiring the highest levels of online service -- whether it's coping with the increase in ecommerce, providing telehealth appointments, or handling virtual queries and complaints.

As we move into 2021, it will be even more important to invest in and develop tools that allow companies to stay connected with customers and adapt to changing demands. We've already seen how rapid the pace of change can be, with people quickly adopting video calling, messaging, and virtual services to do business, stay connected to their friends and families, and to keep living their lives.

There is strong consumer demand for these emerging technologies, including video, social messaging and chatbots. According to PWC's Retailing 2020 report, the number of companies investing in omni-channel experiences has jumped from 20% to more than 80% since 2012.

As more and more companies invest in omni-channel, businesses need to have the technologies that quickly allow them the flexibility to embed programmable capabilities - voice, video, messaging, email and verification - directly into existing applications and workflows. These changes need to be made at scale and at speed in order to meet customer expectations.

Research carried out for Microsoft's 2020 Global State of CX report revealed that 75% of consumers expect customer service agents to know their identity and full purchase history when contacted, and this is where agility comes into play. In order to deliver on this expectation, customer service agents must be able to quickly access a dashboard of information on each customer, irrespective of the channel of communication or where they are located.



These kinds of frictionless transactions can be facilitated by Customer Relationship Management software (CRM), and we expect to see an increased uptake in companies choosing to automate and streamline processes in this way. With a CRM platform, businesses are able to record the details of each customer interaction, along with their communication preferences and history with the company. Agents can then switch between channels (e.g. from voice to video and back) without disrupting the customer journey.

Visual methods of communication and engagement have seen huge growth during the pandemic, and this preference for social video interactions is now translating to the business sphere. Since January, there has been 140% growth globally in the number of people who prefer to connect with businesses via video. Companies need to be agile in order to incorporate these new capabilities into their systems quickly, while ensuring that the customer experience remains consistent.

Visual methods of communication can be a great way to connect both customers and employees. With social distancing measures expected to be in place for at least part of 2021, being able to put a face to a brand can help build customer rapport and loyalty, while increasing customer satisfaction. It can also be beneficial for remote teams to have virtual face-to-face contact, and can help to promote cohesion and productivity.

These technologies help to create a unified and personalised consumer omnichannel experience, and businesses who quickly adopt and incorporate these new methods can set themselves apart from the competition. Companies who are quick to embrace technological change can reap the benefits of increased customer and employee satisfaction, and ultimately, can enjoy the financial rewards that come with adapting to suit the needs of the market.

## Evolution of the channel in 2021

**Adam Wilson, Regional Channel Manager, Vonage**



As is often the case, growth and change in the channel next year is likely to be driven by trends in the wider communications and business landscape. In 2020, for example, we witnessed organisations fighting to maintain business continuity across functions while facilitating remote work across global locations at breakneck speeds due to the

pandemic. The channel flexed to accommodate the new demands for products and services and in 2021 we expect to see organisations building on this foundation as they adapt to a permanently changed workplace.

The global pandemic has also accelerated the adoption of newer communications channels while increasing the fragmentation of channel preferences, especially in the ways that consumers interact with businesses and service providers. Just as the remote delivery of services such as healthcare,

education and retail has become the norm for consumers, we predict that workforce strategies will continue to embrace a distributed, but highly connected, work environment in 2021.

### Channels of communication

One significant shift is that it's now expected for companies to stay connected to employees and customers from anywhere – through whatever channel they choose – video, voice, messaging, email and chat. Businesses will be challenged to differentiate and deliver personalised, engaging experiences as customer demands grow for virtual experiences that deliver real connections. Our recent Global Communications report showed that the use of video to communicate with brands has risen by 43%, and that total use of video calling among the population has grown 14-fold since January. It also found that there had been a 25% rise in voice calls to business.

In this environment, platforms that allow communication between people, businesses, chatbots, and more through all available channels - and which can then be monetised by content, advertising and value-added services – will create a whole new subsector in communications. This will require a centralised collaboration platform, which means customer contact platforms will need to adapt to provide a consistent and unified experience. This will benefit both employees and customers, and channel partners can expect to see greater appetites for such solutions.

### We're all agents now

With the right infrastructure in place, every employee can be an 'agent' of their organisation, and channel partners will increasingly be emphasising this in the year to come. Disparate collections of systems will make way for unified communications systems, allowing agents to escalate and communicate with the relevant knowledge holder without having to switch between platforms.

This trend, combined with the continued take up of AI will create a more seamless environment where virtual assistants allow organisations to automate customer contact by delivering enhanced self-service interactions. In fact Forrester predicts that that more than 60 per cent of B2B sellers will be enabled by AI and automation in 2021 and that 57 per cent of the channel sales leaders they spoke to plan to make deeper investments in tools with AI and automation in the upcoming year. However, Forrester also cautions that virtual assistants will need to be better at leveraging first and third-party data along with AI and machine learning to become a true top-10 engagement channel.

The channel ecosystem may also see a rise in appetite for application programming interfaces (APIs) that allow customers to embed voice, messaging and video into telehealth and e-learning platforms among other sectors. These tools are not only useful, but can provide key intelligence into a customer's preferences and habits - both useful marketing gauges. As in 2020, the customer journey and seamless communication will continue to be key success factors for businesses in 2021 and strong channel partnerships will be essential to delivering that success.



# CX

The digital experience (DX) and the customer experience (CX) are key emerging topics for the digital enterprise. As these contributions make clear, what matters to the customer is what should be shaping your IT infrastructure.





## Kelly Goetsch

Chief Product Officer at commercetools

[www.commercetool.com](http://www.commercetool.com)



# What will be the top commerce technology trends for 2021?

2020 HAS BEEN A CHALLENGING YEAR for retailers – ‘uncertain times’ was the buzzword of the year and COVID-19 showed not everything can be predicted. The pandemic made it clear that ability to adapt to change is key, which is only made possible by flexible and agile technology, not clunky outdated systems. But what specific commerce technologies will be the defining trends of the new twelve months?

### 2021 will be the year of composable commerce

Composable commerce describes how retailers can pick and mix elements of their commerce technology from numerous vendors that do one thing only but one thing well, and ‘consume’ them through individual APIs independently. Composable commerce enables retailers to move away from one-size-fits-all, ‘take it or leave it’ technology stack solutions and have greater control over the online shopping experience they are creating for customers. The driving factor for composable commerce is continued advancements in cloud computing, as more powerful cloud services will make it even easier for developers to create unique experiences made up of ‘best of breed’ products for different parts of the business ecosystem.

There is already one company that solely focuses on data parsing, enabling IT teams to input a string of data to return a date that charges per API call for example. Next year will see a raft of 100% cloud and SaaS-based new market entrants that only provide a single piece of the puzzle, whether it be product search, checkout or something else, but provide an exceptional experience for that commerce functionality, so that when they are all used together by a retailer, shoppers are satisfied throughout the entire online experience.

### Late adopters finally get on board with headless commerce

In 2021 the laggards, more conservative companies still tied down by legacy software suites, will no longer be able to ignore rigid tech stacks holding them back. The old saying that nobody gets fired for buying such decades-old tech is not in

the vocabulary of the new developer generation. Instead digital natives are asking “Why wouldn’t you choose the most suitable tool for the job?”

By decoupling their frontends from their backends through the adoption of a headless commerce solution, IT teams will finally be able to get rid of serious competitive disadvantage and increase agility. With headless platforms, tech leaders and their teams will be able to realise superior compatibility with their CRM systems, deliver higher degrees of customisation to fit their commerce needs and roll out new features to multiple front ends faster to improve customer satisfaction, loyalty and sales.

### GraphQL will no longer be in the shadows

GraphQL, otherwise known as Graph Query Language – has been steadily increasing in popularity across big brand names that leverage high-tech as well as in the commerce community over the last three years. While many developers are using it, the open source query language has yet to enjoy the fame it deserves. GraphQL, which is a layer that can be applied over any REST API, simplifies the process of data retrieval, making the overall process of building commerce applications far quicker and easier. More developers realise its value, GraphQL will no doubt go from being the industry’s best-kept secret to being recognised as an essential tool in 2021.

As online shopping continues to grow, having the right technology will be key to brands keeping pace with continuous change and shopper demands. Retailers need to invest now to reap the rewards and stay ahead of the competition.

The driving factor for composable commerce is continued advancements in cloud computing, as more powerful cloud services will make it even easier

## Brad Christian

Global Chief Customer Officer at Conversity

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# 2020 has seen an irreversible change in consumer behaviour; now is the time to adapt

Retail technology expert releases predictions for 2021: enhancing omnichannel capabilities and building powerful e-commerce experiences will be crucial

2020 has been an exceptional year for the retail sector, with all businesses having to rapidly adapt in some way or another. Such a time of upheaval has led to a permanent, irreversible change in consumer behaviour as shoppers embrace the convenience and security of e-commerce more readily. This is according to retail technology expert Conversity, which has released its predictions for the sector for 2021.

### Consumer behaviour has changed for good

Brad Christian, Global Chief Customer Officer at Conversity, said: "Before the pandemic even struck, consumers were leaving their homes less often to make purchases for reasons of convenience – think of the success of Amazon, Deliveroo, Uber Eats and supermarket delivery services. The arrival of Covid-19 and the fact that we've spent a lot more time at home has accelerated this trend.

"Accepting that this 'cocooning' is a permanent shift is an important first step for success in 2021. Many people will still want to go out to a bricks-and-mortar store, of course, but the dynamic has changed and brands will have to adapt their strategies to suit. This will mean focusing more heavily on the experiential aspect of the physical store, in order to truly differentiate from competitors."

### Omnichannel approaches are the way forward

Christian added: "The brands that will stand out in 2021 are the ones that take steps to properly unify their online and in-store experiences. The companies that have done well this year are the ones that innovated in this manner early on in the pandemic, such as local businesses switching to home delivery services, or larger retailers spinning up a click-and-collect service on the fly.

On the e-commerce side, this means having a website or mobile app that doesn't just "do the job" – it has to be exceptional.

Personalisation technology should be front-and-centre to make browsing and purchasing easy, returning products should be straightforward, and an e-commerce platform should appeal to those who are less tech-savvy as well.

"Physical stores remain important, but we expect many brands to re-evaluate the space they have, especially given there is less of a requirement now to hold large amounts of stock on-site. Instead, many brands' stores will become more of a showroom where customers can go and see products and have an experience, with the choice to then purchase online. It is this effective omnichannel blend that will yield the most success."

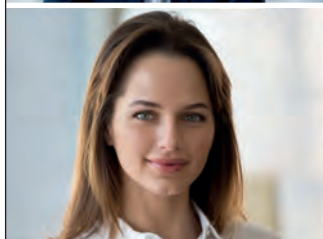
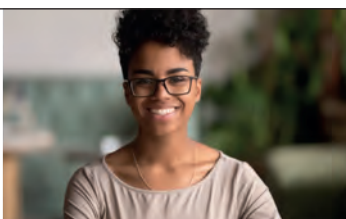
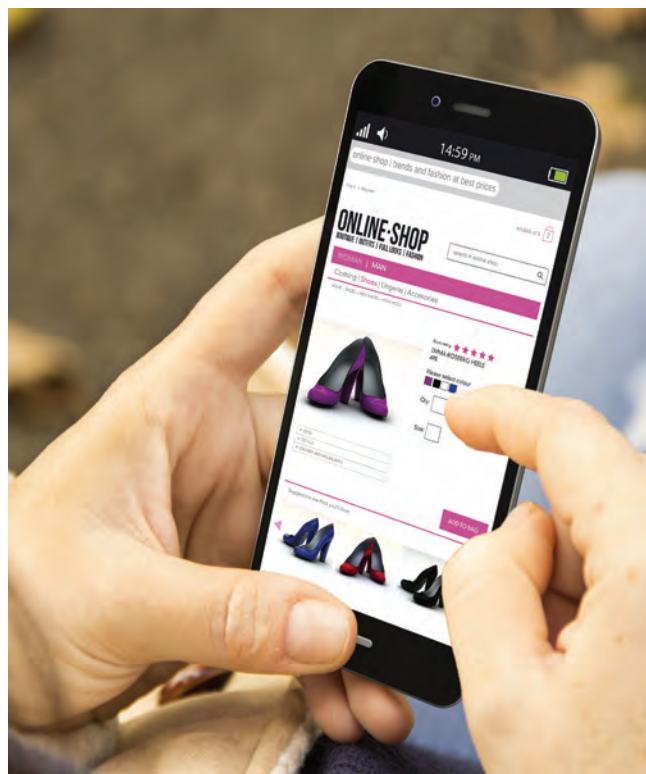


### New technologies will drive success

Christian continued: “Tech has been more crucial than ever in the retail sector this year, but we expect its role to expand even more in 2021. Personalisation tech – such as intelligent guided selling, chatbots and other online tools – will become more sophisticated.

