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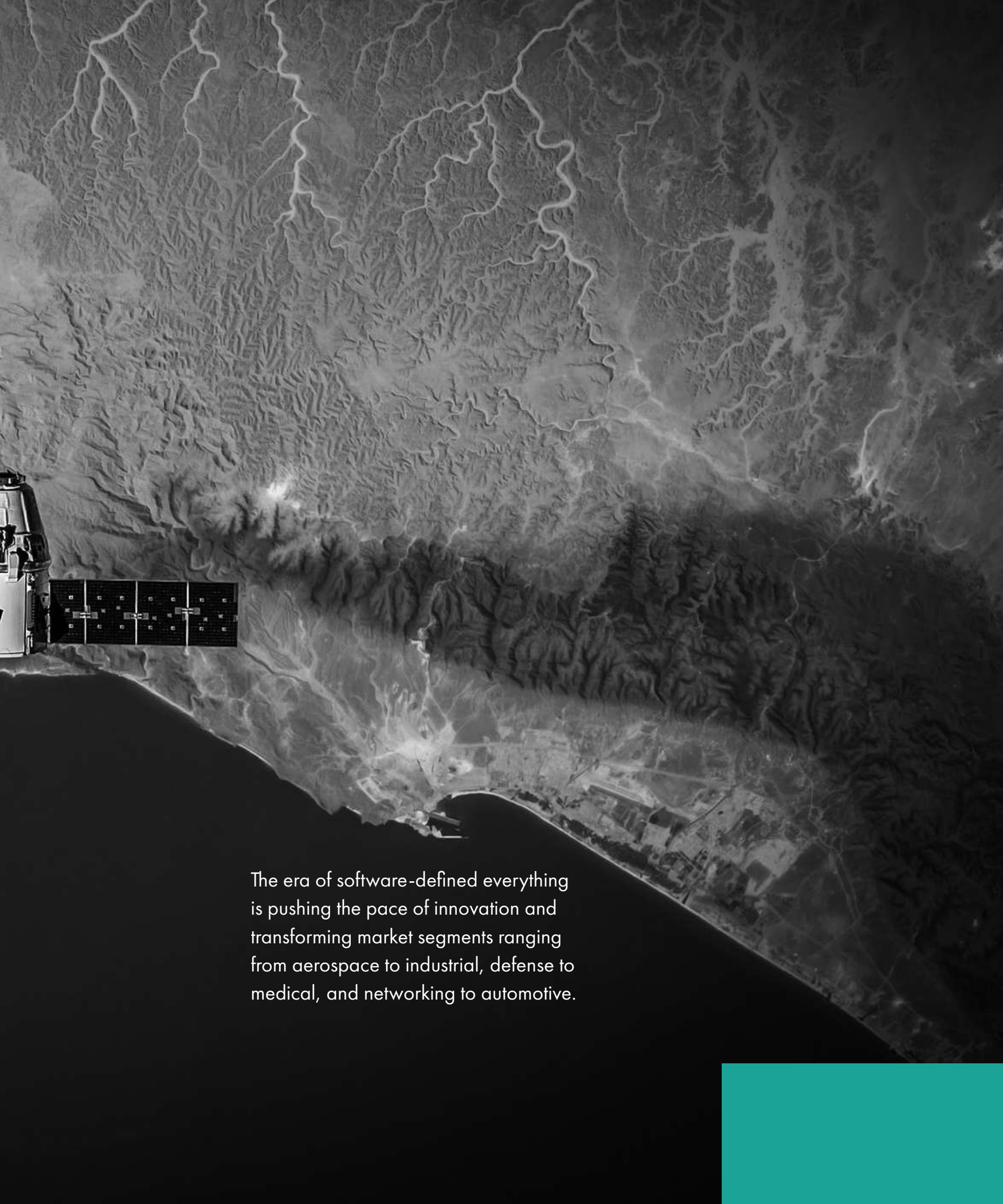
GET SEEN BE HEARD

tbtech explores the advances in communication



The era of software-defined everything is pushing the pace of innovation and transforming market segments ranging from aerospace to industrial, defense to medical, and networking to automotive.

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Over the last few decades, with every improvement, upgrade or optimisation technology has undergone, the networks that connect them have also been evolving.

Editorial

It’s good to talk.

Communication refers to a group of people, processes or tools that are responsible for the effective flow of information and collaboration between employees within a company or brands and consumers. Open and transparent communication tend to have higher employee engagement and retention.

Communication is crucial in creating well informed and motivated staff, as well as for to your customers and clients. The first step is to create a basis for easy and quick distribution of information. It is important to remember that you do not only want to reach your customers, but also those in production, on the sales floor or in the warehouse.

The way we communicate on a daily basis is evolving rapidly, with new software and hardware adding to the experience.

Meet your tbtech team.

JOE ALLEN

Joe has vast experience and knowledge accumulated and honed as a New Business Development Manager and Relationship Manager. Responsible for generating new business opportunities, looking after the growth of the company and strategy, sourcing new ventures and managing the company.

LUKE CONRAD

Luke is Digital Editor at TBTech and has history working closely with the worlds biggest tech brands to deliver campaigns. Luke is an advocate of tech across business and commercial applications.

PAUL WHITTALL

Paul stops at nothing to innovate and create value for our customers. His mission is help those we work with to win in their markets. Passionate about delivering customer success and have had the pleasure of supporting many of the world's leading technology brands for over 15 years.

We have been working behind-the-scenes to elevate the readers experience. Welcome to the rebranded edtion of the tbtech magazine.

JESSIE PETHRUS

Driven by storytelling, Jessie's writer-designer duo allows her to combine the power of synergy across different mediums.
She believes a strong marketing strategy begins with understanding the brands mission and audience, together with the market, in order to position yourself as a leading brand, speaking directly to your clients and customers desires.

WILLIAM MOORE

William's passion starts and ends with design, timeless aesthetic and creative solutions. Having worked on numerous creative campaigns ranging from car manufacturers, leading tech companies, property investors as well as local artisans, the goal is to create the ultimate brand experience between the client and the consumer.

MATT ROBERTS

Matt is Operations Manager at TBTech, he has spent the last 15 years working with multinational IT companies building campaigns, GTM strategies, leading both Sales and Marketing teams to achieve organisational goals.
With a love of computer science, history, and psychology he is an advocate for change, operational efficiency and automation.
Value across the business for all our customers.

The future of communication.

Communication makes the world go around. It is what drives life. And if we have learned nothing else in the challenging times, we have all recently experienced, we have learned the importance of communication and connection, however it is achieved.

As in life, communication is critical in business. Done effectively it can mean the difference between success and failure. Internally and externally, it is imperative for achieving your goals with clients, stakeholders and all your people.

There is little argument on its supreme significance. But there are huge changes ahead in how we communicate, both as individuals and as businesses. Recent polls predict that the most popular ways of communicating in the future will be wearable technology, augmented reality glasses and smart watches for example. Things I only dreamed about as a kid or watched on the sci-fi channel.

From Pete Hanlon,
CTO of Moneypenny.

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Continued...

The future of communication.

THE RISE OF ARTIFICIAL INTELLIGENCE

Over the course of the next decade, this is only going to explode further, with technological advancements of AI and NLP, for example, playing an even more significant role in our daily lives and particularly in the way that we communicate.

AI is already playing a key role in workplace, automating tasks that only a few years ago would have been unthinkable. Take digital switchboards. Think about when you first experienced them, their clunky, mechanical experience. And now, think about the last time you interacted with one, a smoother and more human experience, I am sure. And that is only going to get better.

At this very moment, we are focusing a lot of our research and development on speech to text and conversational AI. We are training our own Automatic Speech Recognition systems using our PA's so that we can increase the accuracy of our transcriptions. We are also working with companies like Nvidia and Huggingface to implement state of the art conversational AI capabilities into our product base.

In investing into our speech recognition software, we are constantly improving our ability to distinguish between more words and accents and respond using natural language. Thanks to cloud-based processing it is also learning every time, improving as it does. Great for us as a communications and technology organization, our goal being to harness the power of technology to work in synergy with our people to make the next conversation better than the last. And great for all organizations.

THE POWER OF YOUR DATA.

Data is your golden goose. It helps you predict trends, identify opportunities, safeguard against threats and stay ahead of the market and the competition. It provides insights to customer behavior, product lifecycles and market bearing so that you can be agile, prepare and respond effectively.

Fundamentally, data is what you make your informed business decisions based upon. Not only is the speech recognition software improving our communications, but it is also adding to our data. Data that is collected and can be analyzed, providing actionable information and insights for business. The potential and value of speech recognition to business is colossal.

Being able to effectively and efficiently being analyze your data means that you can understand customer interests and expectations with more speed and accuracy, turning it into actionable intelligence, tailoring it to meet their needs and exceed them even before they are asking for it.

A NEW WORLD.

Digital transformation is all about leveraging technology to fundamentally change the way that we do business and improve the process and value for our customers. It is at the very core of the future of communication.

It will look different across countries, industries, companies but it is not simply about the technology. It is about rethinking how you work with technology, people and processes. It is about harnessing the right technology for your organization. It is a massive undertaking, but every business has room for improvement. Ultimately, ensuring that it is equipped to make better decisions, faster.

The hows and whys deserve an article to themselves. What is relevant here is that you need people's buy-in. Talk about technological advancements and their near endless potential, and the normal reaction is uncertainty, fear even. Embracing speech recognition software, for example, is not about replacing human interactions, it is about adding value to your people and your business. It is about supporting your people with the tools that they need to do their job.

And the key to the future of communication, is communication. As with introducing anything new, but especially technology, it is critical to take people on the journey with you, involve them from the offset, communicate, be transparent, discuss the fears and make the benefits relevant. Do this and AI, or speech recognition software, whatever you decide is the best technology for you, can contribute to creating a wonderful place to work and a workplace with a long-term future.

WHAT IS THE FUTURE OF COMMUNICATION?

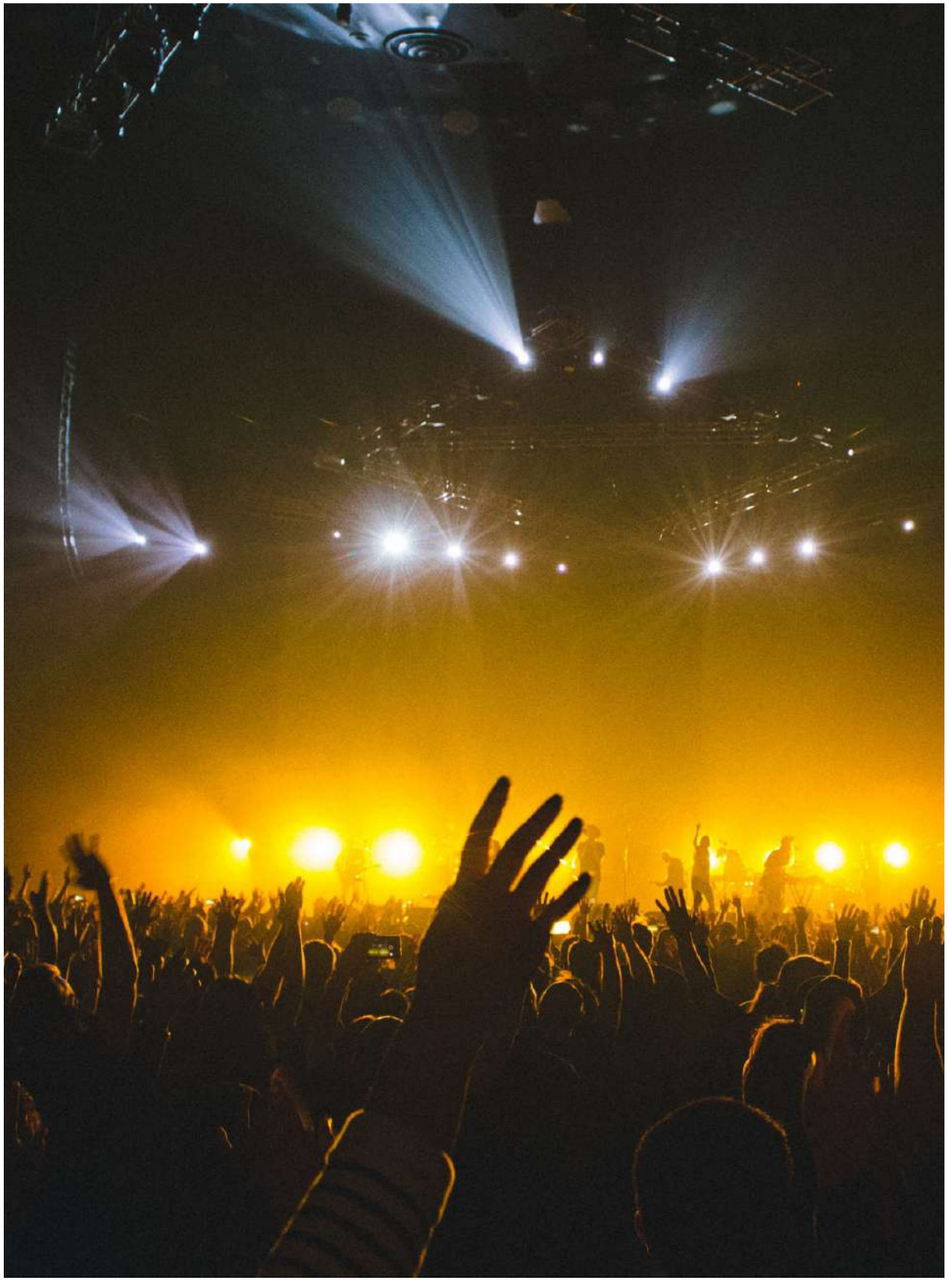
I wish I had the crystal ball to predict that. Unfortunately, I do not. I do believe that the future of business is in the ability to constantly evolve, and technology will play a critical role. It is about asking how you do things and how you can do things better and how technology can help. For example, AI can remove the burden of repetitive administrative tasks, freeing employees up to focus on being more agile, more customer-focused and more innovative.

The only thing I can predict is that technology is getting ever better at enhancing the human communications experience, creating quality conversations enabling rapid, efficient communications through real human beings.

Why virtual and hybrid events are the future of industry.

While Friday quiz nights on Zoom, graduations behind a computer screen and empty venues are now distant memory, other forms of online events are here to stay. The events industry, like most, was hit hard during the pandemic, faced with enormous pressure to adapt as long-standing normalities were torn apart by government mandated lockdowns and social distancing rules.

But the appetite for events prevailed, as people turned to technology for their conferences, festivals, work gatherings and more, and whilst in-person events have made a strong come-back, transitioning to online events has shown people the benefits – benefits which mean virtual events are here to stay.



By Shoaib Aslam
Founder and CEO
of EventsX

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Why virtual and hybrid events are the future of the events industry.

THE BENEFITS OF 'DIALLING-IN'

For all the benefits of in person events, it is impossible to shake the progress made by virtual events services over the past few years. In fact, recent research commissioned by EventsX uncovered that almost two thirds (65 per cent) of business decision makers would be more likely to attend an event if it was virtual or hybrid, and here is why...

At the start of the pandemic, virtual events solutions were relied upon as a necessity and did not come without their issues, with limited features and connectivity problems taking center stage. But through that process, the online events industry took off and the scene has now been set, technical glitches minimized, and now people are able to enjoy events from the comfort of their own homes.

The ability to 'dial-in' from anywhere is a primary benefit for virtual events. Gone are the days of a 10-hour road trip to get to an event, virtual events cut both the travel time and expenses, meaning access could not be easier. At the click of a button, people can join a virtual event and connect with others all over the world.

The removal of geographical barriers opens up a host of possibilities, whether it be easier communication with colleagues overseas, international awards ceremonies, or family events with relatives across the globe. Fundamentally, virtual events help people to stay more connected than ever, a vital necessity for human's who require interaction on a regular basis for their mental wellbeing.

Joining events online also makes the process of accessing event information, contact details, and summaries far easier. Virtual events also offer significant cost benefits for businesses, not only reducing travel and boarding expenses for attending employees, but sponsorship as well.

Sponsorship has traditionally been a particularly tricky area of events, requiring multiple different parties and websites to pay for and promote, but up-and-coming virtual events platforms like EventsX help streamline this process, allowing for payments, referrals, design and reports all in one convenient place to ensure the process is both easier and more cost effective.

By investing in a high-performance online events platform, managing, promoting, and attending an event becomes easier, providing unprecedented engagement and making networking smooth and easy.

THE BEST OF BOTH WORLDS

Now we have seen the benefits of both physical and virtual events, the next logical step is to bring together the best of both worlds, combining the desired human interaction that is vital for our wellbeing, with the convenience of connecting online.

Indeed, through recent polling, EventsX discovered that over two thirds (68 per cent) of business decision makers expressed a desire to attend a hybrid event in the near future, seeking to take advantage of the flexibility these events provide.

Hosting hybrid events allows attendees to choose their preferred method of attendance, whether that be face to face or online, providing the benefits of physical interaction for speeches and networking, whilst also allowing those unable to attend in-person to 'dial-in' to the event and not miss out on the action.

Ultimately, this will help to maximize engagement across events, removing key geographical, cost and time barriers, increasing accessibility for all.

Crucially, these events can rely on the latest technology, with artificial intelligence in particular a key tool for improving the operations of events. For example, a key use case for AI technology that EventsX offer is summarisation, with options for individual conversations, speeches, and even whole event summaries available, helping people re-visit key moments or allowing busy C-Level executives to simply scan a quick summary of an event and stay in the loop.

THE FUTURE OF THE EVENTS INDUSTRY

It is clear that the appetite for events is at a high with people keen to get back out there in person, whilst also reap the benefits of online.With this, the future of events will see a mixture of in-person and virtual events depending on company, type of event and other requirements specific to individuals, with the option of virtual made all the more possible by significant development over recent years. But the industry is ripe to take events a step further, introducing hybrid events into the mix.

