Computacenter

SURVIVE AND THRIVE: TECHNOLOGY TRENDS FOR FUTURE SUCCESS

COMPUTACENTER TECHNOLOGY INSIGHTS

MARCH 2021

INTRODUCTION

10 years ago the "SMAC stack" emerged as a term within the industry. There was an inflection point with the emergence of Social, Mobile, Analytics and Cloud technologies, offering radical opportunities to drive the "digital agenda". This was set in the context of a period of consumerisation of technology and mass adoption of mobile devices providing access to a world of applications and functionality.

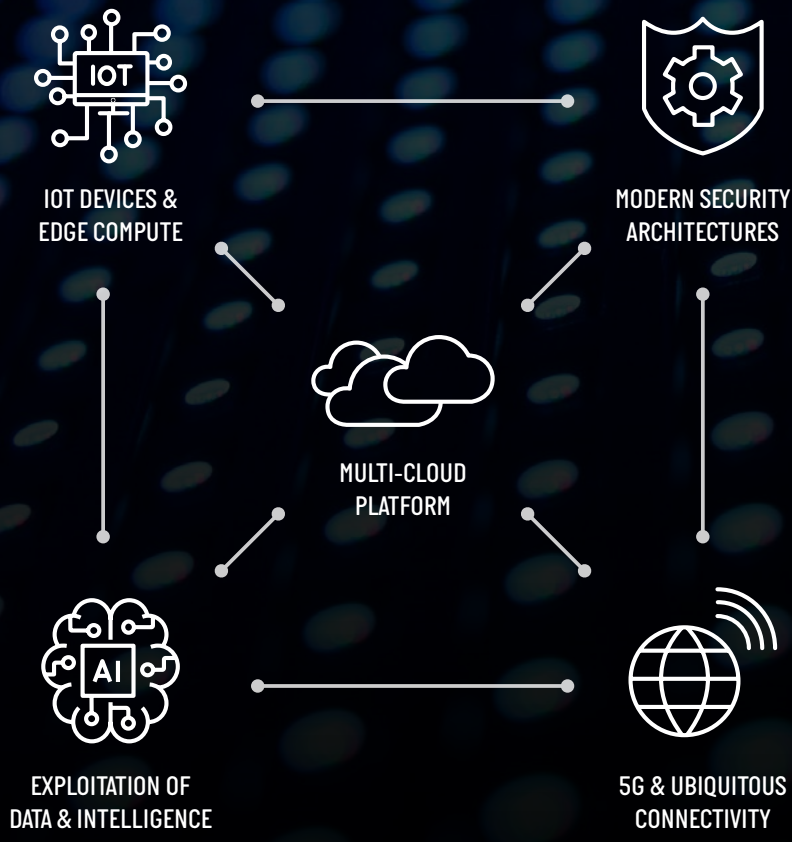
The impact of these technologies has been profound. There were winners; those who embraced these technologies to develop new offerings and business models to redefine markets – such as Netflix, Uber and Airbnb. And there were losers; those slow, or who failed, to adapt and have now disappeared or become less relevant – Blockbusters, Kodak et al. Both stories hold lessons for everyone as we face the next wave of challenge and opportunity in technology.

In 2021, we once again see the convergence of technology forces but this time they are even more powerful than SMAC.

None of these technologies are new, but their combined power offers radical opportunities for transformation of industries and customer engagement. And clearly, all of this is taking place amid the most profound social, political and economic disruption in recent history.

As businesses look forward, the exploitation of this array of technologies may determine whether they survive and thrive in a world that looks very different.

These technologies apply across all industries. Indeed, there are examples and blueprints of where these technologies are being used already. Broader adoption as these technologies mature and scale will only enhance the opportunities ahead.



MANUFACTURING

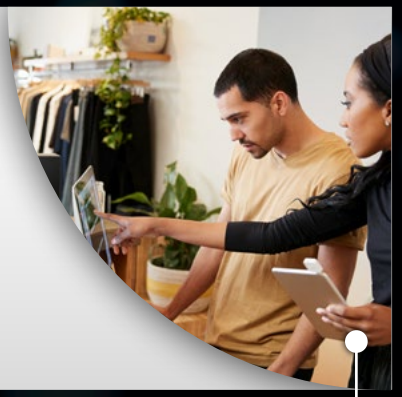
- Transition of proprietary operational technology to standards-based networks
- Adoption of IOT devices and connectivity providing data telemetry to aid analysis and decision making in system performance and maintenance
- Edge processing to drive real-time processing and decisions from data

FINANCIAL SERVICES

- Transformation of consumer experience towards mobile first, and adoption of digital payment technologies
- Managing cybercrime via intrinsic security and AI/ML
- Enabling face to face services in remote and isolated regions using mobile/pop up technologies to deliver an edge bank

RETAIL

- Edge technologies to optimise inventory placement and customer experience
- AI-powered security solutions to manage and help defeat risks of cybercrime
- Exploitation of AI technologies such as Computer Vision to enhance consumer identification and proactive advertising through mobile apps and digital signage



PUBLIC SERVICES

- Transition towards incident prediction using data and AI target repeat offenders (e.g. in policing)
- Enabling mobility of staff with access to data and applications to manage citizen/patient interactions in any location
- Aggregation of data from disparate sources to provide a 360° perspective on an individual or situations

We have compiled the thoughts of our Chief Technologists from our Office of the CTO as they unpack the 5 trends and to aid your thinking about where and how they can be employed as a catalyst to your transformation and growth.