Other measures to make the customer experience more engaging will also figure prominently, including faster checkout processes, tailored cross-selling, voice ordering, and video content designed to stimulate customers – like virtual gym classes or cooking lessons. Essentially, the innovation is about giving customers the inspiration they’re lacking because there are fewer reasons to visit physical stores: if a brand can really fire the imaginations of prospective customers, they will provide something different, something more experiential and put themselves on a path to do well in 2021.”

Christian concluded: “A silver lining to the cloud of 2020 has been that many consumers who were previously unfamiliar with using technology for shopping, entertainment or staying in touch with family, are now more comfortable with it. As a brand, it is essential to capitalise on this momentum and both invest further and innovate in your digital platforms if you want to be successful in 2021. If you don’t, you risk being left behind by more agile and innovative competitors.”



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## Brian Atkinson

GM and VP EMEA, Five9

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# 2021: the year customer service becomes more human

REMOTE WORKING was never traditionally considered a widespread possibility for the contact centre – then 2020 came along. New communication platforms were installed, desktops with customer history couriered to agents' homes, all happening against a backdrop of lockdown and having the entire family at home at once. It's been a stressful time, but thankfully technology has prevented it from becoming even more challenging.

Accelerated by the impact of Covid-19, the cloud, AI and automation have all been chipping away at legacy systems in the contact centre. But while these technologies have been a major enabler

for their customers by maximising responsiveness at any point in time, regardless of location.

In 2021, we will see a greater shift to the cloud away from on premise, as more organisations look to create efficiencies and free up agents' time to focus on more complex customer needs. As well as providing an easy work-from-home set up, it will also offer more omnichannel options, scalable staffing, intelligent routing, easily accessible data and AI-assisted capabilities.

The cloud will provide the foundation on which executives can quickly and easily deploy new technologies without having to install them in their own organisations - further enhancing the customer experience and helping to future-proof the contact centre against similar adverse events as the pandemic.

### Empathy rings true

The COVID-19 crisis has shown the importance of empathy between brands and customers. Messages of comfort and positive support have provided assurance to consumers, as well as employees, that they are cared for during so much uncertainty.

for business continuity, there's still a long way to go for the industry to become fully digitised. To achieve this, tech has to sink seamlessly into the background and create a frictionless communications experience between agent and customer.

Will 2021 achieve this? Here are my predictions for the contact centre space...

### Migration to cloud

Customer demand is changing, fuelled by economic pressures of the pandemic. More than ever, businesses need to be there

In 2021, organisations will continue to strive for human connection with customers by responding to their needs – from setting the right expectations, to being respectful of their time and proactively meeting their requests.

Empathy will be a deciding factor in every decision – from hiring people who are naturally empathetic, to training initiatives that encourage employees to communicate more empathetically. This will also be factored into decisions over what technology to invest in – using software, applications or processes to allow the agent to focus on truly listening and engaging with the customer.



### The Future of IVR

Once deemed the most exciting development in customer service technology, interactive voice response (IVR) has become the most frustrating part of the call centre experience for customers and agents alike. Customers have grown tired of getting lost in an IVR tree which fails to provide options truly reflective of their needs, meanwhile agents all too often end up on the receiving end of their anguish.

In 2021, the time is ripe for disruption in this area. Intelligent omnichannel routing will improve first contact resolution by giving agents the ability to easily access subject matter experts who are using unified communication (UC) capabilities. Agents can connect to them during the customer engagement and bring them directly into the conversation if needed.

Forward-looking companies have already begun integrating UC, CRM and contact centres, enabling seamless communications between agents, customers and, if needed, subject matter experts within the business, making information available at their fingertips to deliver excellent customer experiences. In 2021, more leaders will embrace this technology to gain a competitive advantage with improved customer experience, all while lowering costs when it's needed the most.

### Hold no longer

While phone lines won't be going anywhere in 2021, being put on hold will. Phone support provides that all important personal connection valued most by customers, but making them wait an

average of up to 20 minutes causes frustrations and shows little respect for their time.

In the year ahead, we expect to see a wider uptake in technologies that can help alleviate the irritation customers feel when they are tied to their phone. In particular, we'll see greater investment in comprehensive workforce management systems to reduce hold times. These can automatically and accurately forecast call volumes, allowing organisations to deploy the right number of agents available to handle calls, while also leveraging flexible agent scheduling to address volume spikes.

Call back technologies will also be used more widely to manage customer service expectations. Immediate, instant, or scheduled call backs can allow customers to keep the same spot in line and receive a call the moment an agent is free or select a time to be called later in the day. These technologies will considerably help to improve the customer experience.

### The new front door

The pandemic isn't over, and the UK could potentially face more lockdowns in 2021. Consumers likely won't be out and about at the shops like usual, leaving the contact centre as the front door to communication between a brand and its customer. At a time when human connection is so limited, offering exceptional customer service is a sure way to break the mould. We expect to see brands continue to build on the human connection, investing in technology to enhance the consumer and agent experience.

## Simon Johnson

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# The changes ahead for the customer experience industry in 2021

IT'S BEEN A CHALLENGING YEAR for customer service teams, having to deal with a huge influx in enquiries alongside coping with staff shortages due to the pandemic. But it's not all doom and gloom. As we look towards 2021, the latest research from our CX Mandate into service leaders across the world shows us some encouraging signs ahead for the customer service (CX) industry, everything from increased investment in technology to new flexi working practices. Here are three trends I predict we'll see much more of in the new year and beyond.

### CX budgets will go up, not down

Interestingly, instead of seeing budgets pulled from customer service teams, our research showed a 75% increase to 2020 budgets when compared to 2019. Some of the biggest increases were seen in live chat and messaging (83%), cloud

telephony (76%), collaboration tools (77%) and self-service (73%) as businesses looked to diversify the way in which they responded to their customers' enquiries. We see no reason why this trend won't continue into next year as customer service teams focus more on the user journey and overall experience to enable their end-users to interact on the channels that are most preferable to them. Investment in cloud telephony and collaboration tools, for example, will be even more vital for businesses to deliver a seamless service for their customers.

The results of our research also show that businesses need to ensure that any technology they roll out in 2021 has both inward and outward benefits. It's clear to see that while chat and messaging functions, as well as self-service, are customer-focused technologies, cloud telephony and collaboration tools benefit the CX teams themselves. Any business looking to thrive in 2021 and beyond should really be maximising their investments and considering the advantages of a technology solution that can support both the internal team and external customers.

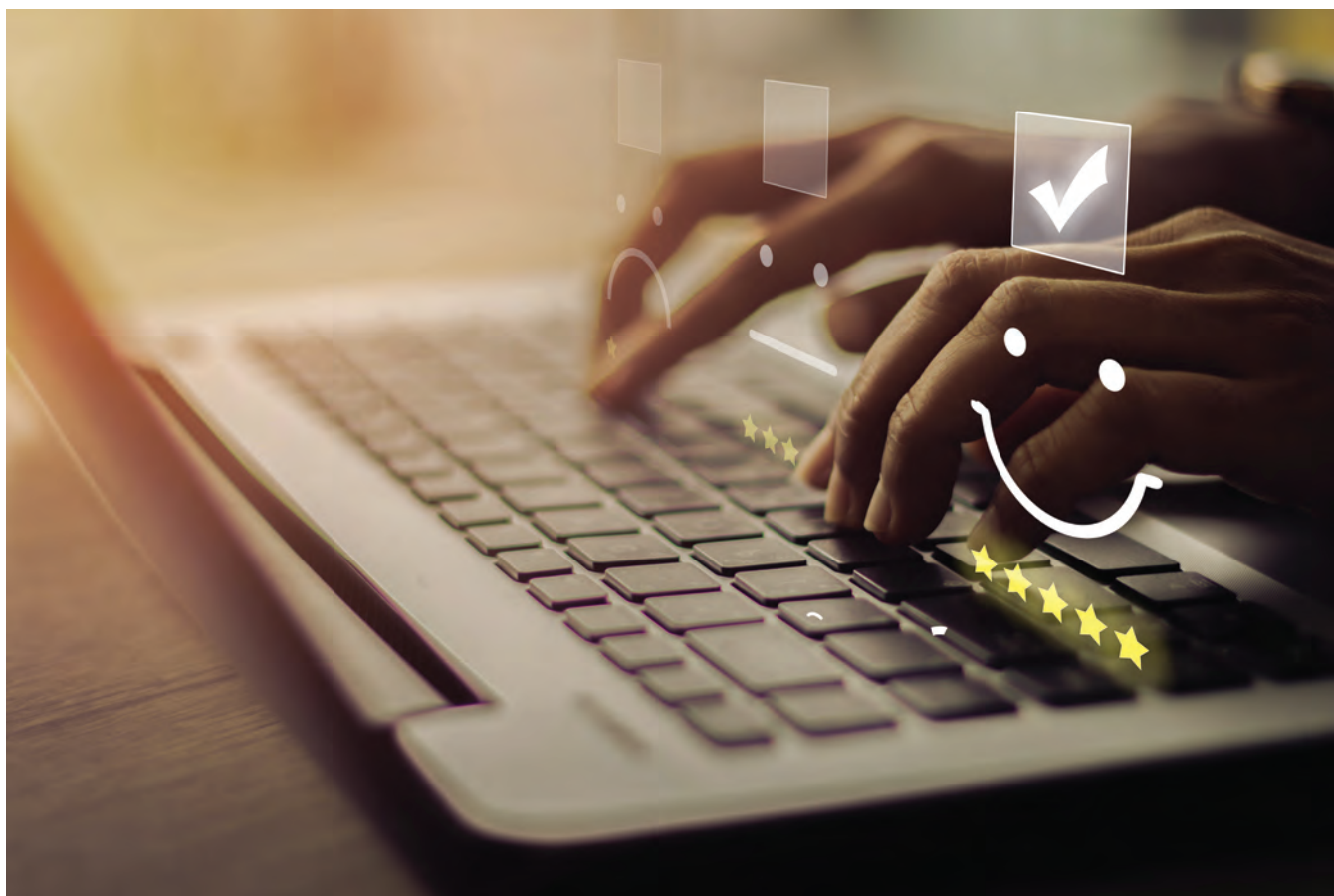
So, with a continued focus and appetite for healthy budgets next year, what can the above technologies tangibly do to support a disparate CX team?

### 2021 will be the year of hybrid working environments for CX teams

The results from our study show that some of the most purchased technologies this year, like cloud telephony and collaboration tools, support the new reality of remote working. But what does this new reality of remote working actually look like? Our research found that 43% of those surveyed believe that the future of the CX team will be one that blends an in-office and hybrid working from home environment. 20% thought the future would look 100% remote. If we compare these figures to before the pandemic, this was 26% in favour of the hybrid model and 6% saying they thought their team would be 100% remote.







