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THE EVOLVING ENTERPRISE

AI & Digital Transformation of the Enterprise

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Talking Heads:

Edge and 5G will match the car and canned food revolutions, says Wind River's Gale

Payment security a major concern for online retail

Businesses more at risk since Covid-19

'Big Technology' poses a growing threat to banks

Learn from the fintech playbook

PLUS: Company, Product & Market News • Edge adoption parameters proposed for Enterprises and CSPs • 5G and Industry 4.0: Where promise meets reality – and expectations are huge • Businesses see a need for ethical, trusted AI-powered systems, but progress is patchy • **More: @TheEE_io** and **www.TheEE.ai**

TRANSFORMA INSIGHTS

Global Advisors on IoT, AI and Digital Transformation

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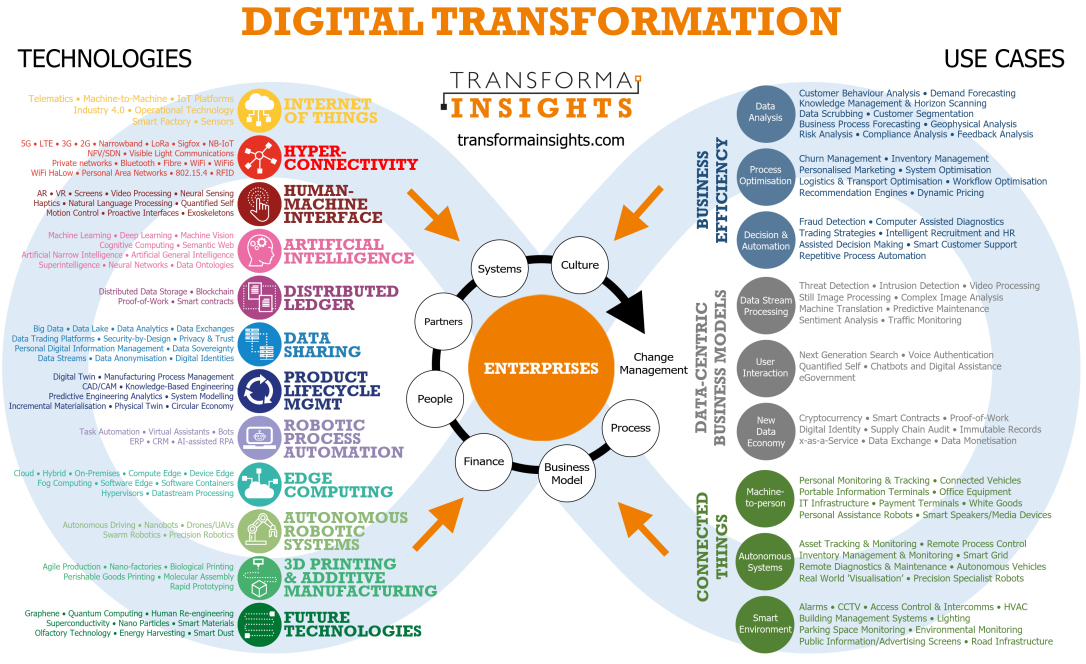

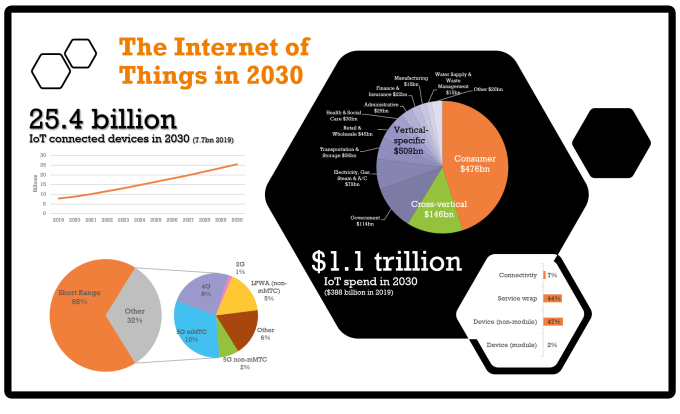

Transforma Insights is the leading research firm focused on IoT, AI and Digital Transformation. Led by technology industry analysts Matt Hatton and Jim Morrish, we provide advice, recommendations and decision support tools (including highly granular market forecasts) for organisations seeking to understand the opportunities and threats associated with new disruptive technologies.

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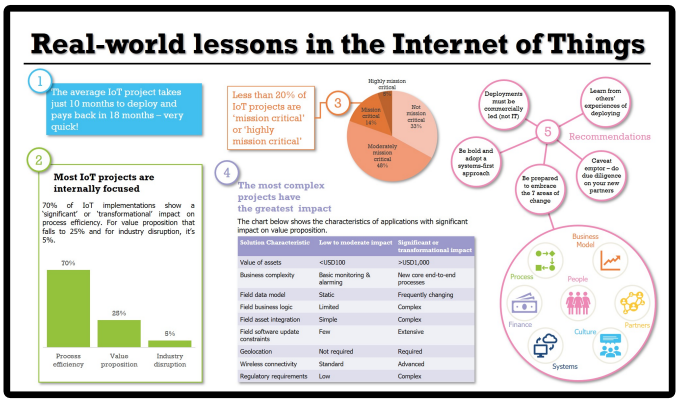

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Trust in ethical data use dips just as 5G, AI and Edge start to reshape our lives

If you're hoping that this issue of **The Evolving Enterprise** magazine is going to avoid any mention of a certain virus then I'm about to let you down. Quite badly. You see, digital transformations (DX) are happening across industries worldwide – and this is not despite Covid-19, often it's because of it! Even a cursory glance at our website (**www.TheEE.ai**), with its focus on artificial intelligence (AI), machine learning, 5G, cloud, edge intelligence, data management and analysis, will show you that the virus has forced enterprises to accelerate their DX plans.

Change is evident throughout this digital issue of the magazine. In a wide-ranging and exclusive interview with **Wind River**'s CMO, Michael Gale – one of the most fascinating execs I've talked to this year – he shows us how 5th Generation (5G) mobile communications is going to be so much more than "just another G". With its tech cousin, Edge computing, Gale says 5G represents an industrial and social revolution that will rival the invention of canned foods (check out Napoleon's influence on page 8) and the changes to family life brought by the car after World War II. On page 14 we also report on 11 key findings of a research study by Wind River of 5G and Industry 4.0.

The Gallic flavour in this issue continues on page 22 as France-based analysts at **Capgemini Research Institute** tell us there's been a 14% drop over the last year in the number of enterprise customers who believe their organisations are being transparent about how they use customers' personal data. That is a shocking loss of trust, and shows how privacy awareness is not translating into ethical AI! Let us know your thoughts **@TheEE_io** . Enjoy the magazine.

Jeremy Cowan,
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The Winners of the 2020 IoT Global Awards are…

WeKnow Media Ltd, the award organisers, have announced the Winners of the 2020 IoT Global Awards.

The 2020 awards programme has been unlike any other. In a year of unprecedented turmoil and change, enterprises and individuals across the Internet of Things (IoT) sector have stepped forward, using their expertise and ingenuity to combat many business challenges, including those presented by Coronavirus.

Now in their third year, the **IoT Global Awards** have become an industry benchmark for excellence in the Internet of Things, honouring the most innovative companies, products and individual talent in 11 IoT industry categories.
With more than 100 entries submitted, the judges and editors were simply blown away by the quality of the applications, from both new and established companies.

Chair of the Judges, Jeremy Cowan, editorial director & publisher of **IoT Now**, says: "In a year like no other, filled with global health, social and business challenges, it has been a revelation and a huge encouragement to all of us behind the 3rd annual IoT Global Awards to see so many entries displaying a wealth of business and engineering creativity.

"To all those who entered, we thank you. To the Award Winners and the Highly Commended, we salute your ideas, hard work and your applications of IoT-enabled services to improve lives worldwide. It really is that simple: You make all our lives better. In 2020 we can say for certain, that the Internet of Things has never been more important."

Here are the Winners of the 2020 IoT Global Awards:

Automotive, Transport & Travel
- Cubic Telecom

Cubic PACE for Automotive

Big Data, Cloud & Analytics
- Tata Consultancy Services

Smart, Scalable, Analytics Driven IoT Solution for TCS Energy Monitoring & Management

Connected Consumer & Smart Home
- Yonomi

Yonomi Smart Home Platform

Connected Health Or Wearable Tech
- scriptr.io

Saepio contact tracing, social distancing and quarantine management

Industry & Construction
- Senseye

Senseye PdM

Research & Development Or New Launch
- Telstra

Telstra Connected Supply Chain - Visibility Imports

Retail, Marketing & Hospitality
- EcoEnergy Insights

Connected Restaurant Program: An IoT driven service for enabling the digital transformation of restaurant operations.

Securing IoT
- UBIRCH GmbH
- UBIRCH TrustService - making data trustworthy

Smart Cities, Government & Utilities
- iOpt Assets Ltd

Protect Property. Protect Tenants.

CxO of the Year
- Enlighted

Tanuj Mohan, Enlighted CTO and Co-Founder

Start-Up, Business Development Or Ecosystem Of The Year
- G+D Mobile Security GmbH

SIGNiT - Data Integrity for the IoT

Highly Commended

In a few cases, the Judges felt that special mention should also be given to entries that are Highly Commended:

Securing IoT
- **G+D Mobile Security GmbH** for their SIGNiT - Data Integrity for the IoT

Automotive, Transport and Travel
- **Eseye f**or their IoT Connectivity Helps Spidertracks Switch from Reactive to Proactive Flight Safety
- **Controlant** for their Cold Chain as a Service® Digital Visibility Platform
- **Tata Communications** for their MOVE - Intelligent Connected Vehicle Platform

Big Data, Cloud and Analytics
- **Cubic Telecom** for their Cubic PACE for Automotive

The team at WeKnow Media Ltd would like to express their immense gratitude to all the judges involved in this year's awards for their time, expertise and invaluable insight.

Gold Sponsor
The chair of the judges added, "We could not be more appreciative of MultiTech, our Gold Sponsor, for their collaboration and support throughout the year. We wish them continued success and another 50 years of innovation."

The organisers also gave a big 'thank you' to their IoT media partners, Geo Connexion, i-SCOOP, Internet of Business, IoT News Asia, IoT For All and IoT Global Network for their support and coverage throughout the awards programme. Lastly, they thanked all those who entered their IoT products, services and individuals, as well as the shortlisted nominees, for sharing your IoT innovations.

You can read more about the winning entries in the upcoming Q4 issue of IoT Now Magazine. Subscribe at www.IoT-Now.com to receive the magazine and updates here.

Data-powered enterprises outperform peers: 70% increase on average revenue per employee

Data-powered enterprises vastly outperform in financial parameters, achieving up to a 70% increase on the average revenue per employee. This is according to a new report by the **Capgemini Research Institute** entitled, *"The data-powered enterprise: Why organizations must strengthen their data mastery."*

Capgemini has found that while applying data and analytics is becoming a prerequisite for success and innovation, the ability of organisations to use data-driven insights to drive business value and innovation remains less than 40%.

Data mastery is critical to gain a competitive edge and organisations that don't take concrete steps to achieve this will struggle to keep up, highlights the report. Only one in six (about 16%) organisations can be categorised as 'data-powered' or as 'data masters' based on several factors of data mastery, including outperforming their cohorts in financial parameters such as revenue generation and profitability.

Covid-19 has pushed organisations to adopt data-driven decision-making approaches more quickly. While progress has been made, a majority (55%) of businesses still use data just for reactive decision making, meaning they lose out on a competitive advantage. Only 21% use predictive approaches, 16% use prescriptive approaches, and just 8% use an autonomous or self-optimising approach. At a country and sector level, reactive decision-making approaches are most prominent in Italy (64%), India (61%) and Sweden (61%), and in terms of sectors, consumer products manufacturing (62%) and industrial manufacturing (59%) are most reactive.