IOT DEVICES AND EDGE

HOW CLOSE TO THE EDGE SHOULD YOU BE?

The last few years has seen a push to "make things smart", which has often meant connecting devices to the internet. Simply connecting a device to the internet doesn't make it smart, but what you can then do with it using the data generated is what does – and what creates opportunity.

A simple example we can all relate to; a printer. Printers require maintenance, a change of cartridge or toner every now and again. It is rarely the top priority of the user to keep track of the ink status, we tend to defer the warnings, and eventually the cartridges or toner runs out. This then causes an interruption or break in the workflow. And this creates an issue.

Connecting the printer to the internet gives the supplier the ability to provide a service, to maintain the device and support the processes the printer underpins. All of which they can monetise as a service to the consumer. The necessary logistics of acquiring new cartridges is now taken care of by the supplier, who is now adding more value beyond the initial sale of the device. The supplier generates more revenue, and the user experience is enhanced.

Internet connectivity has enabled the consumer and supplier to use the technology in a different way. The same is true of IoT devices in general. They are relatively simple devices in themselves but connecting them to the internet opens a world of opportunity, namely for the data they generate to be harnessed, aggregated and interrogated in new ways. This creates the ability to build new services that can inform business decisions and improve user experience.

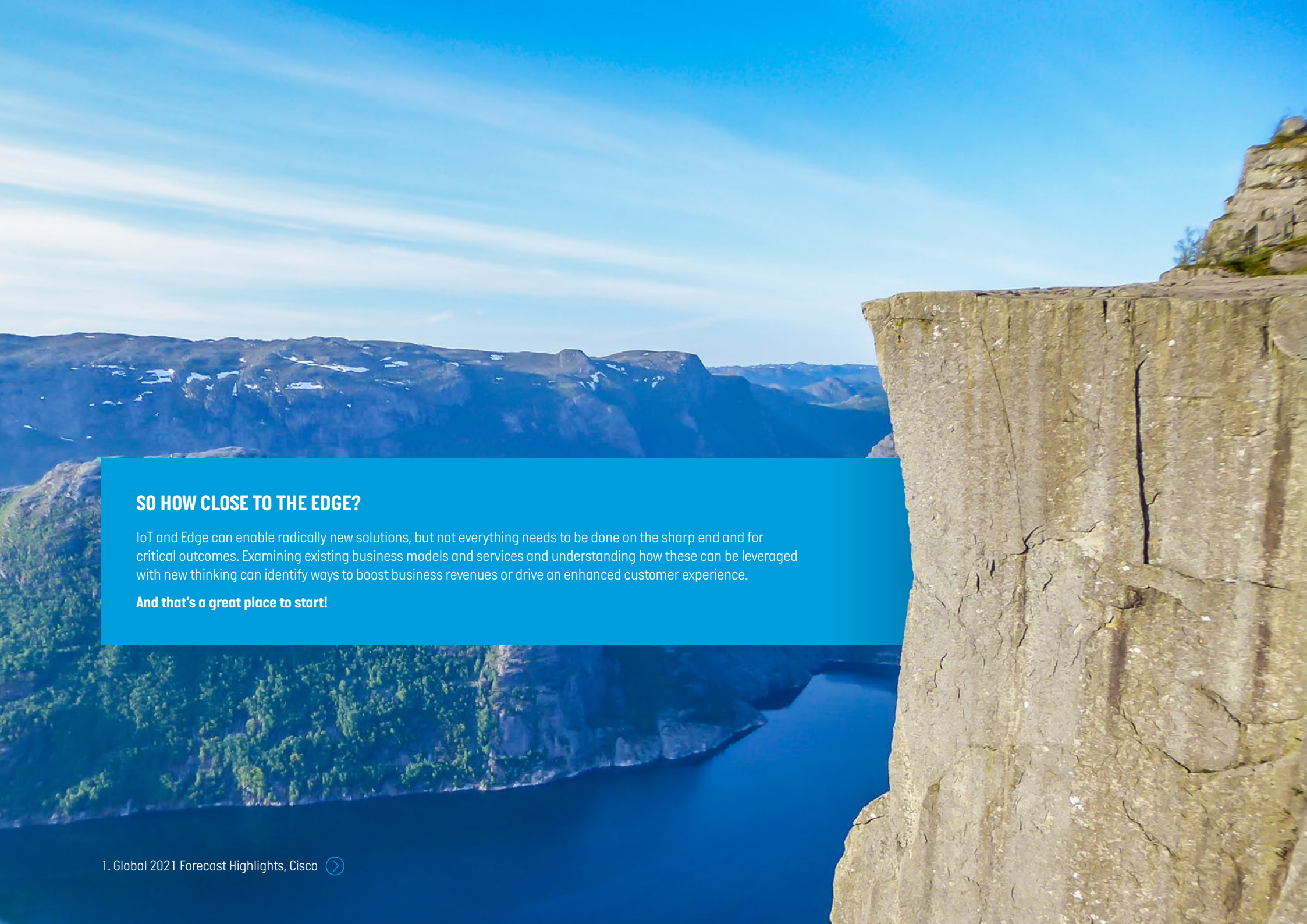
A recent report states that there will be 27.1 billion networked devices in 2021[1]. That's a lot of data and information ready to be consolidated, analysed and monetised if approached in the correct way. The question to consider is how to use connected devices that already exist to drive innovation and growth, and what new services can be created to improve consumer experience and transform the way we operate.