This clearly shows that 2020 has brought a seismic shift in how teams will operate and collaborate as we enter the new year. But how can brands ensure that customer experience does not suffer as a result? In 2021, it will be crucial that CX teams undertake three steps to prepare for the 'next normal'. It all starts with messaging – the new telephone. As our results show, customers are looking for live chat and instant messaging features like WhatsApp to interact with brands, so using these channels is likely to result in happier, more satisfied customers.

The next step is to implement chatbots to deal with rising contact volumes in a hybrid working environment. Chatbots will reduce the cost per customer interaction and bridge the gap between growing demand and a distributed CX team. With the trend for 2021 looking like a continuation of 2020's WFH hybrid environment, it's important to ensure agent productivity continues to be high.

### Ensuring agent productivity remains high

Our research found that agent productivity has taken a hit in 2020, with nearly half (49%) of those surveyed saying COVID-19 has negatively impacted agent productivity. Customer support leaders will be looking to take the necessary steps to empower their agents to increase productivity and to focus their attention on high-value tasks.

The huge numbers of customer queries, especially during the Christmas period and into the new year puts a lot of strain on a business at the best of times. Support agents are overwhelmed

with customer queries and can spend a good part of their day on repetitive tasks such as updating ticket properties, or information around the last contact date, after each customer interaction.

With high numbers of tickets to process, this can result in customer satisfaction not always being their primary focus. Tools such as an omnichannel dashboard that displays incoming tickets from all of the support channels a business offers are particularly helpful. Others, like AI-powered chatbots can remove some of the backlog in customer queries by automating simple questions and routing customer chats that require urgent attention through to human service agents. By providing the right tools to help offload the more mundane tasks, support agents will be motivated to focus on the higher value tasks and use their experience to optimise customer support processes.

Productivity challenges vary from one support channel to another. With businesses offering multi-channel support, a one-size-fits-all strategy will not work to improve agent productivity. This is why in 2021, business leaders must prioritise empowering their agents with the right tools to help them deal with specific challenges associated with each support channel. The months ahead may be unclear in some respects. But if businesses can learn from the lessons of this year and continue to invest in solutions that make their employees' and end users' lives easier, then they can be sure to find success and continue to deliver, whatever next year has to throw at them.

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# CX trends of 2021: the year of the “never normal”

2020 HAS BEEN A YEAR very few of us will forget. And as we move towards a new year which looks just as unpredictable, preparing for 2021 from a business perspective will require focus and agility.

Brands are operating in a hypercompetitive marketplace: one which has had to contend with national and local lockdowns, social distancing and curfews. And all are vying for consumer attention at a time when consumers are feeling overwhelmed at the amount of information they receive – from brands, from the Government, from peers and from the news. In tandem, customers are having to re-learn how to interact with brands – at home on digital channels or on the phone with agents working remotely.

We know consumers are more connected today than ever before (there are now more than four billion internet users globally). This doesn't create less of a need for humanity in our day-to-day interactions; it does quite the opposite – it creates a hunger for it.

Brands can no longer just sell; today's “digital natives” value personalised experiences more than ‘things’, and they expect brands to deliver. Here are my five predictions for the main CX trends we can expect in 2021:

### Keeping up with the customer

As consumers seek better customer experiences, loyalty is shifting to those experiences, rather than the brand. Our research found over a third (33%) of Brits have higher expectations for customer service since the first lockdown and a third (32%) said that they will not spend with a business that provides poor service again.

Whilst it makes sense to automate repetitive or easy to complete processes, consumers feel frustrated and angry if that experience isn't personalised, or if they are not given an opportunity to communicate with a human where needed.

As we approach 2021, the year of “never normal”, UK businesses must invest time and resources into delivering a



hybrid customer experience. Embracing automation to deliver an immediate response, or quick answers to more simple requests, and then escalating more complex queries to agents who can deliver a more human experience.

In 2021, brands must be prepared for customers to engage with them how they want, when they want – whether that be via an app, a chatbot, WhatsApp or over the phone. Only then will they be able to ensure their customers remain loyal.

### Wider adoption of RCS

RCS Chat is text messaging for the smartphone age. It gives customers a richer, smarter, more app-like experience – all from their SMS inbox. It represents a new mode of conversational commerce – being able to develop a relationship through a two-way conversation. From letting travellers know which platform to get their train from and giving directions to stores, to letting shoppers pay for items in the easiest way possible.

And that's what consumers are craving. Our research found that more than half (51%) of people believe that communication has become more important since the pandemic and a third (35%) want to engage with brands on digital channels.

Via RCS, brands can build meaningful relationships with customers by exchanging text, images, audio, video files, documents and location information. I hope 2021 will be the turning point for RCS to move from an experimental feature, to one of the most exciting forms of communication. It will take a few big players to help it get there, but the diversity of the channel is something brands and operators should embrace with open arms.

### Brands need to solve problems in 2021

If brands fail to understand what customers want, they'll be remembered for all the wrong reasons. The brands destined to edge ahead of the pack in 2021 are those that combine technology + relevance + convenience so they can interact with their customers in a way that makes their days run that bit better: powering a moment that solves one of life's everyday problems before it even arises.

The numbers tell the same story. Our research revealed that three-quarters (74%) of European customers find business messaging lacks a personalised, human connection, and almost half (47%) of consumers say that they ignore impersonalised messages. Businesses must focus on building and retaining human connections, and adapting to different audiences – whether it be sharing personalised messages about what a brand is doing to tackle climate change to a more conscious consumer, or simply messaging a shopper when their favourite perfume is on sale.



### Conversational User Interaction

Whether they know it or not, consumers communicate with robots all the time. Via chatbots, SMS messages sent by computers automatically, and even Alexa providing the weather forecast. In fact, consumers talk to robots so easily that the novelty has worn off.

Chatbots have had a bit of kicking over the years, but the AI technology and algorithms behind them are only set to get better thanks to progress in natural language processing technology. In 2021, customers will be able to interact with Chatbots which are programmed to not just answer questions but use a mixture of past behaviour and current dialogue to provide valuable suggestions. The end goal is to use AI to drive conversational interactions that feel as natural as interacting with another human being.

### Coronavirus in 2021

COVID-19 will continue to change almost every facet of how we live and work. During the current crisis, many brands rushed through digital transformation projects to help cater to consumer needs. As the new, or perhaps more appropriate, "never normal" continues, consumers will expect the same level of customer service. In this changing world of CX, the businesses that deliver the best customer service and offer a positive experience across digital channels are the ones that will thrive in this challenging time.

Customer experience should be synonymous with a seamless, frictionless service. Companies must therefore re-think how they approach, communicate and engage with their customers to better serve what they need and expect. People are mobile first (and many are mobile only...), so in 2021, creating a more conversational world will require a mastery of the mobile device – and an understanding that immediacy is no longer a nice to have, but an absolute essential.



## Ciaran Bollard

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# Direct to Consumer, augmented reality and sustainability: The key eCommerce trends for 2021

Global eCommerce platform provider Kooomo outlines its predictions for the year ahead

FOLLOWING A YEAR LIKE NO OTHER that saw eCommerce hurred five years ahead of its time, 2021 is set to see emerging eCommerce trends that will centre around preparing for the unpredictable, says global eCommerce platform provider Kooomo.

"If 2020 has taught us anything, it's that nothing is out of the realm of possibility as far as the future goes," says Ciaran Bollard, CEO of Kooomo. "Bricks and mortar retailers were forced to place digital transformation at the top of their agendas and online retailers have had to respond to the immediate, and unprecedented changes to consumer behaviour at the hands of COVID-19."

With this in mind, Kooomo outlines the key trends it expects to see in retail and eCommerce in 2021:

### More brands will go Direct to Consumer (DTC)

More and more brands will experiment with Direct to Consumer eCommerce, as sales are expected to grow by 24.3% this year to \$17.75billion<sup>1</sup>. While third-party distributors (for example supermarkets and multibrand outlets) are likely to always play a part in the consumer goods sales mix, there's a lot to be said for brands owning everything from logistics to supply chain and everything in between. That, paired with the fact that a large majority of bricks and mortar stores have had to close this year, be it temporarily or permanently, makes DTC a very attractive option for brands.

### Sustainability and belief-based buying will be top of consumers' list of priorities

No huge surprises here. Sustainability has been at the forefront of retail in recent years, but with online being the main channel for sales in the wake of the pandemic, excess packaging, and the environmental impact of deliveries are going to be highlighted even more in 2021. Not only that, the lockdown has sparked a movement of belief-led buying among the masses - opting to buy and support local as much as possible. Now, more than ever, consumers are pledging to vote with their wallets - a trend we fully expect to stretch into 2021 - and beyond.

### Social commerce will continue to grow (but will it take over completely?)

Removing friction from the online shopping experience has long



been a topic for businesses to consider, with the primary focus being on the checkout user experience (UX), but more recently on the browsing experience also. By 2021, the global social commerce market is predicted to grow by 34%<sup>2</sup>, and more channels are hopping on board the eCommerce train - most recently with WhatsApp adding a shopping button to business chats.

But while social channels are a no brainer for playing a key part in retailers' omnichannel strategies, the likelihood of social commerce replacing websites entirely is highly unlikely. Retailers want to be able to maintain control over their customer experience (CX), which is a key differentiator for eCommerce right now - and they will be very limited in what they can then do to set the customer journeys apart if all businesses solely rely on social channels to sell.

### More retailers will invest in augmented reality

What could arguably have been considered a 'nice to have' feature on retailers' online stores until now, augmented reality is fast becoming a 'must-have' in the wake of the pandemic. The try in-store, buy-online tactic hasn't been available to consumers for much of 2020, meaning that the digital doors must now open for products that have traditionally been deemed 'something you couldn't buy before you see it in person'.

Augmented reality is the virtual answer to try before you buy, and will be key to supporting buying decisions, so expect to see more and more brands integrating it into their eCommerce strategy in 2021; virtual changing rooms for fashion brands, try-on apps for cosmetics, and 3D placement for furniture and interior design will become even more prevalent.

### Content will have to play a greater role in eCommerce

Competition has always been stiff in the online retail space, and it's only going to intensify as retailers put digital to the forefront of their strategies. So how can merchants stand out? Well, the expression 'content is king' has been doing the rounds for years, but 2021 is the year that retailers who marry eCommerce and content to enrich the customer journey will really get ahead.

Similar to the rise of augmented reality, we envision more brands weaving content into their online stores as a means to



showcase their brand values, as well as replicate the in-store experience. Expect to see more product 'how-to' videos, as well as storytelling through blog posts, videos, and podcasts. We also expect to see more website pages dedicated to brands' sustainability pledges, as well as deliveries, returns, meet the team, and more.

### An omnichannel strategy will no longer be optional

Implementing click and collect has probably been the quickest measure used by retailers to deal with the pandemic. In 2018, an average of 52% of online stores<sup>3</sup> had omnichannel capabilities. 2021 is likely to see that trend not only continued but broadened into full omnichannel strategies by businesses of all sizes. This means synchronisation of stock, real-time inventory updates, online and offline loyalty point collection and redemption, unified customer service channels - the list goes on.

Ciaran concludes, "With digital transformation projects sped up this year, 2021 is set to be an exciting year for retail and eCommerce. While there may still be some difficult times ahead for the industry as a whole, those retailers who implement these strategies, and other innovative developments will certainly differentiate themselves from their competitors and have a better chance of succeeding in 2021 and beyond."

Augmented reality is the virtual answer to try before you buy, and will be key to supporting buying decisions, so expect to see more and more brands integrating it into their eCommerce strategy in 2021; virtual changing rooms for fashion brands, try-on apps for cosmetics, and 3D placement for furniture and interior design will become even more prevalent

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# Mitel 2021 predictions

### Video collaboration will evolve to create more immersive collaboration experiences

Video collaboration has experienced tremendous growth during the pandemic and this trend is likely to continue into 2021 as organisations are looking to accommodate the needs of their hybrid workforce. As a result, industry players will be looking to add new features to existing collaboration apps such as a shoulder tap button or a quick-call function that allows users to recreate the spontaneity and intuitiveness of in-person meetings.