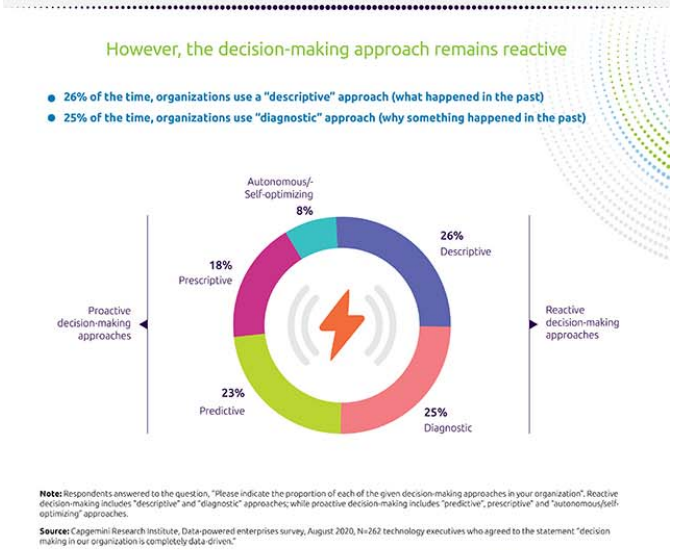
Data-powered enterprises enjoy significant business benefits

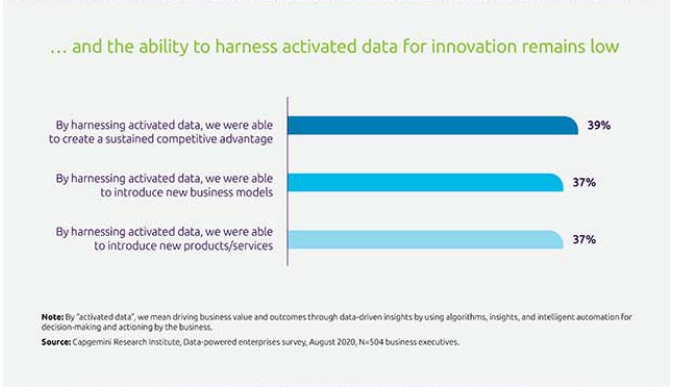
Data masters enjoy between a 30% to 90% advantage in metrics across customer engagement, top-line benefits, operational efficiency, and cost savings. Furthermore, Capgemini's research shows that data masters realise a 19% increase in sales of new products and services compared to 12% for the rest. Unilever, for example, identified emerging consumer interest in ruby chocolate, a pink chocolate, through its social business analytics platform. This insight allowed Unilever to launch the first variant in this space ahead of its competitors.

"Business leaders fundamentally need to look at their data strategy and innovation pathway," says Zhiwei Jiang, CEO, Insights and Data at Capgemini. "We still don't have enough data-minded leaders at the C-suite level to drive organizations on the right data journey. There's a lot more at stake for businesses who don't act; from operations to sales, customer engagement, revenue and profitability. Those that can monetize data and convert these into assets will thrive. Those that don't will get left behind. A mindset change is needed - leaders must accept and embrace an agile culture of experimentation if they are to achieve data activation." ■

For full article go to: www.theEE.ai and search "Capgemini".

Zhiwei Jiang
CEO, Insights and Data
Capgemini





Palo Alto's 5G-native security enables new revenue streams

Santa Clara, California-based Palo Alto Networks has introduced what it says is the industry's first 5G-native security offering, to secure networks, clouds and devices in the 5G world. This new offering reportedly enables service providers and enterprises to turn 5G networks into highly secure networks.

The promise of 5G is much more than faster browsing on mobile phones. Done right, 5G can bring massive business transformation. The design of 5G networks — with its ability to allow millions of devices in high-density settings — can enable smart supply chains, autonomous transportation, smart manufacturing, mass adoption of the internet of things (IoT) and much more.

"For 5G to live up to its promise of transforming industries, companies need the confidence that 5G networks and services have enterprise-grade security," said Anand Oswal, senior vice president and general manager, Firewall as a Platform, Palo Alto Networks. "We created 5G-native security in order to give enterprises the confidence they need to harness 5G for business transformation and to help service providers secure the new enterprise services they are creating."

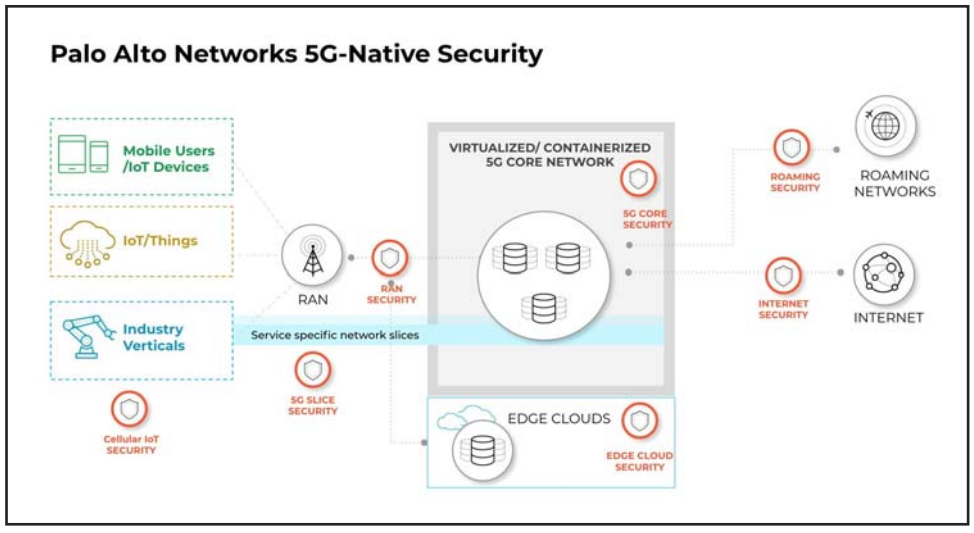
Palo Alto Networks has taken its expertise in securing enterprises and mobile networks and added understanding of the 5G protocols and 5G network interfaces to claim a number of industry firsts:

- **Containerised 5G security:** Much of the 5G infrastructure is being built with cloud native architectures. Palo Alto Networks containerised 5G security is designed to secure the 5G core and edge clouds even across multi-cloud and multi-vendor environments.

- **Real-time visibility, prevention and correlation of threats to 5G user/device threats:** The ability to look into the signalling channel lets service providers and enterprises apply security policies based on the user and device. Real-time correlation of threats can help identify which subscriber, device or machine might be the target of an attack, or where the root cause of threats might be. This can help in forensics and accelerated security event investigation.

- **5G network slice security:** 5G networks allow service providers to offer a dedicated end-to-end piece of the network that gives enterprises the reliability and confidence to use 5G for their core business activities. Palo Alto Networks 5G-native security lets service providers offer secure versions of these slices to their customers as a new product.

Tanner Johnson of analysts Omdia adds, "5G networks bring new capabilities and transform the network architecture adopting containers and multi-clouds, enabling dramatic service innovation. Enterprises in verticals such as automotive, manufacturing, oil and gas, mining etc. are embracing 5G networks to transform their industries. This presents a requirement for service providers and enterprises to integrate security across the entire 5G network, and establish secure connectivity services. The innovation with Palo Alto Networks 5G-native security speaks to this approach." ■



Palo Alto Networks claims first 5G-native security offering, enabling service providers and enterprises to create new revenue streams while securing 5G.

Vilicom, BT and top universities spearhead 5G and artificial intelligence research

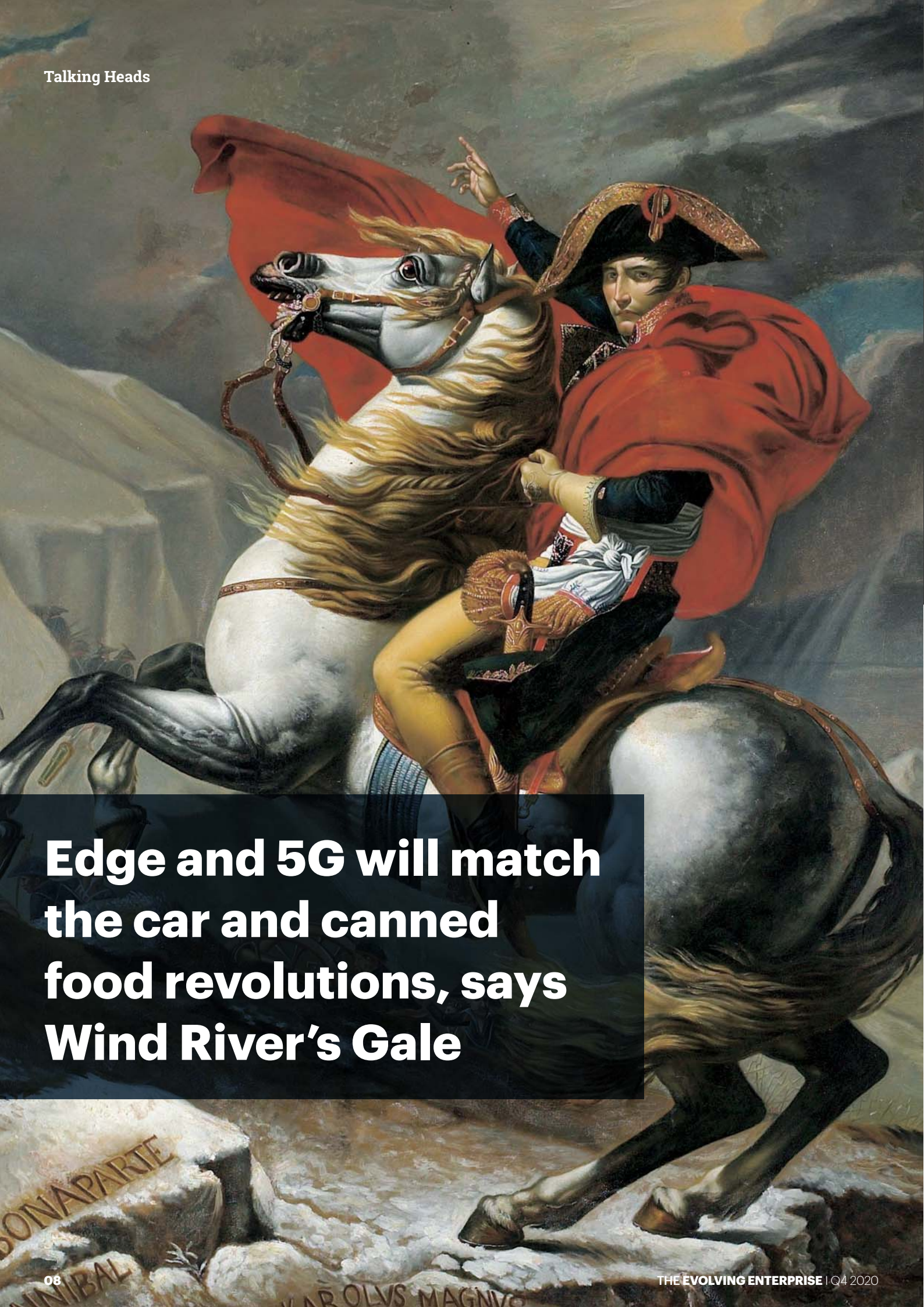
UK-based wireless telecommunications provider, Vilicom, has been awarded a grant alongside BT Labs and Bristol and Loughborough Universities that will enable participation in leading 5G and artificial intelligence (AI) scientific studies.

As part of the research grant, Vilicom, a mobile communications system integrator, will be working to define business and technology use cases, with a focus on using AI for the creation of cognitive 5G networks implemented using Massive MIMO technology that automatically adapt to traffic patterns, user behaviour and external factors. Vilicom Data Scientists will also be working on creating data structures, as well as the integration and development of AI algorithms for descriptive, prescriptive analysis of network operational and user quality of experience (QoE) data to support decision-making in planning network expansion and optimisation actions.

"This research grant is testimony to Vilicom's competency in scientific technology innovation," says Marc Ibanez, Vilicom's managing director.

The research and development initiative will be led by Innovate UK, under the Celtic Next international framework and it is titled Artificial Intelligence-enabled Massive Multiple-input multiple-output (AIMM) project.

The objective of the AIMM is to consider potential applications of artificial intelligence in the 5G radio access network (RAN) mainly on improving the performance of Massive MIMO technology and marks an attempt to achieve ubiquitous access that will likely be a key technology forming the underpinnings of 5G and beyond. Two aspects will be considered: a bottom-up approach optimising the radio interface, enabling novel antenna structures and deployment techniques, and a top-down approach utilising AI to improve management and optimise the RAN at a system level. ■



Edge and 5G will match the car and canned food revolutions, says Wind River's Gale

There are moments in history when one key industrial development changes society radically. As Michael Gale, Wind River's CMO tells **The Evolving Enterprise**'s Jeremy Cowan this is one of those moments. In 1850 food canning enabled Napoleon to feed his armies all year round. The car revolutionised society after WW2. 5G at the edge is about to have an equal impact on our lives.