The volume of data from connected devices will continue to grow, as will the number of attached devices. The key challenge at the Edge is the necessity for low latency data processing to enable decisions to be made very quickly, without the need to back-haul the traffic or decision making to data centers or clouds for processing. Use cases such as autonomous and connected transport, intelligent cities and citizen safety initiatives can only be provided at the Edge.

Edge computing is all about enabling devices to process data where it is created – at the "edge". This can be either within the device itself, or in a separate unit very close by. This is vital to enable instantaneous decision making, where processing time can directly correlate to critically important outcomes.

In our data-heavy future, with billions of connected devices, faster and more reliable data processing will become crucial. The consolidation and centralised nature of cloud computing has proven highly effective over recent years, but IoT and mobile computing puts an enormous strain on networks due to the additional data generated.

Back-hauling data to central data centers or clouds, is often unnecessary, much of this data is highly transient and has no value in the minutes or hours after it is created. Thinking in old architectures of a mandate to process and store all data in data centers or their modern cloud equivalent creates a limitation to opportunity.



SO HOW CLOSE TO THE EDGE?

IoT and Edge can enable radically new solutions, but not everything needs to be done on the sharp end and for critical outcomes. Examining existing business models and services and understanding how these can be leveraged with new thinking can identify ways to boost business revenues or drive an enhanced customer experience.

And that's a great place to start!

1. Global 2021 Forecast Highlights, Cisco

MODERN SECURITY ARCHITECTURES:

TIME FOR DIFFERENT?

2021 will be no different to any other year with security breaches happening all too frequently. This is in part because of failed security controls, caused by legacy configuration practises and aging platforms, and equally because the current speed of business is very challenging for humans to keep pace with.

The rate of change in user expectations, application needs, and services delivered make it extremely challenging for security people, processes, and platforms to remain one step ahead of the attackers. Business users and external consumers now expect applications to be available all the time with the highest levels of experience meaning bolt-on security is an approach from a bygone era. If security isn't built in by design, inherent and intentional – then there is no security at all.

Getting cyber security right is no longer a technology problem, the security products and platforms of today are better than ever. Instead this is an industry, cultural and a philosophical issue. A rethink is required of the impact of poor security – in which the business and the user are insecure and often unaware – exacerbating the vulnerability.