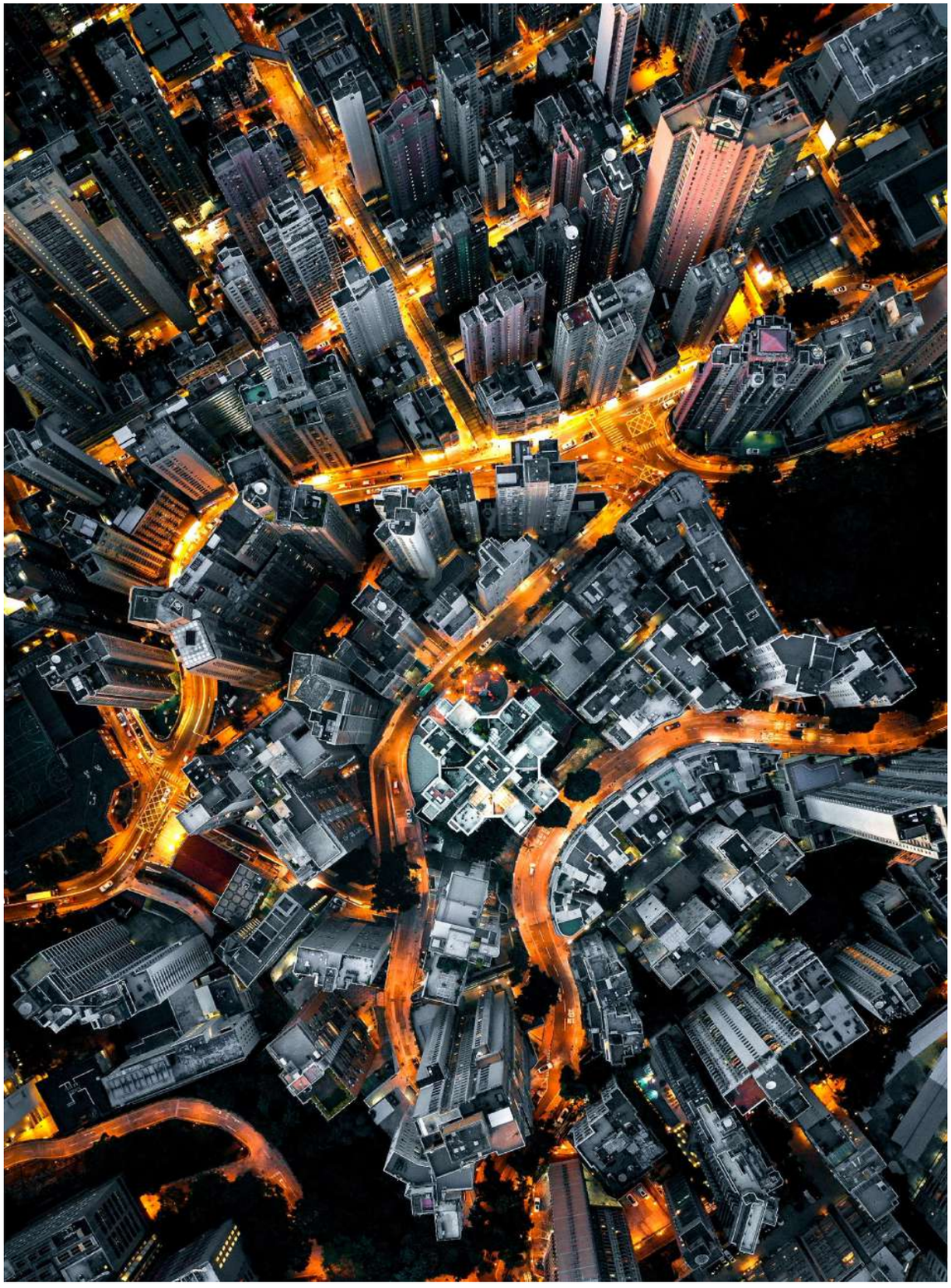
Giving attendees flexibility as well as cost and time benefits, combined with providing organisers with an easier management process for the entire event, including sponsorship, will boost engagement for events and ensure the desire for events remains high.

Why low-latency is so important.

Consumer interest in 5G technology has been fueled by the arrival of glamorous, speedy handsets such as Apple's iPhone 12, with 5G networks now rolled out to many towns and cities across the country. But the 'point' of 5G won't simply be delivering ultra-fast uploads and downloads to the phones in consumers' hands; it also unlocks the potential of emerging technology such as the internet of things (IoT) and smart cities.

It all comes down to latency. In layman's terms, it is a measure of the time it takes a device to send a message and get a response; and it is a key to services that require real-time inputs, and unlocks capabilities that would not have been possible via the 4G network.

5G isn't just about a faster network – it's about integrating an entire ecosystem of technologies to meet the service needs of the 'connected everything' age. 5G will empower even more pervasive use of connected devices in both personal and professional environments. Latency is going to be central to this, along with an open-source approach.



Canonical's Maciej Mazur on why low-latency unlocks the potential of 5G.

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Why low-latency is so important.

While the speeds tend to be the aspect of 5G highlighted in consumer reporting, latency is the factor that makes 5G so useful for emerging technology in the industry, transport and even medicine. For telecom companies hoping to upgrade their services, a reliable low-latency framework will be essential.

Low latency is a key enabler behind many of the advanced services offered via 5G networks, from autonomous vehicles to telemedicine. Low latency is also important in the effective delivery of technologies such as augmented reality, VR and cloud gaming services. By ensuring that input lag is put down to a minimum, then experiences can be delivered in a smooth and frictionless way to the end-user.

OPEN SOURCE, SDN AND 5G

As professionals build towards this in the telco space, open-source is going to be key to delivering and upgrading 5G networks to deal with these technologies. For decades, the telecoms industry was dominated by proprietary businesses and operating models. As market pressures evolved, however, providers were forced to find new, innovative solutions. It has resulted in telcos embracing open-source principles in recent years – an approach that transformed the computer industry from transactions to supercomputing, smartwatches and wearables, and then to a wireless network infrastructure supporting each one.

The success of 5G rests on software-defined networking (SDN), whose main concept is to decouple the infrastructure of wireless networks from expensive, closed hardware and shift it to an intelligent software layer running on top of commodity hardware. 5G and open-source have become an attractive combination for telecoms, with major operators worldwide pioneering new technologies and use cases. For example, open source is already a major part of 5G networks in Britain, with BT's 5G core relying on Canonical technology, and platforms such as OpenStack and Kubernetes used widely in 5G networks.

As an approach, it also promotes third-party app development and greater community involvement, which allows operators to add value and differentiate from the competition beyond the traditional measures of coverage and subscription costs. It's fair to say that the future of mobile connectivity is software-defined.

INTERNET OF THINGS

Open-source software is key to 5G and IoT developments in particular, because the software can power the automation of mission-critical functions required to support the high speeds and low latency of 5G, as well as the huge number of endpoints in IoT. An open, software-defined model will help operators meet the growing need for faster, more flexible, and more secure systems. It is a case of adaptation and survival.

As demand for low-latency networks grows, cloud-native approaches and software-defined infrastructure will enable telecom companies to upgrade their networks to keep pace.

Real-time kernels offer another way to keep up with the latest trends in emerging technology. A real-time kernel is optimised to deliver low latency and to respond consistently to requests. It guarantees ultra-low latency and is used in contexts where near-real-time responses are a non-negotiable requirement, such as industrial automation and robotics. It's also enabling OpenRAN vendors to use SDKs like Intel FlexRAN to build their solutions on top of hardware dedicated to this use-case.

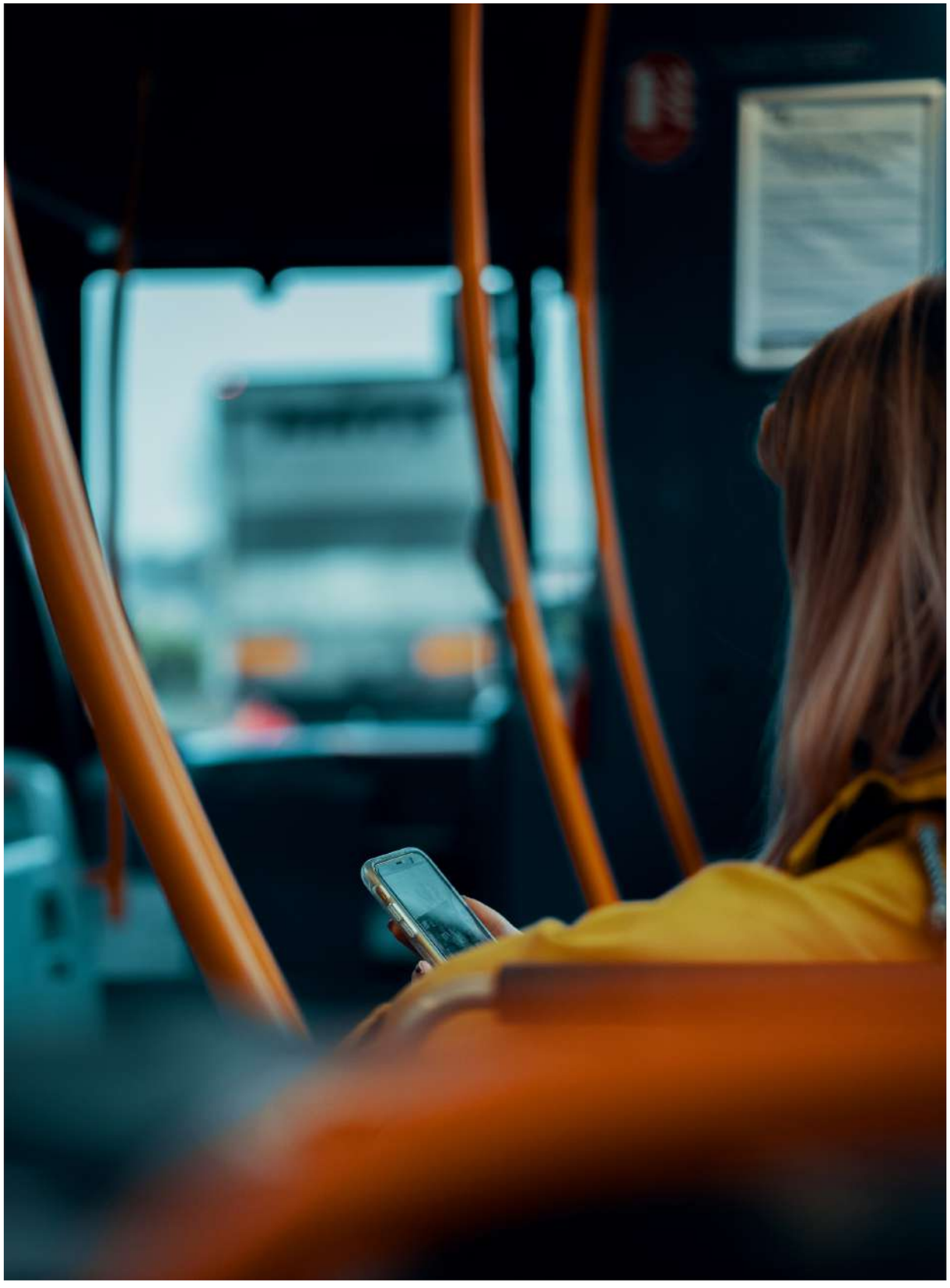
RESHAPING OUR CITIES

Ultra-low latency is essential in use cases such as smart factories (which report their performance in real-time) and intelligent transport systems as well as remote surgery, assisted by AR. In such cases, even a tiny delay caused by latency can lead to real-world consequences, such as patient suffering harm. Across a wider scale, low latency and 5G could reshape the cities we live in. Smart cities use sensors embedded in objects such as bus stops, rubbish bins and buildings to harvest data such as traffic information.

Low-latency 5G will be key to allowing large numbers of such devices to connect in near real-time, offering information which will help everything from local government to longer-range planning. It's no exaggeration to say that 5G has the potential to change the way we live, Telecom companies just need to embrace its potential.

How to evolve your mobile practice.

Mobile devices have become a ubiquitous part of our daily lives. This pane of glass can evolve to power numerous unique experiences for your users. In today's world, these devices can be used to communicate, create, entertain, and procure just about anything. Much like this device, companies must continue to evolve their mobile practice in order to take full advantage of the benefits.



By Ryan Gant.
Solutions Architect
at Bottle Rocket.

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How to evolve your mobile practice.

GO ALL IN ON MOBILE

Gone are the days of pushing out a limited experience to just check a box. Mobile is now an important part of our everyday lives and users expect you to meet them where they are at. Forrester expects that US mobile commerce will grow at an annualized rate of 14.4% over the next five years to 2024 and consumers are continually becoming comfortable using their phones for a variety of tasks. If you're not able to go fully mobile first, at least make this a significant part of your business. Start with an API-first approach to developing services. An API-first approach means your APIs are treated as "first-class citizens" and involves developing APIs that are consistent, reusable, and revolve around the idea that the end-product will be consumed by mobile devices and client applications.

USE THE PLATFORMS TO THEIR ADVANTAGE

Each form factor of a platform has its own unique strengths and use-cases. Your user is not going to enjoy holding up their wrist for a complex flow on their watch, so you must tailor the experience. Tablet and desktop apps are geared toward these complex flows that require a more precise user input. Phone apps should remain as full featured as possible, while reducing the number of steps to get things done. Remember, your user is probably out and about during this time, so make it as easy as you can for them. Watch apps should be narrowed down to only the quickest and most used experiences. Make these experiences context-aware where possible. Finally, while TV isn't mobile itself, it is an important gateway into the mobile ecosystem. TV apps are great for content consumption and can be a powerful experience when closely tied into your app ecosystem.

ITERATE ON YOUR EXPERIENCE

If this is your first foray into mobile, don't just jump in and build an experience without first testing and talking with your users. User testing with high fidelity prototypes built in Figma or Invision can glean important insights into what your users are looking for and whether your delivery of features makes sense. Your app shouldn't require an instruction manual to know how to use it. If you are already established, analytics are a powerful tool for seeing where you should be spending your time and what features could use improvement. Mobile design, functionality, and user expectations are constantly changing. Regardless of where you are in your mobile journey, iteration is key.

TIE INTO THE SYSTEM

The previous mindset for mobile was to always keep users inside your app. In today's mobile world, your app is just one of many possible experiences. You must tie into the system frameworks to allow for many more micro-experiences. Do you work with photos or visual content? Add a photo or share extension to show up in the action sheet. Do you support food ordering? Add an iMessage extension to provide an experience where users can order together. Do you need an always present experience to keep your user informed of the latest crypto prices? Add a widget that can be placed on their home screen. While users may not be in your app, they will have more opportunities for connection with your brand.

SURPRISE AND DELIGHT YOUR USERS

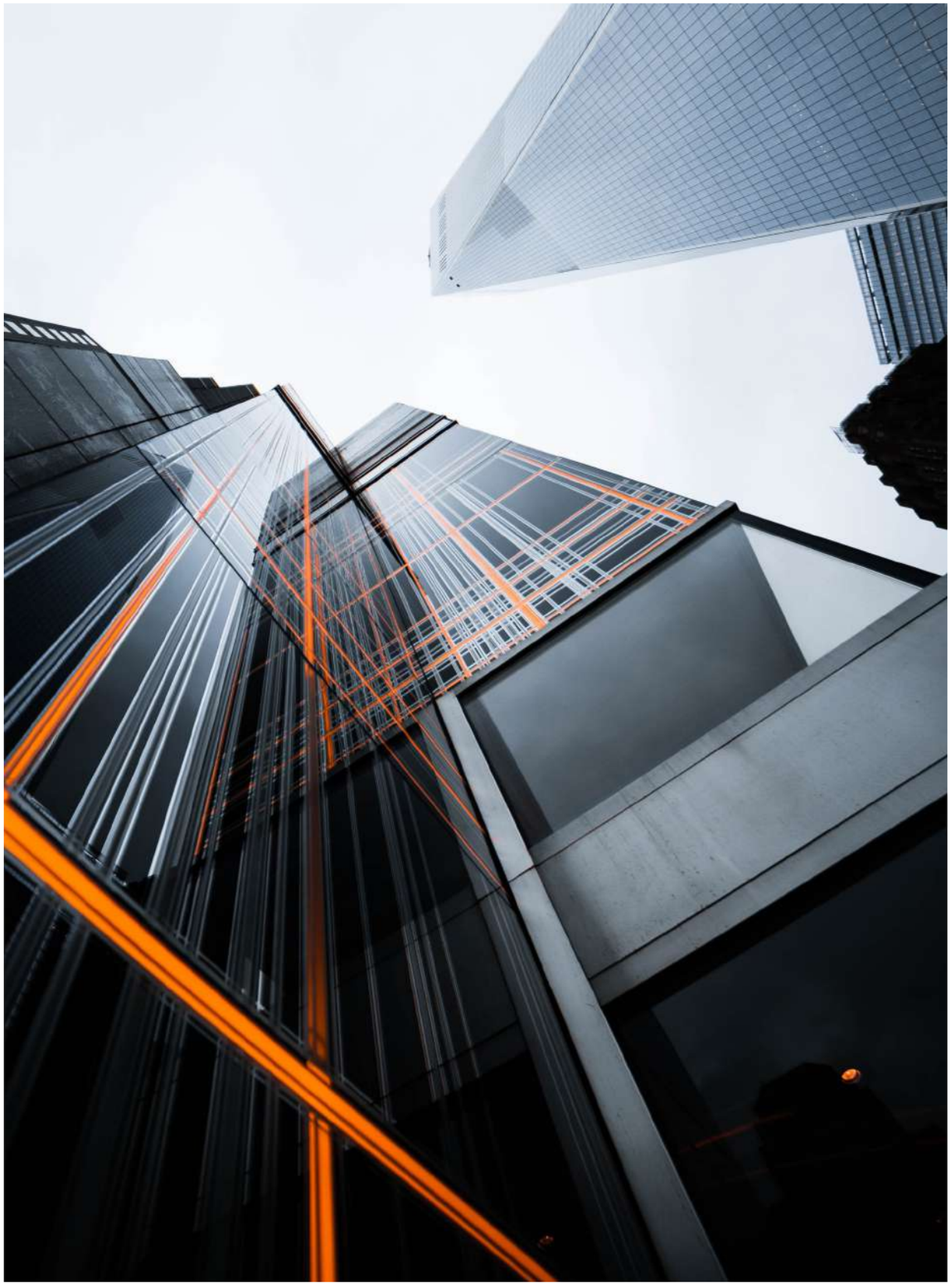
While this does include visual celebrations of your user's successes, you can surprise and delight your users in other ways. Try to delight the user during key moments and pain points. Go ahead and pre-populate a form for them if you already have the info. Make assumptions based on context or previous use and bubble those actions up to make them easier to perform the next time. Not only does this improve the initial interaction, but your users will remember making their lives easier.