Michael Gale, **CMO of Wind River** talks to The Evolving Enterprise's Jeremy Cowan.

Jeremy Cowan, Evolving Enterprise: What is the historical background to the development of intelligent edge?

Michael Gale, Wind River: OK, weird analogies; I'm going to start with Napoleon. These moments are best amplified in tech because they happen so frequently, they are the strange accumulations of elements coming together. If you look at the history of canned foods – it's a bizarre way to start – you realise that Napoleon had to feed his troops across the winter months in Europe. And historically battles happen between early May and late September. What do we use the other 8 months of the year? So, canning food started with Napoleon, and it spread across global armies. So, by 1850 you could feed soldiers anytime, any place. Their needs tested established technology.

Horses were the most common form of transport, even after the car was a moderately established piece of common technology by 1910. It wasn't until the end of the First World War that people went, 'Oh, mechanical horses, they're really useful. And then you don't see a lot of horses afterwards. I think the intelligent edge falls into that paradigm in a really interesting way. A lot of the technology for the intelligent edge has been around for a long time. When I ran Micron we were one of the first three companies to host Outlook as a cloud literally hosted-based application in 2000. When you look at this process of intelligent edge it's a combination of a few key variables.

A key one is millennials -- they are becoming the largest part of the world's population when it comes to the workforce. They have grown up online and have always used a cell phone. The growing desire for more will continue to drive CapEx investments from telcos. At this point, cloud technologies have been running now for 10 to 12 years. And while running applications and data on-premise, even in small, shared public environments has had its challenges, it encouraged a lot of businesses to go, 'if I want to change my technology approaches, and I believe in applications, I'm going to do that. So kids, cloud, and carriers in particular are a big deal here, because they're at this point where they're having to shift out of physical infrastructure.

I remember working with AT&T and Sun Microsystems, and I remember they told me how many servers they bought. And I was like, what? That was like the gross national product of Ireland! That constant refresh likely drove someone to break that codex and go, 'I'm going to virtualise this infrastructure. Why am I wasting having thousands and thousands of servers. Also with the rise of hosted applications or other forms of 'instantness', whether it be Outlook, Salesforce or other applications, you'll see more suddenly thinking: I can build these applications really quickly. As carriers started to look at this, they think – if we get to revolutionary levels of speed, that means you could watch a football game on the top of a hill in the middle of Cotswolds, or watch an NFL game at the same time on a cell phone anywhere. Suddenly

"(5G) made the intelligent edge to me an inevitability. Michael Gale

everything became highly mobile, and a high volume of data was getting pumped through what was 4G. But, it didn't really work as well as expected. So then carriers go, 'We'll need to rebuild our infrastructure, we're going to virtualise everything. We'll have 1,000 clouds or 2,000 clouds or 3,000 clouds.

Like going from one horse to a thousand, evolving towards the edge became sort of a natural process. Companies and consumers were increasingly moving towards using applications and the cloud. Attitudes like 'Hey, I'm fine using everything on the cell phone. I don't need to own the storage. I'll just stick it in the cloud' – they were growing.

Then when 5G came along, there was a revelation. It was more than just using a cloud to host applications or storage. 5G can deliver the power of the cloud, and harness that power outside of the datacentre to the edges of the network. 5G can provide greater computing resources right where they need them and gain new efficiencies; businesses could run processes remotely and automate operations. Data, compute, intelligence - they can live all around you. It can be more dynamic. Don't store anything with you, you move it elsewhere, you interact with things, application orientation.' It made the intelligent edge to me an inevitability. Other people see this too, but it needs that "canning" moment where key variables come together. There isn't a linear process. Would we have got to ENIAC *(Electronic Numerical Integrator and Computer. The world's first programmable, electronic, general-purpose digital computer. Ed)* if we didn't have to break German code in the Second World War? Er, maybe. But, we wouldn't have got there half as fast as we did. These things just marry in this really unusual way. And Covid-19 has utterly accelerated this dependence on what I call 'remote low human touch environments'.

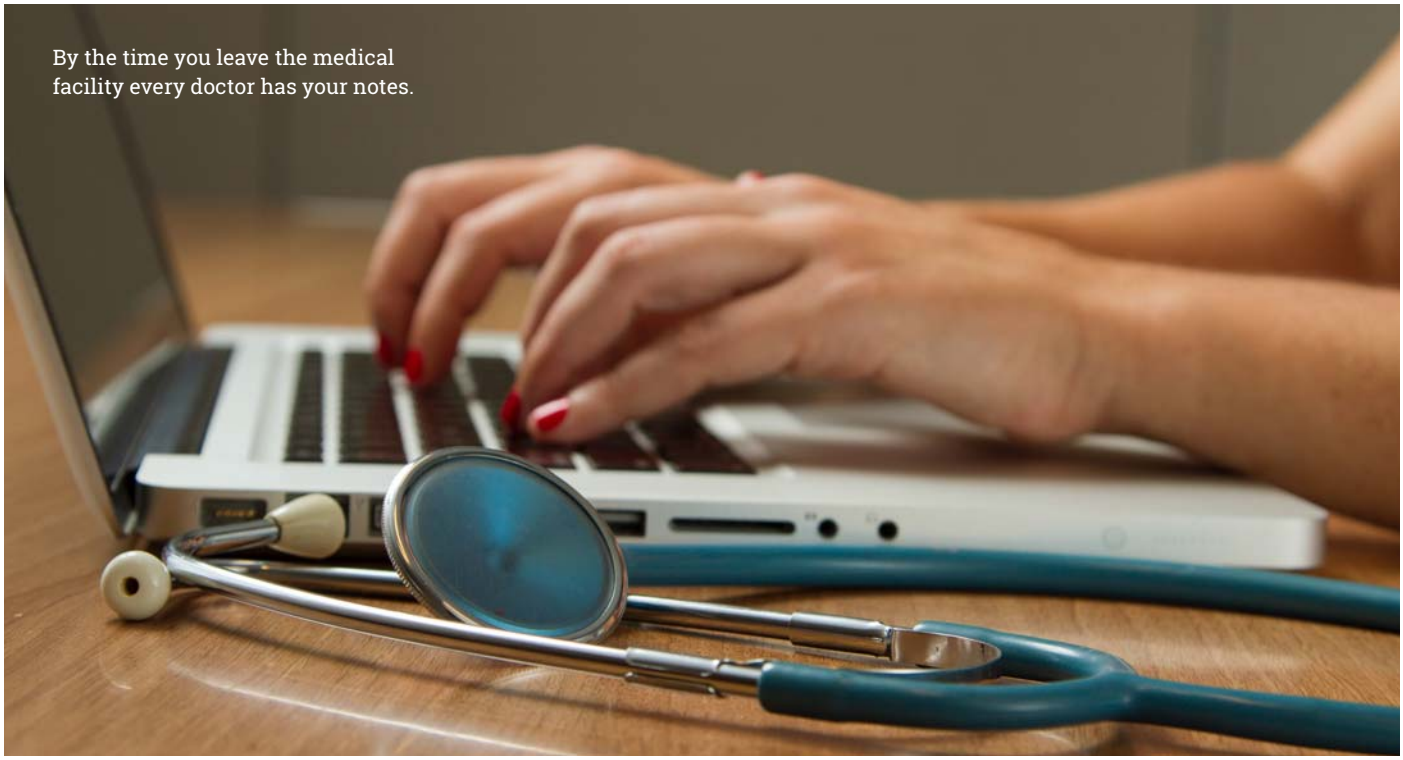
"Covid has utterly accelerated this dependence on what I call 'remote low human touch environments'."
– Michael Gale

With the intelligent edge, you can see the output really quickly. I was with a healthcare organisation in Illinois about eight months ago. And they were walking us through how they are using the intelligent edge to track people through their medical system, and give feedback to doctors, change record systems, drop advice in a cell phone. By the time you leave the facility, maybe after a day of treatment, every doctor has your notes, and they've already added more insights back in again. And it becomes a wonderful sort of journey versus 'we'll be back to you in a week'. I just think we're seeing output that's so remarkable it gets people really excited.

The initial cars were 4 brake horsepower. By, 1920 they're running at 20 or 25 horsepower. Roads were being built for them, people knew how to drive on them without the red flag in front of you. We're at that point now. I think carriers have recognised the exponential business opportunity here. We just did some research in Europe, and 37% of industrial companies say they're open to having 5G as their network solution to run complex industrial edge application environments. We're seeing radical new thinking across industries. I just think we've reached that sort of critical mass moment.

JC: But it had to come together at that particular juncture and that's now.

MG: Yes, and it will be amplified further. There were some questions about whether 5G would be adopted as fast as the carriers said it would be. It's likely now accelerating faster. Covid-19 has made people realign their focus and seek transformation in order to find future success. This process has amplified where the value of this sort of interaction occurs, then you add in AI (artificial intelligence). And all of a sudden you go, 'I've got volumes of data. I've got



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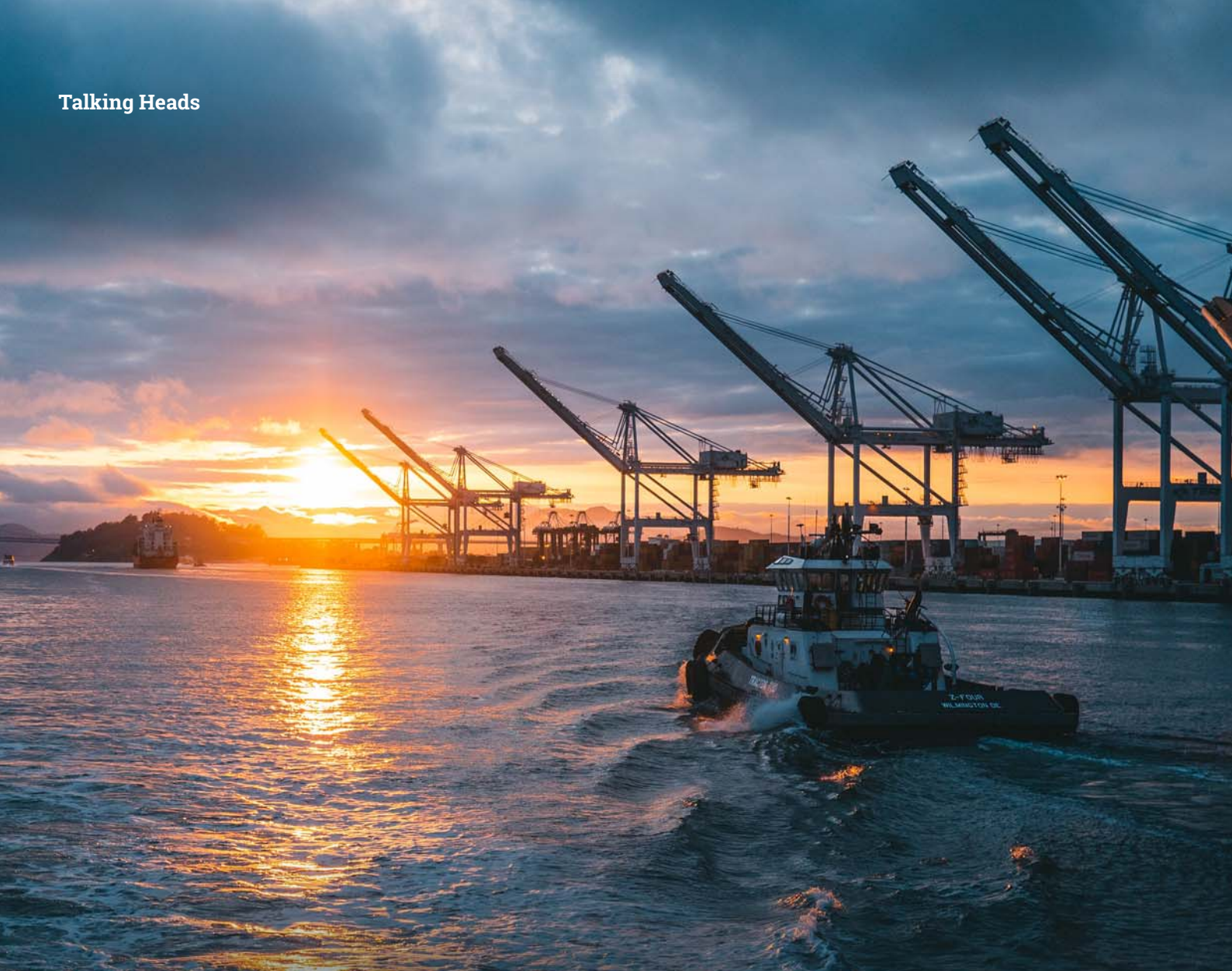

Autonomous vehicles work well in warehousing, public transport systems and docklands

variability in the data and I've got high frequency with telemetry, for example. AI only works if it gets to eat volume, frequency and variability. It's the perfect model, right?

