



DIGITALISATION WORLD

MODERN ENTERPRISE IT - FROM THE EDGE TO THE CORE TO THE CLOUD

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Infinidat continues to exceed customer expectations and gain industry leadership recognition

DW talks to
Richard Connolly

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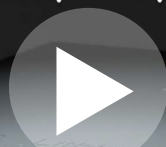
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VIEWPOINT

By Phil Alsop, Editor

AI and the ‘nonsense talk’ of ethics

IN CASE YOU hadn't realised it, AI is already trashing long held views as to acceptable behaviours in so many areas of our lives. Much of this trashing has taken place with our active or passive permission, but most of it has, somewhat alarmingly, gone pretty much under the radar and is almost 100% implemented without any genuine consideration of ethics. Quite why and how we are all now expected to believe that governments and huge corporations are genuinely concerned as to the ethical use of AI is beyond me.

Regardless of one's political views (and I'm firmly of the view that nothing ever good came from extremes of left or right), vast amounts of misinformation and lies are pumped out by some form of AI cross social media platforms, which themselves are using AI to manipulate the content they provide many, if not all, of their subscribers. And because the social media giants are (in my opinion totally spuriously) allowed to argue that they are not the publisher of so much garbage that sits on their platforms, they are all but untouchable. No doubt helped by the fact that far from tech-savvy governments the world over are beholden to many of these same organisations to provide them with all manner of cloud and IT services.

The EU has begun something of a fight back in terms of trying to regulate these propaganda-enabling giants, but until punitive fines are handed out (ones that actually cripple businesses) and/or executives spend some time behind bars, any attempt to regulate the online Wild West will fail spectacularly.



Which means that the world we live in now will continue to degenerate further. AI will be defended as bringing so many benefits to so many, which of course it does.

But at the same time, it will be used by governments and big business to manipulate markets, populations and who knows what else to actually harm many of us in many different ways.

No, I haven't gone mad, or signed up to the wildest of conspiracy theories, just spent quite some time considering the whole topic of AI and concluding that, on balance, the benefits it might bring to us as individuals are somewhat outweighed by the harms it will do to society as a whole. Unless, of course, ethical AI wins the day. And I won't be holding my breath on that score!



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Fewer than 50% of organisations expect to meet decarbonisation targets by 2030

Siemens launches study of 1,400 executives globally revealing regional, city and industry insights regarding the infrastructure transition across energy systems, mobility and buildings.

SIEMENS SMART Infrastructure has released key insights into the divisive nature of the infrastructure transition in a new report, titled “Siemens Infrastructure Transition Monitor 2023: The Great Divide on The Path to Net Zero.” Data from the report reveals that there is limited alignment on priorities and how best to progress towards a decarbonized and resource-efficient world. Whilst more than half of people surveyed believe the infrastructure transition is accelerating in their region, a quarter of participants - senior executives from seven major industry groups - said that progress is “too slow”, while 29 percent believe progress is “coordinated”, and 31 percent describe it as “on target”.

The study set out to measure the current state of the infrastructure transition, including developments within the systems, services, buildings, and structures that are needed for industries, cities, and countries to function effectively. Data was collected through a global survey of 1,400 senior executives from 22 countries, as well as a series of in-depth interviews with leaders and experts. The guiding principles behind the research outlined in the report include the necessity of the infrastructure transition to have a positive impact beyond decarbonization. Secondly, smarter infrastructure integration is mandatory to affect change. Finally, action must be undertaken urgently and at top speed to avert disastrous global consequences.

Matthias Rebellius, managing board member of Siemens AG and CEO of Smart Infrastructure, said: “The infrastructure transition is accelerating, putting pressure on systems worldwide – from energy, to mobility, to buildings. Evolving the world’s infrastructure is of the utmost importance to enable progress towards decarbonization,



resource efficiency, and social wellbeing. Technology and digitalization are instrumental to achieving this transition in a smart and sustainable way. At Siemens Smart Infrastructure we have already taken the first steps, creating innovative products, systems, solutions, and services to support the present and future challenges of urbanization and climate change.”

Despite the acceleration of the infrastructure transition, faster progress is needed at the regional (country) level to support a low-carbon world. Energy is a key priority as almost three quarters of global greenhouse gas emissions come from production, use and transportation of energy. According to the report, less than 10 percent believe their region (or country) to be “advanced, fully integrated, full-scale” on major energy goals of the transition. According to McKinsey2, to decarbonize the world’s energy system would require an estimated USD 275 trillion to make deep changes to electrical power generation, distribution, and consumption.

Regulatory authorities are seen as having the greatest responsibility here (according to 31 percent of respondents), closely followed by the ultimate owners of assets, investors/ shareholders (25 percent). Businesses (17 percent), politicians (13 percent), and citizens (13 percent) are all described as having some responsibility, but significantly less. In the fight against climate change, cities have a major

role to play. In the survey, half of respondents (51 percent) believe that being ahead in decarbonization is a competitive advantage for a city. Decarbonizing mobility, including public transport networks and commercial and private vehicles is a priority to reduce emissions. 45 percent of respondents feel their cities have made progress to encourage the use of public transport. However, according to the report, 44 percent also believe that the privatization of public transport would speed up decarbonization. In terms of feasible mobility policies, 46 percent of executives believe that subsidies or taxes should be used to make electric cars cheaper than combustion engine vehicles. Currently, the lack of charging infrastructure was found to be the biggest barrier to widespread adoption of electric vehicles.

Businesses are under pressure to decarbonize their business models, assets, and infrastructure. According to the report, nearly half have targets for Scope 1 and 2 emissions (47 percent). Only 40 percent think it is likely that they will meet their targets for the year ahead and just 44 percent expect to meet their 2030 targets. The report indicates that there could be a correlation between confidence in organizational growth prospects and confidence in decarbonization targets. Another key area of consideration for businesses is their buildings. Only 37 percent of respondents rated their organization as mature or advanced in improving the energy efficiency of facilities and buildings, and just 30 percent said the same for electrification and/or decarbonization of heating and cooling. There is, however, hope that businesses can leverage innovative solutions to enhance their performance and sustainability of their buildings without the need for extensive new construction, but progress needs to be quicker.

Hybrid IT infrastructure is here to stay

With 88% of IT leaders re-evaluating cloud spending, on-premise infrastructure remains sticky as IT leaders encounter widespread business challenges.

LOGICMONITOR has released Future Further, a new global research report which explores the infrastructure blindspots that have the biggest impact on business success.

With insights pulled from a survey of 500 global IT leaders across the United States, United Kingdom and Australia, the Future Further report details the mounting challenges businesses face as they navigate rocky cloud migrations, AI demands, chaotic infrastructure monitoring solutions, competing job priorities and more.

“For every business, building for the future starts with vision and insights. But without the proper tools, IT leaders are flying blind,” said Christina Kosmowski, CEO at LogicMonitor. “In a world where hybrid IT infrastructure is here to stay, the LogicMonitor Future Further report validates the importance of giving IT leaders and their teams the ability to clearly see what’s happening now to create the opportunities to plan for tomorrow.”

FUTURE SHOCK: Removing chaos and cost from IT infrastructure monitoring tools

The past decade’s massive emphasis on cloud migration has slowed due to emerging business macroeconomics. A hybrid IT infrastructure model now dominates the landscape, causing chaos between on-prem and cloud infrastructure monitoring tools.

The Future Further report found: More than a third (36%) of IT leaders say their organisation won’t be conducting any further cloud migration through 2025 as those macroeconomic forces have taken hold.

Budget cuts and cost considerations are negatively impacting cloud migration for 80% of IT leaders.

Three out of every four (76%) of

organisations with hybrid infrastructure have separate monitoring tools for their on-prem and cloud stacks.

74% of IT leaders report spending more than a full business day each week troubleshooting and reacting to incidents

“Our research findings make it easy to empathise with IT leaders – almost half of them only have bad things to say about their current monitoring approach. While facing pressure from their teams to get ahead of any issues, they are too busy fighting fires to get the chance to proactively deliver on the mission of the business,” said Ryan Worobel, Chief Information Officer at LogicMonitor.

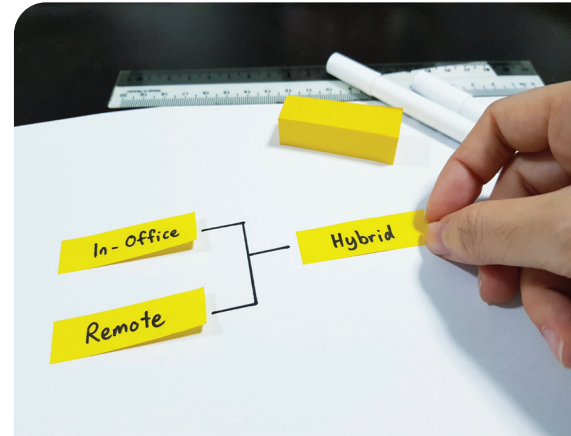
“This isn’t just an issue for IT teams, this is a business critical problem. More than a third of the leaders we surveyed said they have put off projects which have the potential to increase revenue. That is a clear wake up call.”

FUTURE VISION: The impact of AI on IT infrastructure monitoring

While excitement about artificial intelligence is pervasive, especially among IT teams, research shows the underlying architectures may not be ready. With multiple infrastructure monitoring tools which aren’t part of a cohesive approach, the challenge to implement and benefit from AI grows.

According to the Future Further report: Only half (50%) of IT leaders say their company’s current infrastructure is equipped to handle greater use of AI. IT leaders grasp the immense potential of the technology, and even have a shortlist of desired outcomes it could help tackle. Two in five want to see AI provide recommendations for next steps they can take to resolve incidents.

FUTURE PROOF: The freedom to innovate and focus on long-term results



With the current structure of on-prem and cloud IT infrastructure monitoring, teams are constantly reacting, troubleshooting and on the receiving end of complaints, demands and blame. Leaders are constantly in fight-or-flight, leading to employee burnout and high turnover rates.

The Future Further report found that IT leaders are happiest at their jobs when they have interesting, innovative work. Specifically:

While respondents have ideas for how to solve business problems using their data, 74% say they lack the time and resources to turn those ideas into meaningful action.

Perhaps most alarming: 35% of IT leaders say they’ve put off projects that increase revenue to instead focus on responding to incidents.

With a cohesive IT infrastructure monitoring approach and a solution which pairs intelligence with alerts, teams will no longer be chronically put in a reactive position.

By gaining full observability into their IT across clouds, networks and data centres, businesses will have the ability to see how their technology is connected to the customer, ultimately positioning companies for long term resiliency and growth.

Operational efficiency - a key modernisation driver

Couchbase has released the findings from its sixth consecutive digital transformation survey of global IT leaders. The research shows that, despite shifting digital transformation goals, enterprises are still investing heavily in IT modernization and implementing new projects.

A FOCUS on operational efficiency is influencing how global enterprises invest in digital transformation initiatives. Nearly 60% of enterprises surveyed reported that their key modernization goal is to improve business resilience and efficiency in the face of the evolving global economy. And findings revealed that enterprises' top IT investment priority in 2023 is empowering developers to build modern applications.

The survey of 600 senior IT decision makers found that enterprises plan to invest on average \$33 million in the next 12 months. At the same time, digital transformation priorities have shifted. 78% of IT decision makers confirm their main priorities for transformation have changed in the last three years, and 54% say their digital transformation focus has become more reactive to market changes and customer preferences, in order to help the wider organization stay agile.

While these changes in digital transformation goals have helped businesses build resilience and weather a dynamic economy, they have not drastically slowed transformation. More than half (53%) of enterprises are either on target or ahead of their planned progress.

"IT modernization and digital transformation are vital strategic initiatives for an enterprise – whether helping to adopt new technologies like generative AI, creating new services or building resilience in times of uncertainty," said Ravi Mayuram, CTO at Couchbase. "These survey results show how an efficient approach to digital transformation, taking full advantage of advances in data, cloud and AI can help with business resiliency, and at the same time pursue new growth opportunities. And rightly so, empowering developers has emerged as a key priority for enterprises,



demonstrating their commitment to innovation."

Other key findings include: Modernization enhances business resilience: 57% of respondents said their enterprise's key digitization goal is to improve business resilience and efficiency in the face of an evolving global economy. Increased business resilience was the most common benefit from digital projects in the past 12 months, while increased profitability, employee productivity and application performance are the expected benefits for the next 12 months.

Pressure to embrace new technologies: IT leaders are most commonly under pressure from the wider business to adopt serverless computing (identified by 42% of respondents), edge computing and IoT (40%) and low- or no-code technologies (39%). And while AI demonstrates a huge promise in accelerating and transforming businesses, it is still early days. IT teams are under less pressure today to adopt large language models (LLMs) such as ChatGPT, with 35% under pressure to adopt this technology. Web 3.0 and augmented or virtual reality were less of a priority.

Developer productivity in the spotlight: Digital transformation projects are a key focus for developers. Pressure from developers on their organizations to support agile development and innovation (44%), and empowering developers to build more applications

to meet customer needs (44%) were the top two drivers behind individual transformation projects. Furthermore, enterprises' top IT investment priority switched from improving application performance in 2021 to empowering developers in 2023.

IT spending under increased C-level scrutiny: 49% of respondents say their CFO is managing budgets in more detail and asking more questions about IT investment, while 37% say the pressure to achieve transformation with less budget and staff resources has increased in the last 12 months. And 35% say their IT department is under more strain than at any point in the last five years. This suggests that IT leaders are looking for ways to show cost efficiencies and reduce total cost of ownership.

Enterprises report project challenges, significant delays: Issues such as a lack of buy-in within the business, an inability to secure or stay within budgets and reliance on legacy technology meant a majority of enterprises experienced projects failing, suffering significant delays or being canceled. This cost organizations on average \$4.4 million and forced 68% to push digital transformation goals back by more than three months.

High expectations and hopes for creative modernization projects: While there have been challenges, research showed that 38% of IT teams are focusing on tangible modernization projects that will provide immediate results. Furthermore, 100% of enterprises have implemented or identified opportunities for creative digital transformation projects that seemed impossible at the end of 2021. This suggests that modern tech continues to push the boundaries of what is possible for business transformation, drive innovation and inspire new next-gen apps.

Concerns around the cyber talent shortage override economic uncertainty

Insufficient staff is the top (51%) concern for CISOs when asked which factors most affect their ability to deliver against their objectives.

THE TENTH annual Information Security Maturity Report published by ClubCISO in collaboration with Telstra Purple, finds that CISOs are continuing to hire despite widescale economic uncertainty and increasingly looking to diverse pools of talent to make up an urgent shortfall of talent on the global stage. Informed by a survey of security leaders across public and private sector organisations around the world, the report emphasises how navigating the talent shortage is at the top of the agenda for security leaders.

Insufficient staff numbers posed one of the greatest challenges for industry leaders in achieving their objectives. In stark contrast to other functions in the IT sectors, more than half (52%) of CISOs said that they expect to expand their team this year and only 5% anticipated a down-sizing. The next biggest concern for respondents was the culture of the organisation (31%), highlighting that people/cultural challenges are still considered more impactful on the ability to deliver against objectives than macro challenges such as budgets (29%), the supply chain (25%), and the economic downturn (22%).

In growing their teams, security leaders also recognised optimal ways in which to do so, with the majority placing emphasis on diverse recruitment and ensuring equal access to opportunities. Asked about the value of diversity, most CISOs (78%) said they believed that it is beneficial to bring different perspectives into the business, while improving culture (54%) and fostering greater innovation (48%) were the next most common reasons.