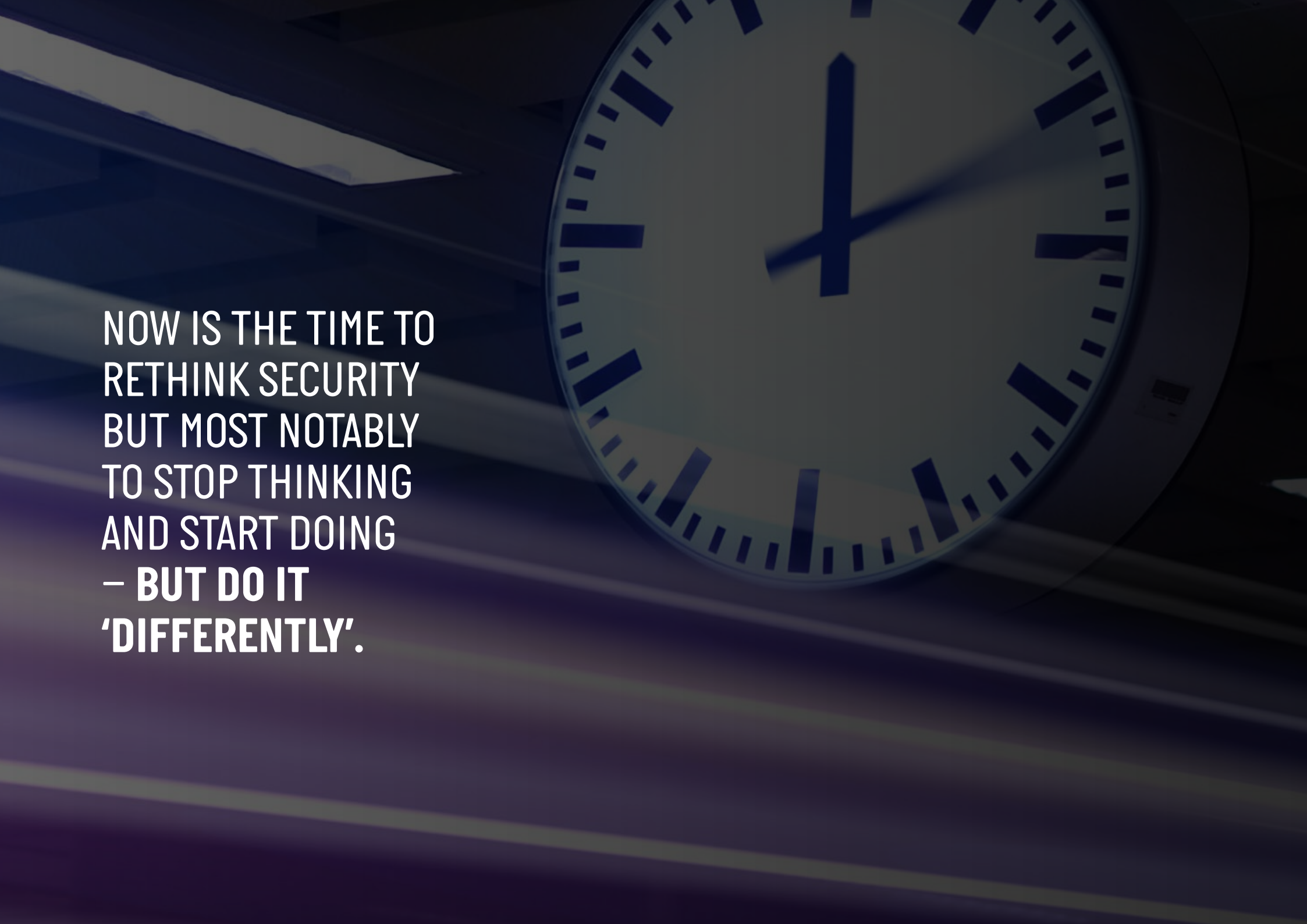
Cyber security attacks are now a business – with highly skilled practitioners, support systems, best of breed technologies and razor-sharp focus on the specific techniques required for a targeted attack. The most lucrative attacks are not random but instead highly planned, well-funded programmes using multiple techniques and vectors and initiated by long periods of reconnaissance. This reinforces the need to rethink security to ensure it's not only security for business now but optimal security for business next and beyond.

To help combat this problem, technology must support human endeavours. The use of Machine Learning (ML), AI, big data and automation are no longer optional but are essential. This is not about replacing people but instead augmenting human activities to make them better and enable scarce cyber security resources to scale.

There are fundamental paradigm changes in security, such as the adoption of zero trust models – accelerating in the face of a future world where the internet has become the new corporate network. And in a world of mobility and remote connection, SASE solutions are coming to the fore rapidly.

Simplification is also an imperative in the security world. This will help to evolve multiple decades of complex security implementations, consolidate vendors with overlapping or redundant functionality to shift business to a proactive cyber security posture that helps to position an organisation as a difficult attack target but equally one that can respond quickly if an unfortunate breach happens. The security industry is playing a major part in this paradigm shift with increased levels of API integration across platforms from different vendors. Alignment with architectural approaches, including zero trust, to increase security effectiveness are helping to accelerate organisations to an improved security posture.

A previously unseen level of sharing and externalising of good practise is helping to enhance the industry with the benefits of security lessons learned well received by all.


NOW IS THE TIME TO
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AND START DOING
– **BUT DO IT**
‘DIFFERENTLY’.

MODERN CLOUD PLATFORM

THE ONLY WAY FORWARD?

Cloud is in no way new; it has been with us for over a decade. It emerged as a disruptor to how, and where, infrastructure was deployed – and how it was consumed. The reasons it resonated at the time were its attributes:

- **Utility** – pay for what you use;
- **Availability –** it was there, and ready to consume immediately; and
- **Flexibility** – what you need, when you need it.

Comparing cloud to an organisation's own IT capability at the time was like comparing apples and oranges, so it was understandable why application developers and the C-Suite were drawn to cloud.

Cloud has been a success. Its usage has grown radically, such that it's not one cloud, but multiple clouds in use within many organisations. This creates the notion of a modern cloud platform. But what do we mean by that? We are already familiar with cloud, so let's focus on the 'modern' and 'platform' aspects. But before we do, lets acknowledge the point that it's not "the" cloud, its 'cloud' – multiple clouds – on or off premises.