There will also be more focus on combining video conferencing with other emerging technologies to create more immersive experiences through complementary use cases for the technology. For instance, we can imagine to augment videoconferencing solutions with AR by introducing features like enhanced digital whiteboards that make collaboration in meetings more intuitive and feel more 'real'. Or if you're a service worker, like a technician, and you're stuck with a problem – an AR-enhanced videoconference could connect you with a colleague who can help you solve it. AR will be also a major boon to remote training, particularly when in-person training is more difficult or expensive.

### Technology that enhances the customer experience will drive channel growth in 2021

As customers rethink their business models and digitize their services to adapt to the volatile market environment, we'll see stronger demand for technologies that help enhance the customer experience. Whether it's AI, chatbots, blockchain, or AR, businesses will be increasingly looking to the channel to help them figure out which technologies are mature enough to be impactful, and where they can add value.

The pandemic has shifted many consumers out of the store and onto digital services, so creating better online customer experiences (CX) will be a major trend, and one the channel should watch. Our recent research into the impact of COVID on consumer behaviour revealed that nearly half (45%) of UK consumers have increased their use of online customer service

during the pandemic and, of that number, more than 73% will rely more on digital options going forward. As a result, next year, we'll see a growing number of brands experimenting with chatbots, AI and messaging apps in a bid to enhance the digital consumer experience.

With CX experience becoming more integral to the success of modern businesses, the channel will be perfectly placed to identify strategic CX touch points that go well beyond the call centre and span the full value chain of the business. For instance, it might be the company's HR division that sets up a CX function to engage with employees or the procurement team using a CX solution to liaise with suppliers.

As organisations are looking to improve engagement with their workforce, business communications technology will continue to experience rapid growth. Channel partners will be able to add value by helping their customers face the burden of choice and understand the interplay between business collaboration solutions and emerging technologies such as AI-based apps, VR and AR.

### The office of the future will require a different technology approach

The lessons we have learnt from the pandemic will have marked impact on office design and how office spaces are being used in the future. While some organisations are downsizing their offices or looking to rent multiple satellite office spaces outside of the city centre, others will focus on ways to attract employees back to the workplace. This will result in a boom in office collaboration hubs where a mix of smaller meeting rooms, social areas, and learning spaces encourages informal communication and productivity.

These changes will drive a shift in the technology employees use. During the pandemic we've seen a rise in productivity applications, virtual assistants and CRM software and this is likely to continue in 2021 and beyond. There will be a stronger focus on adopting cloud-based UC solutions that support a hybrid workforce, enabling employees to access



## The need for seamless communication and collaboration has never been greater, so next year we'll see wider adoption of cloud solutions for unified communications (UC) and business collaboration

everything from virtual assistants to in-depth analytics and video collaboration tools on the go.

### The future of work post COVID-19 will drive wider adoption of cloud UC solutions (new topic)

Within just a few months the pandemic has changed the face of modern working, triggering a shift to virtual collaboration that is likely to last long after the pandemic is gone. The rise of remote working and the financial pressures of the lockdowns have put tremendous pressure on IT departments to offer reliable and flexible solutions for teleworking, while keeping down costs. In this volatile market environment cloud has emerged as an essential strategy for enabling businesses to transition to a more agile working model.

The need for seamless communication and collaboration has never been greater, so next year we'll see wider adoption of cloud solutions for unified communications (UC) and business collaboration. High-performing companies will be spending the time, money and energy to assess their current infrastructure and plan the best way to gain the benefits of cloud without having to start all over, become burdened with expensive deployment models or get locked in for years with a specific vendor. As a result, we'll see a rise of multi-cloud approaches to cloud migration and virtual desktop solutions delivered as-a-service.

### Businesses will ramp up AI adoption to drive deeper personalisation

Since the beginning of the pandemic, many retailers have ramped up their e-commerce capabilities in an effort to drive customer engagement and ensure business continuity. Our recent research indicates that they have been successful in achieving this, with retail coming on top for the best customer service for 50% of Brits, followed by healthcare and hospitality.

The data suggest that consumers' adoption of digital CX tools will continue to increase next year, with nearly half of

UK consumers expecting to use more chatbots (42%), virtual agents (43%) and self-service CX technologies (44%).

In response to this trend businesses will continue to strengthen their digital offerings, so we'll see a stronger focus on personalisation. This will drive faster adoption of artificial intelligence (AI) and predictive analytics, with businesses looking to bundle AI-powered chatbots and agent-assist technologies with contact centre platforms to create more personalised and seamless online experiences. As AI becomes more widely used, virtual assistant apps will become easier to train and deploy, enabling smaller businesses to compete more successfully with larger brands when it comes to customer experience.

These technologies will be key for providing a seamless omnichannel customer experience and for meeting the needs of today's consumers who expect quick and easy access to information at any time and on any device.



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# The bots are coming

## Bot operators are expanding their scope: from sneakerbots to general sniperbots

Even if 2021 sees COVID in retreat, its effect in shifting retail further from offline to online is irreversible. People just won't want to queue for bargains if they don't have to. That's especially interesting for those selling luxury limited-edition goods, or those with extremely high demand and limited supply—recently we've seen graphics cards and new consoles sell out and listed immediately on auction sites for hugely inflated amounts. Luxury brands are looking to the success that sneakers have had in creating co-branded limited editions and thinking, "can we do that?" And they can, but just like the lines of dedicated "sneakerheads" have moved from outside stores to online queuing, their best way to make the most revenue will be ecommerce.

And that's where the experience of the sneaker industry will be most valuable. Sneakerbots, the automated tools used to buy products online before anyone else, are becoming all-purpose "sniperbots". They no longer need much technical know-how, and are sold "as a service" to anyone interested. The frustration that genuine consumers displayed when they couldn't purchase what they wanted in 2020 will repeat in 2021, only with more goods being bought from under them, and more types of goods. 2021 will either see brands start to tackle this problem, or a consumer backlash.

## The value of loyalty points

The economic effect of 2020 will resonate through 2021 at least, and consumers will look for better value from their retailers through vouchers, discounts and loyalty schemes. That last one is a cause for worry. Consumers are notoriously lax with the security of their loyalty points accounts, way more lax than with their online bank accounts. Increasingly, hackers have taken advantage of this, using passwords revealed in other breaches to hack into loyalty accounts.

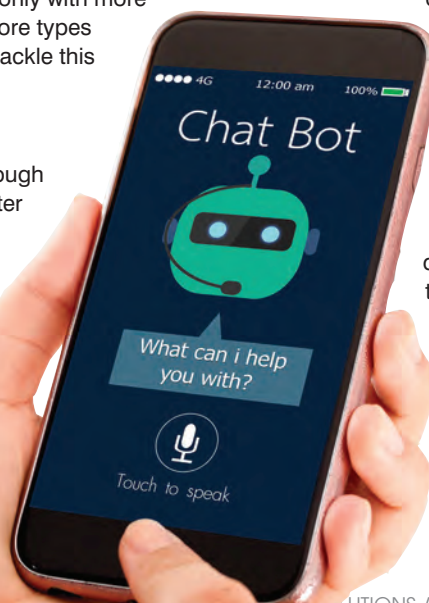
Those points can then be stolen – either used to buy goods or sold online on the dark web for a fraction of their actual worth. 2021 will see this theft become far more common, at a time when people are paying more attention to any loyalty benefits they can get. Retailers have a choice. They can demand that their customers have better security, adding complex passwords and two-factor authentication. They can replace all of the stolen loyalty points at great expense. Or they can deal with the attacks on their business by identifying the automated traffic on their sites.

## Marketing departments will better understand bots. Will they react?

Marketing departments like to see more traffic on the websites they run. Those graphs heading upwards are good news – it means that their campaigns are working and their marketing decisions are good. But those numbers are likely to hide some bad news. Automated bots are generating more and more traffic, so numbers going up might actually be meaningless. This is important as marketing needs to have a good understanding of their customers to make any decisions. What is a typical customer journey? Where are customers bouncing off pages, and where are they lingering? Any insight where the bots cannot be sifted out from the real people is meaningless.

Awareness of the problem is growing, thanks in part to bot traffic being highlighted in Google Analytics and similar products. But awareness is not enough. For a busy and hard-pressed marketing department, the news that the numbers they are basing their decisions on is flawed, and the graphs they are reporting are inflated, is something that they may be tempted to sweep under the carpet, at least for the moment.

So while 2021 may see greater awareness, it may not see any real action taken – even though it's desperately needed.



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# Top 5 customer service predictions for 2021

A LOT OF THINGS CHANGED IN 2020 – to say the least. When it comes to customer service, the pandemic impacted both the demand for service and how that service is delivered altogether. Service teams became highly distributed, no longer working within the walls of a contact center. And in many sectors, service volumes went through the roof. Some might say none of this could have been predicted. But here's a look at several key predictions for customer service in 2021:

### 1. Most businesses will be fooled once, but not twice

When COVID-19 hit, most businesses were caught flat-footed, without the infrastructure to support the surge in customer queries. Organizations were forced to pivot quickly, and many doubled down on digital solutions such as intelligent virtual assistants and scalable Cloud technology in order to transition. Having learned the hard way, businesses will continue to invest in digital strategies and agile solutions in 2021 to better prepare them to take on any future disruptions or uncertainties.

### 2. Agent populations will largely remain distributed

In 2020, most office-based agents were compelled to quickly adjust to new distributed working arrangements. Today, much of this population remains remote. Many agents are now realizing they can perform the majority of their duties at relatively comparable levels to before, particularly those high-volume, straightforward queries that don't require physical team collaboration.

Businesses are eyeing the real cost savings that could be had by reducing (and in some cases, eliminating) the need for pricey office

space in 2021 and beyond. To accommodate this new digital workforce, businesses will continue to invest in collaboration tools to keep teams aligned and connected - even when they aren't sitting shoulder to shoulder.

### 3. A new category – autonomous service – will emerge

With Millennials and rising Gen-Zers increasing their buying power, true autonomous service - when live agents aren't required to achieve resolutions - will become a reality. More and more, younger customers prefer to interact digitally with businesses instead of having actual conversations with a live person.

To meet this demand, businesses will improve their offering by organizing their customer service efforts around customer journeys rather than channels. They will focus on hyperautomation – the convergence of technologies like artificial intelligence, Intelligent Virtual Assistants, machine learning, and robotic process automation – to help volumes of customers resolve their issues faster and more easily, in many cases without a live agent.

A Pega study due out in early 2021 found that 50% of global business leaders expect hyperautomation to impact their customer service operations over the next five years. In the near-term, new proactive and preemptive service strategies will start to emerge that autonomously sense customers in need, and automatically reach out to resolve their issue, often before the customer even knows there is one. Live customer service interactions won't disappear in 2021, but they will begin to be reserved for more complex queries.





While new technologies like augmented reality, virtual reality, and mixed reality continue to advance, they're still not seriously viable customer service tools

#### 4. Data privacy has been on the back burner but will heat up again

A year ago, businesses were scrambling to prepare for the data privacy tsunami expected as a result of the California Consumer Privacy Act (CCPA), which followed in the footsteps of Europe's General Data Protection Regulation (GDPR) and became law on Jan. 1, 2020. When COVID hit, data privacy took a backseat to the pandemic, and Americans were lulled into a false sense of complacency around this issue. But by the end of 2021, data privacy will become a priority again and organizations will need to be ready.