With social engineering still the leading cause of material breaches over the last year (accounting for 38% of reported material breaches, and higher than any

other attack vector), CISOs agree that recruiting diverse teams with a range of perspectives and experience could significantly help.

ClubCISO Advisory Board Member, Kevin Fielder, commented, "In security teams, it's encouraging to see diversity being viewed as an opportunity, and something that needs to be pursued actively to meet the challenges we face going forward. The report highlighted real ingenuity from CISOs who are now looking at diversity from a range of vectors including cultural, racial, educational and professionally diverse backgrounds."

While the vast majority (84%) of respondents feel confident or very confident that their organisation has a strategy in place to offer equality of opportunities for candidates, there is a wider spread of opinions on how best to actually recruit these diverse teams. CISOs are hiring most from culturally/racially diverse backgrounds (60%), but the next highest-scoring strategy was recruiting from educationally diverse backgrounds (48%). Recruiting candidates from professionally diverse backgrounds was almost as common

In growing their teams, security leaders also recognised optimal ways in which to do so, with the majority placing emphasis on diverse recruitment and ensuring equal access to opportunities

(47%) but focusing on gender diversity is rarer, with only 36% giving it specific focus.

Rob Robinson, Head of Telstra Purple EMEA, sponsors of the ClubCISO community, said, "Over the past ten years, the ClubCISO report has been a vital barometer for the security industry and the CISOs navigating it. While security maturity continues to evolve and material breaches are down, the industry now faces a talent crossroads with personnel concerns outweighing purely financial constraints. CISOs are recognising the intrinsic value of diverse talent and taking a leadership role in recruiting from non-traditional areas".



Process intelligence helps combat macroeconomic challenges

Study shows that process intelligence is crucial to maximise efficiency and productivity, both critical to weather volatile markets and disrupted supply chains.

HFS Research has published a study commissioned by Celonis and IBM Consulting that shows approximately 90% of surveyed enterprise leaders are suffering from supply chain disruption, and more than 75% cited the volatile market conditions marked by inflation and recession as having a major impact on their businesses. The study also highlights process intelligence as the most effective way to weather these macroeconomic challenges.

The findings show that process intelligence, specifically process mining adoption, is driven by customer service (56% in production or scaled up), IT (53% in production or scaled up), and supply chain (55% in production or scaled up). Further data from the research demonstrates that businesses believe in the power of process intelligence:

Process intelligence is the #1 emerging tech investment expected to impact process transformation today 88% of enterprise leaders expect increases in process intelligence investments despite the harsh economic climate.

More than 95% of organisation leaders see combining visibility into cross-functional operational performance and monitoring as a game-changer. About half of enterprise leaders are still exploring ways to become more predictive with their data. Process transformation for efficiency, productivity and lowered costs. Process transformation efforts have come to the forefront for many organisations, who are focusing on bottom-line metrics - specifically efficiency and productivity gains, as well as cost reductions. The study findings highlight that process intelligence has become the #1 way to address process debt, and that ERP, alone, cannot do it. ERP modernisation has often



been hyped as the prescription for every ailment related to business processes, but roughly only a third of organisations (36%) believe it is essential today. Designing and running business processes that can thrive despite uncertain macroeconomic conditions will require enterprises to address their process debt, which HFS Research sees as a corollary to technical debt. Process debt is the creation of awkward (and often manual) processes that are designed to buttress aging technologies and that must be redesigned and modernised to improve business operations.

“While migrating to cloud-based ERP certainly has a role to play in operations modernisation, enterprises must revisit the design and execution of their processes to have a bigger impact,” said Reetika Fleming, Executive Researcher Leader at HFS Research. “Our study with Celonis and IBM Consulting finds that many organisations are turning to process mining as the primary way to tackle these challenges. The majority of enterprises have already gotten their feet wet with initial projects and the research shows the high potential for this set of technologies to rapidly drive radically new sources of insight and business value.”

Process intelligence has been a good starting point for diagnostics and addressing process problems or process debt. The study shows that

process intelligence, implemented atop digital process twins, can deliver multi-functional data and insights. This will help business leaders predictively manage business uncertainties through digital command centres.

Digital process twins (also known simply as “digital twins”) enable multi-process and multi-function visibility, as well as blend multiple datasets, augmenting process intelligence which was traditionally more focused on impact on individual business functions. Digital twins enable scenario modelling and planning, as well as stress-testing and simulations - allowing for better future-planning and addressing uncertainties. And with the latest advent in process mining - specifically object-centric process mining (OCPM) - digital twins are made even more valuable. With the release of Process Sphere at its annual Celosphere conference in November 2022, Celonis launched this revolutionary new technology that enables the analysis of interrelated business objects and events involved in business processes. Events are connected to objects instead of a single case, making it possible to easily and quickly view complex and interacting processes from all perspectives.

Whereas traditional process mining allows you to analyse a single process (like accounts payable), the analysis becomes extremely powerful when it is capable of understanding and optimising interconnected processes. Object-centric process mining provides a 3D-view of how numerous processes work and interact (think: procurement’s impact on production), and thus enables optimisation across interconnected processes. If traditional process mining is an x-ray of a single process, then object-centric process mining is an MRI, providing a 3D-view of a company’s interconnected processes.

Half of European organisations still have no corporate BYOD policy

Organisations don't know what devices - either work or personal – are accessing corporate resources.

JAMF is releasing new survey data that reveals 49% of enterprises across Europe currently have no formal Bring-Your-Own-Device (BYOD) policy in place, meaning they have no visibility into or control over if and how employees are connecting personal devices to corporate resources.

The research from Jamf, derived from surveying more than 100 organisations at its annual events in London, Germany, France and Amsterdam, reveals the cybersecurity risks facing organisations. With the summer holiday season in full swing and employees jetting off to sunnier climes, organisations will likely see an increase of remote logins from personal devices to corporate resources.

With no control over who can access what information, from where, when and, more importantly, how, establishing and enforcing a BYOD policy it is still a challenge for many organisations.

This is leaving them open to risks ranging from data leakage or theft, out-of-date or vulnerable software, risky content, shadow IT, and even physical loss of the device; all of which put the company and its critical data at risk.

Additional findings from the European survey revealed:

- 43% of respondents felt they are up against more compliance-based security concerns this year versus last year.
- 53% of orgs are either already actively cutting IT/Security costs or are currently looking into it.
- More than two third (67%) of orgs are using between one and five vendors for management and security across all device types.
- 57% of orgs have separate teams that manage devices versus securing them.



Exacerbating the challenge of managing devices, is the fast-evolving threat landscape that organisations are facing, with 41% of respondents concerned about the growing number of vulnerabilities in Apple operating systems and the volume of patches that must be applied across both devices and applications.

Michael Covington, VP of Portfolio Strategy at Jamf, comments: “While it is easy to get swept up in the positives surrounding ‘anywhere work’ programs that empower employees to work remotely on their own schedule, from any location and from any device, organisations need to examine the associated risks and decide how to manage them.”

“Giving employees the power of choice to use their own devices for work can save the organization money, but the real benefit is a seamless end user experience that eliminates the need for multiple devices and introduces streamlined productivity workflows. It’s important to have a clearly documented BYOD policy in place to take advantage of these benefits, but the good news is that the technologies are now available to effectively manage risk in these environments.”

Advice for organisations looking to implement a BYOD policy includes:

- Getting employees enrolled in a BYOD or Mobile Device Management (MDM) program is a process – think about how you manage this and communicate the benefits to employees. Some may have concerns around privacy so be clear in how data will be handled, how you will be installing applications and security protocols onto their devices or if there will be a figurative partition that separates work-related apps from the personal side of their device.
- Users can be part of the security solution – ensuring basic management controls and cyber hygiene, it is important that employees using their own devices understand the importance of actioning operating system and application updates when prompted.

Lay out clearly in the BYOD policy what the baseline standards for any devices connected to the corporate network is – only if the device and user meet and maintain these standards, then they are allowed access to sensitive business data.

The DevSecOps adoption dilemma

GitLab survey finds organizations are optimistic about AI, but AI adoption requires attention to privacy and security, productivity, and training.

GITLAB has published its 9th Global DevSecOps Report: The State of AI in Software Development. GitLab surveyed more than 1,000 global senior technology executives, developers, and security and operations professionals on their successes, challenges, and priorities for AI adoption.

“The transformational opportunity with AI goes way beyond creating code,” said David DeSanto, chief product officer, GitLab. “According to the GitLab Global DevSecOps Report, only 25% of developers’ time is spent on code generation, but the data shows AI can boost productivity and collaboration in nearly 60% of developers’ day-to-day work. To realize AI’s full potential, it needs to be embedded across the software development lifecycle, allowing everyone involved in delivering secure software, not just developers, to benefit from the efficiency boost.

GitLab’s AI-powered DevSecOps platform delivers a privacy-first, single application to help teams deliver secure software faster.”

Although organizations are enthusiastic about implementing AI, data privacy and intellectual property are key priorities when adopting new tools.

- 95% of senior technology executives said they prioritize privacy and protection of intellectual property when selecting an AI tool
- 32% of respondents were “very” or “extremely” concerned about introducing AI into the software development lifecycle; of those:
- 39% cited they are concerned that AI-generated code may introduce security vulnerabilities and 48% said they are concerned that AI-generated code may not be subject to the same copyright protection as human-generated code.

Security professionals worry that AI-generated code could result in more security vulnerabilities—making more work for security professionals.

- Only 7% of developers’ time is spent identifying and mitigating security vulnerabilities and 11% is spent on testing code
- 48% of developers were significantly more likely to identify faster cycle times as a benefit of AI, compared to 38% of security professionals
- 51% of all respondents are already seeing productivity as a key benefit of AI implementation

While respondents remain optimistic about their company’s use of AI, the

data indicates a discrepancy between organizations’ and practitioners’ satisfaction with AI training resources. Despite 75% of respondents saying their organization provides training and resources for using AI, a roughly equal proportion also said they are finding resources on their own, suggesting that the available resources and training may be insufficient.

- 81% cited they require training to successfully use AI in their daily work
- 65% who use, or are planning to use, AI for software development said their organization hired or will hire new talent to manage AI implementation
- When asked what types of resources are being used to build AI skills, the top responses were:
- 49% utilize books, articles, and online videos, 49% watch educational courses, 47% practice with open-source projects, and 47% learn from peers and mentors

“Enterprises are seeking out platforms that allow them to harness the power of AI, while addressing potential privacy and security risks,” said Alexander Johnston, Research Analyst in the Data, AI & Analytics channel at 451 Research, a part of S&P Global Market Intelligence.”

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It is imperative that Digitalisation World magazine remains a timely resource for this industry, so we are especially interested in highlighting very recent work.



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In what has been, and continues to be, extraordinary times for the business world, it seems doubly important to recognise the projects, innovations and individuals which have made such a huge difference during 2023. Almost overnight, employees switched from office working to working from home, and the new, or next, normal, means that, into the future, what might be called a 'hybrid work' model looks set to evolve, with flexible working very much the order of the day. What was already becoming a trend as part of many organisations' digital transformation programmes, has been accelerated.

The SDC Awards 2023 will celebrate the achievements of end users and the IT community as they have innovated like never before to ensure business continuity in these challenging times. This year more than any other, please do make sure that you enter our SDC Awards. There's no limit to the number of entries, all of which are free of charge, and we'll be promoting all the short-listed entries via Digitalisation World's multi-media platform over the coming months, ahead of the awards ceremony. We really do want to celebrate and recognise the many amazing achievements which have come about in response to the coronavirus.

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Five technologies that will transform the digital future of enterprises

Gartner has highlighted five technologies that will transform the digital future of organizations. They include digital humans, satellite communications, tiny ambient IoT, secure computation and autonomic robots.

SPEAKING at the recent Gartner IT Symposium/Xpo in Australia, Nick Jones, Distinguished VP Analyst at Gartner said, "All five of these technologies are potentially transformational and should be investigated now due to their wide scope and ability to enable new business models or significant new capabilities. "Everyone's definition of disruptive is different, however, so evaluate them from your organization's unique perspective and their potential impact. Then consider new business opportunities enabled by individual technologies, as well as combinations of them." (See Figure 1)

1. Satellite Communications

Increasing interest in low earth orbit (LEO) satellite communications is being driven by the democratization and commercialization of space. Low latency makes LEO an important technology for enterprises to revolutionize communications to people and things.

According to Gartner, LEO will deliver broadband with global coverage and low enough latency for a wide range of tasks; direct satellite connection for small IoT devices to provide affordable global coverage without involving SIMs, telco providers and

roaming complications; and voice and data services from a satellite to an unmodified 4G smartphone to extend coverage to remote locations.

"The industry remains nascent, with a lot of evolution expected, so take a cautious approach to adopting LEO early as this is an emergent technology in a complex market," said Jones.

2. Tiny Ambient IoT

Tiny ambient IoT enables tagging, tracking and sensing of anything without the complexity or cost of battery-powered devices. The result is the ability to unobtrusively sense more information, about more things, in more ways, at a lower cost than in the past.

This will enable new ecosystems; new business models based on knowing the location or behavior of objects; smarter products with new behaviors; and a much lower cost of tracking and monitoring. Tiny ambient IoT will expand opportunities for a wide range of businesses, but Gartner recommends assessing potential social and regulatory issues before adoption.

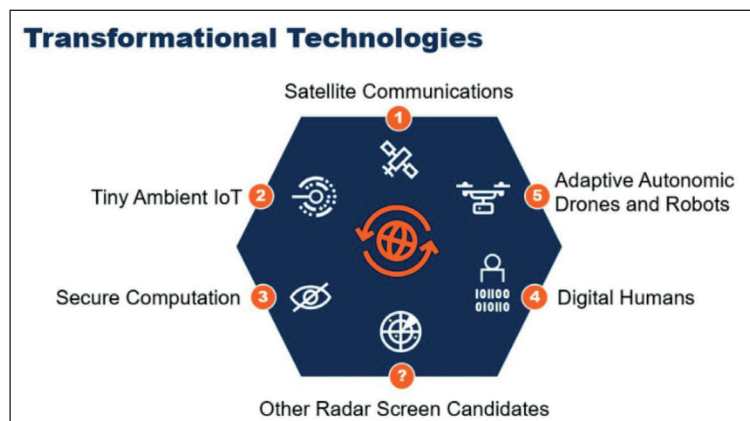
3. Secure Computation

Secure computation is becoming vitally important as things become increasingly connected and as ecosystems access more personal information. It enables data to be exploited without compromising privacy.

While many of the principles of secure computation are already established, implementation is challenging for reasons of cost, skills, performance and availability. To help overcome these, Gartner suggests emerging technologies such as optical accelerators will be important to enable deployment.

4. Digital Humans

Digital humans are interactive, AI-driven representations that imitate some characteristics, personality, knowledge and mindset of a human. They range from physical (e.g. humanoid robots) to



➤ Figure 1: Five Technologies That Will Transform Your Digital Future. Source: Gartner (September 2023)

virtual (e.g. virtual pop stars); or human-driven (e.g. mimicking aspects of a human) to AI driven where they do not need to be human-like in all aspects (e.g. a digital twin or chatbot).

Despite their potential, digital humans pose many challenges, including unethical applications; inappropriate behavior; creation of bias and stereotypes; lack of regulation; risk of social backlash; varying cultural attitudes; and more. Gartner recommends assessing potential social and regulatory issues before adoption.

5. Adaptive Autonomous Drones and Robots

Autonomic systems are self-managing physical or software systems, performing tasks that exhibit autonomy, learning and agency (sense of own personal purpose). Systems that learn and adapt autonomously will be essential if technologies like robots are scaled to achieve their full potential. However, a multitude of challenges exist as it may not be obvious what a robot or AI system has learned or what it can (or cannot) do.