LOOK AT CROSS PLATFORM

Cross platform may be a way for you to quickly get an MVP out to market to prove out your theories. Cross platform frameworks like Flutter have made huge improvements since the early days and can support a number of complex experiences. Move back to native when you have a solid feature set and are ready to fully invest in the product. Being native ensures the best performance and access to cutting edge features on the platform.

How enterprise-grade IoT will create the business world of tomorrow.

The world we live in is constantly changing, and the unseen networks we all rely on are more important than ever. From smart homes to healthcare tracking, communication between machines is a constant.



By Sam Colley, CEO, Pod Group.

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The business world of tomorrow.

This hidden world of communication has been around for years, yet despite all the innovations of the Internet of Things (IoT), we're still at the early stages, with far more growth ahead. Now, while IoT may conjure images of Wi-Fi-connected fridges, it is actually an evolution of machine-to-machine (M2M) communication. IoT breaks the silo effect of communication between one machine and another and instead opens the door to massive deployments of connected devices collecting data from multiple sources.

Smart cities, smart agriculture and smart healthcare all rely on IoT applications to collect, analyse and act on data, making processes more efficient. Such data-driven communication has allowed for vast logistics networks worldwide, leading to the fast-paced society we live in today and ever-increasing consumer expectations.

So, how do we connect the growing number of IoT devices worldwide? Shorter range connectivity technologies, such as RFID, Bluetooth, and Wi-Fi, are too reliant on proximity and fail at long distances, and their single connection has no backup. Therefore, the most reliable method for IoT communication is cellular networks.

Yes, trucks, wind farms, and even beehives communicate on the same networks as you and I. But instead of funny GIFs on WhatsApp, they're sending small data sets at frequent intervals. The difference is that the communication between devices is far more crucial.

Healthcare, national security, and energy providers are essential systems which need always-on communication to send data. Therefore, SIM cards used in devices transmitting such data are designed to connect to multiple networks.

Access to multiple networks allows the SIM to switch to the strongest signal. If a network is down, there are more to connect to. The more networks a SIM can handle, the better the uptime. The added benefit is that cellular networks are far more secure than any of the connectivity technologies mentioned above.

IoT has massive potential for enterprise, and this is where the evolution of IoT communication is going – and what I am personally most excited about.

IoT for business is how the company I lead, Pod Group, began, with IoT for logistics. Tracking delivery trucks helps to improve productivity, leading to increased revenues for logistics companies. One example is Amazon's ability to deliver such small, low-cost items within 24-hours without a delivery charge. IoT communication is behind it all.

Jeff Bezos is hardly the only leader of an enterprise obsessed with productivity. When a process can be made more efficient using quick analysis of fast-moving data, the business will benefit. So, wouldn't it make sense for the next business revolution to be built on the foundations of an improved network for better IoT communication.

The problem is that there are barriers to maximising networks' full potential for IoT applications. There are currently two types of network operators;
Mobile Network

Operators (MNO) and Mobile Virtual Network Operators (MVNO). However, the services offered by MNOs often lack the flexibility required for IoT connectivity, and MVNOs, while more focused on connecting IoT applications, are often reliant on MNO network infrastructure and therefore provide less visibility and control.

However, a recent innovation in telecoms and IoT has allowed for a better business solution for IoT communication. eSIMs can be soldered into devices and include multiple network profiles on the same SIM. These can be swapped remotely "Over The Air (OTA)" meaning that the SIM never needs to be swapped out. As pricing and market conditions change, the enterprise can simply switch networks to ensure the best price or coverage for their connected devices.

Coinciding with this, a new type of network operator has been created to make the most of this technology. An Enterprise Network Operator (ENO), takes the best features of an MNO and an MVNO to put the ownership of the network into the hands of the enterprise and provide completely tailored IoT connectivity.

Whereas MVNOs offer flexible, IoT-specific connectivity without the network control that IoT enterprises require, and MNOs provide reliability and visibility at the cost of being tied into inflexible contracts and consumer-focused connectivity, ENOs manage their own network, designed for fast-paced, high volume IoT communications.

Essentially, an ENO offers businesses the ability to run their own network via a Network as a Service (NaaS) model, meaning all the processes are owned or can be managed on the business' behalf by the ENO. This enables the creation of customised connectivity services for the enterprise, which can be controlled centrally via an intuitive platform. Each IoT application is different, and therefore has different connectivity requirements. An ENO gives enterprises the flexibility they need to deploy and manage their connected devices, thereby speeding up time-to-market and increasing efficiency.

The next Amazon, Google, or Facebook will undoubtedly be a company reliant on data, if not commercialising it as their main business model. Enterprise IoT will be a critical factor in the success of such companies.

The introduction of ENOs will help to build a new, improved, connected economy. ENOs are the modern Silk Road, a pathway towards digital transformation of enterprises, an alternative to the restrictive networks of the past, and the foundations of the businesses of tomorrow.

Book review

Turning around the fortunes of Porsche GB.

Business leader, Kevin Gaskell's book 'Catching Giants' shows how small players can win big. The business leader who revived Porsche GB, boosted BMW GB's profits by 500% and has built 15 companies, brings together his stellar business insights and lessons learned as part of the five-man team who went from novices to world champions in 1,000 days.

Kevin 'The Business Fixer' Gaskell, serial entrepreneur, author and adventurer is recognised as one of the world's foremost leadership experts, responsible for transforming three of the world's most iconic brands Porsche, BMW and Lamborghini (GB).

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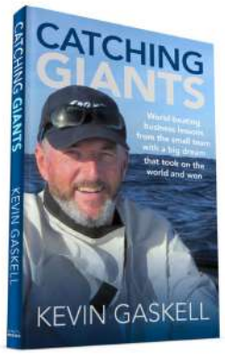
Book review



Turning around the fortunes of Porsche GB.

An absolute must-read, written by the turbo-charged entrepreneur and business fixer, Kevin Gaskell, the author provides step-by-step lessons (80 in fact) on how to build a world class business and transform the fortunes of a company in 100 days.

Insightful, accessible and results-driven, this unique guide shows how to overcome business barriers – whether that's clarity, strategy, team dynamics or finances. And quoting from Churchill who said, 'never let a good crisis go to waste', he explains how to use the tools in your business armory– cash, clients, communication and courage – to overcome the ravages of the pandemic on your organisation.

A book destined to become the 'best-friend' of every business owner, Catching Giants is a 'how-to' triumph and reaffirms Gaskell's position as the man who fixes businesses and demonstrates why he is considered to be one of the top business leaders in the UK

CAN A SMALL BUSINESS REALLY COMPETE WITH THE BIGGEST BUSINESS GIANTS?

The typical argument is that they wouldn't have the budget, skills or experience to do so. But Catching Giants demonstrates that this simply isn't true and shows how, even in the toughest of circumstances and competitive environments, it is possible for the small player to win big.
When Kevin Gaskell and his small, inexperienced crew took on the 'World's Toughest Row' and set out to cross the Atlantic Ocean in a tiny open rowing boat, they knew it would take single-minded determination, a focused strategy, an agile and innovative approach and smart thinking to beat their Olympic level competition and become world champions.
And that's exactly what they did!

Through this thrilling, motivating and inspiring story of triumph over seemingly impossible odds, Kevin shares the adventure of rowing across one of the world's great oceans and extracts 80 world class lessons that he and his team used to beat some of the best rowers at their own game.

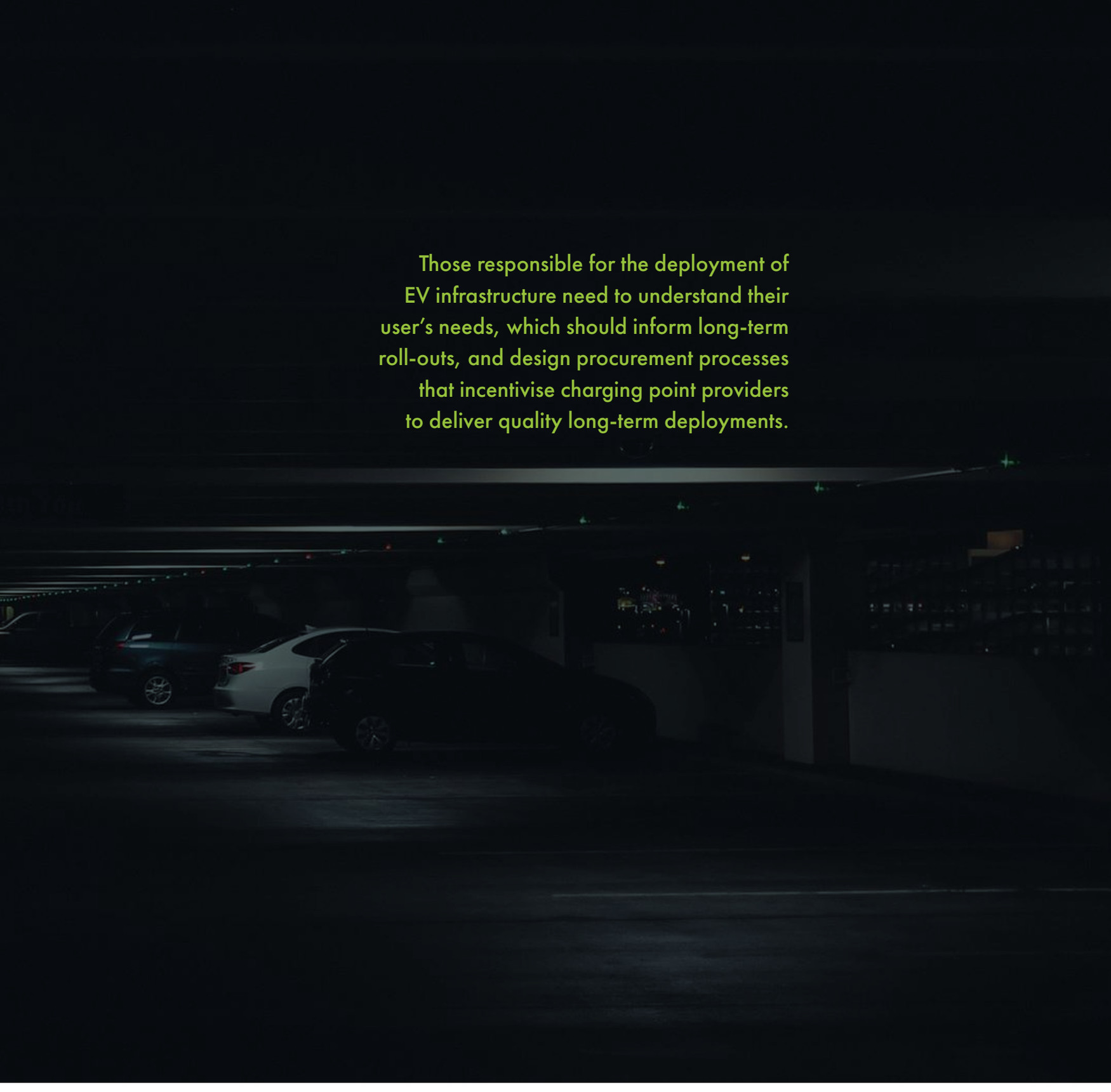
Whatever the challenge that businesses face - whether it's clarity, strategy, finance, team alignment or leadership skills, these game-changing lessons have the power to help any team leader, manager or business owner overcome barriers and drive their team to reach for, catch and pass their own giants.

To be a winner you need a better combination of skills, passion, and culture than your opposition. The approaches and experiences in Catching Giants can be applied in any situation to deliver success.

Lewis Moody MBE, Rugby Player. England, British and Irish Lions, World Cup winner 2003

DELIVERING EV CHARGING INFRASTRUCTURE TO MEET 2030 NEEDS.

CONNECTED KERB



Those responsible for the deployment of EV infrastructure need to understand their user's needs, which should inform long-term roll-outs, and design procurement processes that incentivise charging point providers to deliver quality long-term deployments.

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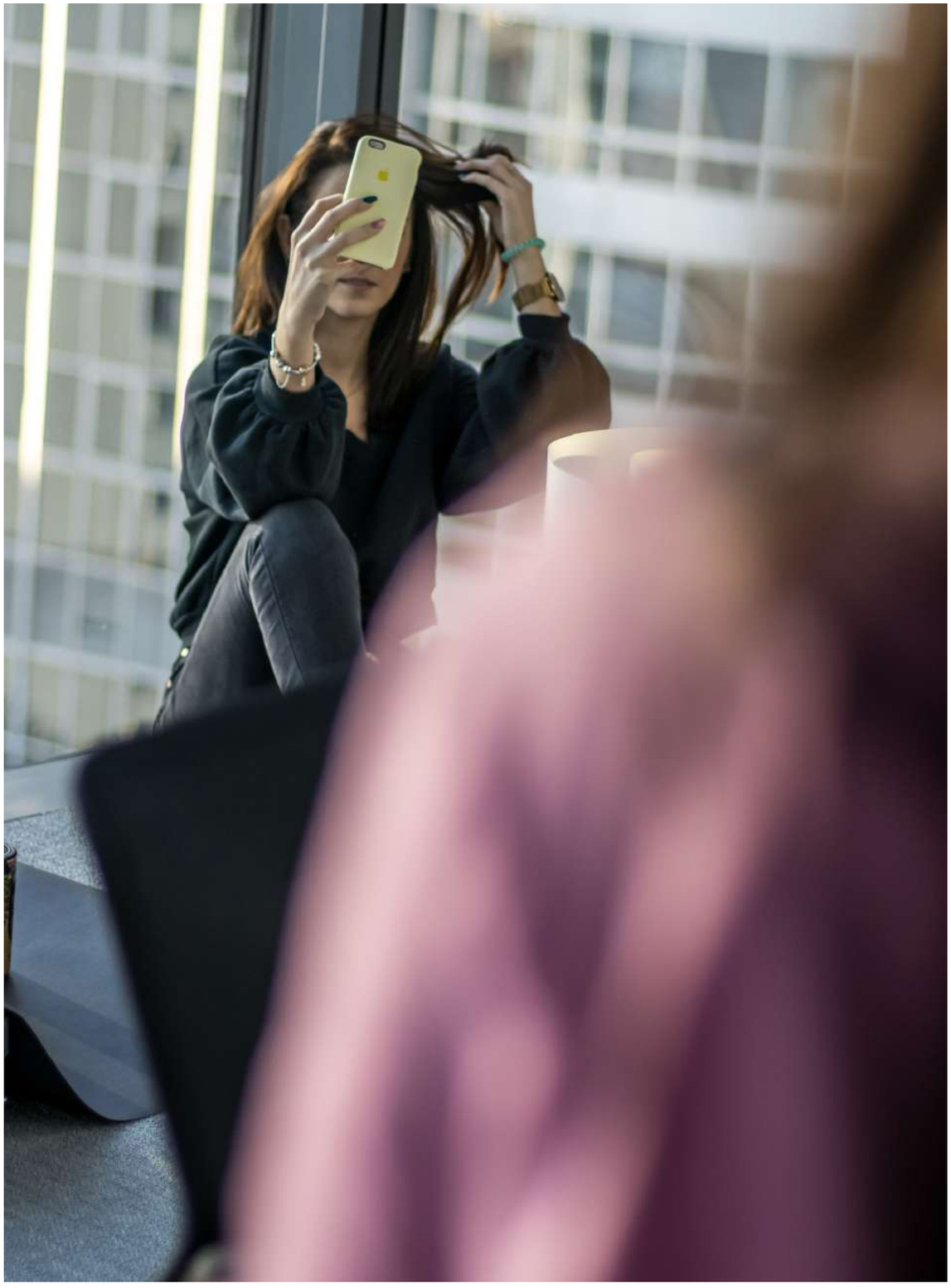
State of Mobile 2022 - trends, traffic and transition

Just a few short years ago, mobile's dominance over web traffic seemed irrefutable. All trends pointed to a seemingly unstoppable takeover of mobile from desktop traffic as mobiles became the dominant connected device for many users the world over. Then Covid hit, and as people locked down at home, primary mobile access to the internet dipped.



By Fernando Angulo, Influencer Lead, Semrush

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Just a few short years ago, mobile's dominance over web traffic seemed irrefutable. All trends pointed to a seemingly unstoppable takeover of mobile from desktop traffic as mobiles became the dominant connected device for many users the world over. Then Covid hit, and as people locked down at home, primary mobile access to the internet dipped.