#### 5. Extended reality (XR) could begin to open up new customer service possibilities

While new technologies like augmented reality, virtual reality, and mixed reality continue to advance, they're still not seriously viable customer service tools. According to Pega's upcoming

Tech Trends study, more than half (52%) of global business leaders think Extended Reality (XR) will be a competitive differentiator within the next five years, while more than a quarter (30%) believe it will become essential to customer engagement.

Virtual reality is already being used in some remote business settings today. While XR, and its ability to simulate physical states of being, may not be ready for widespread short-term adoption in 2021. With a growing number of end-users working remotely and expecting a personalized experience, we're sure to see more and more organizations heading down the XR route than ever before. And a final semi-related "bonus" prediction:

People will finally, finally (oh, please) stop saying "the new normal." Here's to improved experience – for customers and service teams alike – in 2021.



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# CRM systems will evolve in 2021 to satisfy post COVID-19 demands

AFTER THE EARTH-SHATTERING and unforeseen events of 2020, only a brave or foolish person would be prepared to offer their predictions for how 2021 will pan out, right? Well, that may be true, but I'm going to limit myself to discussing CRM systems and how they're likely to evolve next year into tools that are more practical and fit for the unusual times in which we're now living.

## The problems facing traditional CRMs

Traditional CRM systems are currently faced with two issues, one related to functionality and user experience, the other much more timely in nature. First, CRMs are typically complex pieces of software which are only updated infrequently, because data entry relies on a set of manual and laborious tasks. As tools, they're not particularly user-friendly as they lack powerful search engines, making the retrieval of contacts, meetings and meeting notes a frustrating and time-consuming process. Second, the whole concept of conventional networking has been turned upside down this year thanks to COVID-19. Handshakes and the exchange of business cards have been banished by the need for social distancing. Alternative methods of contact sharing, such as Airdrop, SMS, emails or QR codes, often fail to provide contextual value.

## Solutions to CRM challenges

A simple way to overcome the off-putting experience provided by existing CRMs is to automate the data-entry process. The next generation of CRMs will allow key data to be captured via a mobile or web app, offering auto-sync with other CRMs for cleaner and faster data transfer, as well as frictionless addition and auto-update of searchable contacts and meetings. Additional features will include quick audio and visual meeting notes, while a powerful search engine will enable rapid contact retrieval, saving time and money. To meet the challenge of networking in the post COVID-19 working environment, CRMs will have to offer contactless networking functionality. Physical meetings will see contacts exchanged between two smartphones without them touching each other. During or after video calls, participants will swap contacts with a single

click. In both cases, the meeting's date, time and place will be automatically recorded.

## The difficulty of managing business relationships

Managing business relationships was already an onerous task before the pandemic arrived and made it even more complicated. Business cards provide no background to the meeting and aren't compliant with social distancing. Cities like Paris are already promoting contactless culture. A public billboard there in September 2020 read: "In Paris, we greet each other without touching. Coronavirus: let's protect each other. For your safety and that of others, please maintain social distancing."

Online networks, such as LinkedIn, are fit for the post COVID-19 world, but are often full of out-of-date profiles. They're also prone to spamming and the data displayed in profiles is outside the control of businesses. Meanwhile, traditional CRMs are outdated as they've become complex, date-heavy and analytics-focused, and legacy CRMs often require manual intervention and updating. According to research conducted by InsideSales and SalesLoft, logging activities after every interaction can take up to eight minutes, and 72% of CRM users would drop many of their system's features just to make their software easier to use. In short, CRMs fail to focus on the most important part of the exchange: the relationship. What's needed is a solution that combines networking with relationship management.

## Contactless technologies will become mainstream in 2021

As we get used to working and networking in a post COVID-19 reality, exchanging contacts quickly and seamlessly, without any physical interaction, will become the norm. CRMs have never been the most sexy of digital tools, but I predict that next year we'll see them develop into a new generation of platforms offering a safe and satisfying user experience, one which will allow individuals and businesses alike to harness the benefits of efficient networking and streamlined relationship management.

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# How cloud will elevate customer engagement in 2021

CLOUD COMMUNICATIONS emerged as the saviour of businesses during the pandemic. It has given businesses the tools to continue to serve their customers, through an array of digital channels and the rollout of remote contact centres. There's no doubt COVID-19 has driven effective digital acceleration, with UK businesses citing it has sped up their efforts by an average of 5.3 years. But their work is not done just yet. In fact, 1 in 3 British consumers are still calling for more ways to make contact, despite the progress made by businesses in recent months.

Going digital was the first, important step. But digital acceleration must continue if businesses want to create engaging experiences for their customers in 2021 and beyond. Here are four ways we can expect to see customer engagement evolve in 2021.

### 1. The demand to engage digitally, on a range of channels, is here to stay

This year we've seen COVID-19 drive a huge increase in the need for flexible customer engagement platforms. There's been a real need for cloud communication solutions that can be rapidly deployed and scaled quickly. But also, a need to adapt to surges in demand for one channel over another, as customer behaviour has changed according to the impact of the pandemic.

It's now more important than ever to ensure you're reaching people on the channels they are comfortable using, as everyone is grappling with a rapidly changing set of services. We know that 53% of businesses have added new channels during the pandemic, such as live chat, but their focus in 2021 must turn to ensuring the channel mix caters to the preferences of their customer base.

Consumer expectations remain relatively unchanged, but we can expect to see businesses become more flexible in the way they communicate to continue to meet their customers' needs, using the most suitable channels. Mapping out the suitability of each channel to different scenarios and customer segments will achieve the most effective communication and drive customer engagement.

### 2. Data silos will be a top challenge for customers

Silos will continue to be a problem for customers until businesses eliminate them from the customer experience. Customers want to be able to pick up a conversation a week later, on more than one channel, or even with a different department, without having to re-explain their query from the start. As businesses look to adopt new channels to handle the current digital shift, it's going to be critical for them to have solutions that can manage this change and remove causes of friction.

Businesses need to ensure customer relationships aren't







damaged by a clunky, disconnected experience. With the flexibility of cloud-based contact centres that can assimilate and seamlessly link up a vast range of customer contact points, from email to chat, there's no excuse for not doing this in 2021. The businesses that will deliver the best experiences will be the ones that know their customers well and use customer data to provide more relevant interactions.

### 3. Video will continue to transform customer engagement

Perhaps no digital channel has been accelerated by the COVID-19 pandemic as much as real-time video. There has already been massive growth in demand for video over the past eight months, and that's something that will likely continue as businesses and their customers adapt to a new, more digital-first world. Since the pandemic started, we've seen a 500% increase in daily Twilio Video usage and video minutes have almost tripled year-to-date.

In the early days of the pandemic, companies rushed to deploy short-term emergency solutions to enable video. Now they are looking to developers to build long term video solutions that are

more tailored and integrated for optimal user experience. Video is flexible and adaptable to differing business needs - whether it's 1-to-1 customer interactions or group calls - and there's plenty of room for customisations.

### 4. Flexible platforms will be vital for the modern contact centre

The digital acceleration driven by COVID-19 has led to the total reimagining of the workplace, and the role of the office for the workforce. Businesses have seen no greater acceleration to digital than in the contact centre, where organisations have grabbed the opportunity to move to the cloud to support remote work.

The continued need for remote and hybrid working is going to lead to the necessary adoption of more flexible platforms for customer interaction, as both customers and customer service professionals switch up their working requirements from home, to office, and to mobile where needed. Businesses must now be able to serve customers under any circumstances from anywhere.

Perhaps no digital channel has been accelerated by the COVID-19 pandemic as much as real-time video. There has already been massive growth in demand for video over the past eight months, and that's something that will likely continue as businesses and their customers adapt to a new, more digital-first world

## Leigh Gammons

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# Predictions 2021: What will the future hold for customer experience?

THE IMPACT OF COVID-19 on the retail sector cannot be underestimated, with businesses put under significant strain through lockdown periods. Additionally, for many consumers, discretionary spending has decreased with growing economic fear and unemployment. This has meant competition for the consumer pound has never been fiercer and maintaining customer loyalty is of paramount importance.

The businesses who have been better able to navigate the effects of the pandemic have tended to be those offering regular, repeatable and frictionless transactions, making it easier for consumers to purchase when they are seeking predictability and financial security. Unsurprisingly, subscription business models, have also increased in popularity. Pret A Manger launched 'YourPret Barista' in a bid to compensate for loss of city centre spending and adapt to rapidly changing consumer patterns. Similarly, many other retailers such as Hotel Chocolat, Nespresso and Majestic Wine now also offer subscription boxes.

With so many companies refocusing their energies on the digital experience, 2021 will see an even greater emphasis on the adoption of processes and technologies that enable brands to provide a seamless and consistent customer experience on all platforms.

### Brands need to crack the omnichannel experience

Businesses that had already prioritised moving to a more agile and flexible architecture prior to the pandemic, found themselves in a better position to handle the upheavals of 2020. And this approach to building modern, open architectures will continue into the new year as decision makers will, no doubt, continue to focus on technologies that will allow them to adapt and change how their business operates.

With so much focus on the digital experience, customers are far more critical of brands who fail to join up the touchpoints between channels. A recent Wunderman Thompson Technology report found that 42% of consumers consider a seamless experience a top expectation. But with 38% of CX decision-makers telling us in the same report that they have difficulty in unifying data across channels, there are obviously still huge hurdles for many organisations when it comes to delivering on a multichannel strategy.

The same report found that a fifth of UK consumers feel brands are failing to live up to expectation when it comes to online experiences amid the pandemic and 21% claim that a slow website stops them interacting with a brand altogether. Fundamentally, many of these issues around data integration and performance are rooted in the underlying architecture.

Gaining value from meaningful first-party relationships  
With web browsers cracking down on ad trackers, new data privacy laws going into effect and data breaches remaining ever present, there will be a decline in the availability of third-party data. Brands need to differentiate now by transitioning







their customer engagement to more meaningful one-to-one relationships (exemplified by those with developed subscription offerings above).

With consumers becoming more aware of how valuable their data is, and with over a third (35%) now willing to give more of their personal data to brands if it improves the online experience, proving the consumer value of the data exchange will be critical. Businesses need to leverage the data they have to identify patterns to help support positive interactions with consumers.

### The rise of touchless technologies

COVID-19 has been a catalyst for the increasing trend towards touchless interfaces, and this will continue into 2021. With a greater awareness around the ability of surfaces to harbour germs and spread disease, touchless will continue to play a role next year. There will be an even bigger focus on how public and shared interfaces integrate with people's personal devices and add value, along with safety and hygiene, to the customer journey.

In a post-COVID world, digital customer experience is THE differentiator. Anticipating customers' needs and developing

a loyal relationship with consumers will be critical in 2021. By using data and developing customer profiles that encapsulate behaviours at every touch point, across all channels, businesses will be able to prioritise those areas of the experience that have the largest impact on their bottom line.

Moving forwards, businesses who invest in the fundamentals to ensure the customer experience is personalised, consistent and seamless, will put themselves in the best position for growth. Crucial to this success are data-driven insights, curated content and the ability to orchestrate personalised experiences in real time.

COVID-19 has been a catalyst for the increasing trend towards touchless interfaces, and this will continue into 2021



## Peter Lorant

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# Resilience in the face of adversity: Driving business success with CX maturity

2020 SIGNALS A MAJOR TIPPING POINT when it comes to the customer experience. This year, service staff have been stretched and it has been an emotional rollercoaster for many support agents dealing with unexpected roadblocks and hurdles along the way. Whilst 2020 will be the year we're pleased to put behind us, we should take note of the valuable lessons we've learnt as we approach the new year.

Businesses have been forced to review the impact that their customer service has on their overall outcomes and long-term success. As we all strive to adjust to our latest reality, it has become clear that this new way of operating isn't just a one-off.

According to findings from our recent research report on Customer Experience (CX) conducted with Enterprise Strategy Group (ESG), the performance gap between the leaders and the laggards of customer experience is widening, and the

accelerated digital transformation due to COVID-19 is further driving this trend.