Generative AI on the peak of inflated expectations

Generative artificial intelligence (AI) is positioned on the Peak of Inflated Expectations on the Gartner, Inc. Hype Cycle for Emerging Technologies, 2023, projected to reach transformational benefit within two to five years. Generative AI is encompassed within the broader theme of emergent AI, a key trend on this Hype Cycle that is creating new opportunities for innovation.

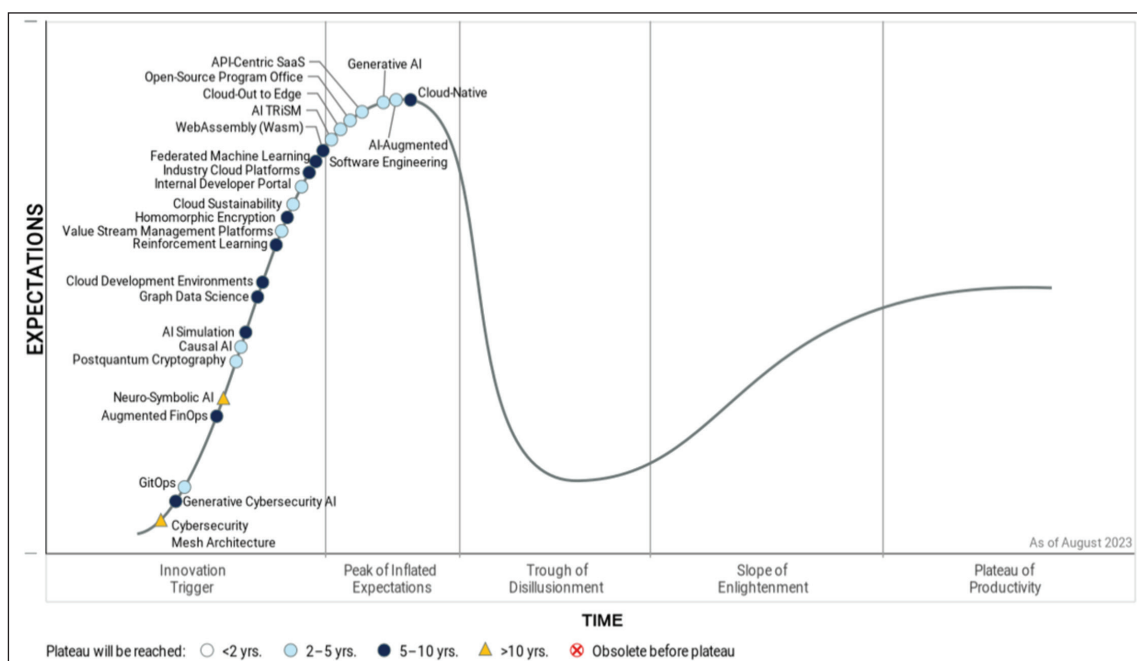
“THE POPULARITY of many new AI techniques will have a profound impact on business and society,” said Arun Chandrasekaran, Distinguished VP Analyst at Gartner. “The massive pretraining and scale of AI foundation models, viral adoption of conversational agents and the proliferation of generative AI applications are heralding a new wave of workforce productivity and machine creativity.”

The Hype Cycle for Emerging Technologies is unique among Gartner Hype Cycles because it distills key insights from more than 2,000 technologies and applied frameworks that Gartner

profiles each year into a succinct set of “must-know” emerging technologies. These technologies have potential to deliver transformational benefits over the next two to 10 years (see Figure 1).

“While all eyes are on AI right now, CIOs and CTOs must also turn their attention to other emerging technologies with transformational potential,” said Melissa Davis, VP Analyst at Gartner.

“This includes technologies that are enhancing developer experience, driving innovation through the pervasive cloud and delivering human-centric security and privacy.”



➤ Figure 1. Hype Cycle for Emerging Technologies, 2023. Source: Gartner (August 2023)

“As the technologies in this Hype Cycle are still at an early stage, there is significant uncertainty about how they will evolve,” added Davis. “Such embryonic technologies present greater risks for deployment, but potentially greater benefits for early adopters.”

Four Themes of Emerging Technology Trends

Emergent AI: In addition to generative AI, several other emerging AI techniques offer immense potential for enhancing digital customer experiences, making better business decisions and building sustainable competitive differentiation. These technologies include AI simulation, causal AI, federated machine learning, graph data science, neuro-symbolic AI and reinforcement learning.

Developer experience (DevX): DevX refers to all aspects of interactions between developers and the tools, platforms, processes and people they work with to develop and deliver software products and services. Enhancing DevX is critical for most enterprises’ digital initiative success. It is also vital for attracting and retaining top engineering talent, keeping team morale high and ensuring that work is motivating and rewarding.

Key technologies that are enhancing DevX include AI-augmented software engineering, API-centric SaaS, GitOps, internal developer portals, open-source program office and value stream management platforms.

Pervasive cloud: Over the next 10 years, cloud computing will evolve from a technology innovation platform to become pervasive and an essential

driver of business innovation. To enable this pervasive adoption, cloud computing is becoming more distributed and will be focused on vertical industries.

Maximizing value from cloud investments will require automated operational scaling, access to cloud-native platform tools and adequate governance.

Key technologies enabling the pervasive cloud include augmented FinOps, cloud development environments, cloud sustainability, cloud-native, cloud-out to edge, industry cloud platforms and WebAssembly (Wasm).

Human-centric security and privacy: Humans remain the chief cause of security incidents and data breaches. Organizations can become resilient by implementing a human-centric security and privacy program, which weaves a security and privacy fabric into the organization’s digital design. Numerous emerging technologies are enabling enterprises to create a culture of mutual trust and awareness of shared risks in decision making between many teams.

Key technologies supporting the expansion of human-centric security and privacy include AI TRISM, cybersecurity mesh architecture, generative cybersecurity AI, homomorphic encryption and postquantum cryptography.

Organizations are piloting them in complex and rapidly changing environments, where early adoption will deliver agility and performance benefits. Manage risk by analyzing the business, legal and ethical consequences.

European public cloud spending to reach \$142 Billion

According to the Worldwide Software and Public Cloud Services Spending Guide published by International Data Corporation (IDC), public cloud services spending in Europe will total \$142 billion in 2023 and will reach \$291 billion by 2027, recording a five-year (2022-2027) compound annual growth rate (CAGR) of 20%. Software-as-a-service (SaaS) will continue to drive most of the spending, while platform-as-a-service (PaaS) will remain the fastest-growing area.

EUROPE has been hit by macroeconomic challenges throughout 2023, including high inflation across the Eurozone and the U.K., a banking crisis scare that originated in the U.S., and mass layoffs in the tech sector. Nonetheless, European businesses will push forward in their public cloud adoption journey and do not expect cloud-related investments to be at risk when it comes to IT budget cuts. About 55% of European companies will migrate to the cloud by the end of 2023 to improve IT staff productivity,

strengthen data security, and drive AI-infused automation, which is gaining momentum thanks to the generative AI (GenAI) hype.

Banking, retail, and telecommunications will be the top spending industries in public cloud in 2023, accounting for 26% of the overall market value. Telecommunications companies have been less impacted by higher energy prices than other industries. Also, debt redemption in the telecom

New segmentation shows resilient cloud spending across industries amid an economic downturn

Largest spending industries (2022-2027 CAGR)



Source: IDC Worldwide Software and Public Cloud Services Spending Guide | Jul (V2 2023)

IDC Data & Analytics

sector remains low, and costs linked to higher interest rates are contained, which creates favorable circumstances for releasing IT budgets. IDC expects public cloud investments in the telecommunications sector to grow strongly in 2024, placing it among the highest-spending industries, along with life sciences, utilities, and healthcare payer.

In the longer term, software and information services will have the highest CAGR among industries in Europe, growing 27% over 2022-2027. Despite being one of the most innovative sectors, software and information services has experienced reduced business revenue growth, mass employee layoffs, and higher infrastructure costs. These factors led businesses to invest in cloud to automate tasks in areas where headcounts were reduced and to support productivity among the workforces. "Inflation remains high, costs of living are affecting

customer price sensitivity, and businesses want to reduce costs to avoid financial trouble," says Andrea Minonne, research manager at IDC U.K.

"Although IT prospects are less favorable than previously forecast and customers are facing price increases related to their cloud usage, cloud migration continues, since the technology is seen as a way to boost efficiency and optimize cost, going against the odds of an unfavorable market."

Investments in cloud continue to drive innovation and, together with emerging technologies such as GenAI, will support businesses' digital transformation in the years to come. The rise of GenAI will also be a significant market factor, as it relies on extensive language models (LLMs) and demands strong and easily scalable computing capabilities to handle real-time data processing.

European IT security spending to grow by more than 12%

According to the latest release of the Worldwide Security Spending Guide published by International Data Corporation (IDC), European security spending will grow by 12.2% year on year in 2023, maintaining its resilience to the negative effects of economic recession, as security becomes one of the defining characteristics of a successful organization.

WITH FURTHER GROWTH expected beyond this year, total European security spending will reach almost \$79 billion in 2027. Among European countries, the Czech Republic will exhibit the greatest increase in security investments over the 2022-2027 forecast period, with a compound annual growth rate (CAGR) of almost 15%, followed by Ireland and Germany. Both security software and

security services will be investment drivers, with double-digit CAGRs through 2027, while security hardware will exhibit only modest growth over the five-year period. "European organizations recognize that robust security is not just an expense, but a strategic investment. The increasing reliance on technology for business operations, coupled with the growing threat landscape, is driving a need

Top European Industries with the Fastest Growing Security Spending in 2023

2022-2023 YoY Growth Rate



Healthcare

13.7%



Finance

13.5%



Telecommunications
& Media

13.1%

Source: IDC's Worldwide Security Spending Guide, V2 2023

IDC Spending Guide

for proactive security measures. This is essential to ensure business continuity and customer trust, and safeguard users, devices, and apps. Creating a resilient and secure environment will enable innovation and accelerate business growth," says Romain Fouchereau, research manager at IDC



European Security. The healthcare industry will record one of the largest year-on-year growth rates of security spending in 2023, driven by the need to protect investments in technology innovation, and to address the evolving regulatory requirements, such as those included in the Cyber Resilience Act.

Organizations in the finance sector will also accelerate security investments, fueled by the need for speed and agility for competitiveness, as well as the obligation to secure clients' sensitive data. Security spending in the media & telecommunications industry will continue to grow quickly, with investments related primarily to the protection of 5G, Edge, and Internet of Things (IoT) deployments.

The most recent changes in the EU-wide legislation on cybersecurity are also expected to have a positive impact on European security spending. "The expanded inclusion of organizations, especially in the healthcare sector, which the NIS2 Directive considers the Operators of Essential Services (OESs), along with stricter requirements compared to the previous version of the regulation, is stimulating aggressive security spending in what would otherwise be considered more conservative industries," notes Vladimir Zivadinovic, senior research analyst at IDC European Data and Analytics.

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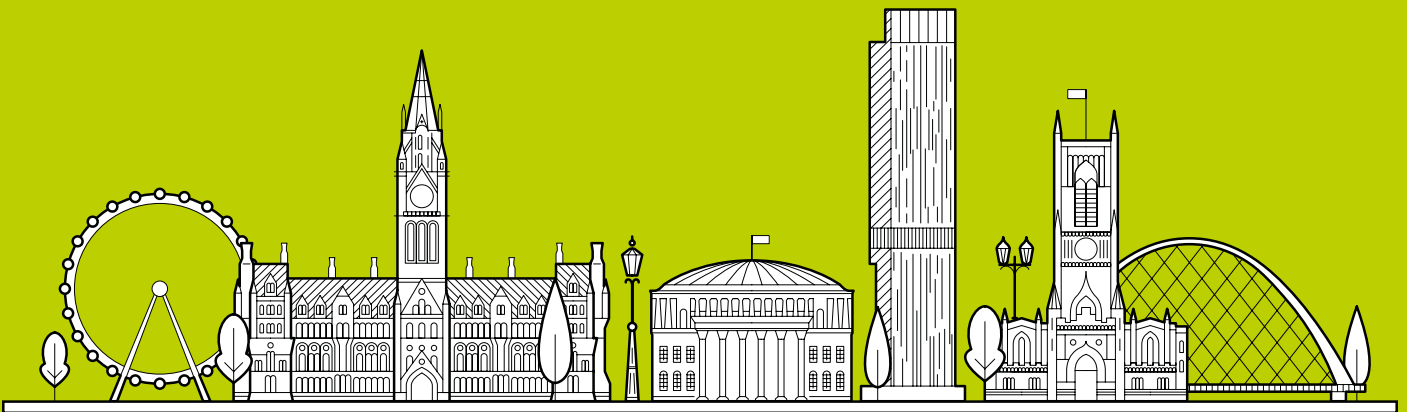
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Managed Services Summit North (sister events in London and Amsterdam) are the leading managed services events for the UK and European IT channel. Featuring conference session presentations by major industry speakers, the Summit provides opportune networking breaks for delegates to meet with potential business partners. The unique mix of high-level presentations plus the ability to explore and debate the most pressing business issues with sponsors and peers across the industry makes this a must-attend event for any senior decision maker in the IT channel.

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- How to build differentiation within an increasingly competitive market
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- Increasing knowledge of new technologies, processes, and best practice
- Analysing trends in buyer behaviour and successful sales strategies
- Changes and trends in regulatory compliance
- Successfully adoption of Zero trust architecture (ZTA)
- Emerging advances in AI, automation and XaaS
- The state of cloud adoption, and hybrid and edge computing
- Hybrid and remote working best practice
- Addressing the growing cyber security skills gap
- Participation with local business community leadership organisations

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How does Infinidat continue to exceed customer expectations?

Being attuned to key customer challenges is a priority for Infinidat and should be one of the most important considerations for any technology vendor today.

RICHARD CONNOLLY'S laser sharp focus for the past two decades has been the customer and now, as Regional Director for the UK, Ireland, and DACH regions at Infinidat, exceeding expectations remains his priority. In this issue, we explore some of the critical questions being asked today. What are the key issues enterprise storage customers are facing? And how does Infinidat provide the answers?

Richard discusses five primary issues for enterprise organisations today and shares Infinidat's innovative answers.

Managing exponential data growth

Topping the list of challenges for every organisation is data and its impact transcends multiple dimensions. Data is at the core of any business today and exponential data growth rates plus data sovereignty and data privacy requirements at a local and global level mean managing data efficiently has become very complicated.

In response to data growth and expanded storage requirements, Infinidat has unveiled two new

major enhancements that enrich and expand the company's all-flash capabilities and capacity for enterprise storage. Infinidat's new SSA Express Software for the InfiniBox® platform eliminates the need for enterprises to purchase a separate, siloed flash array to support smaller applications and workloads that require high performance at low latency. This means enterprise customers can consolidate a greater number of workloads to the InfiniBox hybrid's flash layer than ever before, taking advantage of an even higher level of application workload alignment within a unique, software-defined storage architecture and minimising the consequences of ongoing data volume growth.

Infinidat has also unveiled an expanded InfiniBox™ SSA II solution that delivers double the usable capacity and is ideal for enterprises with extensive high-performance application demands.

Prioritising cyber resilience

Closely linked to the issue of managing data is cyber security and within this, the critical importance of enterprise storage cyber resilience. On many boards currently, the C-Suite is grappling with the dual problems of defending their organisations from a cyberattack and completing the recovery process. According to a 2023 study sponsored by Istari and Saïd Business School at the University of Oxford, seven in every 10 (72%) CEOs admit to feeling uncomfortable making decisions about cyber threats and security. This means they need solutions they can completely rely on. There are crucial questions to address about how data should be managed and stored? How quickly can the enterprise recover from a now inevitable cyber-attack or ransomware demand?