Cloud platforms continually evolve and add new offerings and capability. This is a good thing. The key with a modern cloud platform, and a mature cloud strategy, is that it is not about partisan preference, it's about embracing the best of the available ecosystem.

After years of organisations and IT vendors spending time and significant funds trying to compete with the hyperscale clouds (AWS, Azure, GCP), it is generally accepted that (public) cloud-only, or even cloud-first, is too simplistic – it's 'cloud-right'. Modern cloud platforms are modern in capability and pragmatic.

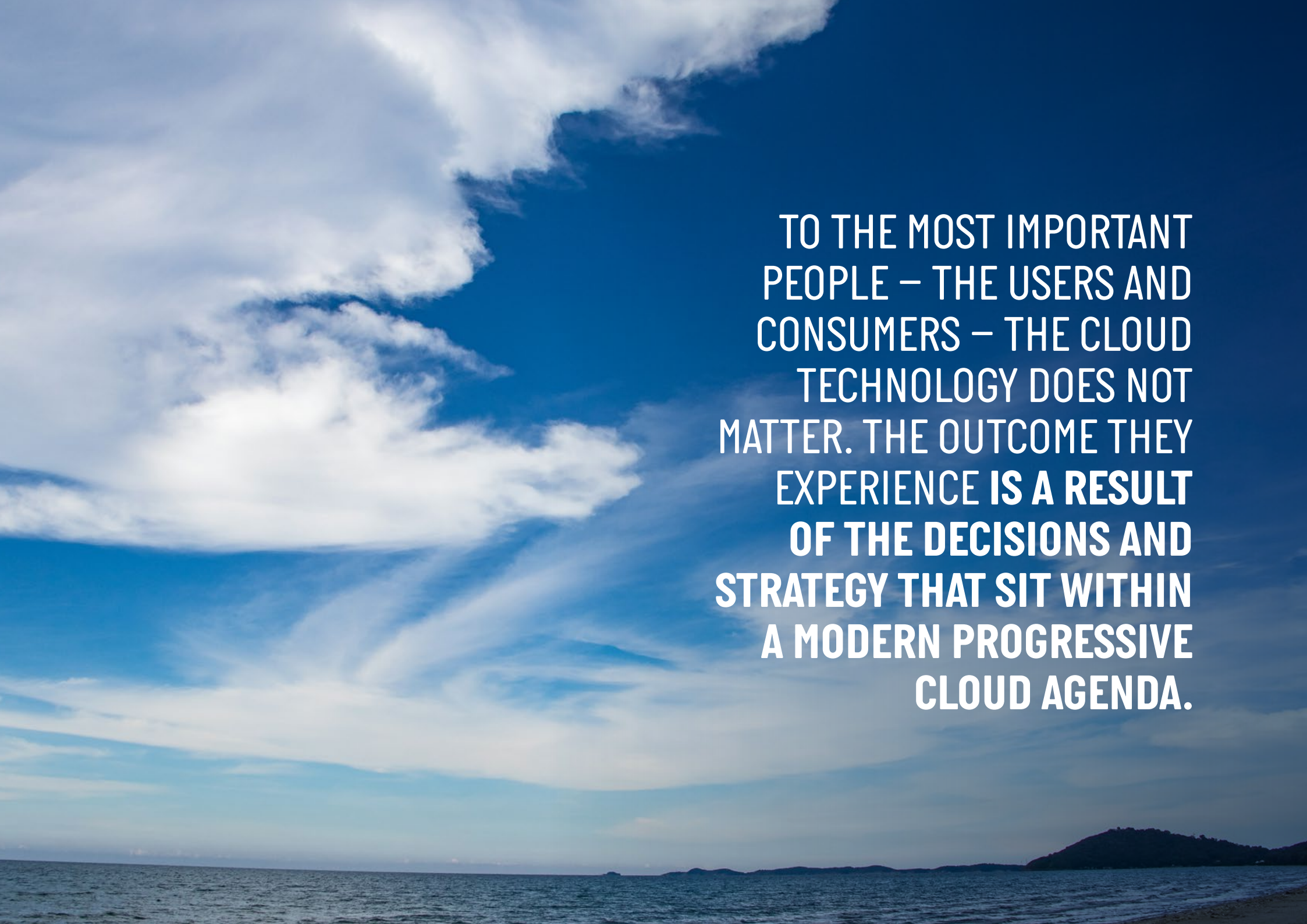
A single organisation can build and deliver a capability better and more appropriate for their business than someone else – even a multibillion-dollar hyperscale or a hosting provider. In other instances, someone else (often the hyperscale) will provide a capability better than you, far more effectively than you. And you should embrace this wholeheartedly.

A modern cloud platform blends 'done for you' with 'done by you', but the overall platform remains your responsibility. A modern cloud platform is a cloud infrastructure, a cloud operating model, and the necessary skills, processes and toolsets that enables the platform to deliver value to your business.