We found that in Europe, the more mature customer service businesses (called Champions in the study) make up just 15% of the business landscape. These Champions, however, are seeing the returns of their investment in CX - they are 3.4 times more likely to have gained market share from their competitors, and 7.3 times more successful than the least mature customer service businesses (called Starters) at growing their customer spend. The research shows the clear connection between an investment in CX and business success - and at the heart of that is the business' ability to stay agile and adapt to ever-changing customer needs.

### Mind the (maturity) gap

There is, however, a risk identified in the research. Compared to Starters, Champions in Europe are 14.3 times more likely to predict a significant increase of investment in tools and technology over the coming 12 months, and while globally this figure drops to just 8.3 times, we see that those leading the charge in CX maturity understand the value of solutions that improve agility. And for those Starters who may be pausing or slowing their investments, there's a risk of falling even further behind.

### So, how can other businesses become CX champions and begin to close the CX maturity gap?

#### Step one: Are you delivering customer-centric agility?

Put simply, customers expect the brands and businesses they interact with to respond to their enquiries quickly and effectively. Whether it's shorter response times or quicker resolution times, meeting this need will help to ensure your customer feels valued.

To do this, find out what the customer wants. How can you deliver this expected level of service? What data do you need in





order to deliver this? And how do you use this data to develop a deep understanding of what really counts: providing customers with the answers they actually need.

Champions are leading the way here. On average, Champions in Europe estimate that 87 percent of customer issues are resolved within one touch, a figure 14 percentage points higher than Starters. What's more, Champions also scored a mean resolution time 82 percent faster than that of Starters. That's a difference of nearly 3.4 hours. Imagine you are the customer. We know that every minute counts and this time saving is a game changer.

#### **Step two: Are your agents equipped with the tools they need?**

The customer should always be at the heart of every decision you make, so as your most customer-facing team, it follows that your support staff should be too. Do they feel empowered to succeed when they come to work? Do they have the right skill sets and tools needed to achieve what is expected of them? With the right tools, an agent can more quickly access the capabilities to make this decision and pivot. This is why omnichannel support tools are vital, allowing agents to toggle seamlessly between the channels and messaging platforms the customer has been using.

Rather than having a different platform for every channel, empowering agents with a single platform of engagement offers a holistic view of the customers' preferences and history with the brand. The end goal: faster resolution times and a happier customer.

To thrive over the long term, it's important to recognise that a critical part of this success is your people. In this study, Champions invested in their teams - offering an average of 2.4 more days of training for service and support staff per year than Starters. This additional training shows your staff that you are committed to their development, reducing your overall turnover rate, while also building high performing teams.

#### **Step three: Are you tracking your data (and learning from it) regularly?**

Peter Drucker, one of the most influential management thinkers is often quoted saying "you can't manage what you can't measure". In order to manage successfully, you therefore need to be aware of the environment in which you are operating and the context of what these insights may be. The research shows that at a large majority of European Starters, CX metrics are rarely reviewed. Champions are more likely to review metrics daily - and this approach is led by leadership.

A great example of this in practice is Trustpilot, an open online review platform with 90 million users. This year, the company has been able to dramatically grow its self-service capabilities. In doing so, agent capacity has increased, leading to a 62 per cent year-on-year growth in self-service and a 98 per cent success rate.

The pandemic has taught us many things. But if one thing sticks, it's that businesses who remain agile – and focused on what the customer wants and needs – are in the best place to drive greater customer loyalty in a highly unpredictable marketplace.

# CLOUD

The digital experience (DX) and the customer experience (CX) are key emerging topics for the digital enterprise. As these contributions make clear, what matters to the customer is what should be shaping your IT infrastructure.



## Amir Khan

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# The network cloud – unlocking the potential of the cloud at last

THE MARKET FOR CLOUD SERVICES is already huge and set to grow even faster next year fuelled by the Covid-19 pandemic. Gartner forecasts an 18.4% rise in global spending on public cloud services to \$304.9bn. Other industry watchers are making even more dramatic claims.

Yet despite the big numbers, cloud hasn't yet delivered on its promise of a hardware-less, software-less, scalable, flexible, shackle-free environment in which organisations pay only for what they need.

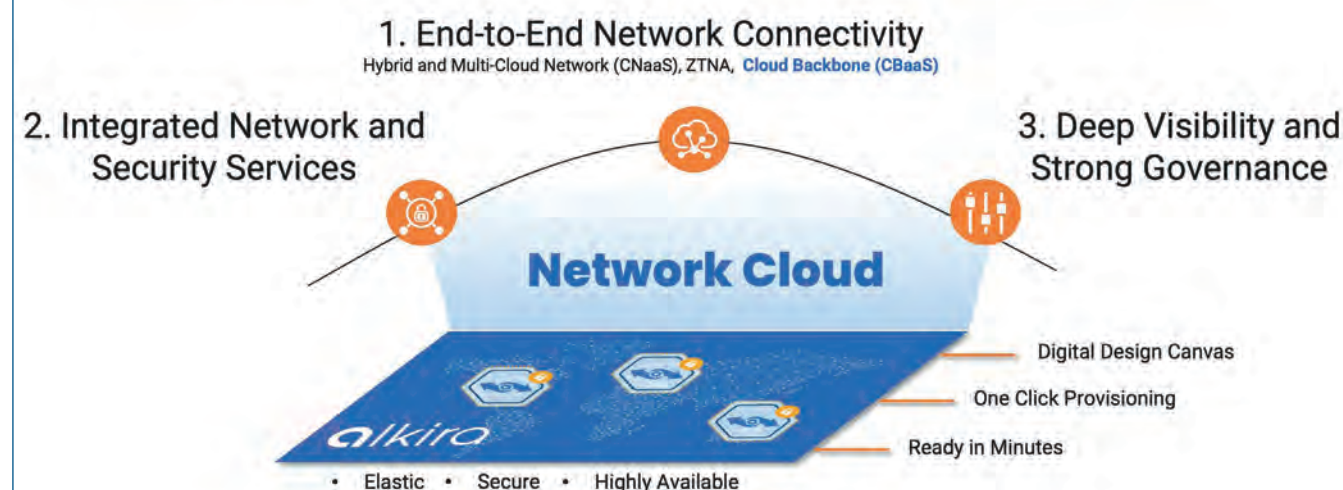
### That's set to change in 2021.

The catalyst for change is a new category of services dubbed network cloud. Network cloud promises to remove the major barrier to cloud deployment experienced by organisations – typically larger enterprises – with IT investment tied up in legacy

applications and systems. According to Accenture, 90% of enterprises are already using cloud and, of those, the number of clouds they are connected to is on the increase. Flexera's State of the Cloud 2020 Report says the average enterprise connects to 4.4 clouds and that 93% profess to a multi-cloud strategy. To judge by these figures, the trend to multi-cloud is already well established. But dig a little deeper and the picture changes:

- Cloud use is wide but not deep: the average enterprise has moved only 20-40% of its workload to the cloud (Accenture)
- Organisations do not believe they are getting value for money: 30% of spending on cloud is wasted (Flexera)
- Costs are overrunning: typically enterprises report a 23% overspend on cloud development and are cranking up their 2021 budgets by 47% (Flexera)
- Most are not happy with the results: two-thirds express dissatisfaction (Accenture)

## Global Unified Network Infrastructure as-a-Service



- Businesses are delaying moving legacy applications to the cloud: for the fourth year in a row, the top priority for 73% of respondents to the Flexera survey is optimising the applications already running in the cloud.

For business and IT leaders these statistics tell a familiar, decades-old story about the promise of IT lagging behind reality, but why is the story of cloud still a tale of disappointment? The answer, in a word, is complexity.

Building a single, secure network connecting data, applications and users in a multi-cloud environment currently takes years. Network cloud proponents promise to reduce the time taken to connect the organisation to each new environment in a multi-cloud network from months to hours or minutes.

Take just one aspect of network configuration, security. To implement the same security posture in a multi-cloud network today requires tailoring the policy for each environment. Vendors signing up to the network cloud paradigm hide the underlying technical differences allowing the customer to apply a single policy throughout.

Network cloud design doubles the overall firewall capacity through intelligent application traffic steering. This has obvious implications for cost and deployment time.

What if connecting an organisation's hard-wired data centres across the country or across the globe could also be provided as a cloud service with capacity on demand and pay per use charging? Folding the legacy estate into the cloud proposition would be transformative, marking the end of the experimental phase of cloud deployment. The network cloud leaders have this in their sights for 2021 too.

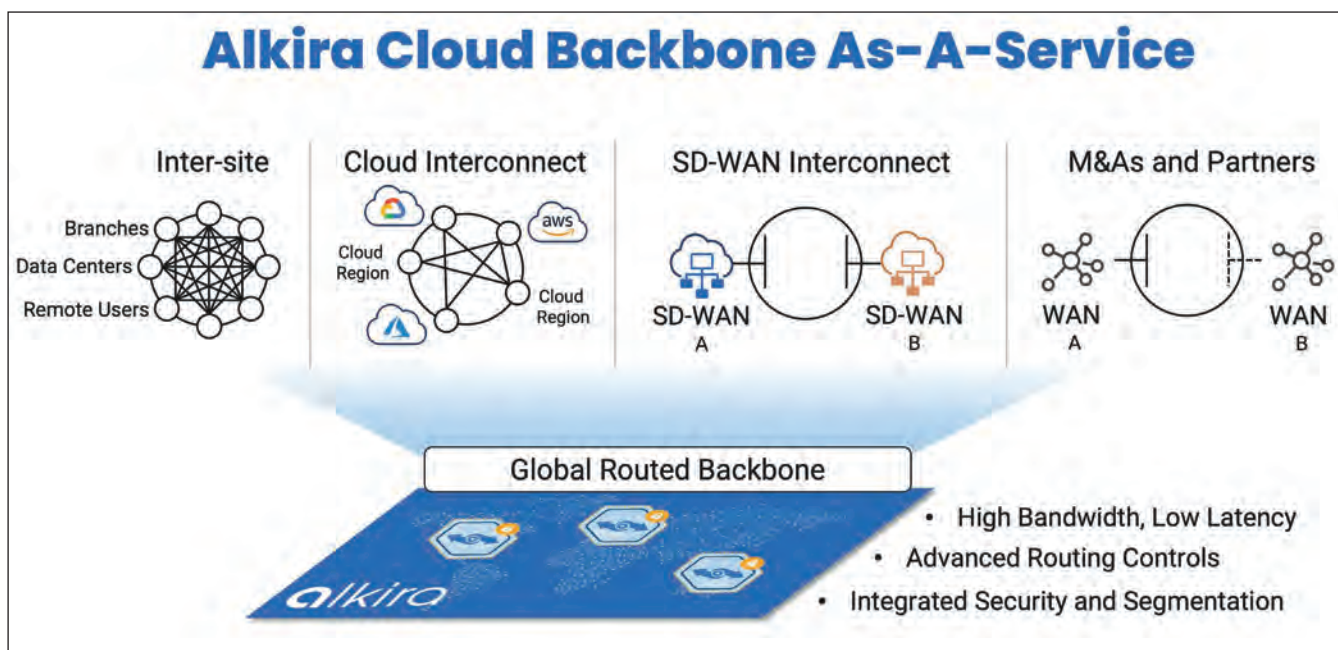
According to Accenture, "enterprises that continue to delay a

Network cloud design doubles the overall firewall capacity through intelligent application traffic steering. This has obvious implications for cost and deployment time

shift to cloud at scale aren't just incurring an opportunity cost, they're risking their very survival."

As we survey the inevitable economic damage in the post-Covid world, the promise of a 40% reduction in total cost of ownership from network is compelling. But the bigger prize in the long term is unlocking the full potential of the cloud to empower businesses to grow, change direction or reconfigure as needed, deploy new applications at pace, extract the full value of data, and maximise the opportunity provided by every interaction with customers.