Generally, although most enterprises are very aware of cyber risk in terms of preventing an intrusion or ransomware attack, they can face problems with protecting the sanctity of their data.



As one of the very few storage vendors to offer cyber detection on both primary and secondary storage, Infinidat equips enterprises with the strongest possible **cyber storage resilience capabilities to thwart a malware or ransomware attack**





Firstly, it's important to secure both primary and secondary data storage to be fully cyber resilient. Most enterprises have accepted the importance of secondary data cyber resilience, but understanding the need for primary storage to be treated in the same way is less widespread.

Infinidat's strength in cyber resilience is multi-dimensional and especially powerful. We have made it a priority to enhance our product range with some essential and complementary solutions. Firstly, InfiniGuard® offers unmatched backup capabilities and lightning-fast recovery performance at scale, benefiting every data protection requirement.

It is further enhanced with InfiniSafe®, a proven cyber storage resilience solution that was designed to ensure users are always ready in the event of a cyberattack, natural disaster, or basic human error. InfiniGuard is built on the award-winning InfiniBox®, an enterprise-proven storage platform that delivers unmatched, fully guaranteed performance and 100% availability, with a simple, 'set-it-and-forget-it' management experience.



Infinidat's inverted support service enhances operational efficiency and productivity for customers, allowing IT administrators to not only resolve problems in record time, but **focus on higher value activity rather than routine storage systems support**

The foundation layer for all these solutions is InfuzeOS™, Infinidat's unique software-defined storage (SDS) architecture. Having a SDS means InfuzeOS can deliver the powerful capabilities inherent in each solution within the Infinidat portfolio without dependence on proprietary hardware or components. For the user, this translates into greater flexibility and cost savings without sacrificing performance, availability, cyber resilience, or ease of use.

As one of the very few storage vendors to offer cyber detection on both primary and secondary storage, Infinidat equips enterprises with the strongest possible cyber storage resilience capabilities to thwart a malware or ransomware attack. InfiniSafe Cyber Detection uses advanced machine-learning models that provide 99.5% confidence in detecting cyber threats. This helps when dealing with false positive/negatives and greatly reduces the effort in any additional forensics.

Cost control without compromise

The third challenge is managing what has become the exponential (and still growing) rise in costs. IT spend is outgrowing any other form of expenditure, with cyber security spend increasing even more rapidly than any other IT spend, according to a recent Deloitte study. Added to this, the proliferation of different technologies and a continuing skills shortage is creating more complexity for organisations to manage and pushing up costs even further.

Cost challenges have escalated for enterprises who face having to update their storage infrastructure as data volume increases. With cost of ownership and ROI remaining such hot topics, having the ability to clearly quantify the financial benefits that Infinidat's enterprise customers can gain is another strong differentiator.

A recent IDC White Paper, sponsored by Infinidat, "The Business Value of Infinidat Storage," found that the payback when purchasing an Infinidat InfiniBox® hybrid solution is achieved within 11 months, showing a rapid investment return (ROI) on enterprise, cyber resilient storage. The research also revealed that the interviewed Infinidat customers were able to realise significant additional value beyond their investment payback, with an average annual benefit of £1.05 million and a 51% reduction in storage management.

On average, enterprises were able to cut their ongoing storage operational costs by nearly half, as a result of transitioning to Infinidat's enterprise storage solution. The IDC study provides independent verification of this capability and the impact it has on enterprise users wishing to rein in their IT expenditure permanently.

Given current challenges within the global economy and seeing enterprise IT spending under more

scrutiny to deliver greater business value, Infinidat's platforms provide the right enterprise storage solutions, available at the right time, to balance CAPEX and OPEX costs, performance, and business operations. IT decision-makers can obtain the rapid payback and compelling ROI needed plus ensure high performance, 100% availability, scalability, and comprehensive cyber resilience.

Inverted support enhances outsourcing trends

Linked to the ongoing skills shortage, especially in the IT sector, recent trends are pointing towards there being an increase in the use of third-party systems integrators and service providers to help manage enterprises' overall complexity. Industry analyst reports are predicting a 16-20% compounded annual growth rate (CAGR) for outsourcing service demand over the next 5-7 years, as organisations grapple with the complexity of managing infrastructures against a backdrop of heightened cyber risk.

Infinidat's inverted support model, whereby users are immediately offered advanced Level 3 expert one-to-one technical support from the outset, fits very neatly into the trend to outsource. Rather than wasting time logging issues with a help desk, it provides immediate value to enterprises at a time when the CFO's focus on minimising operational costs and spending is higher than ever and economic uncertainties are driving more introspection.

Imagine being able to immediately talk to a technical expert who knows the InfiniBox®, InfiniBox™ SSA and InfiniGuard® extremely well, knows the ins and outs of storage and cyber resilience, and already has a deep understanding of your storage implementation and data infrastructure. The financial and operational reassurance that such efficient storage support can bring should not be underestimated. Infinidat's inverted support service enhances operational efficiency and productivity for customers, allowing IT administrators to not only resolve problems in record time, but focus on higher value activity rather than routine storage systems support.

'Set it and forget it' approach

Generally, CFOs are becoming increasingly involved in technology purchase decisions due to their long-term impact on the balance sheet. They seek systems that offer options for reduced cost of ownership, through automation and machine learning to reduce maintenance and ongoing management costs.

Infinidat recognised the advantages of adding autonomous automation to enterprise storage management early on and was quick to incorporate artificial intelligence and machine learning algorithms to help customers manage their stored data in a more cost-efficient manner, using advanced neural cache functionality.



Being ranked as a Magic Quadrant Leader for six consecutive years by Gartner is a testament to the powerful value that Infinidat delivers and additional Peer Review **feedback further cements this leadership position**

Neural Cache is one of the key features behind Infinidat's ability to deliver high-throughput, low-latency storage at scale. It has an intelligent, machine-learning trained cache architecture that is capable of predicting future I/O requests based on ongoing observation of access patterns to the data stored on each array.

This multi-patented capability is unique to Infinidat in the primary storage and backup vendor world. At a time when wage inflation continues to rise and enterprise IT skillsets are in short supply, this 'set it and forget it' approach has proven invaluable for Infinidat users.

Enterprises today are having a hard time juggling the co-existing challenges of security and heightened cyber risk, acute skills shortages, blanket cost increases and the need to rapidly scale storage capacity to cost effectively cope with vast data volume rises. Add into this mix a desire to embrace AI and automation with the need to sustain information technology investments for the long term. All in all, it's a very difficult balancing act to get right. We know this because we invest time in understanding our customers' biggest challenges and our technology roadmap concentrates on addressing their priorities with effective solutions.

Thanks to its advanced capabilities and a rapid payback period, Infinidat is a powerful proposition that keeps delivering a return on investment, with a robust, future proof, and scalable enterprise storage infrastructure. Being ranked as a Magic Quadrant Leader for six consecutive years by Gartner is a testament to the powerful value that Infinidat delivers and additional Peer Review feedback further cements this leadership position.

User comments like "Absolutely no down-time. Seven years, eight Infinidat systems, zero down-time", and "Infinidat is a perfect fit for our needs...100% uptime for the past 6 years", illustrate that regardless of industry sector, users get exactly what they need when they choose Infinidat technology.

The top five benefits of application observability over traditional application monitoring

The shift from traditional application monitoring approaches to application observability is gathering pace within IT departments, as technologists look for new ways to cut through the soaring levels of complexity they're encountering from across hybrid and multi-cloud environments.

BY JOE BYRNE, CTO ADVISOR, CISCO APPDYNAMICS



THE LATEST RESEARCH from Cisco AppDynamics, The Age of Application Observability, reveals that 53% of organisations are already analyzing observability solutions, and 44% are likely to do so in the next 12 months. Overall, as many as 85% of global technologists state that observability is now a strategic priority for their organisation. Across all industries, IT teams are embracing application observability as a way to deliver ever faster speeds of innovation, while also maintaining seamless digital experiences for customers and employees.

In particular, technologists point to five major benefits of application observability over traditional application monitoring:

1. Ability to link IT performance to business outcomes

IT teams are coming under increased pressure to validate the impact of investments in cloud technologies and digital transformation, yet 84% of technologists admit that they struggle to align cloud costs with business performance. This pressure is only going to intensify as organisations look to streamline costs and budgets come under closer scrutiny due to the economic slowdown.

Application observability enables IT leaders to generate business transaction insights in real-time, and then to view them in business-level dashboards. This means they can measure and demonstrate the value that their innovation programs are generating. Application observability allows technologists to

make insight-driven decisions on how to prioritize investments based on potential impact to customers and the business.

2. Ability to detect and solve the root cause of problems

With rapid adoption of cloud native technologies, technologists are having to manage microservices and containers that spawn a massive volume of metrics, events, logs and traces (MELT) data every second.

78% of technologists report that this increased volume of data is making manual monitoring impossible. Traditional application monitoring tools can't handle this level of data, meaning that technologists can't detect issues and pinpoint root causes in a timely manner.

Application observability allows IT teams to properly understand how their applications are performing in real-time, enabling them to cut through data noise and prioritize those issues which could do most damage to end user experience.

3. Improved logging and early warnings of anomalies or unauthorized access

With increased adoption of cloud native technologies, technologists are having to get to grips with a dramatic expansion of attack surfaces. With application components running across a mix of cloud native platforms and on-premises databases, visibility gaps are being exposed and the risk of a security event is rising.

Crucially, application observability integrates application availability and performance data with security throughout the application lifecycle, leading to more robust products. IT teams can leverage the power of AI and automation to always optimize performance and automatically identify and resolve security vulnerabilities. Automation can be deployed to manage areas such as security response, cost

optimization and workload optimization, alleviating the burden of complexity and data noise that IT teams are encountering across their hybrid environments. Application observability can be plugged into the CI/CD application development pipeline and provide detailed and accurate log analytics at all times.

4. Works across dispersed applications

Most organisations are still using separate application monitoring tools for cloud native and on-premises technologies, meaning that technologists don't have a clear line of sight of the entire application path across hybrid environments. This makes effective troubleshooting extremely difficult, impacting metrics such as Mean time To Resolution (MTTR).

By implementing an application observability solution which has the flexibility to span across both cloud native and on-premises technologies, IT teams can access unified visibility across their hybrid environments. Technologists are able to work with real-time insights into application availability and performance even where application components are running across both cloud native and on-premises technologies.

5. Improved productivity and efficiency in the IT department

Without the tools and insights required to do their

jobs properly, IT teams are facing unyielding levels of pressure. They're having to scramble to detect and resolve issues, stuck in a never ending cycle of firefighting.

The consequences of this are profound – technologists are becoming increasingly frustrated and burnt out, and many organisations are seeing levels of churn increase as a result.

Application observability enables technologists to regain control and take a more proactive approach to managing application availability, performance and security. Indeed, 88% believe that the shift to observability will enable them to operate in a more strategic way and focus more time on innovation.

With unified visibility across their hybrid application landscapes, IT leaders can break down silos between people, processes and data, and unite and engage all technologists around a shared vision.

Ultimately, application observability provides IT teams with the real-time insights they need to ensure that their applications are performing at an optimal level at all times. With digital experience firmly established as the key battleground for commercial success, technologists recognize that application observability is now mission-critical for their organisations.



DIGITALISATION WORLD

MODERN ENTERPRISE IT - FROM THE EDGE TO THE CORE TO THE CLOUD

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Observing the Edge helps ensure greater productivity and efficiency

Edge computing is one of the most effective models for companies to adopt. When deployed in tandem with observability, teams can better understand and address potential issues quickly and efficiently.

BY SASCHA GIESE, SOLARWINDS TECHNICAL EVANGELIST

MODERN IT environments are highly complex, becoming increasingly complex with each passing day.

Made up of a massive web of applications, databases, and devices across infrastructures that can stretch across the world, these IT ecosystems are becoming more intricate as organisations turn to technology in their pursuit of improved productivity and efficiency.

There is little doubt that digital transformation and the shift to cloud computing have been at the forefront of positive business change. Especially as enterprises look to increase scalability and ensure employees have access to their work environments regardless of location.

But this change is not without problems. Any reliance on technology must be managed against increased security concerns as data moves between devices, geographies, and platforms.

Moving to the cloud is critical to business transformation...but it is not without risk

One of the consequences is that it has led to latency – or a delay in the time it takes for data to be moved from point to point. Slow data transmission can lead to slow response times and delays in accessing critical information or performing essential tasks.



It can also act as a brake on productivity because employees have to wait longer for applications or systems to respond. And if the latency affects customer-facing applications, it can tarnish the user experience and – if left unchecked – potentially damage business growth. While the shift to the cloud has been fundamental to business transformation, it has resulted in the breakdown

of the network perimeter as devices connect to company networks, applications, and data via the cloud. That's why IT networking teams often deploy virtual machines, which can introduce packet delays if they exist on separate networks.

This may be done to alleviate network congestion and load balancing while improving traffic routing as part of a host of measures to ensure efficient data transmission for optimal performance.

But it is not without risk. And in the worst case, virtual machines can leave IT teams with slower environments and without tools to understand the issue clearly – or how to fix it.

Moving to the edge

To get around this problem, the industry has turned to edge computing, a distributed computing model where data processing and storage are moved closer to the network's "edge." Devices such as Internet of Things (IoT) gateways, smart displays, and sales terminals have sufficient memory and computing power to process data rather than send it back to a central server in the cloud.

One of the standout benefits of edge computing is faster data processing. Simply put, moving data processing to the edge – or as close to the devices generating the data as possible – helps increase the speed at which data can be processed.

Edge computing can offer significant advantages in scenarios where IT pros face networking limitations and time-sensitive processing. It can effectively reduce bandwidth requirements for enterprises by minimising long-distance communication between servers or central hubs – and the devices receiving information. This can help to decrease latency and optimise bandwidth usage. Moreover, it can provide

greater flexibility as data processing occurs closer to its source, enabling computing processes to adapt to necessary changes swiftly.

While edge computing has successfully addressed many challenges associated with cloud migration, it has also introduced new obstacles that enterprises must overcome. For instance, adopting edge computing requires a more distributed infrastructure, which adds complexity to company IT environments. The vast amount of data generated by a network of distributed devices can make comprehending the information being produced challenging.

Observability brings visibility to the edge

Thankfully, observability offers a solution to help enterprises gain the efficiency of edge computing without losing visibility. It's a concept in IT systems and software engineering that allows users to gain insights and understand the internal workings of a system by providing visibility into its internal state, performance, and behaviour through monitoring and analysis of various data sources.

It does this by analysing massive amounts of information across an entire IT environment and pinpointing the causes of outages or performance issues. It also generates actionable insights to resolve these problems quickly – something that is critical to understanding complex IT environments. Observability also allows IT teams to maintain ongoing availability and reliability by identifying bottlenecks in the network, troubleshooting problems, and optimising system performance. And it does this by providing single-pane-of-glass visibility into the enterprise and giving teams real-time information.

With observability, organisations can better monitor network traffic, identify potential security threats, detect anomalies, and optimise system performance. Not only can this help to reduce downtime, improve security, and ensure high availability and reliability, it allows teams to see and understand the edge computing systems in their network and work to resolve issues quickly.

Edge computing is one of the most effective models for companies to adopt. When deployed in tandem with observability, teams can better understand and address potential issues quickly and efficiently. And by combining edge computing with observability, there's little doubt enterprises can increase productivity and efficiency.