JC: Michael, are we now using intelligence, or are the machines simply learning how to deal with data patterns that they've already come to know?

MG: I think it's still primarily the latter. 15% of organisations working with AI pick up 65% of all the positive ROI. Studies show 50% of all AI projects, either produced neutral or negative return, due to their complexity. Interestingly, the ones that succeed are most often in the areas of analytics and automation. I think AI is still in a pregnant state; it will first be most effective for stuff like automation, digital twins or predictive maintenance. Volume, variety and frequency.

In order to really be intelligent, you have to teach machines patterns. It's not just Go and Chess. They have to learn how to do things, learn from patterns, and then react in real time. We're still a long way off, that's why people don't like autonomous vehicles. It's not only because of the vehicles, it's also because of the human beings – we make far too many errors. So, if machines can talk to machines it's actually a really interesting process. But when you put the human dynamic in, it starts to get a little weird, because machines don't quite understand the nature of creative decision making in humans, or situational judgement. They understand situational logic and judgment is a little different.

JC: Somebody once told me the biggest problem for developing autonomous vehicles was that you go through this awkward phase where it's neither one or the other in control. It's neither the autonomous vehicles nor the humans, and they're having to interact.

MG: Currently, where you see autonomous vehicles work really well -- it's in warehousing and public transport systems, docklands, airports with highly controlled patterns of behaviour. Once you start sticking stuff on the road – and it is really basic human behaviour because we don't always accept rules, we make assessments and judgments – there is going to be a cap. But, we'll get there at some point.

Like rapid growth in car use after WW2, have we got to the point with 5G of vastly accelerated expectations?

It's in the industries where you can remove humans from the process; warehouse, industrial transportation, docks, that's where autonomy becomes fantastic. And aeroplanes, we did a podcast and we talked about how within five years' there may not be enough pilots. I'm not sure, post-Covid, that's necessarily true. Perhaps we'll simply have autonomous co-pilots and planes. We do that already anyway. Aside from taking off and landing, much of it is a machine-orientated process.

JC: Do you have any figures to explain just how much of the intelligent edge will be connected by 5G, and how much by other technologies?

MG: We just finished some research about industrial work in Spain, UK, Germany, and the US; it was an interesting combination. And I was very pleasantly surprised that 37% of these large industrial organisations say we're going to do a lot of these applications on the intelligent edge. We get it; supply chain management, customer management, adaptive manufacturing. In all, 37% say we're going to use 5G to do it. I was just blown away right, because 5G can bring incredible latency-free capacity. I think there's a bunch of believers in it now in ways I would not have seen from historical methodology.

Of course, there's other forms of connectivity like WiFi that will get used, but there is a belief – and maybe the carriers have done a phenomenal job at this – when you put 5G in the industrial function, you put it at the edge. It suddenly increases communication with suppliers, customers, systems. You go, wow! This thing is moving literally friction-free. If you start adding in interesting ideas with AI around product configuration, delivery structure, the value becomes very obvious. It's like: I use 5G on my phone, I can see my favourite team play soccer this weekend. Or I get to see this story and the video isn't clipping, it's actually real. And then they go, 'Why can't we use this in our manufacturing environments or industrial? Let's go there!'

I think there are certain functions where it will still be a little difficult, out in the middle of the ocean on a ship it probably won't be as efficient. But with most of us spending all our life on land and that coverage model and the speed of it just makes it easier. Think about those truck trains in the UK where you've got three trucks and a driver. And at some point that signal system between trucks 1, 2, 3 and 4 is going to be done by 5G. Call it a human right to have connectivity. I think it's an industrial right to have 5G capability. It affects productivity very fast.

"I think it's an industrial right to have 5G capability."

JC: It does. When you talk about 37%, that is an astonishing figure at this stage. What figures do you have in mind for two years' time?

MG: The prospect is exciting for carriers. However, I do think some of the larger industrial environments will get their own frequencies. Because if you're a Siemens, Schneider or any really big engineering firm, they will likely want to own it. They may not fully trust a carrier or they may be selective in what to hand over to the carrier and what to keep. I think we're going to see some private 5G networks. That's going to be a really interesting business.

JC: You said you thought maybe they don't trust the carriers, and maybe they do maybe they don't. What makes them need to own (a private 5G service)? I mean, there are plenty of utility resources – and we are after all talking about what will ultimately become a commodity resource – there are plenty of utility resources that they don't need to own. They don't need to own the power supply or the water supply. So, why would they need to own the communications supply?

MG: I think for two reasons, one is just pure psychology; 'We believe this is really important. It's going to be a differentiator for us, at least for a period of time. I want to own it.' When something becomes really important are you comfortable leasing it out?

The second issue is, this is a really big deal right? In order to truly have latency-free, intelligent manufacturing, someone may say, 'Well, do we own the latency-free piece?' And they're going to say No. 'What? Why don't we own the latency-free piece?'

We don't have to own our own oil reserves or rubber factories for tyres, but we're at that very early point in the cycle where ownership gives you comfort. We ask people, 'Where would you go to get this stuff done? What type of vendor? I would have thought carriers would have been the number one place to go; they own everything from the first millimetre to the last millimetre, but they aren't always the immediate choice because people want ownership. That's why I think with the really big guys, we're going to see some private 5G networks. They're going to go and build it themselves.

JC: But that's an enormous chunk of the potential revenue that carriers must be getting excited about. And suddenly you're envisaging it being whisked away from them, before they've even got 5G in the air.

> **Suddenly you're envisaging (an enormous chunk of revenue) being whisked away from carriers, before they've even got 5G in the air."**

MG: I think it's going to be highly competitive. There will be innovation, and there's Christensen's Model (**See: https://hbs.me/31uvWDh**), then there'll be commoditisation. It's going to be a fight. That doesn't mean everyone can go there, the very big guys will. The smaller guys will end up using carriers because they will need the help. But there aren't many large carrier 5G sales units right now. Verizon comes to mind, we're very excited because we're in the relationship with them. But overall for the industry, it's not going to be smooth sailing. Carriers will need to be extraordinary, not just very good. Because if they're trying to sell to you and you say you want to make your own, they will have to show you something so much infinitely better at every level that you go, 'Oh it's a no brainer, I'll make that decision'.

JC: So carriers will have to compete with their own customers to get their customers' business? It's going to come as a heck of a shock if that's true, and I suspect it is.

MG: It may well be a shock, but I think they'll be better for it. They'll be better for competition on pricing, innovation, marketing positioning. And I think these are the big golden eggs that will do this. A small, light manufacturing company in Stuttgart supplying Porsche is probably not going to build its own 5G network, but a car company like Porsche may go, 'We've got 65 industrial operations within 20 miles of each other. And we've got 400 suppliers. I want to move things faster and this lets me move things 10% faster.'

> **"So carriers will have to compete with their own customers to get their customers' business?"**
> **– Jeremy Cowan**

One of the things that really blew us away when we asked people to calculate what they expected to get back from this industrial edge, people were talking about cuts in OpEx of 10, 15, 20%. Now whether or not they get that is the question, but the vision of what this intelligent edge can do for them... it's like the car. The car comes out at the end of World War II. Canning comes out with Napoleon, and you suddenly go, 'This is unbelievable!' I think we've got to the point of vastly accelerated expectations, because all these things are coming together at the same time. ■

Talking Heads:
Michael Gale, CMO of **Wind River**

5G and Industry 4.0: Where promise meets reality – and expectations are huge

5G and the intelligent edge are completely re-engineering how the industrial world works. In the beginning of the first industrial revolution over 200 years ago, Adam Smith wrote about how division of labour would allow 10 workers, working in cooperation to produce 48,000 pins in one day where one person would be pressed to produce 10, representing a 480% increase in productivity.

Since then there have been two more industrial revolutions and we are in the fourth, which has the potential to be even more impactful.

Industry 4.0

The fourth industrial revolution is identified by connectivity, cyber-physical systems, and an intelligent edge network. To understand just where we are in the fourth industrial revolution, we spoke with industrial leaders in the US and Europe to understand what their current objectives are, what initiatives they are pursuing to meet those objectives, and what technologies and use cases they think will drive those initiatives the most. Along the way we inquired about expected outcomes, connectivity preferences, and timelines. We invite you to join us to see the results.

As industrial leaders prepare for the rollout of 5G they are engaged in multiple projects that are much more complex than in years past. This is indicated by the fact that most everyone we spoke with is engaged in 3-5 improvement initiatives that are quite complex. People are fundamentally more confident in the ability of 5G and the intelligent edge to not only solve basic supply chain and inventory issues but also innovation in product, production efficiency and security. And by using the intelligent edge to solve those problems they expect significant benefits in areas such as

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customer satisfaction, internal confidence, competitive advantage and profit margins. The rich mix of technologies being used today, and expected to be in use tomorrow, indicate a confidence in the potential for not just more, or better, solutions but in some cases completely different.

The timeframe is short and now we are at an inflection point. Some of these industrial firms were already on their way with implementing new technologies knowing that 5G is coming at a pace. The Covid-19 pandemic has sharpened focus around the world on the need to accelerate projects that take advantage of the intelligent edge. Some will "wait and see" as they look for better definition of return on investment (ROI) from 5G and new technologies, while others will push forward and experience the revolution for themselves.

Findings

While there were some distinct differences on some of the more detailed questions which will be called out in the full report, by and large the trends were very similar between the US and Europe.

- **74% in the US are pursuing all 5 process improvement** initiatives in order of importance: Optimise supply chain, innovations, enhanced time critical control, remote control/ops, and optimising non-time critical control
- **Of the respondents, roughly 20% have a solution to** their process improvement initiatives in place already, 30% are actively developing solutions, 40% are in the planning stages to develop a solution in the next 12-24 months, while only 10% have no plans or intent to pursue the initiatives.
- **Both regions expect greater security and higher** production as a result of pursuing the initiatives. The US also expects improved production design/quality, while Europe expects optimised inventory management and reduced unplanned downtime. There are a number of second and third tier impacts also considered such as greater manufacturing flexibility, new product/innovation, improved maintenance, etc.
- **The percentage of respondents who expect a 50% lift** OR MORE on these performance measures by pursuing initiatives are: 53% Customer satisfaction, 48% internal confidence, 46% competitive advantage, 41% profit margins. To repeat, 41% of the respondents say they expect a 50% or more increase in profit margins by pursuing these initiatives.
- **We presented the respondents with a list of 21** different technologies and asked which would be integral to addressing the initiatives in order to understand which technology provides the most value across multiple initiatives. The top responses, in order, were: Analytics, artificial intelligence, autonomous/collaborative robotics, and Machine/equipment diagnostics. The full report includes the top technologies associated with each initiative.
- **Of the list of 12 potential barriers to adoption the** biggest concerns tend to be related to investment. 35% are concerned about upgrading or re-engineering legacy systems, while 30% are concerned about the lack of internal skills or knowledge. On the low end, concerns around risk were closer to 17%
- **5G was selected 45% of the time and is the clear** leader in the expected connectivity solution across the range of technologies to be implemented. 5G beat out wireless networks, in-plant solutions and WAN technologies.
- **When asked whether 5G was an expected connectivity** solution across the technologies being implemented, respondents fell in to 3 buckets: adopters, testers, and laggards. The % of each in the US respectively are: 38%/40%/22%. The European results tended to be more conservative in this category.
- **Expected adoption rates are correlated with expected** connectivity. We asked if they expected to adopt 5G enabled technologies in the next year, 2 years or 3-5 years. The US expects adoption rates at 59%, 71%, and 87% where the European responses where not as aggressive.
- **The regions were not directly aligned on which** technologies were most likely to leverage 5G but AI and Edge Computing were near the top of both lists.
- **"Confidence in the technology" topped the list of key** barriers to adopting 5G for both regions, followed by concerns about complexity and being able to experiment in small ways before wide deployment. This seems like a plea for communication service providers (CSPs) to demonstrate just what can be done with their 5G networks.