Our latest comprehensive report into the State of Mobile in 2022 has found that even as the world emerges from pandemic lockdowns, mobile web traffic has not regained its pre-pandemic dominance. But what does this mean? Is desktop really making a resurgence, and how does this impact strategies? We looked at the mobile web and app landscape to analyze year-on-year mobile penetration trends and pinpoint a few insights that will shape the mobile landscape in years to come.

Firstly, that surprise finding. Over a year on from initial pandemic lockdowns being relaxed from country to county, mobile is still regaining its pre-Covid traffic share. Just looking at global mobile traffic trends between April 2021 and May 2022, there are 30% fewer mobile surfers now than in May of last year—and the difference between strict measures being in place (even accounting for varying geographic regulations) is a drastic one between the two dates.

For years now, observers have looked at mobile traffic and traditional laptop use as two ends of a seesaw - as mobile rises, desktop continues to dip. This has informed many development strategies of growing mobile-first optimisation and preferences. However, these current trends suggest there is no direct correlation between the extent of mobile penetration and the growth of desktop vs. the pandemic-related restrictions.

And we've found more proof. When we compared mobile and desktop traffic share, we spotted no link between mobile traffic and strict lockdowns. For example in Australia and Canada, countries with the longest-standing COVID measures, mobile traffic share is much higher than in the US where we saw a softer take on lockdowns. This implies that our previously taken-for-granted notion that "people turned to desktop as they were forced to stay at home" doesn't necessarily hold true.

This drop in mobile traffic also impacted the app landscape. Our report looked at year-on-year app downloads across both Google Play and Apple's IOS store. The three-year downloads data also trended downward across iOS. Some of the most popular app categories—Games and Shopping—saw 20% fewer downloads in April 2021-March 2022 vs. the same period in the previous year. Things were slightly more stable in the Android ecosystem, as almost every app category aside from Games witnessed a YoY rise in installs.

Another key finding in our analysis was the contribution of direct traffic, when looking at mobile volumes exclusively. We looked in particular at the source for mobile traffic across five key sectors; finance, retail, education, food & beverage and healthcare.Direct traffic proved the primary source across the board - meaning that brand awareness campaigns as well as in built loyalty programmes can go a long way when it comes to improving traffic share.

Search also remains an important factor, so brands seeking to make more of an impact still need to maintain a good balance of strategies if they are to maximize their returns. Another finding of note when looking at sector specific trends; finance proved the only market segment that managed to improve ad spend efficiency while also growing the number of video impressions. Other sectors could likely gain by assessing their campaigns from this period to see if they can replicate this success.

So, what does this overview of the mobile traffic landscape in 2022 teach us? If the pre-pandemic era was about mobile-first approaches and expectations about the decline of desktop, we're now seeing different trends emerge. But it doesn't mean 'mobile is dead'. Far from it. We're still seeing mobile traffic dominate across the board. For those who want to win the digital game, omni-channel tactics remain the answer. Strategies should be assessed to ensure that desktop is not set to one side in favor of mobile-predominant tactics.

A balance of approaches which can feed direct traffic, SEO and even creative use of video are proving successful in striking the right balance when reaching people. This combination also implies that strategies have to be backed by an impeccable user experience for whatever device your audience is using.In essence, don't put all the eggs into one digital basket.

Perhaps the most important takeout when looking at the State of Mobile at the moment is that current behavior can no longer be directly attributed to the pandemic. Behaviors didn't immediately snap back to their pre-Covid natures, despite different countries' approaches to removing lockdown measures. Those looking to really make a mark need to assess their strategies to make sure they are based on current customer activities and actions, rather than insights that may have stood firm months or years ago.Being device-agnostic, focusing on the user experience first, and ensuring a rounded approach from brand awareness campaigns through to performance strategies is the best way to navigate this still unsettled and transitional period.

Keep a close eye on latest mobile traffic data, so that tactics can be changed up or tweaked if needs be.

Future-proof your business.

Delight customers, and stay ahead of competitors by selecting the right API management partner. Questions to ask, must-haves for partners, and what to do after you've built your shortlist.

In 2020, global businesses advanced their technologies by an average of seven years. While the shift was born out of necessity due to the complications of Covid-19, these advances have led to a persistent change in consumer and employee expectations.

Customers now expect more companies to cater to them digitally and employees have grown accustomed to more flexible work environments, both of which require novel use of technology and real-time access to data and services. Enter: the API.

By Frances Ferguson, Director of Channels America, Gravitee.

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Future-proof your business.

APIs provide scalable solutions to unique business needs, and when designed, implemented, secured, and managed properly, can save your business countless resources while providing delightful experiences for end users and consumers. However, if APIs are treated as an afterthought, they could end up having the opposite effect, allowing your competitors to capitalize on your downfall.

This is why selecting the right API management partner is so important.

WHAT IS AN API MANAGEMENT PARTNER?

An API partner is an organization that helps you design, manage, secure, and deploy your APIs. Depending on your business or use case, they may also need to help you productize and monetize your APIs. These partners could take the form of a professional services provider, SaaS provider, or a mixture of both.

WHY YOU NEED AN API MANAGEMENT PARTNER

Securing an API management partner is a great way to proactively address the needs of rapidly changing customer behavior, force multiplied by the new ways people work. They help you develop solutions that are easy to manage, built to scale, and compliant with data protection and cybersecurity best practices.

TOP THREE QUESTIONS TO ASK BEFORE SELECTING A PARTNER

How are APIs used by your business today?
When selecting a partner for API management, it is important to understand how your business uses APIs to accomplish certain operations.

Are they a mix of internal and external APIs?

Are APIs approached as products or as integration bricks?

What is their frequency of use? Do your APIs collect or share sensitive data?

Are your APIs being monetized in any way?

A good API partner should be able to adapt their solutions to your unique needs and facilitate the implementation of a comprehensive management strategy.

What is the current state of your API ecosystem?
You'll also want to run an audit of the types of APIs your business uses (public, private, partner, or composite) and what resources you have dedicated to their development, security, governance, and documentation. Additionally, you should document the different API architectures your business uses, as this will help you develop a more sustainable management strategy.

How will an API partnership benefit your business
Consider the primary users of your APIs, the problems they are looking to solve, and the processes you're trying to make more efficient.
Are there bottlenecks in your current API ecosystem?

Can APIs become a revenue source for your business?
Are developers spending more time addressing the issues of your API ecosystem and less time on product development?
What information or services could you deliver faster to customers with better API management?

Answering these questions will simplify the selection process for an API management partner and allow you to prioritize projects that will have the greatest impact for your business.

Must haves for a viable API management partner
While not an exhaustive list, you should consider these minimum requirements for any API partner you're evaluating:

Design-first approach
API partners that use a design-first approach will strengthen the connection between all stakeholders, ensure a desirable and engaging experience for all parties, and make sure that APIs are truly fit-for-purpose, ultimately leading to better products and services for your consumers at faster time to delivery.

Comprehensive API management
A strong API partner will facilitate comprehensive API management that considers all aspects of the API management lifecycle. This includes design, access, security, governance, documentation, testing, deployment, and productization.

Real-time observability
Observing the usage of your APIs in real time is critical to understanding their frequency of use, mitigating risks, and proactively identifying any suspicious behaviors. Monitoring this data will help guide future business decisions and may uncover additional revenue opportunities for your business.

Protocol and style flexibility
Designing your APIs with event-driven and asynchronous systems in mind is a great way to proactively future-proof your applications and infrastructure.The basic advantages are as follows:

Avoid needing to "rip and replace" "legacy" technologies

Easily adjust to meet demand

Quickly expand and expose APIs and services

Modernize at a speed that fits your business

WHAT TO DO AFTER YOU'VE BUILT YOUR SHORTLIST

After narrowing down your selection criteria and developing a shortlist of potential partners, you should determine your kick-off date, develop your evaluation team, and schedule demos with

vendors. Additionally, you should create an assessment document with priority areas identified and different weighting in place to help speed up the process.

In certain cases, you may also want to initiate a formal request for proposal process and set aside times for your evaluation team to meet, review proposals, and score based on your business goals, budget, and preferences.

During this process, you should also request any case studies or references prospective partners can share, research sites like Sourceforge or other review sites, and speak to multiple levels of the API partner's team to understand their full capabilities.

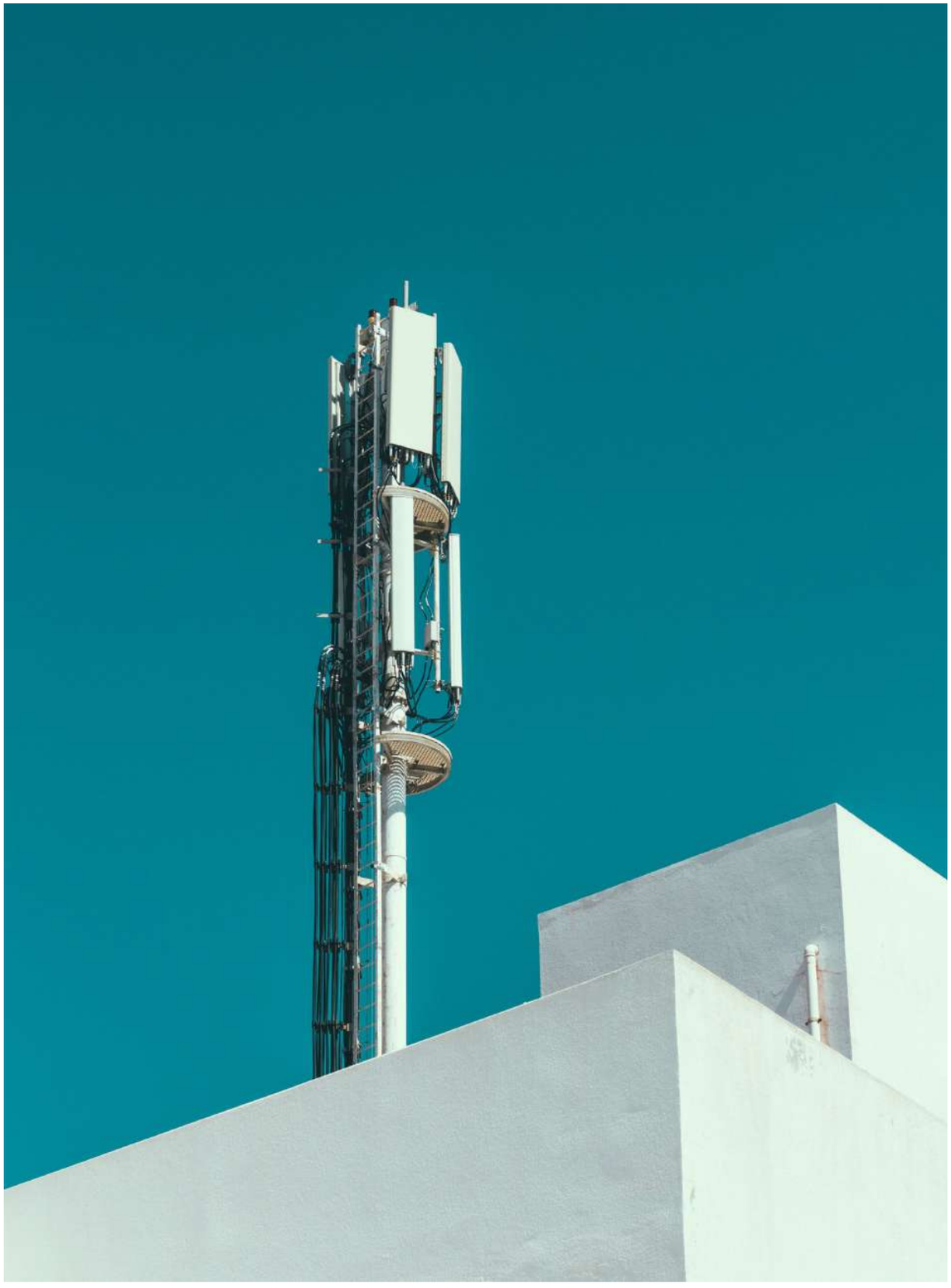
This mix of quantitative and qualitative data will ensure a much higher level of success when you make your final selection, and reduce your time to kick-off.

Thriving in the 5G era.

As consumer demand rises, and network availability expands, 5G is becoming more viable for widespread use — by 2027 it's expected to cover 75 per cent of the world's population. However, it's still no secret that 5G uptake is dawdling and many enterprises still aren't enjoying its benefits.

In contrast to previous generations, 5G can be split into three separate use cases, each with different qualities that favor different connectivity qualities — Enhanced Mobile Broadband (eMBB), Ultra-Reliable and Low Latency Communications (URLLC) and massive Machine-Type Communication (mMTC).

eMBB, as its name suggests, builds on connectivity capabilities already fulfilled by 4G, typically mobile connectivity for consumer telecoms applications, while URLLC and mMTC are new use cases that haven't been possible before 5G's arrival.



Hamish White, CEO and founder of telecoms consultancy and software provider Mobilise, explores what's required to make enterprise 5G use cases a widespread reality.

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Thriving in the 5G era.

NEW GENERATION OF USE CASES

While eMBB offers businesses greater agility and broader, faster download speeds, the true value of 5G lies in URLLC and mMTC use cases. URLLC caters to latency-sensitive connected devices that need extremely reliable real-time data transfer for success, and is useful for machine-to-machine (M2M) communication. M2M comms is becoming increasingly popular in smart factories, which use real-time connectivity to enable robotic process automation, autonomous vehicle networks and even augmented reality (AR) scenarios.

mMTC, on the other hand, unlocks the potential of 5G for Internet of Things (IoT) deployment, as it can connect up to one million devices per square kilometer. IoT deployments have traditionally been limited by 4G's limited capacity to do this, but 5G mMTC has over ten times the capacity of 4G for IoT. This makes the possibility of connecting devices for smart cities much more feasible, providing the infrastructure to connect traffic systems, refuse collection and electricity distribution to an overarching city-wide network. Although network operators are currently working to build the required infrastructure to support all of 5G, the current set up doesn't facilitate widespread access to each of these use cases.

GOING PRIVATE

One approach for enterprises looking to unlock 5G's full benefits is to develop their own, private 5G network. Almost all of the public 5G network uses some of the existing 4G infrastructure, namely the 4G long-term evolution (LTE) core. While this approach unlocks some 5G capabilities, a private 5G network with a 5G core is essential to enabling some elements of URLLC and widespread mMTC use cases. Private networks are completely built, managed and maintained by enterprises themselves. The network is exclusively used by enterprise-authorized devices within a defined location for exclusive use by the enterprise. This offers absolute control of where connectivity is available and unparalleled security, with no responsibility lying with external service providers and no concern around potential interference from other public network users.

However, private 5G networks are localized — the network's only available within the area where the enterprise has deployed it, limiting its use to only within a localized area. Additionally, there are some regulatory concerns around 5G private networks. To access certain bandwidths of the 5G spectrum, businesses may find it necessary to work with a network operator or obtain a government license to use spectrum in a given location.

TAKING A SLICE

Alternatively, service providers (SPs) can use network slicing to allocate portions of the 5G network, and certain features, to enterprise customers. Each network 'slice' is uniquely customized to each customer's requirements — be it massive bandwidth, ultralow latency or large device density — to enable the use cases each enterprise wants to develop.

Network slicing has been heavily invested in by huge vendors including Ericsson and Nokia and offers many benefits for enterprises striving for 5G success. Acquiring just a portion of a carrier's network means that an enterprise customer's dedicated network is supported by existing mobile infrastructure — enterprises don't have to deal with the logistics or cost implications of setting up their own network.

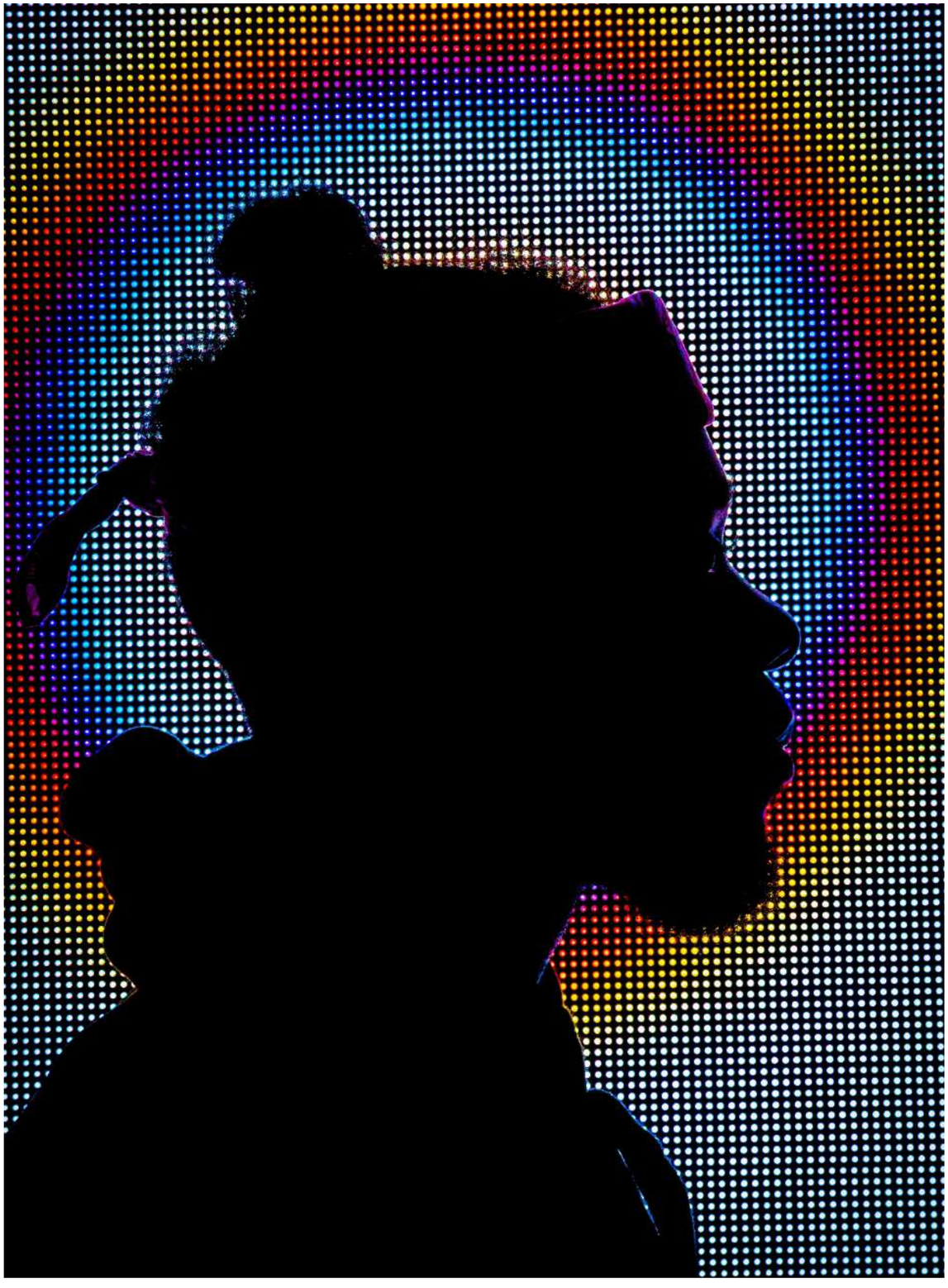
Additionally, relying on existing carrier infrastructure means there's no geographical barriers to the 'slice', it's available everywhere that the telecoms network already exists. Enterprises can connect devices from anywhere within the range of the network, not just from within the boundaries of one facility or premise.