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Creating sustainable IT innovations is key to driving business growth



For businesses looking to deliver success in today's environment, prioritising sustainable innovation as a driver of business growth is crucial. It's what customers expect and need from their partners.

BY MARIA MOHR, SUSTAINABILITY LEAD, EMEA PRESALES, DELL TECHNOLOGIES

IN FACT, according to Dell Technologies 2023 Innovation Index study, UK organisations are facing mounting pressure to be sustainable from several perspectives: from customers who are more exacting of whom they invest with, from suppliers who are becoming increasingly more accountable for their ethical practices; and businesses, as they continue to strive for ways to use less energy and save money.

We're seeing technology-driven sustainability innovations ripple across the market off the back of these three drivers. UK businesses are shifting from taking tick-box sustainability measures to sustainability-driven innovations, with 28% saying they're accelerating their innovation efforts in response to the climate change crisis. We're now seeing 44% turn to technology to increase energy efficiency and reduce energy use in the data centre, and nearly half (49%) use technology to provide organisations services to help them recycle/retire



the IT equipment used. These are great strides forward, but continued momentum is paramount, with the climate emergency an ever-present threat.

Thankfully, part of the answer to helping achieve this lies in new technologies and their potential. By harnessing the power of IT, organisations can drive greater innovation and create a positive impact on the planet to help tackle the climate crisis.

Why investing in sustainability can drive success?

As a business, the journey towards achieving better sustainability credentials begins in IT planning and procurement – a sentiment echoed by executives worldwide. Sustainable IT, the bedrock of organisations' long-term transformative success, focuses on using new innovative technologies like high-performance computing (HPC), artificial intelligence (AI) and machine learning (ML) to

enhance operational efficiency and the long-term goal and impact of reducing carbon footprint.

At the centre of sustainable IT is the infrastructure itself – it's imperative that organisations, and the vendors they collaborate with, focus their priorities on continually improving infrastructure to reduce energy consumption and increase operational and sustainable gains.

An example of this kind of innovation in practice is smart cooling – Air Cooling, Direct Liquid Cooling – (DLC) and Immersion Cooling, which uses state-of-the-art thermal and mechanical simulation tools to ensure optimal cooling and sustained system performance, as well as the highest efficiency and lowest power utilisation effectiveness (PUE).

Organisations must take care when deploying new solutions to ensure they introduce them sustainably, energy-efficiently, and cost-effectively. Dell Technologies and University College Cork (UCC) in Ireland work to support the university's IT transformation plan while increasing the overall energy efficiency of its IT infrastructure. Updating to Dell PowerEdge servers has reduced annual greenhouse gas emissions by 68% year-on-year while reducing power usage by 53% and requiring 39% less cooling.

The logic behind every enhancement is simple: sustainability must be embedded into every technology as part and parcel of everything created. This means choosing the right partner to help identify and align towards your business's sustainability goals from the outset.

Strategic procurement: Unlocking sustainability through flexible models

The way a product is made is important, but so is the approach a business takes when putting that device to use. Your procurement process has a far-reaching impact. As such, when considering IT and product selections, it's essential to consider the following:

1. Product materials: Are the products manufactured from renewable, sustainably sourced or recycled materials? Can they be easily reused or recycled when decommissioned?

2. Product packaging: Does the packaging minimise waste?

3. Product performance: Are the products designed for maximum energy efficiency?

4. Product repairability/reusability: Can products be easily fixed without compromising performance or productivity? Are parts readily accessible and replaceable?

5. Productivity: Do the products enable increased productivity, thereby reducing power consumption?

Driving energy efficiency and sustainability advancements

As our technology and device consumption increases, so does the mountain of electronic waste (e-waste). The amount of e-waste the UK generated in 2022 was 23.9kg per capita, making it the world's second-largest producer of e-waste, following Norway. To reduce e-waste, Dell Technologies aims to help spearhead advances to reduce the carbon footprint of all products and make them more sustainable by significantly increasing the use of renewable and recycled materials. For example, Concept Luna is Dell Technologies' exploration of revolutionary design ideas to make components immediately accessible, replaceable, and reusable – reducing resource use and keeping even more circular materials in the economy.

In summary, there is a direct correlation between innovation, the benefits an organisation can achieve, and sustainability. Sustainability is a change driver, creating win-win situations for the planet and business. When organisations prioritise sustainability, they uncover new ways of working that will lead to greater efficiencies and cost savings, freeing up resources to pursue new opportunities.



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How to achieve incident management best practice

Businesses face the risk of disruption every day, and as IT environments become larger and more complex, these risks only increase.

BY JERE JUTILA, DIRECTOR OF BUSINESS DEVELOPMENT AT MIRADORE

A MINOR OVERSIGHT or flaw in the IT environment can cause data loss or a lack of service for the end user which can affect progress, reputation and the bottom line. And even more so in the event of an external cyber-attack which are becoming increasingly common, no matter a business's industry or size.



In the event of an incident, companies should have established plans in place to efficiently and quickly assess and overcome the challenge to return to business as usual. This is called 'Incident Management'. Here, I explore the concept of incident management, the key steps and stages of incident management and critical incident

management, and best practices to employ in the face of a problem.

What is incident management?

Most often utilised by DevOps teams, incident management aims to mitigate, manage, and improve company responses to a technical problem or unplanned event that may disrupt operations and services. This process prepares businesses for such an event and ensures effective strategies are in place to restore operations as quickly and with as few consequences as possible. Examples of an incident can include network outages, hardware malfunction, and malware attacks which are on the rise.

In 2022, an estimated 236.1 million ransomware attacks occurred globally. Despite this, just 45 percent of companies have an incident response plan in place to combat a problem like this. Incident management measures are essential to minimise the impact of an unanticipated event, as when left unaddressed it can affect the finances, resources, and reputation of an organisation. Not only do incident strategies outline the risks

posed by unplanned events and enact a swift response, they also help to identify weaknesses in business operations, services, and existing plans that can be strengthened ahead of future disruption. Although problem and incident management seem similar, the key difference between the two is incident management aims to resolve an issue as it occurs, while problem management focuses on understanding how a problem arose post-incident and enacting measures to prevent it from occurring again. Both, however, are important to ensure the smooth running of operations.

The five stages of incident management

Improving incident management strategies is a priority for many organisations, as 55 percent of surveyed organisations stated they would like to improve their incident response and containment time. An effective management process should be structured around five key stages to maximise its effectiveness. The incident must first be identified by assigning it a unique reference, the date it occurred, a concise description of the problem, and the name of the employee(s) tasked with addressing it – i.e., the ‘incident manager.’

Below is an example of a simple incident management ticket:

- **Incident ID:** DDoS #4432-B
- **Description:** A DDoS attack brought down our stock website for thirty minutes.
- **Date of Occurrence:** 13/02/2023
- **Incident Manager:** John Smith

Identification ensures all essential information is collated which will make it more traceable and confirms employee responsibility from the outset. The second step is categorisation. The identified incident must be grouped with others of a similar timeframe or nature, as this will make it easier for employees to find these incidents quickly which will increase the speed of resolution and ultimately improve end-user satisfaction.

Prioritisation is the next step. Businesses must consider team workloads and other problems that need addressing before agreeing on an order of urgency. Incidents with the largest and most immediate impact should be addressed first, reducing the time essential services are non-operational.

Once these steps have been completed, the incident can receive a response. This should be handled by the team most equipped based on the information gathered in step one.

The problem must be resolved quickly, so the team must have plenty of workload capacity as well as training and an adequate number of team members assigned. Building an effective incident response is crucial for swiftly rectifying problems and learning from them. Delegation, completing regular reports, and communication is key.

Finally, once an incident has been resolved the report can be closed and archived for future reference. A post-incident meeting can be scheduled to discuss the event, how it was handled, improvements that could be made ahead of another problem, and a plan of action to avoid future incidents.

How does critical incident management differ?

The label of a ‘critical incident’ is reserved for occurrences that may risk the safety of shareholders, clients, or the work processes of the entire business.

An incident that stops employees from performing their responsibilities or inhibits a user’s ability to access a service also qualifies as a critical incident. Like incident management, responding to a critical incident follows similar steps. The key differences are that a critical problem needs to be labelled as critical to be deemed high priority and all stakeholders must be informed of the incident.

Incident management best practice

When it comes to incident management, there are four important considerations to achieve best practice.

Firstly, planning and rehearsals are essential for laying the basic foundations for incident management. This training prepares teams for the most common incidents and organises a set response that can be followed when faced with a real-time incident – leaving no room for panic. A company’s ability to resolve an incident is dependent on the ability of its employees. Team members must be able to work both collaboratively and independently to manage a problem and implement solutions. This rapport and necessary skill base can be established via team-building exercises and upskilling programmes to identify and close skill gaps in the workforce which will equip employees with the skills they need to effectively and confidently manage an incident.

Clear and open communication between individuals and teams is pivotal when responding to an incident efficiently and effectively, making sure important information can reach those who need it quickly to help inform accurate decisions.

Perhaps most importantly, once an incident has been resolved, it must be learned from. Constructive criticism and identifying a set of positive actions that can be taken to close vulnerabilities and weaknesses in any processes are crucial to protect future business continuity. Obsolete actions and plans will slow the incident management process and complicate matters for teams attempting to fix issues. So, understanding what precisely went wrong and amending best practices and training accordingly will ensure that management strategies are up to date and can rectify a problem before damage is caused.

Harnessing the power of experience orchestration

Experience orchestration is about the right coordination of technology across the end-to-end customer journey to nurture long lasting relationships at scale.

BY BRETT WEIGL, SVP & GM - DIGITAL, AI, AND JOURNEY ANALYTICS, GENESYS

IN TODAY'S digital economy, customers expect seamless experiences no matter where they interact with a brand. Companies face ever-growing pressure to deliver or risk losing out on their loyalty. Making customers feel remembered, heard, and understood across every interaction with a brand is essential. Equally, it needs to feel like it's effortless to find answers, perform common tasks, and get help. But this isn't always straightforward to achieve, and organisations are falling at the first hurdle time and time again.

The key challenge organisations face in transforming their customer experience usually comes down to outdated, reactive customer experience strategies. These fail to take into account the full customer journey, missing out on vital context that helps businesses get closer to customers. Legacy software creates silos between departments and, more critically, data that gives employees the insights they need to provide meaningful solutions.

For customers, this results in a disjointed and impersonal experience, causing frustration with employees bearing the brunt. As it stands, too few organisations are taking advantage of the cloud and adopting modern solutions that allow them to free themselves of legacy constraints.

Research has shown how interactions often result in customers feeling angry, so much so that a quarter have lost their temper with an employee supporting them with an issue in the last 12 months. In some cases, these bad experiences have driven more than one in ten customers to tears. Not only does this risk customer abandonment, but employee abandonment too when under such high levels of stress.

So, with not only customer loyalty and brand reputation on the line, but employee satisfaction, it's vital that businesses act now. So, how can they take the necessary steps to modernise their technology strategies and implement solutions in ways that



create fulfilling and meaningful experiences for all involved?

A human-centric approach

Transforming experiences today starts with putting the needs of customers and employees first. Crucial steps that organisations must take includes tying together the end-to-end customer journey by coordinating technologies, connecting data, and shifting to more proactive approaches to experience delivery.

In retail, this could be the delivery of target offers and notifications at the 'right time' to help customers more easily find, learn about, and buy products. In finance, it might be personalised banking sessions driven by information consolidated from across a customer's portfolio, history and communications preferences. In the travel sector, this could be sending alerts on delays and disruptions to customers, which in turn, help make trips as smooth as possible.

Brands must get better at pulling together relevant information from different systems to carry context that can be integrated across all interactions. The price of failure to act? Our research concluded a third of consumers abandoned a brand for a competitor in the past 12 months alone as the result of a bad customer experience. Organisations simply cannot afford to get customer experience wrong any longer. Instead, businesses must switch to more relevant, more personalised, and more proactive strategies, which is where experience orchestration enters the picture.

Breaking down departmental silos

A fundamental principle that every organisation must realise is that experiences are happening whether they plan for them or not. Instead of reacting to people's needs, companies must anticipate them, and design experiences centred around them from the start.

The best way to do this now is to unite experiences around a single platform with the power to easily integrate and coordinate technologies, data, and channels across the entire journey. Our research found that customer experience leaders are already on board with this way of thinking, with 71% prioritising the implementation of platforms that integrate all systems.

Once this foundation is in place, companies should consider how to design experiences that are personalised and empathetic, while making it intuitive and simple for customers to accomplish their goals. Digital and artificial intelligence (AI) offer powerful ways to deliver here. However, many brands go wrong by deploying isolated AI-based point solutions aimed at only solving a 'specific' problem. This often results in customer frustration, as unhelpful bots or employees are limited with insufficient information, training or siloes. In these

cases, all are hamstrung by stagnant data versus real-time knowledge enabled by algorithms, that allow for continuous learning and optimisation.

So rather than solving individual pain points, AI should be deployed with the purpose of connecting the holistic experience in a way that benefits customers, employees, and the organisation's bottom line. A few examples of how experience orchestration powered by AI can improve experiences include:

- **Knowing what customers need before they tell you.** Customers' historic data, partnered with behaviour patterns can trigger proactive intervention. Take for example when an airline customer initiates a chat. The employee can instantly see they have searched the company's FAQs for information on flight change fees, and then offer assistance with rebooking or navigating change fees without the customer needing to ask.
- **Putting an end to broken records.** Customers shouldn't have to tell a bot their name, phone number, home address, account number, and their issue, to turn around and have to tell an employee, only to then have to repeat themselves again to the next employee they're transferred to. When experiences are connected, this information follows the customer wherever they go for a fluid, echo free experience.
- **Matching customers with the employees best suited to help.** Understanding which employees are best suited to provide the help a customer needs when they need it means customers are more likely to receive the first contact resolutions they want, and employees are able to focus on the areas they do best. A win-win result for all.

Better experiences for all involved

Consumer perceptions of a brand can change in an instant. All it takes is one bad experience for relationships to be damaged and loyalty to be lost. With expectations higher than ever, businesses need to be implementing the necessary framework to stay ahead of their customers' needs and offer them truly meaningful experiences. Interactions can't be managed in silos. 'One-off' engagements must become a thing of the past. Communications need to account for the entirety of the customer journey, over every touchpoint and channel.

Experience orchestration is about the right coordination of technology across the end-to-end customer journey to nurture long lasting relationships at scale. Businesses need to connect the dots across every step of every experience, so they have one complete view of the customer journey. By applying digital and AI with purpose, organisations can establish a strong methodology for listening to and understanding customers and employees. Then, they can predict actions, shape journeys, and drive meaningful outcomes, offering a truly personalised experience that forges increased loyalty.



Generative AI: reshaping the future of IT teams

Generative AI (GenAI) has led the technological charge this year, with businesses impacted - for better or worse - by the daily evolving Large Language Models (LLMs), virtual assistants and AI applications.

BY SEAN SCOTT, CHIEF PRODUCT OFFICER, PAGERDUTY

IT TEAMS are working fast to keep pace, as advancements in GenAI change how and what we automate, while in parallel, navigating the complexities of its integration. That's notwithstanding the ethics and legality implications of the technology.

What's clear is the potential for GenAI within the IT and software engineering space is immense, with McKinsey estimating the productivity lift on software engineering teams utilising AI alone could be up to 31%. This underscores the urgency for teams and individuals to enhance their understanding and capabilities of the technology. After all, staying ahead of the curve will only translate to a more seamless journey forward as the technology - and indeed the world - continues to evolve.