The benefits and attributes of a modern cloud platform are many. It is a well governed framework, enabling you to leverage the best of individual specialist cloud platforms, whilst operating an overall portfolio of cloud resources in a consistent and secure manner. It delivers a multi-cloud ecosystem in a consistent, well managed and governed way, providing the digital platform to underpin future business growth.

A central premise of cloud has always been agility. With a modern cloud platform you can scale resources elastically up and down in line with business demands and deliver the agile and functional requirements of modern "digital" or dev teams and reduce time to deliver new capabilities to the business.

Always recognising the modern cloud platform is an ecosystem of multiple environments, we strive for common automation and operations, common data management, protection and disaster recovery and inherent resilience at an application level.


TO THE MOST IMPORTANT PEOPLE – THE USERS AND CONSUMERS – THE CLOUD TECHNOLOGY DOES NOT MATTER. THE OUTCOME THEY EXPERIENCE **IS A RESULT OF THE DECISIONS AND STRATEGY THAT SIT WITHIN A MODERN PROGRESSIVE CLOUD AGENDA.**

5G AND UBIQUITOUS CONNECTIVITY

IS 5G STILL THE QUESTION?

There have been few technologies with a story of promise as great as that of 5G. A next generation wireless communications network, 5G delivers greater reliability and performance than existing 3G and 4G mobile networks. And it's here now. This sounds straightforward, but surely there must be more to it than this?

Yes and no, 5G is faster than previously available networks, much faster. With a theoretical transfer speed of 10 times faster than the current 4G networks (as high as 1000MBps) the performance offered is game changing. But it doesn't stop there, low latency is the killer element that is often underplayed in the discussion. Lower latency means a greatly improved user and application experience, with the potential to make services never previously envisaged (such as those at the Edge or in remote areas) accessible via a standard mobile network. This is the real potential of 5G, the service and experience possibilities it can enable. 5G in isolation is a network transport waiting for problems to solve or services to transport at lightning speed. A technology-centric thought process will not unlock the value 5G can deliver.

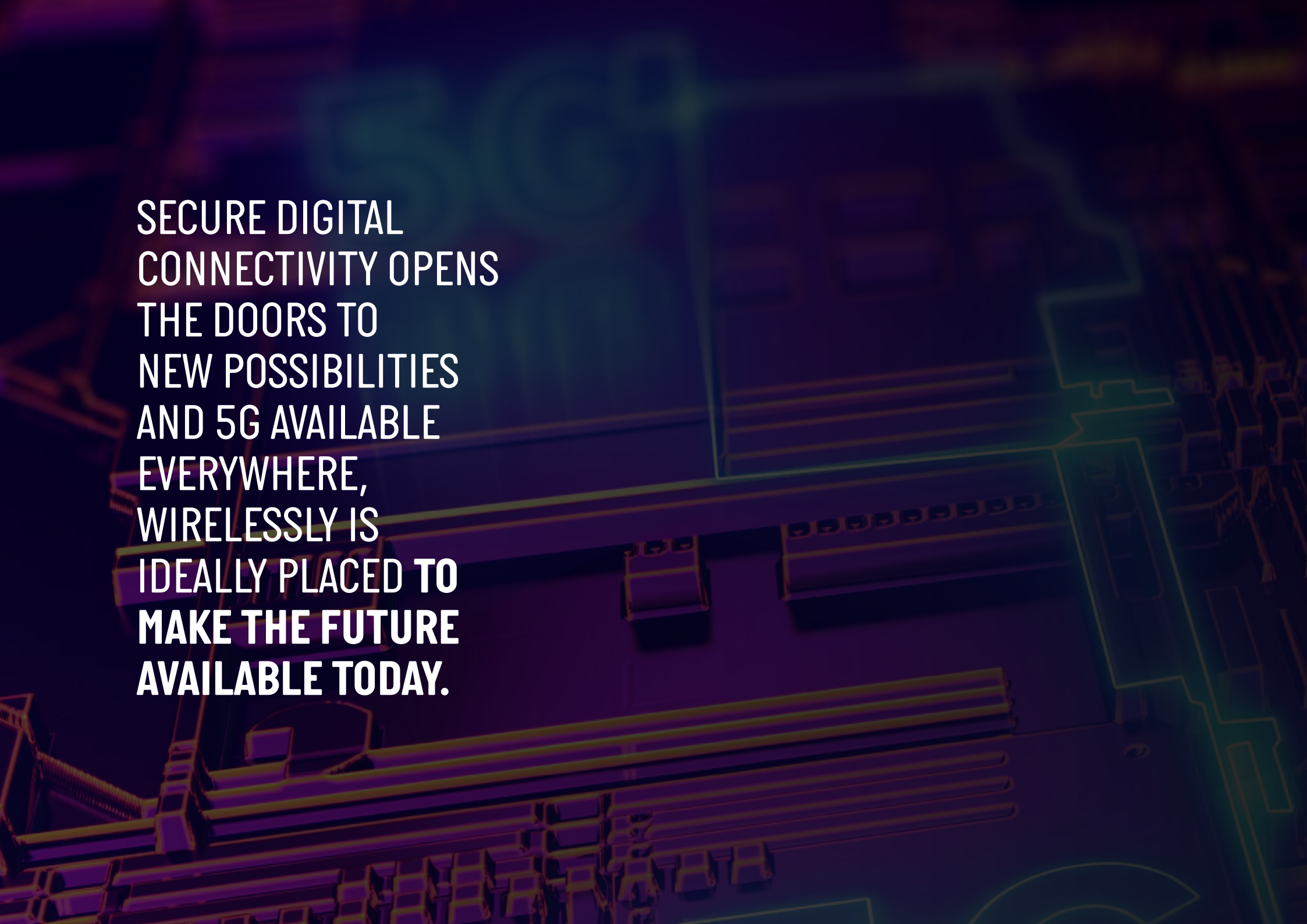
Maximising the benefits of 5G starts with thinking differently. The catalysts that energise the unquestionable potential 5G are ideas, the desire to innovate and a robust change agenda to make use of such a transformational technological offering. To make 5G more than an interesting discussion and to gain real world user or business experience benefits, organisations need to rethink old service delivery modes and consider new customer service expectations. It's time to storyboard innovative ideas for beneficial services that have previously been impossible due to the lack of availability of a reliable, ultra-high performance, low latency network available on the move and without specialist equipment.