In summary

Industrial companies want improvement very badly and most are already implementing new technology in that pursuit. New technologies and connectivity solutions such as AI and 5G are expected to contribute substantially to the KPIs that matter. Companies need help to understand just how exactly to implement the technologies in order to derive the most benefit.

Edge adoption parameters proposed for enterprise and CSP consideration

Multi-access edge computing (MEC), formerly called mobile edge computing, is an ETSI*-defined network architecture concept that enables cloud computing at the edge of a network. In layman's terms it brings cloud advantages at the edge of the network or closure to customer services outside regular cloud deployments thereby reducing latency and bringing in efficiency.

The author is **Praveen Gundkal** of **TechMahindra Ltd.** He is a business consultant for Network Capabilities & Digital Transformation. He is currently working as service design architect enabling 5G capabilities for one of the leading UK CSPs.

The Edge of the network from the communication service provider (CSP) standpoint is within the Radio Access Network (RAN), as *Praveen Gundkal* of **TechMahindra Ltd** explains. This can be the LTE (4G) base station (eNodeB) site, small cells aggregation point or along the core network.

Specifically, for a 5G Standalone network a physical deployment of MEC can have single or multiple UPFs (User plane functions) configured to steer data traffic between MEC and Packet core data network e.g. MEC co located with UPF at a base station (gNodeB)

From an enterprise point of view, MEC physical deployment can be located at the multi-RAT cell aggregation site/s indoors within an enterprise (e.g. headquarters, large scale industry, hospital) or outdoor where there is a special coverage requirement. (e.g. football stadiums, arenas etc)

By doing so we are bringing the cloud computing platform closer to where data is actually generated and processed. MEC will provide storage, processing, and analysing functions for data in a much faster way at the edge of the network. Applications which require real time feed, which need to process data and provide real time monitoring for enterprise to make decisions will be hosted in MEC. AI/ML/DL application processing will serve true value deployed at the edge of the network.

Four key MEC challenges are:

- Data (Integration, Governance & Analytics)
- Diversity (Use cases, Topologies, Technologies & Standards)
- Protection (Security, Privacy & Compliance)
- Location (Scale, Environment, Remote Management & Autonomy)

With these challenges, how CSPs or enterprises can look at exploring MEC potential and determining a business model becomes crucial to achieve business value i.e. total cost of ownership, staff productivity, operational resilience, and improved user experience.

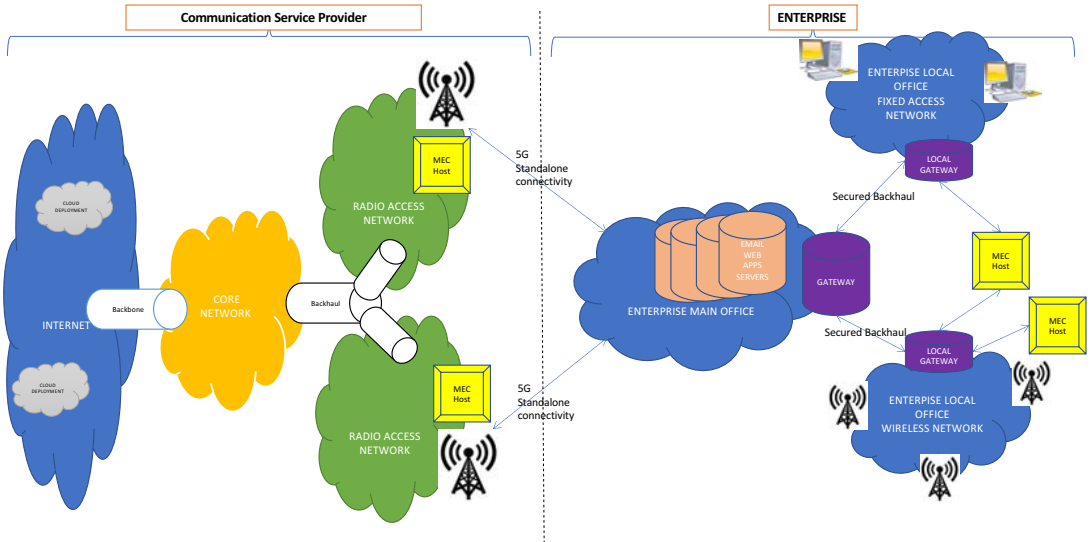

Figure 1 depicts MEC positioning for CSP and enterprise.

The reviewer is **Dr. Anand Singh**, CEO - ILINK Digital Advanced Communication Services.

*ETSI: European Telecommunications Standards Institute (**www.etsi.org**)

Below are 8 key parameters proposed for enterprises and CSPs in conjunction for edge computing adoption, implementation and utilisation.

Maturity

a. CSP – Strategising and assessing current network maturity will be important e.g. how much is telco network cloud native? Is an IT-BSS platform able to support MEC application hosting aspects – provisioning, mediation & billing, support model, infra & tenant onboarding and assurance at radio network level. Assessment of Key technologies closely associated to create business and customer value – 5G, network slice, single OSS 5G inventory etc.

b. Enterprise – Maturity assessment providing scores in terms of key enablers like NFV vs physical native applications, applications development, vendor flexibility for MEC integration & hosting, security and organisation compliance will help in MEC decision-making.

NFV

a. CSP – A variety of technologies are in use for different domains – Radio, Core, Transport, Packet core for data processing and communication network. How MEC can be used to bring uniformity, efficiency and scalability is to be investigated. Whether IT (BSS/OSS) and Network applications are virtualised? – 50%,75%, 100%. Is NFV environment in place for 5G Standalone launch and MEC hosting. Strategy and position on ORAN need to be considered in planning.

b. Enterprise – Consideration of moving an NFV application from a private On Prem, cloud or centralised public cloud onto CSP MEC hosting, migrating application and customers from physical native applications from enterprise premises onto MEC into sizeable manner, a migration strategy with impact analysis needs to be devised.

MANO (Management and Network Orchestration)

a. Both for CSP and enterprise, MANO will be a challenge considering the variety and distribution of MEC cloud. As per ETSI, design of MEC cloud will need to divide distribution of control function partly centralised and partly in MEC. Robust set of APIs to be developed to interface and interact for management purposes.

5G

a. CSP – Edge computing will enable 5G technologies for achieving performance KPIs. 3GPP 5G system specifications define the enablers for MEC. Options for hosting MEC depends on security, operational and use cases requirements. MEC colocation alongside UPF in RAN is to be worked out for traffic routing and policy control.

b. Enterprise – Intelligent use of MEC based application and seamless use of 5G connectivity from CSP based on technical and business parameters like application functional and non-functional requirements, customer survey scores, real time solutions, scalability and overall cost will determine efficient technology usage.

Data model enterprise/CSP

a. CSP and enterprise will need to work on their data model where GDPR compliance and data privacy per location, region, country can be met using MEC hosting instead of a central cloud location.

Use cases

a. CSP – 5G slicing use cases with MEC for B2B segment. Data analysis and security for efficient utilisation of network resources.

b. Enterprise – The idea is to build real time connect and provide seamless services to employees (internal) and customer (external). Use cases to consider will be Smart buildings/ factories, Data Analysis real time using artificial intelligence (AI), video streaming, augment / virtual reality (AR/VR) conferencing.

Mobility

a. Both CSP and enterprise need to account for mobility of an Internet of Things (IoT) device. A UE like mobile phone or a device fitted in a vehicle, the challenge is meeting application requirement where location is variable but requiring real time analysis. Configuring MEC host within application usage radius and designing hosting accordingly is to be considered.

Operational & Process impacts

a. MEC will impact business process functions and the overall operational model. Enterprise business process function affected will be in service fulfilment and assurance areas. Key domain impacted will be Service domain relating to service quality management, service configuration management and problem management. CSPs' IT Service Management e.g. Remedy or Service Now will need to cater for MEC specific out of the box solution per impacted process modules i.e. mainly Incident, Event, Change, Availability, Access, SLA, and Configuration management. Both CSP and enterprise will need to adopt Change Management framework for user adoption and training to ensure business change impact and user alignment is not at risk. ■

Conclusion

Enterprise is at the forefront to utilise MEC offerings from CSPs and this will enable several use cases to enhance CeX. However, the journey is long, stretched and challenging. The above parameters are aimed at providing a snapshot for 360-degree view considerations.

EdgeQ raises US$51mn to unify 5G and AI in open, programmable platform

Santa Clara, California-based EdgeQ Inc, a 5G systems-on-a-chip company, has launched from stealth with US$51 million in total funding, including $38.5 million in a Series A round.

Backed by investors Threshold Ventures (formerly DFJ), Fusion Fund, Yahoo! co-founder Jerry Yang (AME Cloud Ventures), and an unannounced strategic customer, EdgeQ will address the untapped 5G infrastructure market, claiming to be the first company to converge 5G connectivity and artificial intelligence (AI) compute onto a system-on-a-chip. By unifying 5G and AI at the nearest focal point of data at the edge, EdgeQ says it will allow enterprises (in manufacturing, construction, energy, automotive, warehousing, surveillance, telco and other verticals) to harness private networking for disruptive applications, intelligent services, and new business models.

Today's connectivity and compute constructs are based on legacy networks that are largely closed and monolithic. As new sets of devices (robotics, drones, autonomous vehicles, etc.) enter the network, coupling reliable connectivity and AI compute at the edge becomes essential. Traditional, purpose-built fixed hardware can no longer scale efficiently and economically to support 5G service-oriented applications. A new modern approach is required to harness fast connectivity and AI compute at both the devices and infrastructure.

EdgeQ will deliver a converged 5G and AI silicon platform that is open and software programmable for both devices and edge infrastructure. By introducing open programmability to the baseband, EdgeQ provides a new software-driven development model for OEMs and operators that can support existing cellular protocols, such as 4G, 5G and beyond.

"We are rapidly evolving from a smartphone economy to a constellation of intelligent edge devices. This will cause massive disruption to the current paradigm, where existing fixed-function approaches are inadequate to meet the scale, speed, and breadth of new end connections," says Vinay Ravuri, CEO and founder of EdgeQ. "By building 5G and AI hardware in a newly imaginative, software-friendly manner, we empower and inspire customers with an open and programmable platform that is adaptable, configurable, and economical for 5G-based applications."

To execute this vision, EdgeQ assembled a distinguished team of semiconductor, 5G, Wi-Fi, and AI industry veterans with decades of leadership experience from Qualcomm, Intel, and Broadcom. Collectively, EdgeQ's leadership team has successfully delivered decades of cellular modem technology that powers much of today's cellular handset and infrastructure market, as well as up-and-coming AI acceleration for data centres.

"The 5G ecosystem is nascent today. The market has a limited set of players delivering 5G solutions designed around smartphones and legacy networks. There is a huge opportunity for innovation and disruption particularly for U.S. companies," says Mohammad Islam, partner, Threshold Ventures. "EdgeQ is poised to capture that and become the leading U.S. 5G company. With an elite founding team, they have developed a groundbreaking software-defined platform that serves a market set to grow exponentially during the next decade. As the first company to combine compute and 5G connectivity in a single chip, EdgeQ is at the forefront of the critical 5G infrastructure space."

Open, 5G and AI on a chip

EdgeQ is developing what it claims is the world's first fully software-customisable silicon platform that offers 5G connectivity and AI at the edge in a simple, accessible, and frictionless manner. 5G connectivity is comprised of the fundamental backbone that fuels edge intelligence, edge cloud, and associated services.

DT selects ExtremeCloud IQ to give customers monitoring, management, and data insights

Extreme Networks, Inc. (Nasdaq: EXTR), a cloud-driven networking company, is partnering with Deutsche Telekom to launch the next generation of Telekom's managed net-based LAN service, NBLS 2.0, which is now available to customers.