Within telecoms itself, network slicing is widely becoming recognized as a source of great business potential, with Ericsson estimating its worth to reach $200 million USD by 2030. However, network slicing will require network operators to deploy 5G cores across the public network to facilitate the complete set of use cases possible. Be it private networks, network slicing or general 5G deployment, Mobilise helps SPs and businesses to better understand the enterprise telecoms landscape, including IoT capabilities through its mobile strategy services. With unrivalled experience in 5G implementation strategy development, Mobilise's 5GTM framework offers a modular suite of end-to-end support services that help operators to smoothly transition from 4G to 5G, build a new infrastructure including RAN, OSS and BSS, as well as solutions on how best to maximize the benefits of data, analytics and AI.

While some argue that network slicing and private networks are competitors in the quest for en masse 5G adoption, in reality, they actually complement each other. Both have a place in supporting businesses to launch their own 5G-enabled use cases and should both be considered for ultimate, widespread 5G success.

The digital boom fuels the next billion digital identities.

The average digitally-savvy individual has hundreds of online accounts, and a dozen (or more) distinct digital ‘identities’.The proliferation shows no sign of slowing down, but is also unsustainable.



By Aubrey Turner
at Ping Identity.

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The digital boom fuels the next billion digital identities.

DIGITAL'S BIGGEST ADVANTAGE - CHOICE - IS ALSO ITS GREATEST DRAWBACK.

There's a near-endless pool of potential destinations: clouds, applications and services, for users to select from. Whether free or paid, each destination inevitably asks for a bit of information about the person (or device) wanting access to it. This often results in a set of credentials being created to identify the user when they interact with that destination in future. Information about their use of the service may be collected for personalisation, monetisation or other purposes.

People are inevitably amassing vast collections of credentials, often a new one for every digital service they interact with. What's certain is that a person is no longer a single identity. We estimate that a typical person might have upwards of 15 identities distributed across social media accounts, applications, cloud services, mobile, and physical devices.

Even a cursory look at digital usage habits sees account numbers quickly add up.

Globally there are over 5 Billion Internet users who are estimated to have 4.65 billion social media accounts, and 16.1% have access to "streaming services" and 1.9 Billion individuals actively use online banking services.

RISKS OF CLOUD COMPUTING

While there are many benefits of cloud computing, as it offers businesses a convenient, scalable, and readily accessible service to its users; there are also risks associated with the cloud:

Unauthorized Access: The most common cloud security issues include unauthorized access through improper access controls and the misuse of employee credentials. Over permissioned users, particularly administrators and lack of proper entitlement visibility, management and governance are contributing factors. Insecure APIs and unauthorized access are the number one perceived security vulnerability in the cloud.

Data Loss or Theft: When you store files and data in someone else's server, you're trusting the provider with your data. However, that doesn't mean you have abandoned or fully transferred responsibility for your data in event of loss due to system error or theft by cybercriminals. Cybercriminals can hack into servers or malware can render data unreadable by both humans and software. In many cases, this data cannot be recovered so data loss prevention is an essential tool.

Denial of Service Attacks or Distributed Denial of Service: A denial-of-service (DoS or DDoS) attack is an attack meant to shut down a machine or network, making it inaccessible to its intended users. This can render systems inaccessible for users and severely disrupt business operations.

CLOUD IDENTITY SECURITY

As users, we are largely responsible for generating the content and data that creates our online identities. As a result, it's reported that 88% of cloud breaches are due to human error, what can businesses do to help individuals stay safe using the cloud?

Establish an Identity Control Plane: Passwords can often be the only barrier between a cybercriminal and your sensitive information. There are several programs attackers can use to guess or "crack" passwords or even easier to phish credentials. We recommend users follow NIST guidance on updating passwords, which is generally now once per year or upon known compromise. However, to really help mitigate credential sprawl, organizations should establish a global authentication authority to define access policies and apply the concept of SSO'ing everything to its practical limits. SSO (and even passwords) should be used with compensating controls such as MFA and risk signals.

Opt for Multi-Factor Authentication (MFA) Verifications: Leverage MFA for logging in wherever possible. If passwords become compromised, enabling this extra layer of security will decrease the likelihood that cybercriminals who have stolen passwords can log into accounts. Furthermore, adding a layer of intelligence via risk signals will help to decrease MFA fatigue.

Control Privileged Access: Secure and manage administrative consoles and entitlements as well as secrets such as embedded credentials, keys, tokens, certificates and API-keys for human and machine identities.

File Encryption: Ensure that all important files are encrypted. To read an encrypted file, the user must have access to a secret code to enable decryption. This means no one other than an authorized user can see it—not even the software provider. This extra level of security will make it difficult for any potential attacker.

Monitoring and tracking solutions to industrial customers.

LAUSANNE, Switzerland, 30 May, 2022 – Astrocast, a leading global nanosatellite IoT network operator, today announced the signature of an agreement to acquire Hiber, a Netherlands-based, IoT-as-a-Service provider. Under the agreement, Astrocast agreed to acquire all of Hiber's shares in exchange for the issuance of new Astrocast shares, representing 16.5% of Astrocast's share capital, calculated prior to its previously announced public offering on Euronext Growth Paris. Hiber's shareholders also agreed to invest €10.45 million in Astrocast's public offering.

By Laurent Viera de Mello at Astrocast.

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Monitoring and tracking solutions to industrial customers.

Hiber provides asset monitoring and tracking solutions to industrial customers, through satellite-connected devices that allow customers to monitor and track assets in remote locations.
Its services include wellhead monitoring for major oil and gas companies and asset tracking for off-grid worksites in sectors such as agriculture, forestry, and mining. Its business model is based on multi-year subscriptions covering sensors, network hardware, satellite connectivity and a dashboard

KEY BENEFITS FOR ASTROCAST

The acquisition of Hiber is expected to bring a number of key benefits for Astrocast:

It expands Astrocast's distribution strategy by establishing a direct-to-end user sales channel.

It accelerates Astrocast's OEM strategy by increasing the development of additional satellite-enabled IoT devices.

It expands Astrocast's portfolio of products and services by adding the HiberHilo remote oil well monitoring solution and Hiber Easypulse asset tracking solution.

It adds coverage of the Americas region, based on Hiber's access to L-band spectrum, through its agreement with Inmarsat.

It brings onboard 50+ highly skilled and experienced IoT specialists, who have unique technical capabilities and understanding of customer IoT needs across multiple verticals.

It expands Astrocast's sales team by adding Hiber's sales force and creating cross-sell opportunities.

Since Hiber's customers include ExxonMobil, Shell, Oil Search, NAM and ENI, the combined group will also have additional exposure to clients in the energy industry and the ability to support their transition to renewable energy production.

ENHANCING ASTROCAST'S SALES AND GO-TO-MARKET STRATEGY, AND OEM STRATEGY

In addition, Astrocast's sales and go-to-market strategy will be expanded by adding a direct-to-market sales channel in select verticals. This will complement Astrocast's existing partner sales strategy. Hiber's expertise within oil & gas will enable Astrocast to further penetrate this market. By combining Astrocast and Hiber's technical expertise, Astrocast will also be able to better leverage end-users and accelerate its OEM strategy.

Fabien Jordan, Astrocast's CEO said the following about the acquisition: "We've carefully monitored Hiber's impressive shift in strategy over the past few years. Hiber is recognised as a powerful IoT scale-up within the market. Hiber's focus on satellite-enabled IoT solutions, innovation and production aligns with Astrocast's strategic go-to-market priorities for 2022 and beyond. We're excited to welcome Hiber to the growing Astrocast team."

Commenting on the impact of the transaction on Astrocast investors, Fabien Jordan added: "We're excited about the positive implications of the transaction for our investors. With this acquisition, Astrocast will gain access to customer segments that we have historically had little traction with. These segments complement Astrocast's current sales effort. In addition, this acquisition will strengthen financing opportunities for Astrocast, benefiting investors, and accelerating the total fundraising plan for Astrocast."

Roel Jansen, CEO of Hiber added: "Hiber brings IoT solutions to its customers located in the most remote locations on earth; we are democratizing data for industries that previously did not have access to affordable and easy-to-use solutions via satellites. We are excited to join forces with Astrocast to continue developing and providing world-class IoT solutions that are unrivalled in service excellence and product innovation within the IoT space."

Hiber brings IoT solutions to its customers located in the most remote locations on earth; we are democratizing data for industries that previously did not have access to affordable and easy-to-use solutions via satellites. We are excited to join forces with Astrocast to continue developing and providing world-class IoT solutions that are unrivalled in service excellence and product innovation within the IoT space."

Roel Jansen
CEO of Hiber

Going beyond segmentation.

Marketers are often very good at setting up segmented audiences, however, true personalization goes far beyond that. It calls for thinking bigger than simply dividing audiences into buckets based on demographics or spending habits.

To activate a customer-centric personalization strategy, brands need to look at individualizing their marketing strategy and activating customer data at scale in a way that not only meets customer expectations, but drives revenue and improves workflows — generating a mutually beneficial outcome.

By Matt Lyon, Regional Vice President, EMEA at Movable Ink

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Going beyond segmentation.

According to McKinsey, 71 percent of consumers expect companies to deliver personalized interactions. It's therefore no surprise that 76 percent get frustrated when their expectations are not met. A lack of personalization can have a direct impact on revenue, as if consumers don't like the experience they receive, it's easier than ever before for them to look elsewhere. Why then is it so challenging for brands to build true 1:1 individualized customer experiences?

There are a number of tech and business-related barriers that stand in the way of moving beyond segmentation and towards orchestrating individualized marketing. For example, siloed data, technology migrations, campaign timeliness, and countless other issues get between marketing teams and the kind of individualization that drives revenue and increases ROI.

Many brands stick to segmentation because data points live in a complex web of software that makes up a brand's martech stack. Communicating to each person–not a segment–however, requires all these technologies to connect in a way that few were ever built to do.

Even with all that data living in different silos, sophisticated personalization is still possible. With the right puzzle pieces, data can tell customers the story about themselves that they want to hear. It requires bringing all that disparate data into a single communication, while scaling millions of creative variations so that each person receives their exact story, not an assumption based on their demographic information.

Based on first-hand experience working with some of the most innovative brands on adopting a personalization strategy, below are four solutions to common technical and operational bottlenecks brands can leverage to develop a 1:1 individualized marketing strategy.

UNITE DIGITAL CHANNELS AND DATA.

Consistency and personalization suffer when brands deploy different campaigns, messaging, and strategies across digital channels like email, in-app messaging, on-site or SMS. The most valuable customer experiences exist when all streams of communication support each other, so it's important to shift from a channel-centric approach to a customer-centric one. Utilizing reusable dynamic campaign modules across channels, to meet customers where they are, can be a great way to create a consistent omni-channel brand experience and streamline data.

AUTOMATE MANUAL PROCESSES WHERE POSSIBLE

When small marketing or multiple, larger teams are involved (developers, IT, design) with doing monotonous manual work–such as creative iterations and coding, to get a single campaign out the door–it's much harder to focus on customer centricity. Automation is your time-saving friend. Try to automate as many manual processes as possible, for instance the new client onboarding journey, by leveraging one design template that launches thousands of 1:1 variations based on customer data and behavior.

BYPASS COMPLEX MIGRATIONS BY DEPLOYING CONTENT THAT CONNECTS TO ALL RELEVANT DATA (REGARDLESS OF SOURCE)

Omni-channel personalization can take a back seat when technology migrations or data transfers are required. Businesses often think that they don't have enough data maturity to develop individualized strategies, however, sophistication usually isn't a prerequisite for personalization. With the right tech stack, it's possible to deploy email and mobile content that connects to all relevant data no matter where it lives (be it your website, an API, a CSV file, or beyond).

CREATE PRODUCTION EFFICIENCIES

Campaign planning can take weeks or months, and once a campaign is deployed, it's almost impossible to make updates or changes to messaging. As a result, marketing and creative teams have limited resources, leaving time to only focus on execution.
By focusing on creating production efficiencies you're making a strategic decision to broaden your team's strategic opportunities. One way to address this is by using dynamic as opposed to static campaign modules that update with relevant messaging, even after the campaign is deployed.

To deliver personalized experiences, having the right tech stack is indispensable for marketers to understand and converge what data is accessible, how to use it, and where they can save time by automating manual processes. Ultimately, by being adaptable, customer-centric, and omni-channel, marketers can create the most value for both the consumer and the brand.

How to build the customer-centric model that your channel partners really want.

Companies are constantly on the lookout for ways to successfully adopt a customer-centric business model. Having been faced with many obstacles and barriers in recent years, it has been much more challenging to firstly identify solutions and secondly, implement them both quickly and effectively.

By Richard Eglon, Chief Marketing Officer at Agilitas.

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The customer-centric model.

For example, in our digital society, businesses are flooded with a high volume of customer data and some companies do not have the correct systems in place to effectively process and analyze the information. Ultimately, there is still a shortage of technological capabilities that allow businesses to intelligently evaluate customer data to deliver a far richer customer experience.

This is not the only concern facing businesses, as company culture also plays a vital role in customer-centricity. In fact, many organizations can remain product-focused and prioritize its sales over its people. To change this and successfully implement a customer-oriented model, Channel businesses must start internally and have a culture that aligns with its customers' expectations. Leaders and decision-makers need to become role models and demonstrate to the wider team the company values and morals it wants to be known for - therefore delivering to customers the experience they now expect.

Customer orientation can provide a solid foundation for a customer-centric business which, when championed and embraced by employees, can drive success. This culture will also result in more positive customer outcomes and will keep employees motivated, reinforcing effective relationships with partners.

PUTTING YOUR CHANNEL PARTNERS FIRST IS KEY

Customer-centricity is all about prioritizing the customer. Having this model at the heart of any business will allow the end-user to have a positive experience from the very beginning of the purchasing journey and will enable them to build a long-term relationship with the company. With the advancements in technology, a business can measure its success with its customers. This is extremely valuable data because it is possible to have a wider understanding of customer needs, interests and how they are engaging with an organization. By identifying these key trends, businesses can offer its channel partners customisable services and promote them to other potential customers.

Customer retention and lifetime loyalty are where a company will exceed in profits and values. Subsequently, if a customer doesn't receive the correct experiences, they will turn to competitors in search of what they are looking for. Those competitors can end up becoming their first choice when looking for a service. Therefore, organizations must focus on delivering a positive customer experience - even when issues can occur. This may result in adjustments to services and offerings, but once in place will see a massive shift in customer activity. In order to successfully do this, businesses will need to rethink their structure and culture.

Globally, businesses have seen a change in past and present relationships and how they interact with their customers. The pandemic has encouraged customers to return to the businesses that have made changes within the organization and that have altered services to fit its current demand.

Also, being digitally available has been vital during a time of limited face-to-face collaboration. In fact, this has changed the way customers interact with brands, which is a huge part of the customer journey. An important consideration is that customer-centricity has evolved to become all about the customer demand and how they want to interact with the business, rather than a business's products and offerings.

ACHIEVING CUSTOMER-CENTRICITY ACCELERATES GROWTH

Following a customer-centric approach is the future, and allows businesses to anticipate what channel partner customers want and need. Creating not only services and offerings that suit the current demands, but ones that are designed to help its partners as well. This will be key to growing and nurturing an organization.

In today's workplace, employees are shaping cultures, rather than employees. This will determine the overall customer experience, so aligning customer-centric thinking employees to front-facing roles will be very important and impact the level of customer service for a business. The adage that 'people buy from people' has never been more crucial and it is essential that employees treat partners as customers, rather than sales numbers and targets to reach. Developing a relationship with each and every customer will bring significant benefits to a business and will establish a strong foundation for more successful leads.

To encourage and connect a culture that achieves positive partnerships, decision-makers should motivate a customer-centric strategy by implementing benefits, rewards and supporting its employees. After all, a business that is struggling to become customer-centric can quickly become a negative working environment, especially in the sales and marketing teams. Alignment between culture and customer needs is crucial for synchronicity and must be addressed as a priority.