And that's it! The benefits and value of 5G are ready and waiting for all but will only be realised and truly maximised by creative and transformational thinking.

A few examples of such thinking include 5G acting in private network mode enabling organisations to create personal, campus-wide mobile networks with the possibility of tenfold greater performance than the fastest current Wi-Fi network. Think of the potential within healthcare or industrial environments to roam across a hospital or industrial campus connected to wire free, high performance, low latency services. Vodafone have storyboarded the evolution of traditional industrial organisations toward a smart factory footprint, enabled by high performance 5G networks connecting campus or factory-wide IOT devices, users and digital things. A low latency, wire-free medium can facilitate connectivity where the use of physical cabling may be prohibitive, creating opportunities.

In healthcare, human-implantable biomedical devices transmitting and receiving data anywhere and everywhere, can leverage the low latency performance benefits of 5G to ensure patients remain in near real-time communications with a medical practitioner.

The handful of examples mentioned summarises real world actionable user and business benefits and show an art of the possible is available here and now. Now is the time to use the potential of 5G to dream and rethink user and business experiences, considering areas never previously examined.


SECURE DIGITAL
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EXPLOITATION OF DATA AND INTELLIGENCE

ARE YOU READY TO BE DATA LITERATE?

"Data is the new oil" someone once said. That statement helped people understand that data had value that was yet to be fully understood or appreciated. But the phrase has aged badly, as sustainability, quite rightly, becomes a core responsibility – so oil is often a bad comparator. The energy companies are adapting to diversify their dependence on oil, plus it's obvious that there is finite oil even if the human race did want to extract it all. Data growth however is infinite, aided by many new sources of data that never existed previously – IOT, external datasets, operational data, and human generated.

Around the time that unfortunate connection between oil and data was made, most people working in the industry were dealing with data storage concerns, less so the data itself. The major consideration was data connectivity in the what is now considered legacy data center, or things like data replication between sites. SAN, fibre channel and direct connected storage, backup, DR and tape backup kept many storage admins busy.

In what is quite a short space of time the landscape is so very different. The average enterprise still has the legacy and on-premises data challenges to deal with but is now also faced with connectivity issues to data buckets in the cloud – in multiple clouds, stored in PaaS, being consumed and shared globally as well as locally. Some industry stats predict that by the end of 2024, cloud will have more data (51.6%) than on-premises (48.4%), so we'd better get used to managing data wherever it exists.

Today many companies are trying to catalogue and ready that data to be ingested into AI and data engineering pipelines as they drive towards becoming a data-enabled business. And as the enabling technology has become more accessible, the benefits of and the ability to become data driven is being recognised from the local high street retailer up to the enterprise. To be data driven, to really exploit data is a mind-boggling opportunity and the race is on for companies to adapt to deliver competitive edge.

Big tech has shown the way – some of the most valuable companies in the world have driven their spectacular growth through mastering the exploitation of data. Google index the entire internet 5 times a day enabling search responses to be instant and insights to be up to date. 40% of the worlds internet traffic runs on Google's own network – such is the value of data and their pursuit of instant search and insights.

Others like Nvidia, famous for graphics for gaming, have in the space of a few years grown a multibillion-dollar business by building the platforms for data exploitation across all industries. The technology and capability have become democratised through rapid innovation of devices and data services in the cloud.