Telekom will leverage ExtremeCloud™ IQ, the market's only cloud management platform offering unlimited data access, as part of the company's managed net-based LAN service portfolio. With ExtremeCloud IQ, Telekom will enable customers in more than 20 countries with proactive monitoring, reporting of SLA compliance, and other unique metrics via a service that offers security, flexibility, and scalability at a reduced delivery cost. Specifically, Telekom's customers can now take advantage of Extreme's industry-leading unlimited data offering for ExtremeCloud IQ subscribers to gain unparalleled insights on network activities and performance via one centralised management tool.

As a benefit to all of Telekom's existing net-based LAN service (NBLS) customers with a related subscription, they will be migrated to ExtremeCloud IQ at no extra cost. The partnership's benefits include:

- **Insights:** ExtremeCloud IQ supplies unrivalled insights and analytics, leveraging machine learning and artificial intelligence to assist in collecting data to build, secure, and maintain agile and distributed networks. In conjunction with Extreme's unlimited data offering, Telekom provides affected NBLS 2.0 customers with actionable insights to optimise network performance and deliver secure, agile connectivity.

- **Network management:** By removing the need for Telekom to deploy, host, upgrade, scale, or maintain software itself, ExtremeCloud IQ reduces the complexity of

managing enterprise edge-to-data-center infrastructure. Less time spent managing and maintaining the network provides more time to optimise the applications and services which run on the NBLS 2.0 network.

• **Data security:** Data transmission between WLAN access points and ExtremeCloud IQ is encrypted, and strictly limited to configurations and monitoring data. This means that no user information nor communications is transferred, and data security is protected. To further ensure the highest levels of information systems and data protection, management, and compliance, Extreme's cloud platform is ISO/IEC 27001 certified by the International Standards Organization (ISO), complying with local data protection regulations such as GDPR and hosted within the premium data center environments of Amazon Web Services in Germany. By leveraging the security benefits of a cloud-based solution, Telekom can ensure to customers that mission-critical applications will always be available.

• **Greater flexibility:** Optimised for feature flexibility, Telekom can further tailor its network operations to meet customers' individual needs with ExtremeCloud IQ. Continuous updates, high availability, and advanced machine learning analytics and insights offer Telekom and its customers the flexibility required to ensure network performance matches business expectations.

Markus Nispel, VP International Markets – Office of the CTO, Extreme Networks says, "We are firmly committed to providing our partners with the most advanced and innovative network solutions on the market so they can offer exceptional managed services to their customers. Now, those customers have access to a state-of-the-art cloud-driven network management solution to optimise performance, gain valuable insights, and scale network operations based on organisational needs. With the demand for managed services on the rise across Europe and around the world, we are thrilled to go to market with this NBLS 2.0 service alongside our partner, Deutsche Telekom."

Frank Dietrich, VP Inhouse Services at Deutsche Telekom Business Solutions adds, "Most of our customers are undergoing significant digital transformation efforts and, as a result, the adoption of public cloud services is rising significantly. At Deutsche Telekom, it is our mission to arm them with the best solutions to make these projects a success. A robust, resilient, and reliable network continues to be key here." ■

Edge computing capabilities expand as workloads scale beyond central clouds and datacentres

To help enterprises bring edge computing into hybrid cloud deployments, open source solutions provider, Red Hat, Inc., has introduced new capabilities for Red Hat Enterprise Linux and Red Hat OpenShift.

The enterprise Linux platform adds features to maximise system stability and preserve workload independence in smaller physical footprints, while Red Hat OpenShift now provides remote worker node architecture to help deliver Kubernetes to space-constrained and remote deployments.

According to the *Worldwide Edge Spending Guide* from IDC, the worldwide edge computing market is estimated to reach US$250.6 billion in 2024 with edge-related software predicted to be roughly 21% of this spend. Red Hat believes that edge computing requires open hybrid cloud, built on a foundation of enterprise-grade Linux and production-ready Kubernetes.

Enterprise Linux, ready for the edge

The small physical footprints, remote locations and limited connectivity of edge devices pose a challenge for traditional, full-featured operating systems, but with enhancements in Red Hat Enterprise Linux 8.3, the platform can more easily span from core datacentres to space-constrained, remote servers, and is built to provide the levels of supportability, stability and security features required by enterprise edge deployments.

Edge-focused updates to Red Hat Enterprise Linux include:

- **Rapid creation of operating system images for the edge** through the Image Builder capability. This enables IT organisations to more easily create purpose-built images optimised for the broad architectural challenges inherent to edge computing but customised for the exact needs of a given deployment.
- **Remote device update mirroring** to stage and apply updates at the next device reboot or power cycle, helping to limit downtime and manual intervention from IT response teams.
- **Over-the-air updates** that transfer less data while still pushing necessary code, an ideal feature for sites with limited or intermittent connectivity.
- **Intelligent rollbacks** built on OSTree capabilities, which enable users to provide health checks specific to their workloads to detect conflicts or code issues. When a problem is detected, the image is automatically reverted to the last good update, helping to prevent unnecessary downtime at the edge.

Dave McCarthy, research director, Edge Strategies at IDC says, "Edge products and services are powering the next wave of digital transformation, globally and across nearly every industry, with edge technology vendors looking at a substantial market opportunity in the next few years. Software providers like Red Hat that can deliver existing datacentre technologies, like Red Hat Enterprise Linux and Red Hat OpenShift, in an edge-centric manner are well positioned to take advantage of this shift." ■

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Growing number of businesses see need for ethical, trusted AI-powered systems but progress is patchy

Artificial Intelligence (AI) has the power to positively transform society and the environment, and to harness that power to its full potential organisations need to focus on addressing the ethical challenges. That's according to a new report from the Paris-based Capgemini Research Institute, "AI and the ethical conundrum: How organisations can build ethically robust AI systems and gain trust," which found that the share of customers who believe organisations are being fully transparent about how they are using their personal data has fallen from 76% in 2019 to 62% today.

Anne-Laure Thieullent, **Capgemini**

The report also finds that only 53% of organisations have a leader who is responsible for the ethics of AI systems. Additionally, governance and accountability for AI, and deploying pragmatic tools and frameworks for AI systems to be developed and used, is coming at a high cost for organisations.

The report notes that while organisations are more ethically aware, progress in implementing ethical AI has been inconsistent. For example, nearly the same share of executives in 2019 said that they have taken steps towards building "fairness" (65% in 2020 vs. 66% in 2019) and "auditability" (45% in 2020 vs. 46% in 2019) dimensions of their AI systems. Also, transparency has dropped from 73% to 59%, despite the fact that 58% of businesses say they have been building awareness among employees about issues that can result from the use of AI. The research also reveals that 70% of customers want a clear explanation of results and expect organisations to provide AI interactions that are transparent and fair.

Discriminatory bias and negative AI customer experiences

As public and private organisations increasingly continue to deploy a range of AI technologies, it is critical for them to uphold customer trust by furthering positive relationships between AI and consumers. However, reports show that datasets collected for healthcare and the public sector are subjected to social and cultural bias.

This is not limited to just the public sector. Capgemini's research found that 65% of executives said they were aware of the issue of discriminatory bias with AI systems. Further, close to 60% of organisations have attracted legal scrutiny and 22% have faced a customer backlash in the last two to three years because of decisions reached by AI systems. In fact, 45% of customers noted they will share their negative experiences with family and friends and urge them not to engage with an organisation, 39% will raise their concerns with the organisation and demand an explanation, and 39% will switch from the AI channel to a higher-cost human interaction. Over a quarter of consumers (27%) say they would cease dealing with the organisation altogether.

Leaders must be accountable

Only 53% of organisations have a leader who is responsible for the ethics of AI systems at their organisation, such as a chief ethics officer. It is crucial to establish leadership at the top to ensure these issues receive due priority from top management and to create ethically robust AI systems.

In addition, leaders in both business and technology functions must be fully accountable for the ethical outcomes of AI applications. Our research shows that only half said they had a confidential hotline or ombudsman to enable customers and employees to raise ethical issues with AI systems.

Ethical governance is a prerequisite

The need for organisations to implement an ethical charter is also driven by increased regulatory frameworks. For example, the European Commission has issued guidelines on the key ethical principles that should be used for designing AI applications.

Meanwhile, guidelines issued by the US Federal Trade Commission (FTC) in early 2020 call for transparent AI, stating that when an AI-enabled system makes an adverse decision (such as declining credit for a customer), then the organisation should show the affected consumer the key data points used in arriving at the decision and give them the right to change any incorrect information. However, while globally 73% of organisations informed users about the ways in which AI decisions might affect them in 2019, today this has dropped to 59%.

According to the report, this is indicative of current circumstances brought about by Covid-19, as well as societal and environmental needs, growing complexity of AI models, and a change in consumer behaviour, which have all disrupted the functionalities of the existing AI models. New factors, including a preference for safety, bulk buying, and a lack of training data for similar situations from the past, has meant that organisations are redesigning their systems to suit a new normal; however, this has led to less transparency.

The report notes that while organisations are more ethically aware, progress in implementing ethical AI has been inconsistent

Customers are becoming increasingly comfortable with AI but have high expectations

- **49%** of customers found AI interactions to be trustworthy in 2020 compared to 30% in 2018
- **71%** of customers want a clear explanation of result generated from AI systems
- **66%** of customers expect AI models to be "fair and free of prejudice and bias against me or any other person or group"
- **67%** expect organizations to take ownership of their AI algorithms when they go wrong

"AI is a transformational technology with the power to bring about far-reaching developments across the business, as well as society and the environment"

The report highlights seven key actions for organisations to build an ethically robust AI system, with each being underpinned by a strong foundation of leadership, governance, and internal practices:

- Clearly outline the intended purpose of AI systems and assess their overall potential impact
- Proactively deploy AI for the benefit of society and environment
- Embed diversity and inclusion principles proactively throughout the lifecycle of AI systems
- Enhance transparency with the help of technology tools
- Humanise the AI experience and ensure human oversight of AI systems
- Ensure technological robustness of AI systems
- Protect people's individual privacy by empowering them and putting them in charge of AI interactions.

Ensure no harm

Anne-Laure Thieullent, Artificial Intelligence and Analytics Group offer leader at Capgemini comments, "Given its potential, the ethical use of AI should, of course, ensure no harm to humans, and full human responsibility and accountability for when things go wrong. But beyond that there is a very real opportunity for a proactive pursuit of environmental good and social welfare.

"AI is a transformational technology with the power to bring about far-reaching developments across the business, as well as society and the environment. Instead of fearing the impacts of AI on humans and society, it is absolutely possible to direct AI towards actively fighting bias against minorities, even correcting human bias existing in our societies today." Thieullent concludes, "This means governmental and non-governmental organisations that possess the AI capabilities, wealth of data, and a purpose to work for the welfare of society and environment must take greater responsibility in tackling these issues to benefit societies now and in the future, all while respecting transparency and their own accountability in the process."

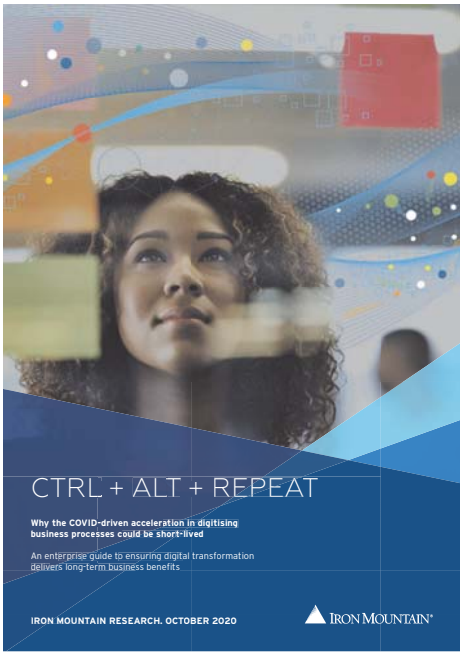
Research methodology

For the 2020 report data points, Capgemini conducted a global consumer and executive survey during April – May 2020. The consumer survey polled 2,900 consumers in six countries, while the executive survey polled 884 executives (job functions include: Information Technology, AI developers, data scientists, sales, marketing and customer services) from across 10 countries. These results were further compared against 2019 surveys conducted during April 2019 and June 2019, involving 5,000 consumers, and 722 executives which included AI developers, data scientists, sales, and marketing teams. Capgemini also conducted in-depth interviews with a number of industry executives, academicians, and subject matter experts in the area of ethics in AI, during August-September 2020. ■

To read a full copy of the report and its recommendations, go to **https://bit.ly/36K0OkV**

Short-sighted digitisation strategies may see businesses revert to analogue processes

Around the world, Covid-19 and the need to enable remote operations have accelerated the digitisation of business processes. But while these technologies have undoubtedly delivered a range of business benefits, new research suggests an 'off-the-shelf, quick fix' approach to transformation may see this progress scrapped as many revert to analogue data access post-pandemic.