Shifting towards a fully customer-centric business can be more challenging than initially believed, and requires commitment and patience from decision-makers during its transition. However, simply making the smallest changes and implementing the correct policies can create significant benefits for both employees and customers, and can be implemented immediately.

Becoming a customer-centric business will be the key to unlocking employees' true potential and creating customer loyalty as the organization evolves, acting as a vital part of its progression in the years ahead. If employees are empowered to be empathetic to partners' needs, they are more likely to do well. Once that is in place, customer satisfaction and business growth will soon follow.

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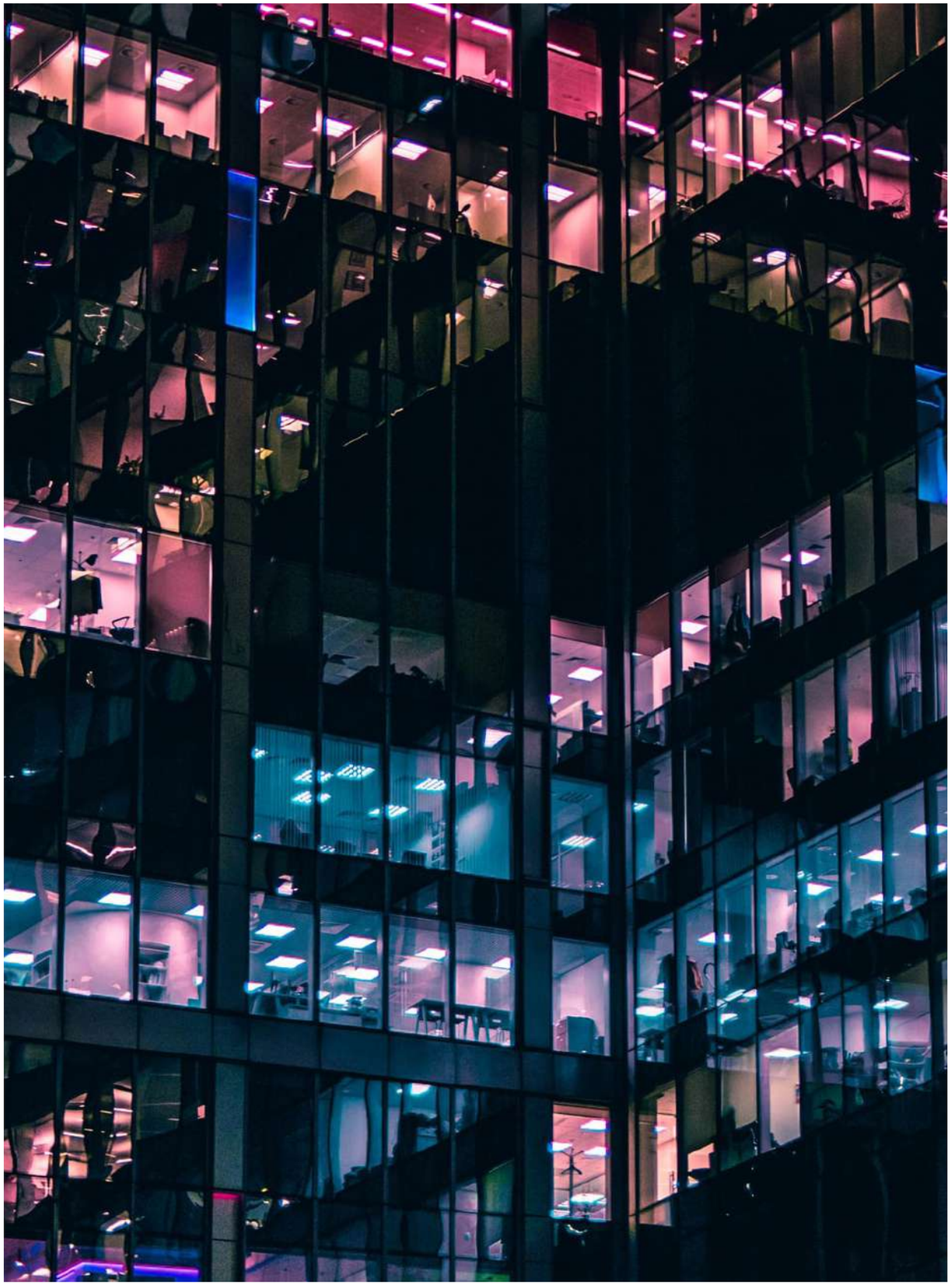
Asset tracking solution with Artificial Intelligence capabilities.

This solution holds powerful potential for the healthcare industry, such as calling medical staff for assistance, locating and assessing the availability of critical equipment, and improving safety of patients and staff.

Communication and research is key to finding the right data center partner.

Digital technologies are vital to nearly every organization in the world, and where they choose to store their data is crucial to day-to-day operations.

When a company decides to work with a data center partner, it will be one of the most important decisions they make as a business. It will help to increase resiliency, boost security and overall efficiency, while making the company more adaptable for the future. There are lots of ways for a company to decide to work with a data center; whether you're considering colocation or cloud, your IT will be hosted in a data center



By Jack Bedell-Pearce,
CEO & Co Founder,
4D Data Centres.

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Communication and research.

Choosing the wrong partner can impact the future performance of a business' IT, but by finding a data center that supports your specific business needs, you avoid any potential disruption.

A report from 2020 estimated there were more than 7,000 data center providers in the world and it's likely this number has now increased. With many providers focusing on market strategies such as hyperscale, wholescale, colocation or managed services, it has become more difficult for any company searching for its first data center partner to compare apples with apples. Doing your due diligence and research is key.

ESSENTIAL POINTS TO CONSIDER

Location: In an emergency scenario involving their systems, a company's engineers will need to get to a data center as quickly as possible. An inconvenient location could pose serious issues in the long term, especially as engineers will be visiting the site for regular maintenance.

Any potential data center would ideally need to have good transport connections. You need to be able to have staff quickly travel to any potential data center, either because it's conveniently located close to your business, it has good transport connections, or ideally both.

Latency: With modern networks this is less of a factor than it used to be, but if you're transferring a huge amount of data, you may want to consider a data center closer to your office to reduce latency. There are also GDPR and other data compliance implications of hosting IT in another country, so you'll want to avoid this.

Security: Picking a data center which can monitor and protect your system is crucial. When it comes to security, this is split into physical security which consists of 24/7/365 on-site security to prevent someone from physically breaching your IT, locked doors, CCTV systems and vigilant staff

A data center should also be able to repel any potential cyber attacks, with services such as comprehensive firewalls, managed backups and vulnerability scanning, ensuring it's able to provide managed backups and restoration as a last line of defense against a successful cyber attack, corrupted data and human error.

It's never been more expensive to suffer a security breach of your systems; if an attacker gains physical access to your servers, there's almost nothing that can be done. As well as reviewing the physical on-site security and range of cyber security services of a potential data center, ask about their record with security and if they've ever had a breach.

Reliability: Above everything else, your company wants to keep its system up and running. Having a face-to-face tour of a data center will allow you to visually assess whether it's the right one for you. Being able to ask specific questions about the running of the site, from power and connectivity, to how much downtime they've had in recent years and whether

they offer SLAs with compensation, will all help you come to a definitive answer.

A data center also boosts reliability, with backup generators, geographically diverse network cables and redundant equipment. You should be aiming for a record of 99.999% uptime for a potential partner.

Efficiency: Lower power consumption in a data center is important for two reasons: it keeps costs down for them, but just as importantly, it's more environmentally friendly. Another key factor is Power Usage Effectiveness (PUE). The average score is 2, but it's possible for a data center to have a score of less than 1.3, so this is what you should be expecting your preferred partner to have.

Expertise: As your business continues to grow, selecting a data center partner that can provide expert advice and guidance when upgrading your systems will be crucial. And before they begin the upgrading process, you'll want to check track records to ensure there is minimum disruption to operations for your customers.

It's also important to consider the depth of services a data center operator can provide. Do they have offerings for colocation, different types of cloud or capable of hosting HPC? These questions will need to be at the front of your mind, especially when it gets to the stage of futureproofing your current systems. In recent years, data centers offer a much wider variety of IT infrastructure solutions, providing a comprehensive range of services to support all aspects of your business growth.

Spending on data center systems is expected to amount to $227 billion in 2022, an increase of 4.7% from the previous year, demonstrating the range of services available. When planning your digital transformation, you'll have dedicated a lot of time deciding how to host your IT. But you'll also need to spend an equal amount of time deciding where you're hosting as well. No matter what IT infrastructure solution you're going for, you'll need to make sure your data center provider is a good fit for your specific needs - both in the short- and long-term.

According to a report by Statista.

Transforming CSP Revenue with new 5G and IoT offerings.

5G Technology and cloud-based platforms are creating significant opportunities for communications service providers (CSPs) to go beyond telecoms and build profitable 3rd party partnerships to launch innovative digital services.

With more than 198 commercial launches in the world [1], 5G has already penetrated 9% of the global market and will likely cover 1/3rd of the world's population by 2025 [2]. Operators are looking at this leap to become digital ecosystem enablers, co-creating new services with partners and customers. But time is of the essence: CSPs must lay the groundwork now to capitalize on 5G and the proliferation of the internet of things (IoT), and this requires transforming not only their networks but also their business support systems (BSS).

5G offers digital service providers (DSPs) an amazing opportunity to reclaim their right to play in the digital economy by moving up the value chain. It allows them the opportunity to move from enabler to shaper of new customer experiences and to tap into new revenue streams across different industry verticals. The rapidly expanding Internet of Things (IoT) and all the new capabilities available in Enterprise 5G have opened up a plethora of opportunities for DSPs beyond their traditional markets, particularly in verticals such as digital health care, smart agriculture, smart energy, connected vehicles, and smart manufacturing. To monetize these opportunities, DSPs will need to meet the expectations of a broader range of stakeholders and be able to handle complex ecosystems. This will require an evolution of BSS systems for 5G and IoT monetization.

Up to 72% of 5G revenue growth is dependent on the transformation of operational and business support systems (OSS/BSS) [3] . The BSS must be transformed into a system that is able to monetize IoT/5G platforms and edge deployments, which will enable operators to scale their operations as well as handle traffic and many devices at IoT scale.

EXPECTED REVENUE GROWTH OF ENTERPRISE CUSTOMERS 2021-2023

6.43% Extensively using 5G across organization
4.64% Partially implemented some solutions
3.65% Have piloted some solutions
3.97% Planning to use 5G w/in 1 year
3.94% Planning to use 5G w/in 1-2 years

ADOPTION OF 5G

According to a GSMA forecast, 5G technologies are likely to contribute $2.2 trillion to the global economy between 2024 and 2034, unlocking their true potential across verticals via cross-industry solutions and services, IoT-based platforms and services. This will bring exciting new use cases in the healthcare, automotive, banking and other sectors.

More interestingly, enterprise customers (B2B) that have been the early adopters of 5G have created strong revenue growth during the Covid-19 pandemic and expect to maintain this strong performance into the future. The figure below depicts the expected revenue growth of the enterprise customers for 2021-2023. Here we can see noteworthy variation among enterprises that extensively use 5G across the enterprise (>6%) versus enterprises that have not yet deployed 5G but plan to do so in the next one to two years.

So far, telcos have been primarily performing the role of connectivity providers for IoT. By discovering a larger share of the IoT value chain, avant-garde telcos can create new streams of high-revenue digital services.

To make this happen, Telco's needs to escape the commoditization trap, and assume a more extensive role as service creators and providers for IoT-enabled industries. They must, in other words, venture "out" of the box

By Piyush Mishra, Director, Solution Consulting, Tecnotree Corporation.

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Transforming CSP revenue with new 5G & IoT offerings.

GO DIGITAL

Build Facilitating a seamless personalized experience across multiple channels which blend human and artificial intelligence to enhance customer experience

CO-CREATE WITH PARTNERSHIPS

The success to monetization of New-Gen Technologies lies in connecting consumers with producers of goods and services that inspire CSPs

MULTI-FACET BUSINESS MODEL

Investing in go-to-market models that provide revenue sharing, application & product marketplaces, ecosystem enablement through network virtualization, & service exposure through OPEN APIs.

DEPLOY MODULAR ARCHITECTURE

To ensure high reliability, low latency, and that huge numbers of machines can be connected on the network, CSPs need an open, modular, software-based, cloud-native, loosely coupled and AI and data-driven architecture.

DIGITAL BSS KEY CAPABILITIES FOR 5G AND IOT MONETIZATION

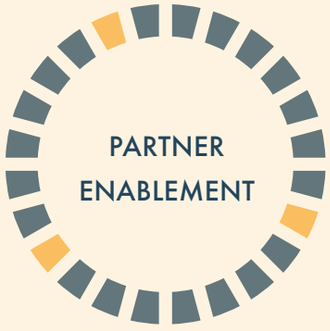
Up to 72% of 5G revenue growth is dependent on the underlying Business Support System (BSS) Transformation [5]. Although the standards and frameworks are in transformation stage, CSPs need to fastrack their transformation goals to quickly realize revenue on the investments. Operational silos must be confined to times gone by and services must be managed end-to-end from network provisioning, through to product creation, billing and service delivery through automation and specifically AI-powered closed automation to monetize the service differentiation that sets 5G apart from its predecessors.

Traditional BSS were set up to cater for the needs of a single network layer, billing system, operator and end customer. In contrast, IoT makes it possible for any connected business model you can think of and allows data to be charged according to supply and demand. IoT and the underlying BSS system needs to be ready for anything, to invite multiple partners, devices, and various pricing models into the conversation from the outset. Legacy CSPs will be jammed charging against a traditional pricing model, with no way to reap fruits from a spike in demand.

In terms of capabilities and functionalities, following enhancements are required to the new Digital BSS to maximize the return on the 5G investment.

Charging models for non-telco services Charging for Private 5G networks Charging for Edge Computing (MEC) based services 5G SBI support (charging function) New charging trigger points, NChf interface for 5G

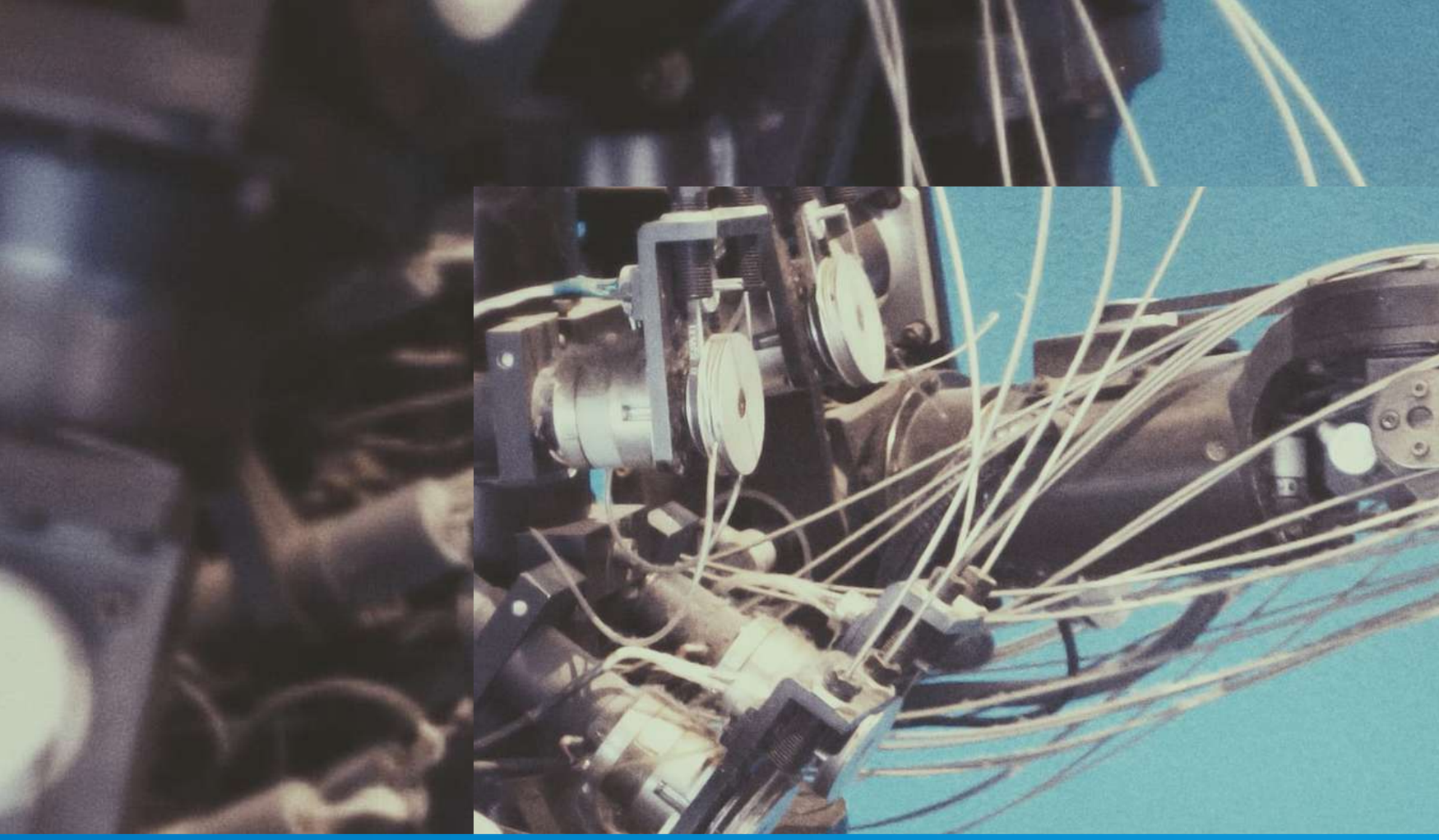
Open, modular, cloud-native architecture (ODA). Life-cycle management for mass IoT devices at scale. CI/CD & Devops enabled. Artificial intelligence and machine-learning automation. Multi-tenancy Support Orchestrate IoT Network.