The benefits GenAI and automation offers IT professionals. Imagine being at the top of your game all the time. GenAI promises to extend your reach

and the time available to you. Those that can stay up-to-date with a growing armoury of AI tools will be able to leverage them across the digital operations stack as part of daily ops. GenAI is already being put to use generating status updates, incident response comms, diagnosing faults, and working through possible root causes. It's only going to get better at abstracting away the more laborious tasks of engineers, developers, and managers alike.

With an awareness of how to use these tools - ideally reformed as functionalities built into platforms - tech workers will work quicker and to greater effect. Understanding the logic behind the models, and their training data, will be key to understanding their functionality and limitations. That means whatever your specialism, it's likely that at least an intermediate level of AI background knowledge will support your career ambitions and place you above any less skilled peers, stuck - unable to get the most from their toolsets.

Begin adopting AI and automation into strategies sooner, not later

Success will come in a large measure from research and planning. Awareness and understanding of GenAI capabilities will require trialling and testing products and ensuring that features match the scaling needs of the business over time.

Building up knowledge must become an institutional exercise. It's no good to have one expert who takes that knowledge with them. Learnings must be documented and shared, along with policy-making that departments stay up-to-date with their field. Industry experts such as consultants and analysts may be best placed to advise the integration of AI into the tech stack. They will also be well-placed to cut through marketing claims to help businesses of all sizes appreciate the nuances of integration and change with complex cloud tech stacks. In-house experts are enormously knowledgeable about one business, but external advisors have the benefit of having been through processes many times and can see the underlying tracks and trends.

Adapting IT skills for the AI era

Everyone in IT must understand how their unique skills and experiences can be leveraged in a world where drudgery and toil - basic administration and rote tasks - are all abstracted away to automation. This will be a benefit leading to more satisfied time spent on more interesting, valuable, and mentally stretching work.

Picking the right education and training will become more important as professionals will inevitably specialise further. According to McKinsey's research, software engineers and IT professionals who receive training in GenAI tools, like Microsoft's GitHub Copilot, are able to rapidly reduce the time needed to generate and refactor code, for instance. What's more, they also report a better work experience generally, in happiness, flow, and fulfilment.

Individuals should be encouraged and empowered to complete online professional credential courses that could not only assist their day-to-day use and knowledge of AI but enhance career prospects in future positions.

Additionally, training in, and utilising skills across domains, like business and research allied to problem-solving and design thinking, may transform

technologists into digital business transformational specialists. With AI tools extending their reach, it may empower individuals into one-man consultancies. They can choose between tools that enable them to work up and down tech stacks and throughout a business - problem-solving and evolving organisations with incredible agility.

Simple steps to seamless integration

In just a few steps, businesses can wholly integrate AI as a key resource to accelerate their digital operations and empower fluid IT teams:

1. Policy Determination - through consultation of research and gauging the overall impact of AI integration, leaders can set the parameters for generative AI usage. For instance, setting limitations on the usage of business or customer data can ensure compliance with data privacy regulations while still enhancing automated day-to-day processes.

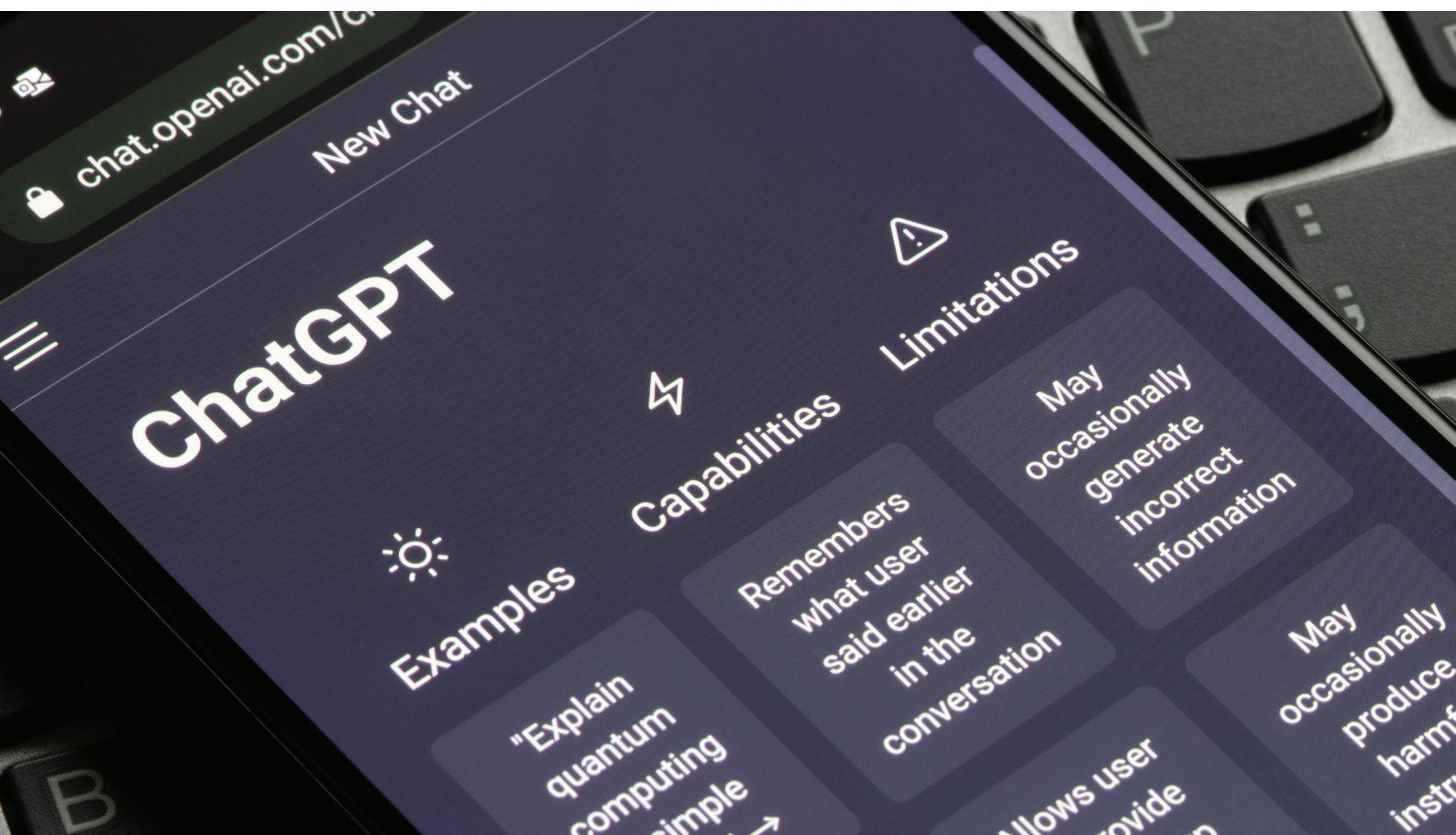
2. Training and education - business and IT leaders should be encouraging and providing regular training resources for their teams to empower the usage of AI, while being diligent and thorough with its application. There is also the additional bonus of fostering a more fluid and agile workforce, with workers able to apply themselves positively both horizontally and vertically throughout.

3. Experimentation with appropriate use cases - broad policy and training provide clarity and empowerment to the workforce, but leaders must decide where best to allow generative AI to positively disrupt the traditional workflows. Experimentation with different applications will allow leaders to understand the variety of utilisations, and to appreciate where best generative AI can have the most beneficial impact - it's not something to be scared of when used in the right ways, so explore and find the sweet spot.

To the future

Yes - GenAI is going to upend established ways of working, with digital operations for developers and engineers just at the start of an era of disruption. Getting the most out of these tools will need constant education to keep up with change, and adding a working knowledge of AI's capabilities, limits, and features.

Picking the right education and training will become more important as professionals will inevitably specialise further. According to McKinsey's research, software engineers and IT professionals who receive training in GenAI tools, like Microsoft's GitHub Copilot, are able to rapidly reduce the time needed to generate and refactor code



Five ways ChatGPT can augment IT operations, without reinventing the wheel

IT operations (ITOps) teams are finding it increasingly difficult to keep up with the complexity of their technology environments as they continue to grow.

BY SANJESH RAO, VP OF PRODUCT STRATEGY AND INNOVATION DIGITAL ITO AT HEXAWARE

TODAY, the average large enterprise's tech stack comprises of no less than 187 different applications. As organisations have become more reliant on these applications to support customer experiences and keep revenue flowing, ITOps teams face growing pressure to keep them running smoothly. They need to respond instantly to possible security incidents or service outages before they impact the business, support internal users effectively, and – where time permits – support development teams in their efforts to deliver innovation projects. Given the sheer breadth of responsibilities ITOps teams face, it's no surprise that burnout has become commonplace.



To overcome these challenges and alleviate some of the pressure on ITOps teams, organisations are turning to artificial intelligence (AI) and automation.

These capabilities can help by reducing manual workloads and increasing operational efficiency, which in turn boost job satisfaction and often leads to better customer experiences. Organisations have turned to many approaches and tools to drive this automation over the years, but in recent weeks it is ChatGPT, a sophisticated large language model, which has been capturing their attention. Cutting through all the hype, it's possible to identify clear, practical upsides for businesses that implement ChatGPT in their IT operations.

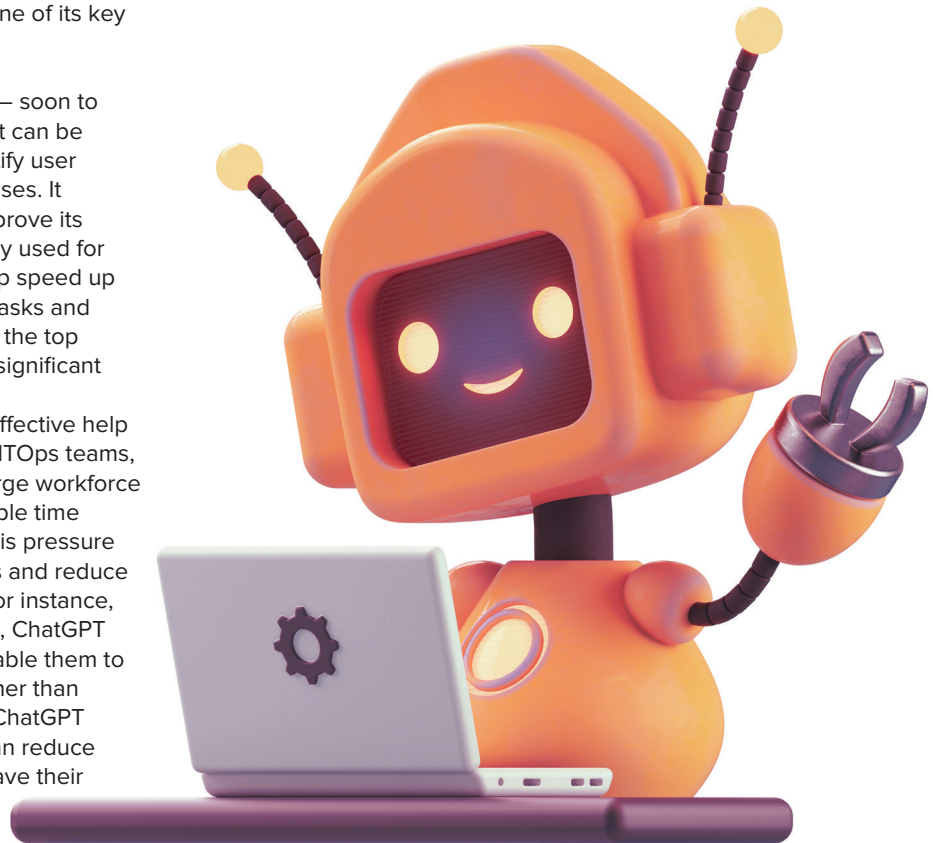
ChatGPT: what is it, fundamentally?

Before exploring ChatGPT's potential benefits for ITOps teams, it's important to clarify exactly what it is, and what it does. At its heart, ChatGPT is a powerful AI chatbot capable of automating routine tasks and providing users with real-time support. Its

ability to process natural language is one of its key strengths.

Using previously acquired information – soon to include the entire knowledge base that can be accessed via the internet – it can identify user intentions and provide relevant responses. It also leverages machine learning to improve its responses over time. While it is typically used for chat-based interactions, it can also help speed up and streamline multiple IT operations tasks and processes to drive efficiency. Here are the top five use cases where ChatGPT shows significant potential:

- **Supporting help desks:** Providing effective help desk support is a key challenge for ITOps teams, especially in organisations with a large workforce and those that operate across multiple time zones. ChatGPT can help to ease this pressure by automating routine support tasks and reduce the need for manual intervention. For instance, if a user needs their password reset, ChatGPT can provide simple directions to enable them to remediate the issue themselves rather than needing ITOps to step in. By using ChatGPT for help desk queries, ITOps staff can reduce their workloads, and ensure users have their help desk support queries answered quickly. This leads to improved user experiences, as it becomes significantly easier for employees to access help desk support without losing productivity, and lowered levels of stress among IT operations staff.
- **Troubleshooting day-to-day problems:** Technical troubleshooting is another critical challenge for ITOps teams that ChatGPT can support. For example, if a user is experiencing an issue onboarding themselves to use a new software solution, ChatGPT can instantly scour the product documentation and offer clear, detailed instructions on how to troubleshoot the issue, or direct them to a relevant support page if they need further help. By providing users with real-time support, ChatGPT can help the ITOps team reduce the time spent on support tasks and focus on more complex issues that require their expertise.
- **Notifying appropriate staff of technical issues:** ITOps teams need to be notified in real time when technical issues arise, so that they can respond as quickly and effectively as possible. In cases such as these, ChatGPT can be used to send real-time notifications, to ensure teams take speedy action. For instance, in the case of a server outage, it can send an automated alert to an appropriate team member, who can then go on to resolve the issue as soon as possible.
- **Speeding up routine work:** ChatGPT's intelligent automation technology can be used to automate repetitive, time-consuming operations tasks such as server maintenance or software updates, freeing up ITOps teams to focus on more complex issues. This not only drives efficiency, but boosts



job satisfaction for ITOps teams, by reducing the parts of their role that don't truly require their specialist skills.

- **Learning from user intent:** ChatGPT can learn from users' requests and use natural language processing (NLP) techniques to analyse their intent and provide more intelligent answers over time. For example, if the user says, "I can't access my email," ChatGPT can recognise that they intend to troubleshoot an email access issue. ITOps staff can train ChatGPT to detect these specific intentions by providing samples of user requests and the corresponding intents.

ChatGPT can augment, but not supplant

Love it or loathe it, ChatGPT's ability to learn from user intent and respond to queries in a precise and timely way can take significant pressure off ITOps teams by reducing the volume of routine, repetitive, and manual work that they simply no longer have time for. If used effectively, ChatGPT can play a pivotal role in modernising operations workflows, allowing businesses to keep up with rising customer demands and adapt to changing user needs. It's important, though, that ChatGPT isn't seen as a silver bullet. Organisations using ChatGPT to enhance their operations must still ensure they have reliable IT architecture in place, and an ITOps team who view ChatGPT for what it is: a tool for augmenting their own work, not an excuse to shirk responsibilities or a potential threat to their employment. When all is said and done, ITOps is too important to organisations' success to eschew human involvement.

Multi-Cloud network visibility and optimisation helps modern companies build resiliency

Companies using a multi-cloud approach with the aim of building resiliency and availability need both traffic steering and observability so they can pivot as and when cloud service providers fail to perform as they should.

BY EKIM MAURER, SENIOR PRODUCT LEAD, AT NS1, AN IBM COMPANY



THE SUMMER brings holidays and sunshine, but for those of us working in technology, the correlation between hot weather and the risk of outages becomes very real. Not only does internet activity continue at its normal blistering pace consuming server power all over the world, but data centre operators are also challenged by the increased wear on overworked cooling equipment which ensures services remain up and running.