Expect in 2021 to see the long-held promise of a cloud that moves at the speed of the business finally being fulfilled.





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# The role of the cloud

2020 HAS ACCELERATED digital transformation efforts as businesses prioritised the mobilisation of workforces, sought to facilitate collaboration and ensure business continuity due to the interruptions from the pandemic. At Aptum, as we take stock of the events of the past year, and the role cloud computing has played, we anticipate the following predictions to become a reality in 2021.

### DRaaS adoption will be driven by the need for business resilience

While most organisations have a disaster recovery plan in place for data protection, data retention, and fast deployments, many have only recently undergone their first test. Several months after the trial-by-fire, businesses can now readjust and confront the gaps in business continuity and disaster recovery (DR) plans. As a result, companies will consider end-to-end solutions and adopt disaster recovery as a service to future-proof access to data.

Demand for multi-cloud and hybrid infrastructure will grow. In 2021, businesses will seek assistance in determining the right infrastructure, where applications and workloads would be best suited, and what tools should be adopted to optimise those environments. Aptum's recent study shows that more than half (59 percent) of organisations plan to decrease their on-premise infrastructure in the next 18-24 months. The same percentage of companies expect to put more infrastructure into the public cloud, while an even higher proportion (66 percent) plan to expand private cloud workloads.

### Cloud Management Platforms will become a necessity

As a result of the complexities that may arise from hybrid-cloud or multi-cloud adoption and ongoing economic restraints due to the pandemic, insights into the effectiveness of workloads in different cloud environments will become essential. Subsequently, the demand for Cloud Management Platforms is expected to surge in popularity.

Investing in a comprehensive Cloud Management Platform gives businesses visibility and access to real-time information on the cost and performance of cloud services across



multiple ecosystems to enable greater agility. Agility is crucial for companies to continue to deliver uninterrupted service to customers, while visibility is key for security. If one of those resources is misconfigured or deployed with sensitive information and left unmanaged, security and compliance can be exceedingly difficult to achieve for IT staff. As cybercriminals move to take advantage of hybrid and multi-cloud users' blind spots, knowing the location of all crucial data and having controls in place to protect that data is critical.

### Businesses will harness Data As Infrastructure™

Data As Infrastructure™ is the concept that data is at the foundation of every organization and is as important as physical infrastructure. As organizations seek deeper insights to enable business resiliency, efficiency, and continuity, the value in approaching data as infrastructure™ on both a conceptual and practical level will increase. Research from McKinsey confirms the benefit of this methodology. Data-driven companies are 23 times more likely to acquire a customer, 6 times more likely to retain that customer, and 19 times more likely to be profitable as a result. This approach will continue to lead companies toward a hybridised approach to the cloud and encourage them to take extra steps to optimise data usage.

As the world continues an expedited digital transformation journey, there lies limitless opportunity for the IT industry. We must continue to innovate and provide total solutions and tailored options to support companies as they adapt, evolve, and look ahead to 2021 and beyond.

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# Tackling legacy systems to reduce technical debt

I BELIEVE 2021 will be the year when we see organisations making a concerted effort to tackle technical debt, because the pandemic has permanently altered the balance of the 'live with it' or 'change it' equation which has held back many organisations from taking action.

Technical debt, and how to address it, has been a regular topic of conversation among CIOs for the last few years. Most organisations still have legacy systems which are key to their operations at the core of their business. However, we've seen more discussion and planning than actual change. The expansion of home and flexible working has increased the cost of maintaining, accessing and supporting proprietary elements.

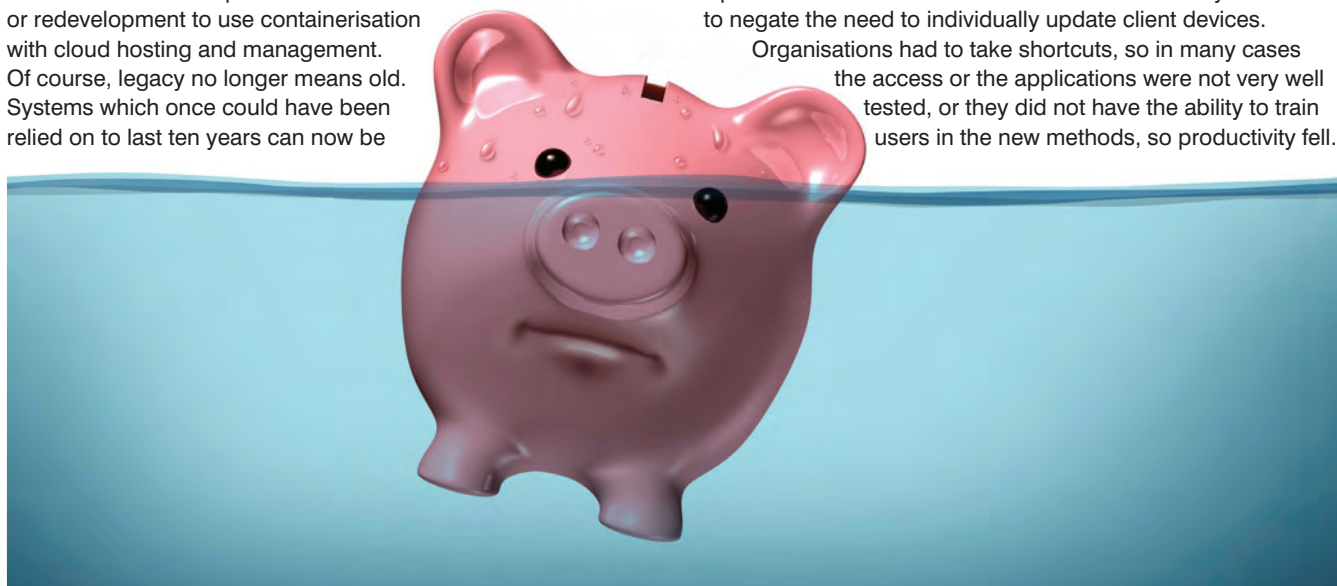
So in 2021 I believe we'll see many organisations reviewing the cost of continuing to use legacy systems, including how they are hosted and accessed. As business confidence increases this will drive either replacement with suitable SaaS alternatives or redevelopment to use containerisation with cloud hosting and management. Of course, legacy no longer means old. Systems which once could have been relied on to last ten years can now be

out of date in just five. Take the Windows operating system: it is less than ten years since Windows 7 was launched, but already many new laptops are not certified for Windows 7. This means that if the organisation uses an application developed in the last eight to ten years which is coded to run on Windows 7, it has to carry out compatibility testing to ensure users with new laptops running Windows 10 can actually run the application. Oddly enough, this is an area where cloud can actually be your friend when it suits the supplier. For example, the only way you can have officially supported Windows 7 (unless you pay for a special contract) is to host it in Windows Virtual Desktop in Azure.

### Short term fixes during the pandemic

To ensure workable remote access to their legacy systems at short notice during the pandemic, most organisations either used VDI to package and deliver the applications or implemented mobile or web interfaces onto these systems to negate the need to individually update client devices.

Organisations had to take shortcuts, so in many cases the access or the applications were not very well tested, or they did not have the ability to train users in the new methods, so productivity fell.



As the dust settles, they need to step back and consider whether these quick fixes are manageable and cost-effective for the longer term; whether it is time to implement a new, probably Software as a Service (SaaS), solution; or whether to redevelop the application using current technologies such as cloud databases and function containerisation.

The key to tackling the problem of technical debt is to understand what you're dealing with. First, ensure you can manage any risks in the short term and have strong governance in place, with clear policies that users understand and can comply with. Organisations need to ensure that they haven't exposed themselves to undue risk in their rush to implement effective home and remote working. There are also the associated security risks arising from employees using their own devices, particularly if these are shared with other members of the family.

Next, work out what services the business really needs and what can be consolidated, simplified or turned off – in other

words, carry out a business and IT alignment review. Using this information you can prioritise actions, tackling mission-critical issues first. The more you can standardise and simplify, minimising the need for bespoke development, the better your chances of avoiding technical debt in the future.

### Planning the move to public cloud

Standardisation will also make it more straightforward to move applications to public cloud, which is the ultimate aim for most organisations. Many application providers are developing their own SaaS strategy, but these frequently only support the latest version of their software, so moving an older version that has been extensively customised means accepting the loss of those features.

However, if you have a legacy application that simply can't be moved without significant cost, you have the option of using managed cloud as a stepping stone. This ensures that what you have is secure, and you can benefit from cloud's flexibility and scalability while looking for a longer term solution.







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## Pip White

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# Cloud will no longer just be an IT infrastructure decision. It will be infused into a company's culture and drive new operating models

THE UNPRECEDENTED WORKING ENVIRONMENT created by COVID-19 led boards and executives to accelerate their digital transformations. Until now, cloud migration has been an infrastructure decision, promising to change the way business devices and information systems interact with each other. But cloud migration brings another type of transformation too - of a company's culture - and it's coming to the forefront of conversations.

As we enter 2021, cloud migration will be increasingly driven by the need to establish a culture of continuous innovation to keep pace with rapid change.

Untethering staff from low value, labour-intensive tasks and allowing them to focus on innovation and high-impact projects. Companies will move away from what might have been top-down corporate strategies, to fully infusing transformation and letting every person in an organisation transform.

Businesses will also need to embrace an "anywhere operations model", as coined by Gartner, that allows for business products and services to be accessed, delivered, and enabled anywhere. New ways of working will emerge, as will new ways to create, collaborate and innovate.

### 2021 will be a move towards a more "open" cloud.

Unsurprisingly, 2021 will see a new and ever-evolving workplace, and businesses will need to remain agile, responsive, and able to adapt to survive. More businesses will opt for an "open" cloud approach to avoid vendor lock-in and foster innovation across environments in the cloud and on-premises faster. There will be a greater desire by companies to not bring the problems of the on-prem world into the cloud and by not being "open," businesses will not want to repeat past mistakes.

As businesses continue to stabilise themselves post-pandemic, a renewed focus will be placed on projects that enhance employee and customer experiences, reduce costs, increase operational efficiencies and boost revenue. To enable an "open" cloud, build new environments and modernise old ones, the open-source community will dial-up investment in container and serverless functions, creating a spike in global demand.





### Cloud will reach more industries and uncover some less-obvious use cases.

The shift to remote work and business operations has propelled businesses' digital transformation strategies forward beyond just our usual industries. COVID-19 has provided a unique opportunity for businesses in every sector to reassess and re-imagine their needs, opening up new, perhaps less obvious cases. For instance, industries like insurance, which are still dominated by legacy systems and old technology systems, are increasingly recognising the cloud's potential, turning to AI to build real-time risk models. Brit Insurance, a Google Cloud customer, recently collaborated on Ki, a fully digital and algorithmically-driven syndicate, to drive greater efficiency, responsiveness and competitiveness. Elsewhere, in retail, the adoption of cloud-based contact centres that use chatbots and rapid response virtual agents will increase, delivering more immediate, personalised customer support in response to complex customer service issues.

### Sustainability will remain top of the agenda next year.

Just four or five years ago, corporate sustainability was a nice-to-have. But thanks to the 'Attenborough effect' and the growing awareness of the negative impact of global warming, the 2020s have been named 'the climate decade' by the GLOBE Forum. As a result, sustainability has become one of the top priorities for businesses and pressure is increasing from customers, business partners and shareholders who demand positive action.

In 2021 we'll see more companies make carbon neutral pledges, and those that already have will put their words into action. For instance, Google Cloud recently committed to running its business on carbon-free energy everywhere by 2030. New strategic partnerships will take shape as cloud providers increasingly work with end-user companies to do more for the planet.