Open partner ecosystem. Manage new business models. Automate Partner Management. Flexible B2X2X Partner Ecosystem Management. Digital Partner Experience Partner Monetization.

CONCLUSION

The 5G network evolution presents communication service providers with the opportunity to transform themselves to digital service enablers for 5G and the Internet of Things, and to collaborate beyond telecoms to establish digital value systems. DSPs must maximize ROI by enabling flexible new business models to capture every revenue opportunity. Legacy BSS systems are not fit to capitalize on these opportunities due to their monolithic architectures and limited flexibility, hence CSPs need 5G-ready digital BSS to manage new value chains and support evolving 5G & IoT business models.



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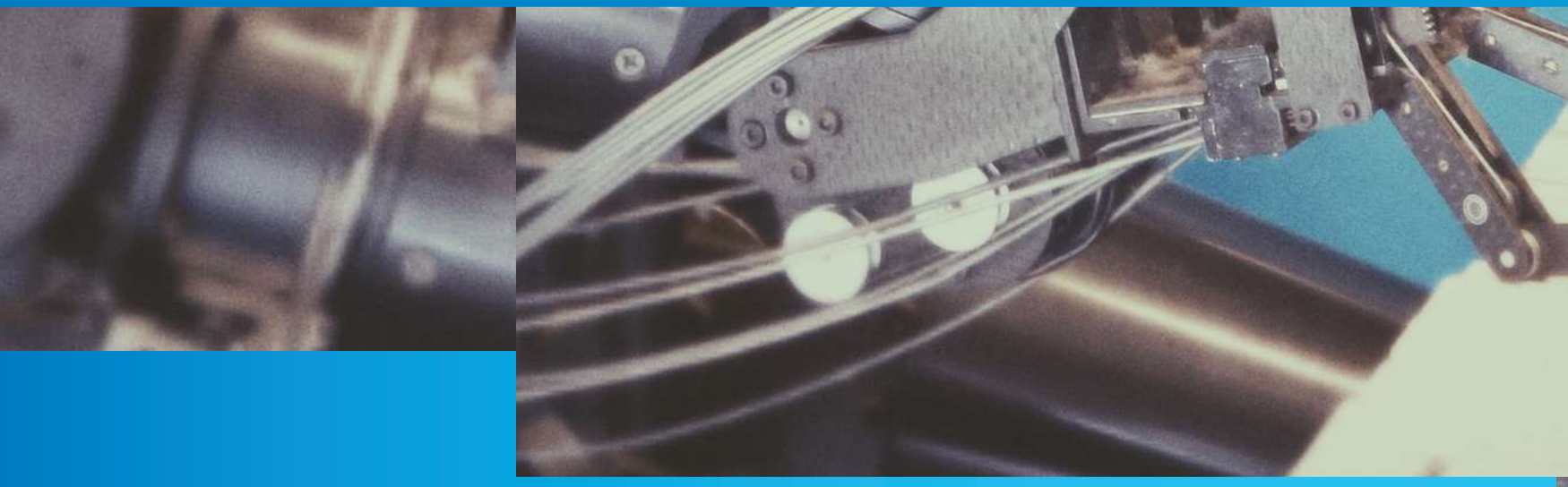

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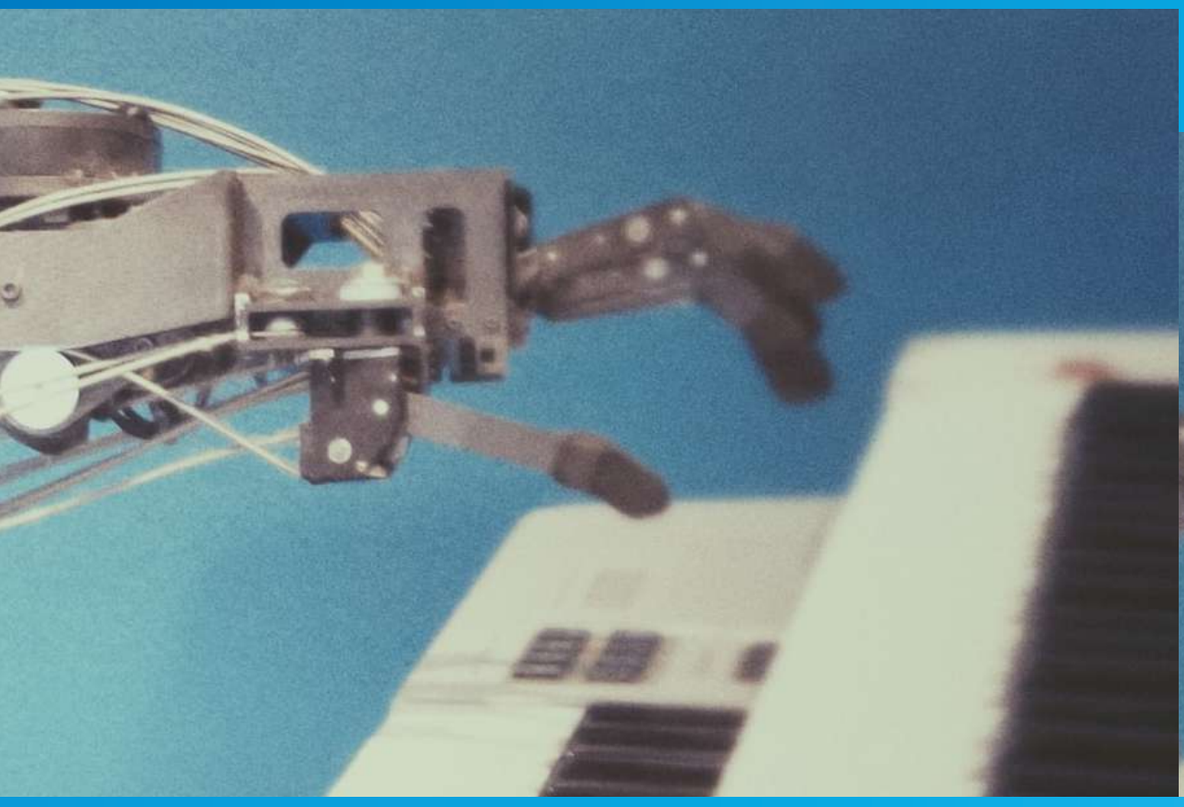

AI-AUGMENTED HPC FROM DELL DRIVES CUSTOMER SUCCESSES

DELL Technologies

Improving communication: What remote collaboration looks like in 2022.

36% of UK employees are still working at home in 2022: Proof that remote collaboration is no longer the “new norm”, but rather a prevalent way of working in the modern age.

By Jessica Compton, Marketing Manager at Pragmatiq.

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Continued...

Improving communication.

With remote shifts set to stay, employers must find ways to provide staff with the necessary digital tools to facilitate: particularly CRM (Customer Relationship Management) systems.

CRMs are becoming increasingly important for organizations with large client bases - improving customer experiences and streamlining procedures that make up the intricate relations process. 91% of companies with over 11 employees turn to CRM systems to manage relations with their customers today - and the CRM market is expected to grow by 13% per annum from 2022 onwards.

But what else can businesses be doing to make modern working as effective and collaborative as possible?

THE CHANGING TIMES

The pandemic has set about a distinctive cultural shift in attitudes towards working from anywhere (WFA).

What started out as a company perk soon became a necessity, with lockdowns forcing businesses to facilitate the remote model full-time (as offices remained off limits for long periods in 2020 and 2021).

Today, remote working is not only accepted but embraced. A recent study showed that 30% of staff globally now work at exclusively remote companies - with employers and employees alike realizing the wide benefits of the hybrid model.

Companies can access global talent and new perspectives by hiring remote workers - providing a sense of flexibility that enhances work-life balance and improves company retention rates due to satisfied staff.

With the correct balance of effective technology, organization and rapport, remote working can unlock considerable potential - with a 2021 study revealing that an overwhelming majority of the workforce found hybrid working less stressful. Up to 64% actually preferred to work remotely rather than having to visit the office.

The workplace has changed since lockdown - making cloud-based CRM systems and digital tools essential in ensuring that continued remote collaboration is supported.

THE VIRTUAL TRANSITION

For many organizations, the remote working model would not be possible without the development of digital platforms.

Video communication tools such as Microsoft Teams and Zoom have kept people connected effectively - reducing the overall time many people spend on completing tasks. But these big brand video calling systems are just two examples from hundreds of digital tools now available. From cloud-based storage systems

to conferencing software, comms platforms are so plentiful these days that any business can access the tools they need to streamline remote working practices.

Project management software, time tracking systems and online to-do lists are all available to make communication seamless, with collaborative digital whiteboards, productivity management, virtual onboarding and customer interaction systems all emerging as invaluable assets since the pandemic.

These are tools we didn't know we needed - but have quickly become staples in our working lives.

THE NEW CULTURE

According to Monster's Future of Work report, the ability to work collaboratively is a highly desired quality for companies hiring new staff. Employees feel the same way - rating teamwork as one of the top features when searching for new opportunities.

That's why a collaboration strategy is so integral to the modern workplace culture.

In order to work effectively, employees need to stay in constant contact with their team. Frequent communication via video software prevents a siloed approach even when staff are working in different locations all over the world. Meetings and get-togethers can be arranged at the touch of a button - with platforms even being utilized outside work for long-distance social occasions that can include everyone in the company.

Working from home is also the most productive environment for some members of staff - with 83% of employees claiming to be more productive outside the office rather than in it, according to an Intuition report.

Hybrid working is the new culture - and it's going to play a much bigger role in the developing structure of the modern workplace moving ahead.

THE FUTURE

Although it has materialized under somewhat strange circumstances - in a climate where quarantines and COVID regulations all prevented people from lawfully re-entering the workplace - the move towards home-working has gained considerable momentum since the dawn of the pandemic.

Up until 2020, hybrid shift patterns were largely regarded as an added extra or bonus offering for staff - usually among smaller agencies hoping to offer something different to prospective employees.

But today, people around the planet have warmed to the work-from-home model. Staff themselves are feeling more settled and satisfied in remote roles - saving money on commutes to the office whilst enjoying more flexibility in how they tackle various tasks across each shift.

Employers, meanwhile, have tapped into a whole new talent pool - welcoming individuals into their fold they might have never previously considered for roles purely due to their remote location.

Whilst many members of staff have returned to the office in a part-time capacity in 2022, work from home days remain part of the package - which is why the demand for quality CRM systems and efficient communication tools is only going to increase from 2022.

With the right platforms in place, firms can hire absolutely anyone in the world - and staff can work from anywhere.

Working together has never been easier. And it's crucial for companies to adopt and apply new features to bridge the collaboration gap for a hybrid workforce.

Remote collaboration is a reality - and it is here to stay.

The cost-of-living crisis.

What Communication Service Providers can do to help their customers cope with the cost-of-living crisis. We're all familiar with the rip roaring marketing slogans of our U.K. Communication Service Providers – 'together we can', 'The future is bright', 'It's all about you'... but sadly, these no longer appear to ring true for the millions of consumers now facing the cost-of-living crisis, as telecom operators start to increase the financial squeeze on their own customers by driving up prices for Phone and Broadband usage.

By Mo Firouzabadian,
CEO at Lifecycle Software.

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The cost-of-living crisis.

With inflation topping it highest rate since 1982, increasing at more than double the rate of basic wage growth, the U.K. in particular is feeling the shockwaves of a cost-of-living crisis more so than many advanced economies. As the Bank of England predicts double-digit inflation by October the imminent future also looks bleak, leaving little choice but for telecoms operators to jump on the bandwagon and increase their prices alongside those of their energy, gas and petrol counterparts.

The result has seen phone and broadband bills jumping faster than even the rate of inflation with three of the UK's mobile operators raising tariffs by 3.9% earlier this year, warning that many customers' bills could go up by 9.3% from the end of March, adding an extra £3.50 a month (£42 a year) onto other rising bills; with other industry players following closely behind with their own warnings of imminent rises in contract prices in line with the Consumer Price Index (CPI) rate of inflation.

As far as the customer is concerned, a recent survey from Hyperoptic, stated that more than 9 million customers are unaware of these impending bill shocks with 63% of those surveyed feeling that the increases are unfair, and 48% stating that they would not have signed their contract if they'd known prices would go up.

So, what's causing these unprecedented price hikes in the telco sector? The main culprit isn't due to inadequate bandwidth, of which there is no lack, but rather the increase in data usage. According to a spokesperson at BT, the company has seen a 90% increase on broadband usage since 2018 and a 79% increase on mobile since 2019 as customers rely on connectivity more than ever for things like working from home, education online and the growth in TV streaming. To cope with this demand, Communication Service Providers are therefore using the monies gained through price hikes to invest back into their networks, so that they can better cope with this exponential rise in data usage.

However, these imminent costs to millions of telecoms customers can be somewhat offset if the Communication Service Provider's ensure that these price increases are directly reflected in the quality of the services being delivered. For instance, operators can offer Spending Caps to limit bill shock and avoid unexpected surprises. A cap limits the amount customers are happy to spend

above the monthly plan price and data limit on chargeable services. Customers can edit the cap but can't exceed it, so they can enjoy total control over the monthly bill avoiding unexpected surprises.

Additionally, the groups feature, also known as family plans, can be a good way to manage the spending in households. The group allowance can include multiple SIMs and facilitate the payments and adding any new members should also bring discounts.

Some operators will also allow users to roll over unused data or allowance into the next month's bill, either as data, as credits or as a discount. This way, nothing goes to waste.

No doubt during this time, many customers will be reverting to SIM Only deals (1 month contracts), but also keeping their eyes peeled for the best offers in the market, in order to switch provider and guarantee savings. With next day switching for example, it's incredibly easy to find and switch to another provider within 24 hours. All the customer needs to do is to request a switching code by text and give it to the new provider and the switch is completed within one working day.

If Communication Service Provider's want to limit this behaviour, and ensure better customer retention, it's vital that they are able to offer flexible plans, relevant schemes and offers and total visibility for their consumers on their spend. Operators who offer real-time charging options are best equipped to provide a frictionless customer experience where the customer can see what is spent and how, as well as the remaining data allowance remaining. Time and again, research shows that customers appreciate having full control and total transparency of their spending behaviours, so implementing these simple measures is a win-win for the Communication Service Provider's when it comes to customer satisfaction and stickiness.

If Communication Service Provider's rightly implement any or all of these measures, it will also go a long way in gratifying the regulator Ofcom and senior politicians who have been repeatedly pushing the telecoms companies to promote so-called cheaper "social tariffs" and the future might look brighter after all.

The importance of integrating customisable, cloud-based software to improve customer experience.

Recently, WhatsApp announced plans to help businesses operate and amplify their presence online, including a new chat feature that allows for more effective communication with customers. This move from WhatsApp is in line with the rise in demand from consumers for digital customer service communications, with chatbot and messaging services growing in preference.
In fact, online contact channels are now an expectation for customers, with 86% expecting online self-service options.

Jonny Campbell, Head of Customer Growth and Retention at customer service specialist, FM Outsource.

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Cloud-based software to improve customer experience.

WhatsApp already has an API interface which allows businesses to connect their systems and use the platform as a customer service channel, however, these plans will form part of a new premium service specifically geared at small businesses. These features will include the option to manage chats across up to 10 devices and customised click-to-chat buttons that can be posted on websites and shared, meaning businesses can customise their experiences and quickly reach out to customers.

The rise in cloud-based software specifically developed to enhance customer service means that businesses can combine efficiency and personalisation, work remotely, reduce their costs and, ultimately, improve their customer's experiences.

Let's explore some of the benefits and discuss how integrated cloud technology can be a game-changer for small businesses, allowing them to provide an effective and efficient customer service experience.

EFFICIENCY AND PERSONALISATION COMBINED

Customer experience has a huge impact on whether consumers will return to a business with 90% saying that their brand loyalty is based on the quality of customer service they receive. Customer bases are often diverse and so present a range of unique queries. Personalising customer service is therefore the key to satisfying customers. Traditionally this has been through personal interactions with service agents, however, this approach is labour heavy and businesses often had to choose between efficiency and quality when it came to customer service.

Integrated cloud-based customer service platforms have meant that the way customer service is delivered has drastically changed in recent years. Chatbots, once an almost space-age innovation, are now a familiar part of customer service, saving customers valuable time and businesses huge amounts of money. They allow customers with simple queries to easily access information, freeing up agents for more complex tasks.

Whilst chatbots are adept at servicing large numbers of customers, they struggle to mimic the personal touch of a real customer service agent. Cloud-based technology allows chatbots and real people to work together to maximise the experience . When integrated in the cloud, real customer service agents can handle queries that are more complex, while chatbots are left to respond to large numbers of simple queries. In this vein, the new WhatsApp features will allow companies to send standardised responses initially and have up to ten connected devices that can personally respond to queries when a more in-depth reply is needed. This means companies can respond to a range of queries seamlessly and effectively.
A win-win for both the businesses and the customer.

REMOTE ACCESS

Communication channels connected to the cloud, such as WhatsApp, mean that customer service agents can respond to issues from wherever they are in the world at any time. In this new age of remote working, this means that companies can have their systems in place at any location. Businesses, therefore, retain the ability to maintain productivity and prevent disruption for both the business and its customers. Reducing the need to be in the office also means that the need for expensive office space is decreased or even totally eradicated giving employees flexibility and also lowering overheads..