A recent survey of 1,000 IT professionals responsible for managing business data in enterprises* by Iron Mountain, showed that IT support (49%), customer relationship management (36%) and team resource management (34%) were the top processes digitised in response to lockdown. And despite digital solutions only being in place for a relatively short period of time, the research shows respondents are already reaping the rewards:

- **27% report increased productivity (most common reported benefit)**
- **20% have experienced time savings**
- **13% have seen data quality increase**
- **12% have been able to cut costs**

At a time when businesses face unprecedented disruption, it is clear digital transformation has been invaluable in helping them adapt to a new normal.

To gain an understanding of how organisations might benefit from new digital tools in the medium- to long-term, respondents were asked about their use post-pandemic. Researchers were surprised to find a staggering 57% fear their employer will revert to less efficient, analogue means of accessing data.

So, why would an organisation allow this to happen? Possible explanations include:

- Business leaders were under huge pressure to make rapid-fire decisions to keep their organisations functioning. Due to the urgent nature of this task, it was inevitable some would opt for **off-the-shelf 'quick fixes'**, rather than solutions designed for longevity
- As a result, it is also highly likely that some of this **decision-making took place in silo**. By failing to consider the broader impact across business units, these organisations will find a lack of integration means solutions fail to meet their fundamental business needs

Addressing this situation means recognising that digital backtrack is not an option. So, Iron Mountain has designed a seven-steps guide to help businesses future-proof their digital journeys and maximise value from physical storage:

1. A **Gartner** report suggests 82% of companies will transition to a part-time remote working model. As a result, it is just not practical to even consider a return to analogue process and companies should ensure these insights are fed into developing more robust solutions

2. Information on **governance and compliance** is fundamental to data handling. Frameworks hold valuable insights that can be turned into actionable intelligence

3. **Understand your risk profile:** A key early step is to analyse where you are most vulnerable. With data in motion and people working remotely, which records are at risk? What could be moved into the cloud? Are your vendors resilient?

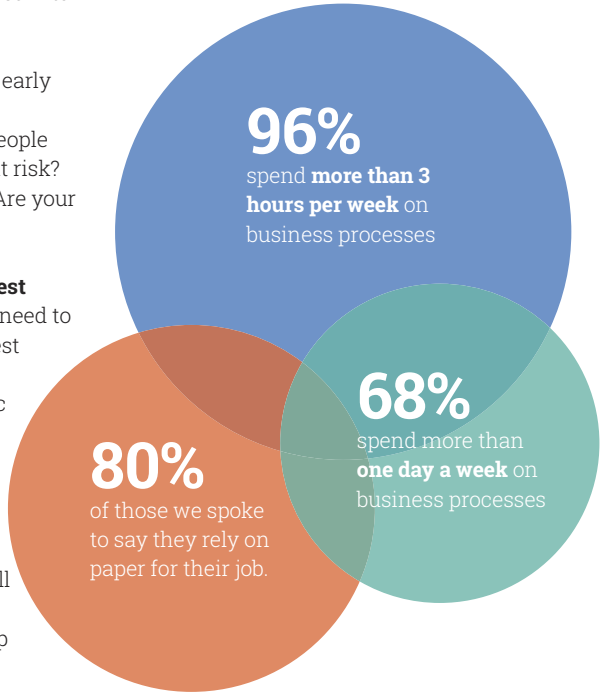
4. **Focus where you will achieve greatest impact:** To prioritise successfully, you need to know where you will achieve the largest impact. This involves looking beyond initial set-up costs towards the holistic benefits of digitisation, including reducing time spent on manual scanning, and the risk of compliance violations

5. **Reach out and collaborate:** We are all in this together therefore, ensure you collaborate across functions to develop robust, integrated solutions

6. **Find a provider who can relate to your digital journey:** For companies that still rely heavily on analogue solutions, digitisation can be daunting and risky. It pays to find a vendor who has been on the same journey, understands your paper processes and can guide you through the digital world

7. **Prioritise and evolve communication and training programmes:** Our survey found that 81% of data handlers have received training to work digitally which is an excellent step in the right direction, but consider teams beyond data handling to truly succeed.

Digitisation may have accelerated due to a one-off emergency event. But now the barriers to transformation have come down it is vital to lock it in place to safeguard recovery for the long-term.



**Iron Mountain Business Process Survey: August 2020, Censuswide – 1,000 respondents responsible for data management aged 20+ in companies with more than 250 employees in UK, Germany, France, Spain and the Netherlands.*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Payment security remains a major concern for online retail

New research by Paysafe shows that businesses and consumers are more concerned about payment fraud than ever since the onset of Covid-19.

For more than half of online businesses (55%) an increased risk of fraudulent payment transactions has been one of the greatest concerns during the Covid-19 pandemic. That's according to international research from specialised payments platform Paysafe which indicates that concerns around fraud are of greater concern for businesses than ever after such an unprecedented year.

Danny Chazonoff
Paysafe

Change seen in customer payments

The survey also found that businesses feel the same concern is reflected among their customers. In all, 60% of online businesses believe consumers are more concerned than ever about being a victim of fraud following Covid-19 and 76% have already noticed a change in the way their customers are making payments. When asked why, the highest number of respondents (40%) said they felt that consumers are looking for a more secure payment method.

The findings form part of London-based Paysafe's most recent addition to its 'Lost in Transaction' research report series – How Covid-19 has reshaped the SMB checkout - in which 1,100 small- to medium-sized businesses (SMBs) globally which operate online were asked about the effects of Covid-19 on their business.

Balance between security and customer ease

The importance of security as a key criteria for businesses when it comes to accepting online payment was also highlighted as a key trend in Paysafe's research from 2018 and 2019, and despite a year of new challenges it remains the primary payments concern for businesses. With 45% of respondents placing it in their top three most important factors to consider when evaluating a payments provider, security was ranked as higher priority than reliability (36%), cost (34%), and ease of integration (22%). Yet the solutions aren't necessarily straightforward – 58% reported that they find it hard to strike a balance between improving security processes and making the online customer journey as quick and easy as possible.

Commenting on the research, Danny Chazonoff, chief operating officer at Paysafe, says: "Protecting ourselves from fraud has long been reported as a concern among businesses and consumers, but our research shows that security has become more of a priority than ever, and there are a few reasons for this. The economic impact of Covid-19 has led to a natural desire from both consumers and businesses to protect their finances. Coupled with that, we know that criminal activity such as fraud historically rises during national and global crises, and this pandemic has been no exception."

Paysafe research among 8,000 consumers conducted in April this year highlighted that protection against loss from fraud (34%) and keeping financial data safe from fraudsters (32%) were the two main reasons for consumers to choose a payment method. Over half of consumers (51%) said they would accept any security measure if it kept their data secure, however poor it made the user experience, and 25% said they would accept more inconvenience than they currently experience.

Chazonoff adds: "We're also seeing more consumers than ever shopping online, given shielding, lockdown restrictions and less desire to leave the house. The 18% of consumers who told us they'd shopped online for the first time following the initial lockdown may have

concerns around trying new payment methods. Other consumers who are perhaps already used to shopping online might be interacting with new businesses which they're unfamiliar with, affecting their willingness to share financial details. For online businesses which want to attract and retain customers from these two groups offering greater choice at the checkout will be essential."

Survey methodology

To compile the business data Paysafe commissioned a survey by Sapio Research among 1,100 online businesses based in the US, UK, Canada, Bulgaria, Italy, Austria, and Germany, and 350 businesses that predominately sell products or services in-store based in the US and Canada, from September 9-18th, 2020.

Paysafe commissioned Sapio Research to carry out the consumer research in March and April this year using an online questionnaire. The final results include responses from 8,000 consumers across the UK, US, Canada, Germany, Austria, Bulgaria and Italy (over 1,000 respondents per market). ■

Navigating the 'Big Technology' threat in banking;

Traditional banks can learn from fintech playbook

In 2017, the World Economic Forum (WEF) released a report which cited 'Big Tech' as a greater threat to banks than fintech. Three years later, says Eelco-Jan Boonstra, managing director of EMEA at Mambu, this continues to hold true as we've seen technology giants such as Google, Apple and Facebook move deeper into the world of finance.

Financial institutions are being forced to adjust their processes and carefully weigh risk exposure vs innovation

The emergence of Covid-19 has put an added spotlight on this issue for banks as they grapple with the repercussions of the crisis and how to evolve with the changing industry.

Risk exposure

Multiple European countries have officially entered into a recession, with many more predicted to follow suit as a result of the global pandemic. Consequently, the financial services industry is under increasing pressure as lending continues to decline and some customers default on debt. Financial institutions are being forced to adjust their processes and carefully weigh risk exposure vs innovation.

While the move to digital banking was already well underway prior to Covid-19, the crisis has accelerated this shift as it forced more people and businesses to move to digital channels out of necessity, and many financial institutions continue to struggle to meet these demands.

Skyrocketing growth of Big Tech

In comparison, Covid-19 has 'contributed to the skyrocketing growth of Big Tech', according to Rick Sherlund, **Bank of America Merrill Lynch** vice chairman of Technology Investment Banking, as people became more reliant on these services of Big Tech to work, entertain, shop and socialise from home. For instance, **WhatsApp**, Facebook and **Instagram** saw more than 40% increase in usage during the pandemic.

This ongoing period of social distancing has resulted in long-term shifts in society, as working from home becomes the norm and people adjust to living with the ebbs and flow of the associated restrictions. As a result, the dependency on Big Tech will likely continue to grow. This provides further incentive for these companies to take a more meaningful step into the world of banking and further capitalise on this trust and engagement.

In order to ward off this threat, it's important for banks and financial service providers to be proactive in how they create their customer experiences and innovate. In many ways, fintechs are well prepared to cope with this powerful shift of reality and can play a major role in helping banks compete and survive during these unpredictable times.

The author is **Eelco-Jan Boonstra**, managing director of EMEA at Mambu.

Cloud, AI and customer analytics

According to WEF, 'cloud computing, customer-facing artificial intelligence (AI) and 'big data' customer analytics' are the three domains that are becoming ever more crucial to competitive differentiation among financial firms. Fintechs are built to be agile, with cloud-native technology and a mobile workforce that allows for operations to continue anywhere and to scale with demand, thereby providing the support and specific solutions necessary for banks to innovate and compete. The challenge is executing rapidly and effectively. This is where traditional banks can learn from the fintech playbook.

The last few months have clearly taught us that no one can predict the future with any degree of confidence. Few doubt that the pace of change will continue to increase and that Big Tech will continue to remain a dominant force in our lives. The extent of this presence in the world of banking remains to be seen; however, it is crucial for banks to act now to strengthen their long-term position in the industry. ■

RPA auto-balancing feature to offer ‘hands-free’ bot workload management

Despite its name, most Robotic Process Automation (RPA) is anything but robotic when it comes to managing bots. When demand for bot assistance inevitably surges or drops, humans behind the scenes have to reallocate the available bots across the enterprise to ensure the work gets done on time.

Eric Musser
general manager,
intelligent automation
Pegasystems

www.pega.com

Many organisations compensate for these surges by purchasing extra bot licenses so that no request goes unfulfilled, but this overprovisioning only leads to more bot management and licencing costs while also tying up more virtual machine resources.

Now one Massachusetts-based company says it can enable organisations to significantly reduce RPA licensing, management, and infrastructure costs. Pegasystems Inc., a software company empowering digital transformation for enterprises, has launched Pega RPA Auto-balancing. This is claimed to be the industry’s first Robotic Process Automation feature that automatically provisions workloads between an organisation’s available bots. The new Pega Robot Manager™ capability uses artificial intelligence (AI) to intelligently optimise the capacity and efficiency of bot resources on the fly with no human intervention.

Analysis and automatic provisioning

With Pega RPA Auto-balancing, the new Pega Robot Manager capability analyses all work requests and automatically provisions them across available bots. When new or unexpected needs arise, the feature dynamically and intelligently reallocates bots in real time to get the work done. Pega RPA Auto-balancing will also be able to prioritise more important work over less critical jobs when bot demand exceeds capacity – enabling organisations to stop wasting money on unnecessary supplemental bot licenses and management resources.