But while the tech is out there, a lot of enterprises have a way to go to genuinely being data driven, and it's that other scare commodity of people and skills that is once again the greater challenge to overcome.

To truly exploit data and become a data-driven business, you really need to believe that data is one of your greatest assets for both growing your business and defining the direction and decisions you will take. That means using data insights as the enabler for business transformation – where business outcomes and business value are the focus, not technology. That is a leap for IT literate people coming from thinking about data platforms to being data literate. While they don't all need to retrain to become data scientists, they do need to understand the needs of the data scientist as well as others looking to exploit data.

Meanwhile, the expansion of the data footprint increases the challenges for data governance, security and protection. Cloud is now being used for more and more critical workloads and functions driving a need to protect across hybrid environments. Larger pools of data require scalable architectures that allow for the protection and secure transit of data across the enterprise.

There is no simple fix here other than to evolve your organisations' perspective, mindset and skillset rapidly to think differently about data.

- **What data sources are of value? Machine generated? Human generated? External sources?**
- **What data from those sources is of value and what can be discarded?**
- **What data types are of value? Operational data as well as core systems of record data?**
- **Who needs access to the data?**
- **How do I protect, anonymise and visualise my data?**
- **Which platforms are storing and ingesting the data and what needs exist there?**
- **How do I govern, manage, and protect this data wherever it resides?**
- **Which technologies are enablers?**

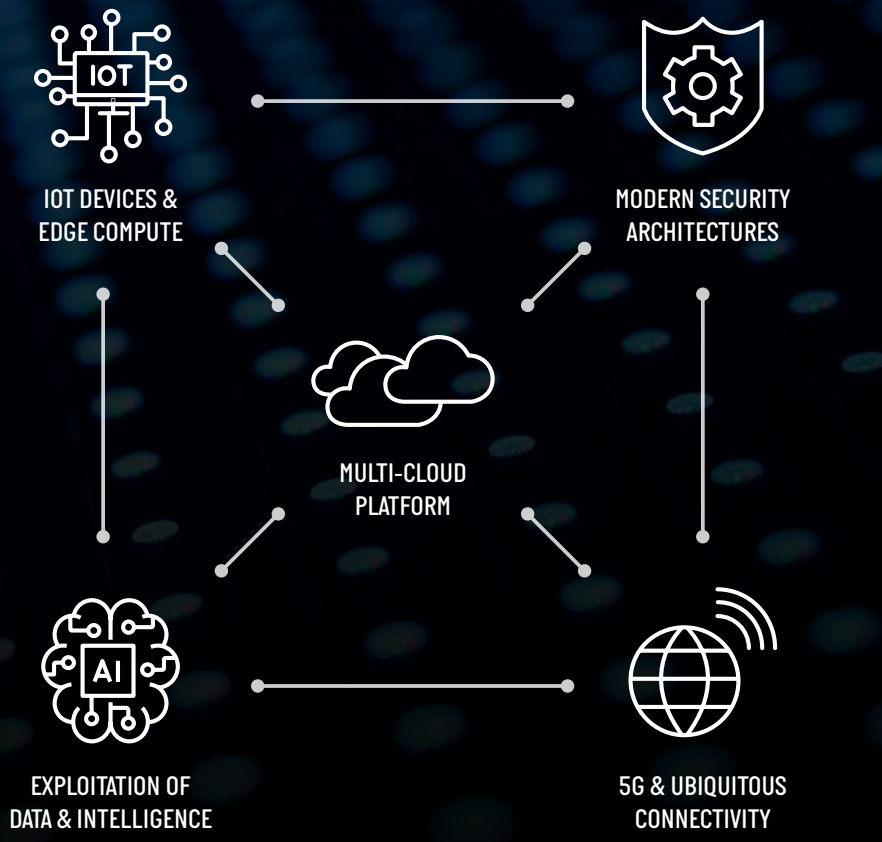
SUMMARY

Individually these topics are progressive or even radical opportunities for IT transformation. Collectively they represent a compelling and powerful force for future business transformation that cannot and should not be ignored.

The most successful businesses and industries of the next few years will be founded upon the successful adoption of these technologies, and some creative and ambitious thinking to reimagine how technology can be used to transform what your business does and how it services your customers. Optimisation of costs, enhancing consumer and user experiences and the delivery of differenced value and revenue streams are the goals to be pursued.

Yet equally we know the journey to this transformation is long, complex and often daunting. The simple question of "where do we start?" is often incredibly difficult to answer. And in a world of challenged budgets, this transformation may seem ambitious, if not unattainable.

The question is twofold – the cost of not starting this journey, and what are your competitors doing right now? And by competitors we don't just mean the ones that you know about, but the new competitors, the unknowns that will be the next wave of disruption to your industry. The brand names that we'll reflect upon in years to come will be the ones leveraging these technologies at the heart of their business model.



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