Remote access also makes it easier to offer customer service solutions 24/7. Employees are able to work from home instead of the office when conducting out of hours work, meaning they can avoid those red-eye commutes and start work well-rested. A 24/7 service is a huge benefit for a business that receives out of hours queries from customers in different time zones or on weekends, and reduces the time customers have to wait for a response.

COST SAVINGS

A system that can integrate several channels together such as chatbots and telephony can also present a number of significant cost savings for a business. Employees are able to communicate internally through instant messaging platforms as well as using them to deliver a personalised customer experience. This reduces the overheads of customer service operations as well as personal costs to employees who don't need to commute into the office every day.

In much the same way, when operations are integrated, systems can also be streamlined, reducing costs. Disparate systems can be merged together, in this case a chatbot feature is melded with a personal response platform, whereas before two systems and two potentially expensive subscriptions would be needed.

At its heart, cloud technology is designed to be able to interact with other technology as seamlessly as possible. This means that cloud-based customer service programmes can also be utilised in line with existing systems such as CRM databases, removing the need for costly system switches.

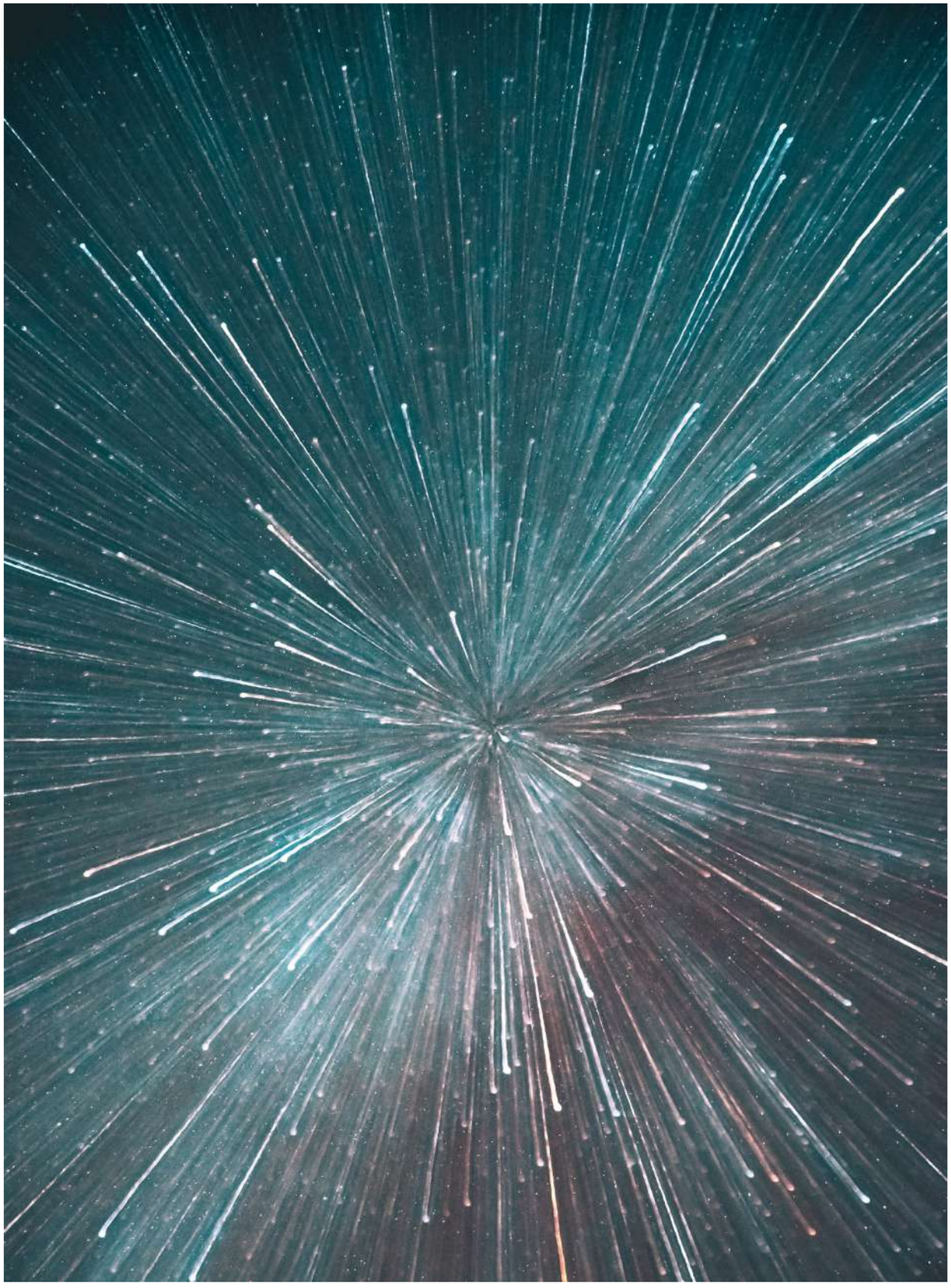
Ultimately, however, the first concern for businesses is to keep their customers as well serviced as they possibly can be. Investing in a cloud-based customer service system means that they can treat customers as individuals and create customised responses to their queries. The level of service their customers experience is therefore enhanced, so, customers are happier, customer loyalty is boosted, and the company is strengthened.

Network evolution.

Over the last few decades, with every improvement, upgrade or optimisation technology has undergone, the networks that connect them have also been evolving. With time, these and other technologies were absorbed into enterprise architecture through the consumerisation of business technology. And it's these staggered, iterative, rapid changes that have created the complex corporate infrastructure and networks we use today. Lets look at how it all started.

Enterprise networks began with data centre focused, wide area network (WAN) architecture. So, the network was just the office branches and the data centres which held their applications. There was a time when some of these applications even sat in a desktop in an office, where the business users would connect to it.

But as the network got bigger, and requirements got more sophisticated, applications eventually moved into data centres. With data centres, businesses had dedicated compute capacity, security and network bandwidth. Users (employees) simply went into the office to connect to these resources, and this was considered state of the art up until around 15 – 20 years ago.



By Song Toh, VP Global Network Services, Tata Communication.

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Network evolution.

RISE OF VPNS AND THE FIRST REMOTE WORKERS

By the 90s, enterprises were using virtual private networks (VPN) or MPLS networks to connect to their data centres. As the VPN encrypted the connection and there was no direct connection to the internet at the time, it was a secure method of protecting organizations.

It also meant that, without changing the overarching architecture, some users could now work from home. They would need to install VPN software on their home desktop or use a laptop with it pre-installed to have access to the business network and applications. For these remote working pioneers, the experience of working from home was usually plagued by errors, and troubleshooting with IT was troublesome.

Because connectivity requirements for remote users were not that sophisticated at the time, this worked. Essentially, if you logged into the VPN from home, you would appear to be in the office. And everything connected to the office network was trusted, as network security was a much simpler problem.

However, that would change with the emergence of cloud computing

THE RISE OF SAAS AND THE INEFFICIENCIES OF PRIVATE WAN

By the turn of the millennium, we begin to see the start of the shift away from corporate data centres, which were based on a CAPEX (capital expenditure) funding model.

Vendors began offering applications 'as a service' from the cloud, where you pay what you consume and communicate.

As IT teams became leaner and more efficient, many realised this Software as a Service (SaaS) consumption-based model was much more flexible as well as they absolved enterprises from having to spend funds on building and maintaining on-premise data centres.

However, now the process of connecting to enterprise apps wasn't as convenient as it used to be. The data centre-architecture was now inefficient as applications were no longer being hosted on the business' data centre, but on that of the vendors. So, network traffic was now taking much longer, and often unnecessary routes.

For example, if you worked in San Francisco for a company that was headquartered in New York. To access your company's CRM app, your connection would have to go from San Francisco to New York, then up into the internet to access your vendor's data centre, which may be based in the same region as your office (San Francisco).

These long roundtrips began leading to poor user experiences, with more delays and errors such as timeouts. And with time, the bandwidth that went from office to the data centres started to get choked by increased bandwidth

required by modern graphical user interface. Businesses needed to breakout of this framework of long, inefficient network routes if they wanted to improve the working experience of their employees. And that's exactly what they did.

THE INTERNET BREAKOUT

To get around these choked networks, businesses started using local internet breakouts as a way to connect straight to the internet. With an internet connection at branches that linked enterprise users directly to the internet, it meant shorter routes for network traffic and a better user experience when accessing cloud-hosted applications.

At first, most of the traffic still went through the data centre, even if employees were using SaaS applications. That's because at the time, only a handful of the business apps – such as CRMs or HR apps – were consumed as SaaS by enterprises.

However, the turning point started when software companies decided to stop selling desktop versions of their apps altogether. An example is Microsoft which changed its product offering into Office 365, which was cloud first and viewed desktop clients secondary.

These sorts of decisions changed the scale of business' networking needs dramatically.

Enterprises that previously only needed to manage an internet breakout from their data centre for maybe a fifth of their users were now having to do it for 80 – 100% of their users.

The current architecture simply wasn't sustainable for this way of working. It meant businesses had to put in more direct internet connections, increasing their complexity levels as they started needing to manage multiple connections at each branch.

More worrying however, was the fact that those branches now connected the business directly to the internet, which meant businesses had to focus more resources on cybersecurity. In the past, no one outside the organisation could access the business network unless they somehow got in through

the private network, which, along with the IP address, simply wasn't available outside the organisation.

But this had all changed and it was getting more and more complicated to secure and configure all business' networks.

SD-WAN TO THE RESCUE

With hybrid network at branches, the configuration of each branch router became a more complex task. This also meant every time there was a change in policy, the arduous work of reconfiguring them had to happen again.

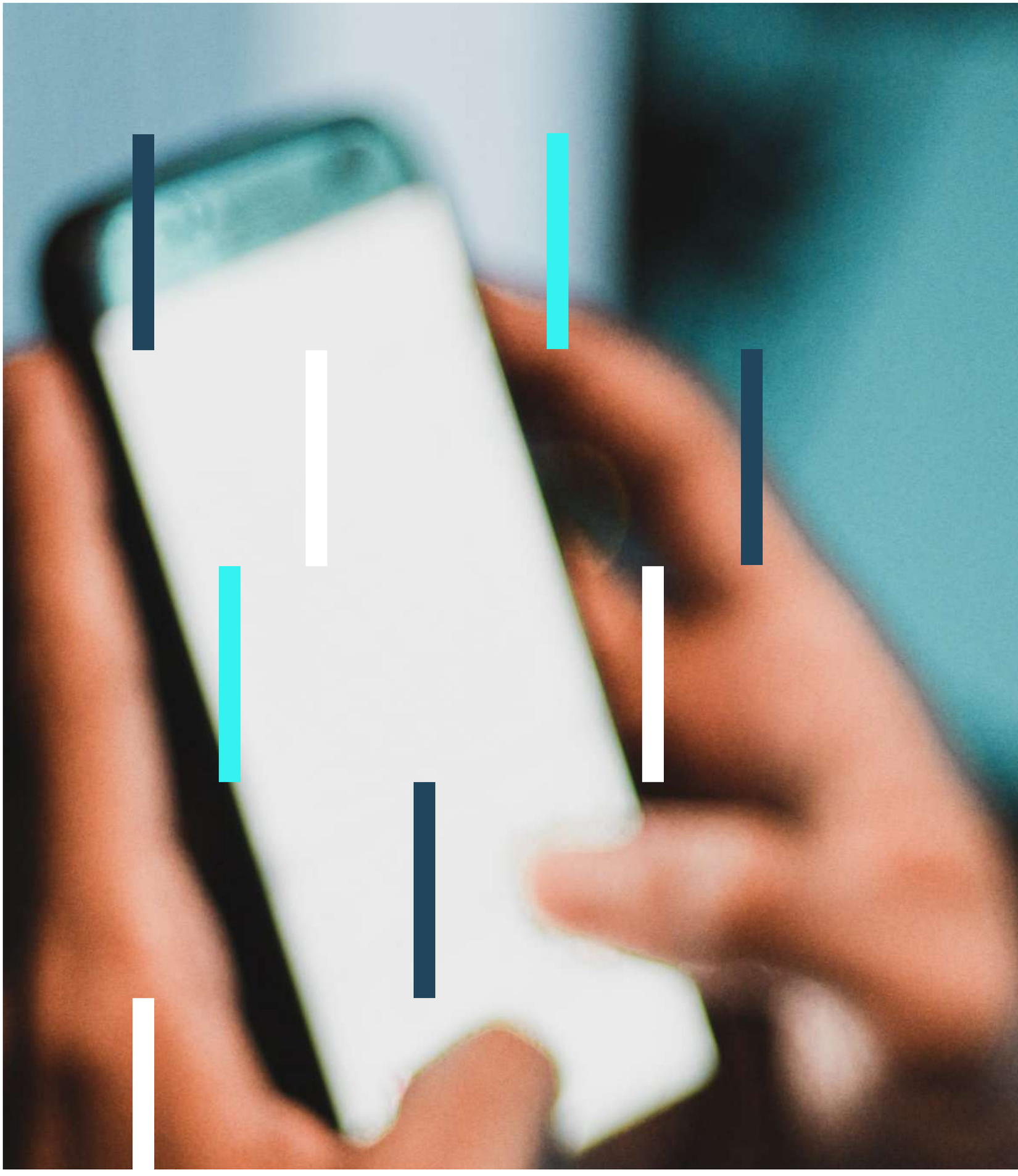
With the introduction of SD-WAN, that configuration was moved to a centralised cloud controller, so businesses had the ability to apply different configurations to routers based on an individual branch's needs.

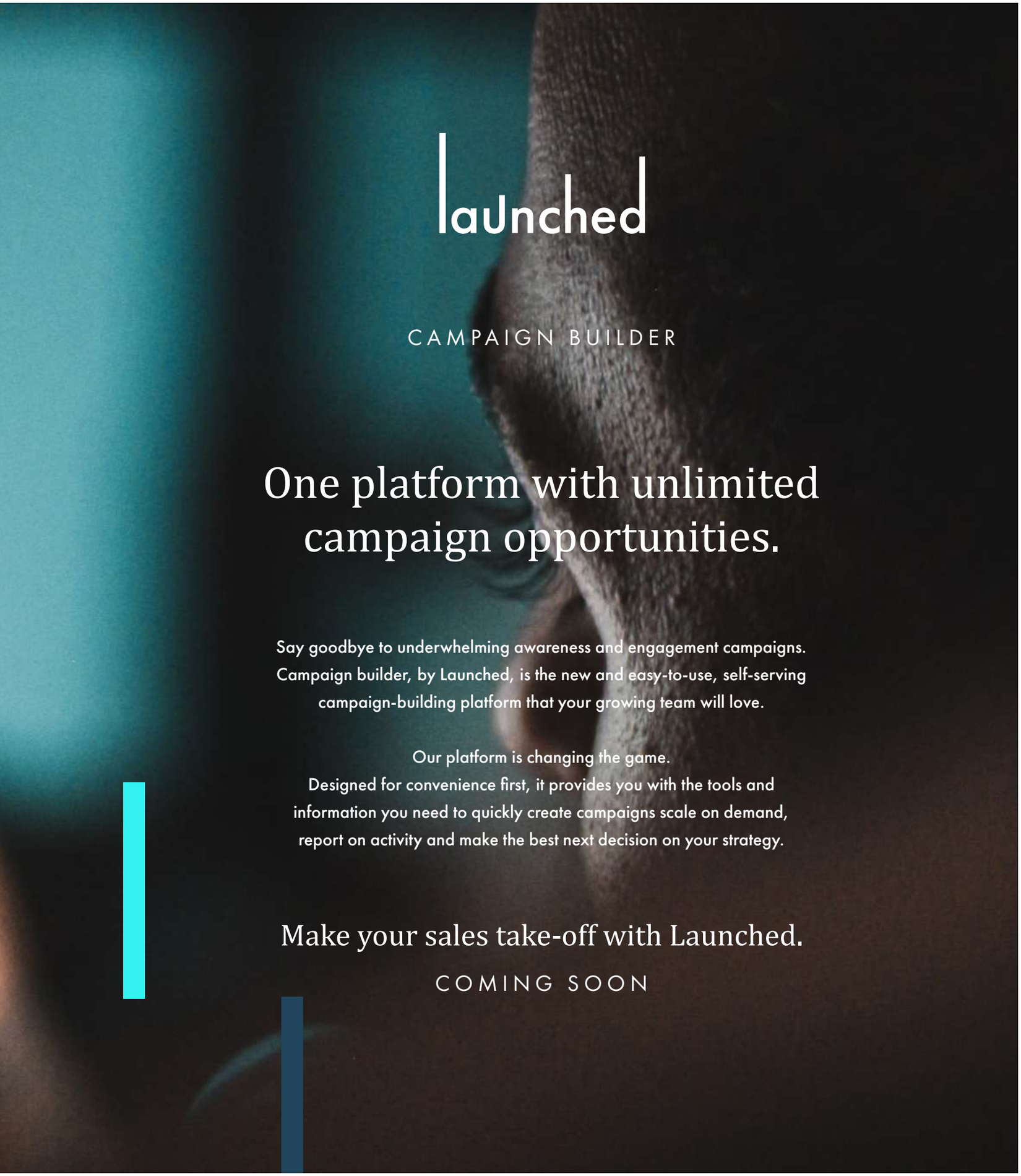
So, say a business had hundreds of branches and 98% of them were regular internet branches, with a few data centres. With SD-WAN, a business could apply different network profiles to its different branches to optimise the user experience of employees.

The profiles were standardised as templates, making them a lot easier and faster to reconfigure branches. And with time, secured SD-WAN solutions with firewall features were introduced in a bid to further reduce complexity.

And that's where we were until about three years ago.

We now need to look at the network developments that took us through to the present day of en masse remote working and look at some of the networking developments the future holds like intent-based networking.

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