Google Cloud recently collaborated with Stella McCartney and the WWF to enable the pair's use of data analytics and machine learning, giving fashion brands a more comprehensive view into the impact of their supply chains. Companies will increasingly leverage similar capabilities to improve the eco-friendliness of operations.

### AI and ML will become central to every business strategy.

To emerge successfully from COVID-19, the organisations that will succeed are those who not only put an emphasis on a great user experience, but also predict changing user habits and course-correct, fast. Technologies like AI and ML will be crucial to extracting meaningful insights from data sets.

For example, the banking industry has dialled up AI investment to enhance personalisation, deliver financial well-being insights and better manage risk. Even industries who are not already using AI or ML will start to experiment with technology to create tailored experiences, from anywhere.



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# Data to be the silver lining for cloud in 2021

THE YEAR 2020 has been a learning experience for all of us. The pandemic underscored the importance of being agile, responsive, and resilient. Last year, we predicted a move from datacentres to the edge and cloud – not only did this happen, but this shift is happening at a pace never seen before.

As we look toward 2021, we predict that unstructured data management will continue to be a priority in the cloud as organisations look for ways to accelerate cloud data migrations and manage data more efficiently.

### 1. Cloud Data Migrations become Intelligent

Over the past few years, cloud adoption has steadily increased – particularly for new cloud-native applications that are largely object-based. With the shift to remote work, businesses are moving to a more aggressive “cloud-first” strategy. This means core enterprise workloads that are largely file-based and running in datacentres are now shifting to the cloud.

In 2021, businesses will evolve from a blanket “lift-and-shift” cloud data migration approach to a more nuanced approach of “intelligent cloud data migrations” using analytics and data management to move the right data at the right time to the right cloud storage class.

### 2. Cloud Storage Costs to Overtake Compute Costs

For the past three years, cloud cost optimisation has been a key priority for businesses. A bulk of cloud costs so far has been in the compute, since cloud object storage is relatively cost effective. This is changing. Cloud file storage is typically ten times more expensive than S3, and file data is way more voluminous than block data. In 2021, enterprise IT organisations will begin adopting cloud data management solutions to understand how cloud data is growing and manage its lifecycle efficiently across the various cloud file and object storage options.

### 3. Cloud Replication Replaces Datacentre Replication

Enterprise IT organisations are realising the importance of resiliency – to spin up access in the cloud if their datacentres

become unavailable or to protect from cyberattacks with an air-gapped copy in the cloud. In 2021, many companies will stop mirroring their data across datacentres and instead put a second copy of their data in the cloud. This cloud data replication ensures that data is recoverable if a site goes down, a company gets hit with ransomware, or if users need to spin up some capacity in the cloud and want to access some of the data there.

### 4. Cloud Storage Management Transitions to Enterprise IT from DevOps

As cloud adoption becomes mainstream, there is a shift happening on who manages cloud resources. Historically, a lot of cloud applications were cloud native and so DevOps teams typically handled cloud storage. Now with core IT workloads going to the cloud, enterprise IT teams are increasingly managing cloud storage – this trend will accelerate in 2021, spurring demand for hybrid, multi-cloud data management that gives a single pane of glass to manage data across on-premises and cloud storage.

### 5. Multi-Cloud Data Management-as-a-Service gains prominence

In 2021, simpler automated Multi-Cloud Data Management-as-a-Service (DMaaS) will gain prominence for its simplicity and flexibility. Enterprises don’t need to babysit their cloud storage costs and environments, DMaaS solutions will elastically adjust their capacity to migrate large workloads or move data across storage classes and tiers and optimize costs, all through policy-based automation. Artificial Intelligence (AI) and Machine Learning (ML) techniques will be leveraged more in DMaaS solutions to grow their analytics-driven unstructured data management capabilities and become more adaptive.

2021 is the year that cloud becomes truly core to enterprise IT strategies, and multi-cloud data management becomes of utmost importance. DMaaS that simplifies unstructured data management, data analytics and data migrations with a single pane of glass across multi-vendor clouds and storage technologies will also gain more prominence.

CEO of oneclick AG  
www.oneclick-cloud.com



2020 WAS A PARTICULARLY TURBULENT YEAR for technology and the cloud, as we saw the way people work completely transform out of necessity. The future of working will now be achieved through personalised digital workspaces or workspace access through a browser of any device. Boundaries between working from home and in the office will be even more blurred with more of a focus on availability of tools and capabilities to provide quality engagement between employer and employees. The employees will be able to work on the most efficient solutions that IT managers can make available within minutes instead of days or even weeks.

Cloud adoption is by far the most efficient way to secure and sustain such digital workspaces for the future. Therefore, organisations will need to have the most efficient cloud adoption strategy in place. This will provide them with an opportunity to simplify their IT ecosystem and procure solutions without large upfront investment. Another aspect to consider will be to have a robust security strategy and a solution that is easy to manage and maintain.

As a result, there are three key issues companies will need to address looking ahead to 2021 when setting up remote or home working infrastructure:

- **Simple set up:** For the long-term roll out of remote and home working, infrastructure must be simple and easy for employees to download and set up.
- **Security:** As the probability of becoming a victim of more and more sophisticated cyber attacks increases day by day, companies must invest in highly secure remote solutions to keep sensitive individual and company information safe.
- **Cloud software:** Investing in solutions that are cloud-based

means real-time editing and sharing will be most effective as the workforce collaborate remotely

With the increase of digitisation, this has opened up new security issues in ensuring safe environments for the workforce. As a result, companies should look to regularly have independent professionals assess and analyse their IT environment for any security vulnerabilities.

The reports will highlight and recommend appropriate solutions and strategies to mitigate risks to ensure a safe and secure environment. Having an IT system that is secured to industry standards is now desirable for companies providing services to large multinational companies and the Public Sector.

Another trend will be the uptake in investment in appropriate cyber insurance. The demand for cyber insurances has

grown significantly worldwide in recent years, primarily due to the higher risks of distributed infrastructures and increased home office and remote work. Since COVID-19, the majority of employees access company information via the Remote Desktop Protocol. As a result, there are now millions of attack attempts on RDP connections every day because they are often insufficiently secured.

An uptake in architecture of cloud-based workspace providers that are based on a Zero Trust network and highly encrypted streaming is predicted to increase. These investments guarantee that no malware can penetrate the connected company networks from the outside. This approach is highly desirable to provide companies with a safe and secure environment to operate.



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## Cloud's reign continues

EVEN BEFORE THE EVENTS OF 2020, cloud had already established its value for many businesses by providing improved agility, scalability, and cost efficiencies across industries.

This year however, the technology is helping add a layer of resilience to many organisations by making the sudden shifts in working habits less disruptive. This has sealed cloud's place as an essential piece of enterprise tech. In the next 5 years, the cloud computing industry is expected to grow from \$371.4 billion in 2020 to \$832.1 billion by 2025, at a CAGR of 17.5%.

Next year specifically, businesses will focus more on managing their cloud costs better and look to unify their different cloud environments.

In the face of increased competition due to greater prevalence, cloud providers will need to focus on enhancing and integrating

security, compliance, and privacy into their offerings.

Cloud will also grow in popularity as the ideal execution venue for new and emerging technologies such as artificial intelligence (AI), machine learning (ML), blockchain, and edge computing. Thus, making it integral to the digital transformation journey many more businesses are now on.

### Intelligent networks are the new normal

The COVID-19 pandemic is forcing businesses to innovate reactively and creatively in order to make work pattern shifts that they thought would take years, happen in mere weeks.

While it might've been necessity that got them there, the results of this mass experiment have been eye-opening. Despite many preconceptions, remote working has largely been a success. Some 77% of remote workers say their productivity has increased this year which is great for employers.







According to one study in the US, 75% of those surveyed said they would like to continue to work from home in at least a partial capacity, while 40% of respondents said they feel strongly that their employer should give employees the choice to opt-in to remote work.

This new normal will put new pressures on companies, as there will be increasing need for networks capable of supporting hybrid architectures – be it cloud, on premises, or edge computing.

As a result, I predict more organisations will start seeking intelligent and intent-based networks that offer integrated security – such as SD-WAN for the WAN with SASE and Zero Trust security or virtual networks for multicloud – to deal with the increased cybersecurity threat of their new perimeter-less ecosystem.

Similarly, the need to also improve customer experience (CX) will accompany the increased digitisation of businesses. Being able to offer platform stability, ease of use, and personalisation, while maintaining a human touch, will only grow in importance. I also think we'll see more onus placed on digital trust. The businesses capable of ensuring the safety of the customers identity, data, and transactions as well as employee data and transactions, will be rewarded with customer loyalty.

### Automation – a business imperative

The pandemic is significantly increasing investments in automated solutions this year, such as AI, ML, and robotic process automation (RPA).

So, in the new year, I predict more businesses will become platform-driven digital business and use of these technologies will continue to rise. This will help them automate routine, repetitive, predictable tasks and unlock tactical benefits.

These innovations will strengthen operational efficiency, increase accuracy of platforms, and improve user experiences across ecosystems. This will also drive cost efficiencies and realignments, by helping businesses intelligently repurpose these savings in the right innovations.

Looking forward at what poses to be an increasingly more uncertain future, expect businesses to continue to gravitate towards solutions that make them more resilient and agile.

Early adopters of cloud, IoT, and automation were the firms that fared best in 2020. But even as we hopefully say goodbye to COVID-19 in the new year, only expect the benefits of digital transformation to grow.

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# We're Entering the "Data Age" of the Cloud

OVER THE NEXT DECADE, most of the world's IT infrastructure will migrate to the cloud. Most organisations are no longer interested in owning and running their own equipment and infrastructure, given that the cloud has emerged as a cheaper and more reliable option.

In addition, the cloud has allowed companies to change what would be a hefty one-off capital expenditure for their infrastructure into a series of installments as operational expenditure. This has tremendous economic and logistical implications, alongside also enhancing the accounting ease of IT infrastructure.

One of the most important ramifications of the cloud model is that it upends the traditional way organisations go about scaling up their infrastructure - rather than being a complex internal project that will tie down a team for weeks or months, the cloud turns scaling up into a simple matter of upping your budget to your provider. Compared to the traditional corporate data centre, the cloud is infinitely easier to scale than on-premise infrastructure, especially when it comes to storage.

In addition, new technologies are making the scalable storage capacity of the cloud more desirable than ever. Applications of artificial intelligence and machine learning - such as natural language processing, facial recognition, and complex modelling - all need to draw on large data lakes. This is both to train an AI to spot patterns before being deployed and to provide it with sufficient volumes of data to analyse.

AI is having two notable effects on the use of cloud: it's accelerating the adoption of the cloud in the first place, while also encouraging companies that have embraced the cloud to markedly scale up the amount of data that they choose to store within it.

As mentioned, the first trend - greater cloud adoption - is due to the fact that it's not financially or logistically viable for more organisations to build or scale up an on-premise datacentre when the cloud can offer them the same with far less hassle and with the benefits of economies of scale.



The second trend - the scaling up of cloud use - is due to both the aforementioned ease of scaling the cloud, along with the fact that the cost per unit of storage continues to drop as cloud storage providers benefit from tremendous economies of scale, combined with the fact that the data-intensive requirements of AI encourage organisations to store anything and everything for future examination.

Every bit of data across every business area could potentially yield insights which generate new innovations, processes, and productivity boosts in the future - the value of which would far outweigh the trivial cost of storing such data at the present. This is why we're entering a "data age" when it comes to the cloud: an era of ubiquitous storage of information, across every business area.

This data age is going to serve as an essential foundation for delivering on the revolutionary potential that data-intensive applications like AI offer, and will allow them to scale up so as to meet the complex tasks that are being placed on them.

Whereas once organisations were more discriminate about what they'd saved to the cloud, for reasons of economy and security, the data age is going to see them fully leverage the cloud to store as much data as is humanly possible.



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