The impact of global warming means that this is now becoming an annual problem in the UK. While most enterprise data centres run at less than full utilisation, allowing reserved cooling capacity to help them in extreme heat, the story is very different for cloud providers in hyperscale data centres whose utilities are driven harder. This explains the outages suffered by Google and Oracle last July when the barometer hit 40° c.

Companies can't afford critical server outages, either financially or reputationally. According to a recent survey conducted by Enterprise Management Associates (EMA), facilitated by BigPanda, the average monetary cost for unplanned outage downtime is \$12,900 per minute, a number much higher than any typically cited across the industry.

And with user expectations increasing by the day, the inability to access business critical applications, carry out video calls or connect to digital healthcare services, spells danger for brands whose reputations rely on high performing, always-on services.

Multi-cloud delivers resiliency

Enterprises have learned the hard way that if they're building and delivering applications, they must invest in infrastructure and a distributed footprint that doesn't put all its eggs in one data centre — or one cloud — basket. Taking a multi-cloud approach has allowed them to build resiliency and availability, while delivering performance at scale.

There's no doubt that distributing the digital load across multiple providers makes sense. If one goes down, another one is available to ensure applications remain available. It removes the risk that comes with single-points-of-failure that take systems and services offline. There are other benefits, including not being locked into one cloud provider, cost and performance improvements, and the ability to create operational diversity.

But while the use of multiple clouds has proven to be a success for many, it has also required enterprises to make strategic decisions about how



they manage their increasingly complex, distributed infrastructure. The use of multiple clouds that operate independently means companies are forced to think more carefully about how they steer their traffic, how they observe it, and what they need to do to control their cross-cloud workloads.

Traffic steering and observability

Workload distribution across multiple clouds cannot be traced with standard tooling, or even tooling provided by hyperscale data centres. Delivering consistency of service is best approached using solutions that are dedicated to traffic steering. These provide real-time information that enterprise network teams can respond to as conditions change.

In the event of an outage suffered by one cloud provider, for example, intelligent traffic steering will use a variety of criteria to determine the issue and quickly reroute traffic away from the problem to ensure a seamless experience for users. But in addition to this, intelligent, automated traffic steering solutions make life easier for organisations, so they can balance application delivery performance, capacity and cost using telemetry that provides full visibility into internet and cloud conditions.

To ensure traffic steering is finely tuned, companies need to have clear visibility into their traffic flows. This is not just to help identify an outage, but to

observe and extract useful business insights, debug problems in the network and identify security weaknesses. Network observability tools help to tap into network data streams and analyse them in real-time and have proven to be invaluable in helping companies better understand the masses of data they are generating so they can act on the insights and improve performance.

Companies using a multi-cloud approach with the aim of building resiliency and availability need both traffic steering and observability so they can pivot as and when cloud service providers fail to perform as they should. If they put in the work upfront to calibrate the tools based on real-time conditions experienced by end users, and create policies to fully utilise these tools, they will be able to shift workloads automatically to available resources if they are faced with an outage.

Whether the summer heat, an extraordinary demand on Black Friday or a malicious cyber-attack causes the next outage, it will undoubtedly be neither the first nor the last, and companies need to act now to shore up their multi-cloud policies.

Building resiliency will help them to address future problems, bringing redundant infrastructure, the right configuration, observability tools and dynamic traffic steering together to keep services, applications and users online.



DIGITALISATION WORLD

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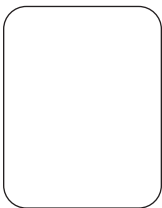


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Partnering for climate success

Unleashing the power of data and collaboration

BY MARCO MANCUSO, EMEA HEAD OF STRATEGIC COLLABORATIONS



BUSINESSES are hearing the voices of their customers, their clients, and the regulators loud and clear. They have to move quickly to become more sustainable and reduce their carbon emissions. The problem is that although companies are aware of the urgency, their ability to get a plan in place that matches that pressure to move is lacking. According to research carried out by Hitachi Vantara, on average, organisations do not expect to be at net zero carbon emissions until 2046 - 23 years from now.

From the conversations I have with businesses in many different industry sectors and hearing their stories and pain points, one conclusion I have is that technology isn't the issue holding people back. It's organisational and cultural change that needs to take place in order to reach climate goals. There's a need to collaborate, share insights, share data, and maximise investments so that companies can reach their goals faster.

As EMEA Head of Strategic Collaborations at Hitachi Vantara, my role is essentially to put people around a table with different backgrounds and different priorities to solve key issues, with sustainability being a prominent one right now.

The biggest challenge for any organisation, or groups of organisations, is to agree on a common purpose or shared sense of direction. This can sometimes be challenging for people within one company to do, but when it comes to

sustainability, particularly when measuring scope three carbon emissions, there are many people involved in the value chain.

To get a working strategy in place that can get companies moving in the right direction, it requires data. And currently, businesses don't have enough of it, or rather, they aren't able to track it and analyse it adequately. According to the same research, 35% of UK businesses said they had inadequate access to critical sustainability data. It makes it difficult to know how well you are progressing if you can't crunch the numbers that tell you. Another issue is that many businesses are driven by the wrong things when it comes to sustainability. Our research found that complying with regulations was cited as the primary driver of organisations' sustainability goals at 66% of responses. This means that too often, businesses are beholden to the needs of the



day instead of considering the environment itself and the business case for sustainable operations. Also, anecdotally, I often hear a lot of talk about return on investment, when in fact we should be prioritising the return on environment. When we focus on the long-term deliverables, the effect on business performance will materialise in tandem.

Shared data powers sustainable design

Shared data is such an integral part of successful sustainability strategies. Unfortunately, there are challenges that come with sharing data across the supply chain because many organisations worry about the possible security implications. It shouldn't be necessary to share everything, but it is essential to relay key information to partners who need to see it.

If we want to improve the value chain, implement new products and services, and create with an eternity design mindset to extend the lifecycle of products, there is a need to share data from the raw material to the production lines. We also need to be able to collect the data into a single dashboard that gives a comprehensive view of all operations.

To collect that data in the first place, we need more sensors and IoT connections, which also implies the introduction of cloud infrastructures. These have to be managed sustainably as well. Yet only 25% of CEOs say that an eco-friendly data centre is one of the most effective ways to reduce their company's carbon footprint; compared to 60% of CIOs and 60% of Chief Sustainability Officers. This mismatch of priorities is often why there is underinvestment in data centre modernisation, which can deliver so much value when reducing carbon footprints.

Bringing in broader perspectives

Indeed, shared data and the platforms that underpin the data are significant building blocks of sustainable businesses. Alongside this is the way that organisations work together. Yes, that means companies in the same value chain working more closely, but beyond that, it also requires collaboration beyond the usual areas of conversation.

Whereas before, most of the people I spoke to were CIOs, I now spend most of my time speaking with Chief Sustainability Officers. The topic of conversation is often about how they can combine expertise from different specialists to help them become more sustainable and implement their strategies with pace.

For example, a utility company might be concerned with increasing their renewable energy sources to provide more clean energy to their customers. But on the other side, they need to provide stability to the grid and get more control of the grid. We at Hitachi Vantara combine our data management solutions with the operational technology and



domain expertise of others – whether that's the expertise from other Hitachi companies such as Hitachi Energy, or other partners that a company wants to collaborate with. The important aspect is that businesses appreciate the significance of data services in the bigger picture of sustainability and bring the right people around the table from the planning stage.

Stronger together

They say a problem shared is a problem halved. It's no longer possible for companies to work in isolation if they want to reduce their impact on the planet. By sharing insights and bringing in the expertise of others, it amplifies the efforts of each party by creating a collective intelligence. Company leaders have to look outside the four walls of their business but they can even go outside of their industry to seek out best practice and knowhow from other leaders who can add value. If the goal is to become more sustainable and to a shorter timeframe, collaboration and knowledge sharing can help organisations to get there faster than they could ever imagine.

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The digital renaissance in travel

A journey to the future.

BY PETRINA STEELE, BUSINESS DEVELOPMENT SENIOR DIRECTOR AT EQUINIX

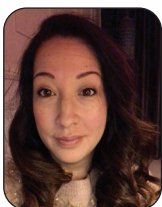
THE TRAVEL INDUSTRY'S renaissance, driven by digital innovation, is reshaping the way we explore the world. As modern travellers seek personalised experiences, the travel and transportation sectors need to re-think their data architectures. With airports and airlines leading the way, and the market poised for continuous growth, the future of travel is promising and exciting.

As the demand for travel grows, the process of booking flights and accommodation has undergone a remarkable technological leap. For instance, the Eurobarometer survey on Attitudes of Europeans towards tourism highlights that online platforms are the preferred method for making travel arrangements in various countries. Whether it's using booking sites for professional accommodation services, combining travel services, or relying on websites of hotels and airline companies, travellers are increasingly turning to digital solutions for their travel needs. With cutting-edge online travel agencies, metasearch engines, and a plethora of mobile apps on offer, people can easily hunt down the perfect deal. Travelers can compare prices, read genuine reviews, and seize unbeatable offers, all with a few taps on their device. They are now empowered with the freedom to make reservations on the go, whenever and wherever they please. As highlighted by a report by Sensor Tower, a data insight firm, which reveals that travel apps in Europe

surpassed 130 million downloads in the second quarter of 2022, representing a substantial 56% year-over-year increase. The growth in this sector is projected at USD 3.70 billion from 2021 to 2026 according to Technavio. This upward trajectory is expected to continue at a growth rate of over 7.6 percent, reflecting the industry's dedication to using digital solutions.

Categories such as vacation rentals and ground transport are just some of those experiencing significant growth, indicating travellers' reliance on digital services for various aspects of their journeys. According to industry insights, an astounding 94% of airlines are expected to invest in mobile applications for passenger services, showcasing a considerable increase from 88% in 2021. This shift is fuelled by the growing preference from travellers to manage their journeys digitally.

With this shift to online-first, data has naturally become the lifeblood of the aviation, travel, and tourism sectors. Growing connectivity among systems allows companies to collect, exchange, and analyse data from various sources, optimising customer experiences and providing valuable insights. As a result, digital platforms that enable ecosystem alliances are continuously emerging, promoting asset and information sharing for business growth.



At the forefront of this digital transformation is the aviation sector, with airlines and airports adopting cutting-edge technologies to create a seamless, contactless passenger journey. According to SITA's 2022 Air Transport IT Insights report, 76% of Airlines are looking to implement self-boarding gates using biometric and ID documentation by 2025. Moreover, real-time information about baggage sent to mobile devices is becoming increasingly prevalent, with 25% of airlines offering this service, and 42% planning to implement it by 2025.

To enhance the customer experience, airlines and airports are extending the usage of biometrics beyond security controls. Biometrics now facilitate payments, health checks, lounge access, and priority boarding, offering a touchless experience that combines convenience with security. Lufthansa City Centre (LCC) and Kansai Airports are excellent examples of companies that have harnessed Equinix's digital services to create flexible, scalable solutions for their travel services. Frankfurt-based global travel agency LCC developed a virtual solution for high-availability booking services for franchise agencies. They collaborated with Infrastructure as a Service provider IONOS by 1&1 (formerly ProfitBricks) through Equinix Fabric, ensuring fast, secure, and low-latency connections while prioritising data sovereignty and security.

Similarly, Kansai Airports in Japan adopted an innovative approach to enhance operational efficiency and streamline real-time information sharing among airlines, partners, and aviation regulators. By actively utilising Equinix International Business Exchange (IBX) data centres and connecting to a range of partners and customers through Equinix Fabric, Kansai Airports achieved a high-speed, secure, and dependable connection with Amadeus's overseas network. This ensures Kansai Airports remain at the forefront of the aviation industry's digital transformation.

Digital twins, computer programs that use real-world data to create simulations predicting the performance of products or processes through digital 3D models, are transforming airports by optimising operations like baggage handling and passenger flow. Digital twins enable real-time analysis and optimisation of baggage flows, offering valuable insights into the identification of recirculating bags, manually encoded bags, mishandled bags, and bottlenecks. This deeper understanding allows for necessary changes and improvements in flow and processes to be identified and implemented. By harnessing digital twins, airports can continuously monitor, track, and optimise their operations, leading to a more efficient and personalised experience for travellers.

Keeping travellers informed about their baggage in real-time has become a priority for airlines. Currently, 25% of airlines offer this service according to SITA's 2022 Air Transport IT Insights report, and

an additional 42% are planning to implement it by 2025. Such innovations eliminate the anxiety associated with lost or mishandled luggage and improve the overall customer experience.

The expectation of personalised services is also driving the use of AI and machine learning in the travel industry. AI-powered chatbots on social media platforms and instant messaging apps are assisting customers online, providing real-time support and tailored recommendations.

The aviation sector has faced unparalleled challenges in the past several years, including the significant drop in airline traffic during the COVID-19 pandemic and the complex recovery process amidst labour shortages, high fuel prices, and supply chain constraints. Despite this, the industry has proven its remarkable resilience and adaptability. The industry's focus now extends beyond mere recovery; and aspires to elevate the customer experience to unprecedented heights. To truly optimise the passenger experience, modernising digital infrastructure becomes imperative.

Distributed, interconnected digital infrastructure enables agile responsiveness, especially for airlines, which operate in constant motion across various locations. With the right infrastructure, we can unlock innovative "airport edge" use cases, leveraging AI and data for enhanced security and streamlined processes. Equinix has witnessed the transformation of leading airlines like Delta and Vueling Airlines through their partnership. The provision of scalable, resilient, and interconnected digital infrastructure is the key to unlocking the industry's full potential, enriching the lives of travellers, and opening new horizons for growth.

The travel industry has been completely transformed, thanks to the advancements in digital technology. Dreaming about a vacation now involves browsing through travel websites, following travel influencers on social media, and immersing oneself in virtual reality experiences that allow travellers to explore destinations from the comfort of their homes.

And that is just the beginning. With European travel on the rise, the industry is shifting to digitally transform its infrastructure to allow for an easier end to end travel experience. According to a survey by The European Travel Commission, 77% of European travellers intended to take a trip during the first six months of 2023, marking a 16% increase compared to the previous year. All very positive for the sector – but a call to action for those that have yet to fully embrace the opportunities of digitisation.

Meanwhile, for those passengers returning to their favourite holiday destinations, gone are the days of having to flip through brochures to plan a holiday, queuing at airport counters to buy a plane ticket and the need to carry physical boarding passes. Today, travelling has entered a new era, where the world is at their fingertips, and just a click away.

Hospitality technology – the ongoing evolution of the hotel check-in experience

The hospitality industry is experiencing a rapid transformation as technology continues to evolve. Technological advancements are changing the way hotels operate, interact with guests, provide customer service, and present access to additional amenities.

BY BRANIGAN MULCAHY, CO-FOUNDER AT VIRDEE



TODAY'S TRAVELER expects technology at every point in their journey from home to destination. They might use Uber to get a ride to the airport, use their airline's app to check into their flight and keep their boarding pass at the ready in their Apple wallet. There already exists an expectation that technology will be in place at several touchpoints along the way. However, in the coming decade, we can expect technology to truly revolutionize the hotel check-in experience.

The pandemic played a role. During its onset, many scaled back operations or even shut down, but when they did that, they laid off a substantial percentage of their workforce. Many of those individuals transitioned to other careers and when the time came to hire them back, a significant number had moved on in their careers and were doing something else. Additionally, the pandemic

also accelerated the demand for touchless interaction options from guests. From grocery stores to restaurants, everyone seems to be offering touchless options now, and the hospitality industry cannot afford to be left behind. Finding seasoned staff has been an order of magnitude more challenging, even with the industry standard pay increasing by 23% since before the pandemic.