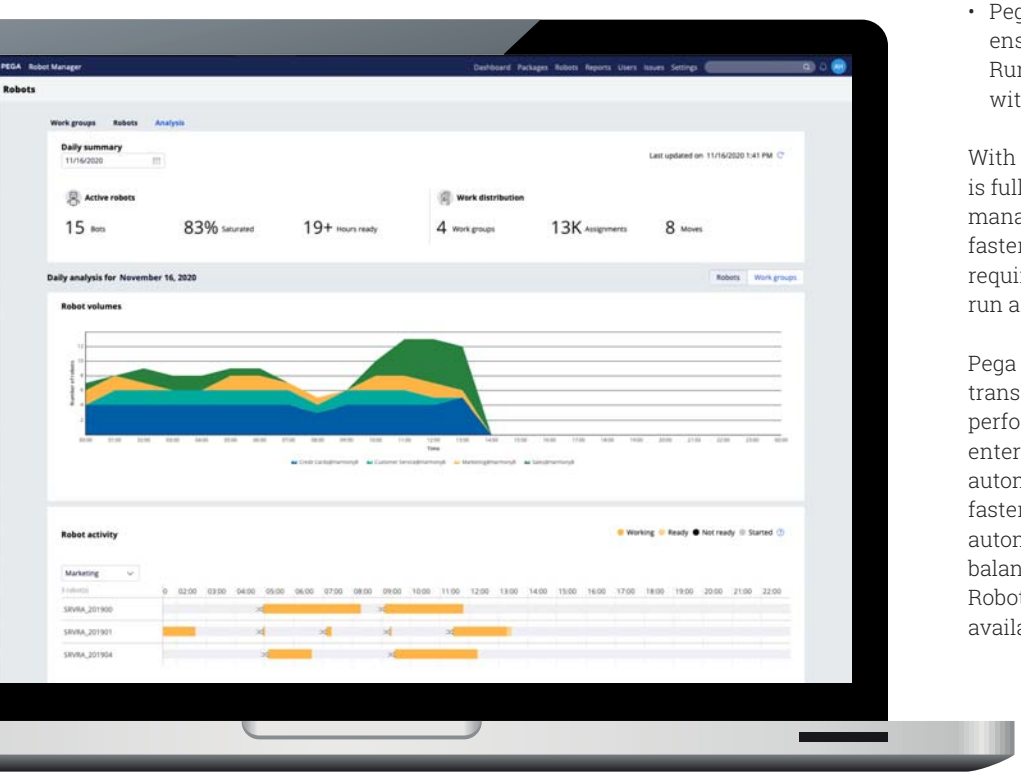
“Too many organisations are trying to overcome RPA’s many limitations by, ironically, buying even more bots,” says Eric Musser, general manager, intelligent automation at Pegasystems. “This just results in more bot management headaches and costs them more money while never truly reaching scale. In our latest step towards hands-free RPA, Pega RPA Auto-balancing makes it simple and painless to maximise bot efficiency and reduce costs without human intervention – bringing true automation across the entire RPA lifecycle.”

This development aims to provide a fully automated robotic process infrastructure. Previous hands-free bot management features introduced this year include:

- Pega X-ray Vision, a feature that detects and fixes broken bots with no human intervention, and
- Pega Synchronization Server, which automatically ensures bots are using the most current Robot Runtime software at all times and updates it without requiring IT to manually install it.

With these combined features the entire RPA lifecycle is fully automated – from authoring to deployment to management. This enables enterprises to experience faster, more durable, and easier to deploy bots that require significantly less time and fewer resources to run and manage.

Pega RPA, part of the Pega Infinity™ suite of digital transformation software, automates repetitive tasks performed through the user interface (UI) of enterprise applications. It uses its Deep Robotics to automate applications at the code level, resulting in faster, more accurate, and more resilient robotic automation at scale. Available today, Pega RPA Auto-balancing is included in the new version of Pega Robot Manager, and the prioritisation feature will be available by end of year.



The author is **Alan Bentley**,
president, Global Strategy at Blancco

How enterprises can protect data assets during turbulent times

As the Covid-19 pandemic rages on, organisations are being forced to make tough decisions about business continuity and how to maintain profitability in a time of economic uncertainty. Globally, says Alan Bentley, president, Global Strategy at Blancco, enterprises have moved "non-essential" employees to a 'work from home' model.

This has created several organisational challenges, including effective management of a distributed workforce and the need to quickly equip teams with the collaboration tools and IT assets required to do their jobs with as little disruption as possible.

The truth is, we simply don't know how long this period of turbulence is going to last. While companies are bringing employees back to the office, one thing is patently clear: Business will not resume as usual. And perhaps that's not such a bad thing. Many business owners now realise that working from home can be successful, and that their businesses are able to survive and even thrive with a distributed workforce. But it's apparent that all organisations must plan for every scenario possible and be prepared to navigate the fallout of a potential second lockdown.

While much has indeed changed, the need to secure and safeguard sensitive customer and business data has not. In fact, the threat landscape has also evolved, and bad actors see numerous opportunities to target home office vulnerabilities and intercept valuable data on IT assets.

Adapting asset lifecycles

The initial scramble to get employees outfitted with necessary IT assets, such as laptops and mobiles, was a key part of many organisations' transition to remote working. But it was not without its challenges. Numerous original equipment makers' (OEMs') factories, including those of **Samsung** and **Apple**, were forced to shut down in response to the Covid-19 outbreak, and this left organisations facing IT equipment shortages.

In response, some firms have opted to instead procure cheaper, refurbished systems, predicting that the effects of the pandemic on business operations would not last. This newfound reliance on the secondary market for IT equipment is positive in many ways. It not only reduces the amount of equipment contributing to growing levels of e-waste, but also presents an opportunity for businesses involved in the reprocessing of secondhand devices for resale on the secondary market. However, organisations need to ensure they are securing those assets appropriately.

Primarily, those enterprises procuring new assets must be mindful of how that IT asset's lifecycle has changed and maintain a clear chain of custody over both that asset and the data stored on it. If more businesses do eventually start returning to work, they need to evaluate and assess the value of the data stored on out-of-use devices to determine if it has become redundant, obsolete or trivial (ROT). Businesses must also avoid letting those assets stockpile, to avoid incurring unnecessary costs for storing assets that could be reprocessed and resold. Worse still, should that asset become lost or stolen and unaccounted for, it could potentially result in a data breach and an eyewatering fine from data regulatory bodies.

Securing data: A continuous objective

With a change in IT asset procurement policies, CSOs/CISOs should turn their attention to ensuring their data security policies and IT infrastructure tools are updated for this new normal. Among other things, they must re-evaluate what they are doing to ensure the security of corporate and customer data when employees are using either corporate devices or their personal ones when working remotely, as well as how to meet compliance regulations.

We've discussed the importance of an audit trail and tracking chain of custody, but enterprises will need the necessary processes in place to permanently and irreversibly remove the data that no longer holds value to the business. Fortunately, many of the tools used for appropriate methods of data sanitisation are automated, with solutions that can be pushed out by administrators to help continuously protect employees in the background, without the need for a significant shift or change from normal routines. Remote erasure practices also enable the sanitisation of devices that reach end-of-life, these can then be transported to the device processor without the threat of sensitive data being intercepted.

Amid so much change, organisations are undoubtedly going to be challenged in new ways. But it's vital that they don't fall victim to wholly avoidable data breaches, through the mishandling and lack of safeguarding of sensitive data on company IT assets. Yes, culturally, and operationally, the face of business has changed forever, but securing data should be a continuous objective. And one that continues to adapt to a shifting threat landscape. IT asset management is as crucial a part of that as something like encrypting data, and enterprises need to adopt the basic hygiene practices, audit trails and appropriate methods of data sanitisation to ensure the protection of sensitive corporate and customer data.

What's On

Industrial IoT World
December 1-3, 2020
https://tmt.knect365.com/industrial-iot-world/

The Smart Cities Summit
December 1-3, 2020
https://tmt.knect365.com/smart-cities/

IoT Security Summit
December 1-3, 2020
https://tmt.knect365.com/iot-security/

Future of Industrial Innovation Europe
December 2, 2020
https://industrialinnovation.live.ft.com/home

GITEX Technology Week 2020
December 6-10, 2020
https://www.gitex.com/welcome

AI Summit New York
December 9-10, 2020
https://newyork.theaisummit.com/

Virtual Superclass - Build the Future of Communications with us
December 10, 2020
https://virtualsuperclassdec2020.splashthat.com/?utm_source=Topio&utm_medium=email&utm_campaign=superclass

Advanced Metering Infrastructure 2021
February 24, 2021
https://www.smartgrid-forums.com/forums/advanced-metering-infrastructure

AI & ASI Expo London 2021
March 10, 2021
https://www.aisiexpo.com/

Intertraffic Amsterdam
March 23-26, 2021
https://www.intertraffic.com/amsterdam/

BIG DATA & AI WORLD
March 24-25, 2021
https://www.bigdataworld.com/

Embedded IoT World
March 30-31, 2021
https://tmt.knect365.com/embedded-iot-world/

AI EXPO TOKYO
April 7, 2021
https://www.ai-expo.jp/en-gb.html

The Battery Show Europe / Electric & Hybrid Vehicle Technology Expo
May 18, 2021
https://www.thebatteryshow.eu/en/Home.html

Book Talk on "The Reasonable Robot: AI and the Law" with Ryan Abbott
https://www.datainnovation.org/2020/11/book-talk-on-the-reasonable-robot-ai-and-the-law-with-ryan-abbott/

Podcast 7: Tackling telecom pain points to aid new services
https://www.theee.ai/2020/11/10/5666-podcast-7-tackling-telecom-pain-points-to-aid-new-services/

Podcast 6: Edge starts to play central role in enterprise 5G
https://www.iot-now.com/2020/10/19/105487-podcast-6-edge-starts-to-play-central-role-in-enterprise-5g/

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**IDC, 2019: www.idc.com/getdoc.jsp?containerId=prUS45213219*

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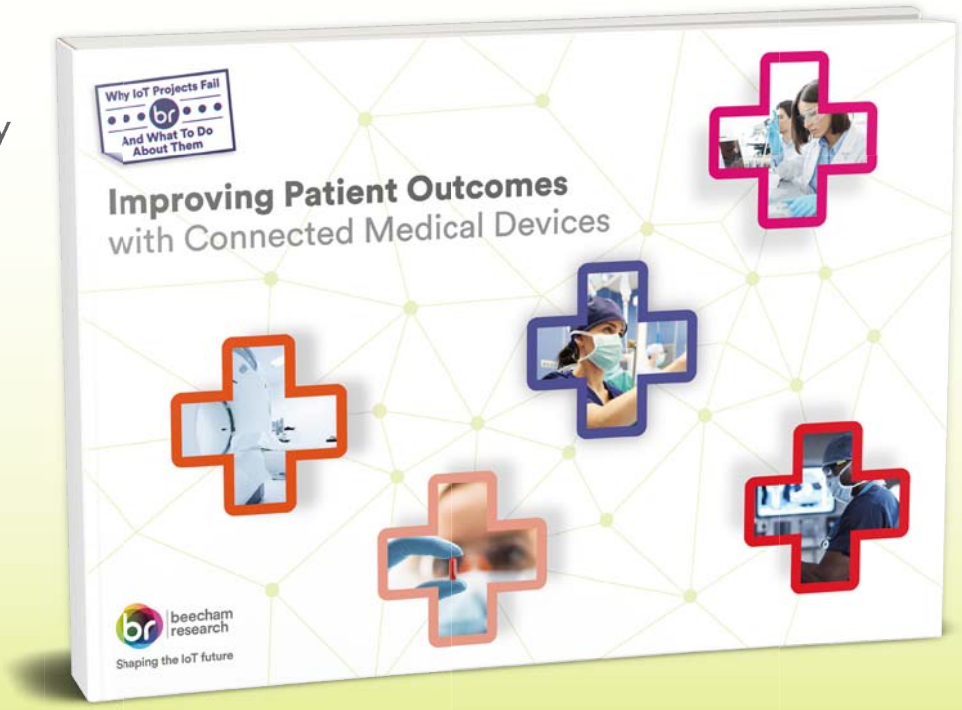

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