Technology has gained traction over the past three years, filling in the gaps where hiring has become difficult. When considering the downside of having fewer employees on the floor of a hotel or property, the onboarding of specific technology has also brought about positive change, modernization and in some cases, a more seamless experience for the hotel check-in and stay experience. In doing so, hotels are also catering to the changing demands of guests for more on-site technology.



Hotel check-in and beyond. Guests have a choice. Today, travelers and hotel guests make a choice about whether they want to queue up at the reception desk to check in. There are those that prefer to speak with a person, but increasingly hotel technology is used in the next phase of the traveler's journey. It's interesting to note that a major source of negative guest reviews for hotels is the check in experience, especially when it leads to long lines of people waiting for their turn. Statistics tell us that front desks can only check in one person at a time and the typical check-in experience at the desk runs 5 - 9 minutes. Advanced software and applications are now making it possible for hotels to process guests faster, handling an infinite number of check ins at a time. Guests use their smartphone or an in-lobby kiosk to complete the check-in process, bypassing the front desk altogether. This process saves guests a great deal of time and hassle, especially when they are in a hurry.

The rise of mobile check-in apps and kiosks is changing the way guests interact with hotel staff and what they require of them, as well. It's now a choice that many guests make – if they wish to wait in a line to speak with the person at the front desk. Or they want to have a touchless experience and do everything on their phone.

Mobile check-in provides a choice. There is no typical hotel guest. Some want to stand in line and speak with a person. Some want to check in via mobile or kiosk but go to the front desk when they have a request for a room upgrade.

However, even room upgrades are now accessible via mobile or in-lobby kiosk, enabling guests to conduct their entire stay without interacting with staff. With technology, guests can bypass the front desk and go directly to their rooms if they wish and, ultimately, tailor the check-in experience and their entire stay to their personal desires. Mobile check-in provides clear convenience as guests can check in from anywhere, at any time and in a positive sense, reduces the need for staff at the front desk, freeing them up to attend to other duties.

Additionally, some hotels have begun using artificial intelligence (AI) to streamline the check-in process. Chatbots can answer guests' questions and provide information about hotel services. AI has been particularly useful for hotels that receive a high volume of guest inquiries, as it allows them to respond to requests and questions more quickly and efficiently than ever before.

Impact on hotel employees

While technology has made the check-in process more convenient for guests, it has also had an impact on the hotel employee hiring and retention experience. The combination of the pandemic ripple effect where some staff did not return to their roles, and the rise of mobile check-in apps and kiosks, means that the demand for front desk staff has waned. Some common scenarios include those that have previously held the position have moved onto higher-level more long-term roles in the organization while some hotels have implemented self-check-in kiosks, allowing guests to check in without any assistance from hotel staff. The popularity of this type of offering is gaining momentum, empowering hotel guests to check in quickly any time of the day or night.

The impact of technology on human capital raises concerns about the potential loss of hospitality jobs. However, it is important to restate hotels across the board are still having trouble finding staff. Technology has filled the gap and allowed hotels to continue operating, using check-in technology as a differentiator by removing the mundane tasks of checking guests in and instead turning front-desk staff into guest-relationship managers. Staff now has more time to interact with guests and make their stay more personable.

Mobile check-in provides a choice. There is no typical hotel guest. Some want to stand in line and speak with a person. Some want to check in via mobile or kiosk but go to the front desk when they have a request for a room upgrade

Total addressable market

There are many lodging rooms available in the US – anywhere from 5-9 million rooms of various cost and size available. Hotels spend, on average, about \$9 per check in on front desk labor (about \$6.2B per year), a significant cost when considering that the average room rate is \$100 industrywide. Total US hotel revenue is \$342B per year, and ancillary revenue sales (purchase room upgrades, and room service options) equal about \$75B of that. Considering sales increase 17% - 20% when these upsells are offered via mobile phone app compared to speaking with hotel staff, there is significant upside opportunity there. New technology is supporting additional revenue by removing check in labor costs as well as providing a quick and convenient way to support additional sales. Finally, we have to consider fraud, which is estimated as 1.1% of revenue (or about \$3.8B per year) and can be virtually eliminated with modern check-in technology.

What's next?

The big debate with hospitality tech over the last decade has been “build it vs. buy it.” And hospitality brands are the deciders in which road to take. Many independent hotels buy hospitality technology, as they typically lack the resources to develop purpose-built software. And lately, even for the larger hotel brands, there has been a trend to look for third party solutions in the marketplace to fit their needs across their properties. It is likely this trend will continue in the property management system space and guest experience software markets. There is technological and market adoption on the horizon.

Another potential development is the use of biometric technology in the check-in process. Biometric technology, such as fingerprint and iris scanning, could eliminate the need for physical keys and provide guests with a more secure and personalized experience. Additionally, the use of biometric technology could improve the efficiency of hotel operations by reducing the time it takes to check-in guests even further.

Overall, technology is transforming the guest experience in the hospitality industry in several ways. The hotel check-in experience is just one area where changes and evolution are already in force.



How digital transformation stretches network performance and risks network security

Digital transformation offers incredible possibilities for businesses, but they're highly disruptive too.

BY CARLOS FERRO, SVP AND GENERAL MANAGER INTERNATIONAL REGION, FOR LIVEACTION

DISRUPTION is one of the modern world's favorite words. Not a day goes by in which one exciting new startup or another doesn't claim that it will "disrupt" one space or another.

But take that word seriously and you'll find that disruption doesn't just refer to insurgent new ideas or transformational new technologies, but the old relied-upon traditions and ways of working being fundamentally uprooted.



The double edge sword of digital transformation
Many businesses are now waking up to this reality. Digital transformation is happening everywhere and often at breakneck pace and while those digital transformations often provide astounding benefits, they undo the time tested arrangements upon which those organisations previously relied. Both

NetOps and SecOps teams know this well because digital transformation disrupts their ability to ensure network performance and spot threats. So while digital transformations offer huge benefits - they often create chaos in their wake. However, the true disruptions that digital transformation causes are not explicitly to do with the new technologies that are introduced, but the fact that many organisations don't re-architect their environments to accommodate the ways in which that technology has changed it.

SecOps' new blindness

One of the key obstacles that digital transformation often introduces is the presence of new areas of darkspace - parts of the network that are invisible to operations and security teams. In fact, one report by Dimensional Research shows that 81% of operations

professionals deal with network blindspots. That's understandable - much of the network is now made of devices, services, entities and technologies which sit outside the perimeter and the view of legacy visibility tools. The new shape of the digitally transformed network often makes it difficult to monitor in the same way. As new technologies are added to the network, new pathways can open up which lead to unaccounted for blindspots. Similarly, the ease and flexibility that so often characterises digital transformation can permit instances of shadow IT and risky behaviours which are also left unmonitored.

Take an example like the cloud: Many organisations have now migrated their networks - or portions of the networks - en masse to the cloud. This has, on one hand, permitted great levels of flexibility for organisations and paved the way for future transformation - such as mass remote work. On the other, it has made much of the network invisible to operations and security teams. As a result, cloud misconfigurations are one of the leading vectors in data leaks.

Similarly, APIs are allowing new connections and collaboration between different organisations and entities. In fact, it is now estimated that APIs now account for 84% of network traffic. Unfortunately APIs are often left unmonitored due to how quickly they can be spun up, and how numerous they soon become. As a result, breaches can quickly spiral out of control. One 2022 Google Research report found that 62% of IT decision makers had experienced an API related security incident in the previous 12 months. One respondent noted that "the rate at which APIs are developed today exceeds the rate at which our organisation can ensure the security of each of these APIs."

NetOps' new resource demands

Similarly, when new devices and technologies are added to a network, they can claim unexpected amounts of resources if not correctly accommodated. This in turn, has a huge effect on the network and when resources aren't correctly allocated to individual parts of the network, performance suffers and bottlenecks emerge. The first and perhaps most obvious effect on network performance is increased traffic. As new technologies, devices and applications get added and new pathways run through the network, they generate more traffic in more places - adding to potential complexity, potential performance issues bottlenecks and ultimately the burden that NetOps teams have to deal with.

These often include bandwidth-intensive applications - such as video applications - which can be extremely demanding on network resources. When these new demands aren't accounted for, they can deprive other parts of the network - including critical applications - of crucial resources thus leading to more performance issues and introducing

latency. The potential issues run further still: Cloud deployments, hybrid networks and other distributed architectures can introduce latency; integrating new technologies with legacy technologies can cause compatibility problems which can cause further performance issues and initiatives such as remote work can cause huge problems if they're not properly optimised and endowed with the correct resources.

So what?

While enterprises undergo digital transformations, they often expand out of the reach and sight of the NetOps and SecOps teams that are supposed to be managing the network. As the network complexifies and their monitoring tools become less effective, problems spiral and those organisations become sure victims of security incidents and have to deal with more and more performance problems and ultimately, downtime. Downtime is a very scary word for a business. Considering that so many businesses are internationally-focused and digital-first, they require the smooth operation of their networks every minute of every day in all timezones, everywhere. Every minute of downtime is a minute of revenue loss, increased cost and business paralysis. In fact, data shows that downtime costs organisations \$300,000 to \$400,000 an hour.

Treating the problem

Many of the network optimisation problems that come along with digital transformations are not necessarily problems of the technologies themselves, but that organisations haven't pre-empted the ways in which they would disrupt their previous modes of operation. Organisations can't always be expected to know what these digital transformations will do to their networks. Networks are complex things and are becoming ever more complex so it may not be easy to understand beforehand the true scope of the changes that a digital transformation will make to the network. That's one of the reasons it's so important to regain control and visibility over the network to accommodate digital transformations as and when they happen.

The complexification of the enterprise network that digital transformation introduces increases the machine-to-machine traffic within the data center which is often invisible to IT teams. Retaining visibility and control over the network requires visibility into this crucial east-west channel. That solution should include the ability to glean granular insights to quickly identify, troubleshoot and resolve issues across both the traditional network and virtual infrastructure.

Digital transformation offers incredible possibilities for businesses, but they're highly disruptive too. Organisations need to maintain visibility into their own network so they can actually understand the ways in which digital transformations fundamentally change the network.

INNOVATION



Unlocking innovation: how service providers can support industries

Though businesses are feeling the pressure to innovate, many are still lagging behind when it comes to investing in and implementing the right technology.

**BY DANIEL VALLE, SENIOR VICE PRESIDENT, GSP INTERNATIONAL,
AT WORD WIDE TECHNOLOGY**

IN LIGHT OF THIS, we conducted research with industry leaders from FTSE 200 companies in healthcare, manufacturing and transportation to better understand the problems they face and consider how service providers can better cater to their needs.

Whilst the challenges each industry faces are somewhat unique, it is clear that service providers' unrivalled connectivity alongside a clear understanding of businesses' verticalized ambitions is key to unlocking the next stage of opportunities. By becoming trusted long-term partners, service providers can drive innovation and transformation forward.

In this article, I will delve into the pain points experienced by industry leaders, examine their vision for the future and explore strategies that could support industry leaders in achieving their innovation objectives.

Healthcare: Sharing data securely

Frequently, healthcare innovation requires collaboration between multiple stakeholders such as hospitals, clinics and government agencies. Yet, sharing data between these groups is ruled by complex compliance regulations. Device interoperability – the ability to exchange and use information across devices – is also an issue here, affecting business leaders' ability to seamlessly share information.

In recent years, we have seen a significant increase in demand and use of telemedicine and virtual care: in the UK alone, the market size of telemedicine services has increased by roughly 20% per year between 2018 and 2023. However, there is a digital divide across the UK. A lack of widespread fixed line access has left a significant number of homes without proper internet connectivity. For service providers, this is an opportunity to enable remote care through connectivity.

5G-fixed wireless access will augment existing infrastructure in rural areas to ensure that dwellings without fibre connectivity, such as farms, can access remote healthcare. This approach is being actively explored with encouraging results. West Mercia Rural 5G is enabling remote patients to stay in the familiar setting of their care home while accessing treatment, which is deemed especially important for patients with dementia. In addition, this connectivity will save patients from travelling back and forth, which could expose them to additional health risks.

Manufacturing: Growing security and maintenance needs

Despite the private manufacturing sector accounting for a huge share of research and development spending in the UK, there is an industry-wide skills gap that is yet to be surmounted. The internal knowledge and skills needed to utilise new technology is lacking outside of the developers. This gap not only creates inefficiencies in the production process (resulting in higher costs and lower profits) but feeds into a cycle where innovation is not supported – resulting in a wider cultural problem. As a result, the lack of new technological investment often leaves outdated legacy systems in place, with higher-ups wary of supporting upgrades or migration to new platforms. Legacy systems leave companies vulnerable to the growing threat of cyber-attacks which increased globally by 7% in Q1 of 2023.

So, it should come as no surprise that manufacturing respondents in our research cited protecting investment from cyber-attacks and theft as a key priority area for investment. Businesses must invest in up-to-date cybersecurity technology to keep the fruits of their innovation secure. While predictive maintenance has already revolutionised the way that manufacturers, and the businesses they supply, approach equipment preservation. Digital twins and 3D models are the next iteration of real-time data visualisation, from IoT-enabled devices back to a centralised system which can predict potential faults or malfunctions before they occur. This approach minimises unplanned downtimes, keeps machinery running smoothly, and ultimately reduces costs if businesses are willing to invest in innovation. Innovators such as Nvidia are accelerating the outcomes that can be realised with this approach, an example is their omniverse platform which enables industrial metaverse applications with little to no code, augmented by AI.

Additionally, improved infrastructure can enhance efficiencies via AI and machine learning. Manufacturers who invest in digital twins can also virtually replicate a physical product or system: Siemens successfully pioneered digital twins to test complex product design and production planning, optimising its manufacturing process.

Transportation: Upgrading legacy technologies

Finally, the global transport industry has successfully



recovered since the stagnation of the COVID-19 pandemic, with compound annual growth rate expected to reach 9.5% into 2026. Leisure and business air travel in particular, is rising rapidly as the aviation industry is expected to exceed its pre-pandemic level by year end. With growth less of a concern, the industry is now under pressure to achieve its sustainability goals, with huge modernisation efforts and investment needed. Achieving this will require navigating upgrades to infrastructure that is already heavily depended on. Service providers can help the industry at large to better utilise data analytics in order to gain sight of future demand which in turn, will drive efficiencies.

Reducing risk and journey times will also contribute towards meeting sustainability goals. Service providers need to demonstrate understanding and ability to navigate dependencies to position themselves as a trusted partner for the sector. Smart data, including real time transportation data, can analyse where, when, and why accidents happen and create Prognostication Crash Maps to shortlist high-risk areas to avoid. Additionally, as autonomous driving has received billions of dollars of investment in recent years, the demand for advanced driver-assistance systems (ADAS) has increased. Major improvements in capabilities could be on the horizon. An upgrade would not only support the industry in measuring its own success through smarter insights but also in becoming more interconnected to support transformation and automation across the board.

An innovative future

Service providers have a vital role to play in the current landscape through aligning their 5G offerings to industry verticals. To their advantage, service providers are uniquely placed to support verticalized innovation. Already, they have access to thousands of pop exchanges across the country with an existing widespread network and close access to customers.

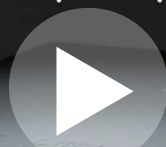
Partnerships between businesses and service providers, will provide vertical organisations with the knowledge and confidence they need to implement the right innovative technology to help them become competitive for the future.



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