Technology.

TOP 100

TECHNOLOGY COMPANIES

valtech_

WELCOMING THE HEADLESS REVOLUTION

Mihaela Mazzenga, SVP of Technology Strategy at Valtech, on how headless technology is transforming modern enterprise

FEATURING: VODAFONE | ROYAL AIR FORCE | FINASTRA

10

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Creating Digital Communities

Time to lose your head?

This month's cover star is Valtech's Mihaela Mazzenga, who is leading the charge for a headless revolution. Now before you think of the executioner's axe and fears of regicide, let me explain...

In the world of eCommerce, there are two portions: the frontend of your store (that beautifully designed interface that your customers will interact with) and the backend (the part behind the scenes that facilitates sales).

Headless breaks from the traditional 'monolithic' approach of eCommerce.
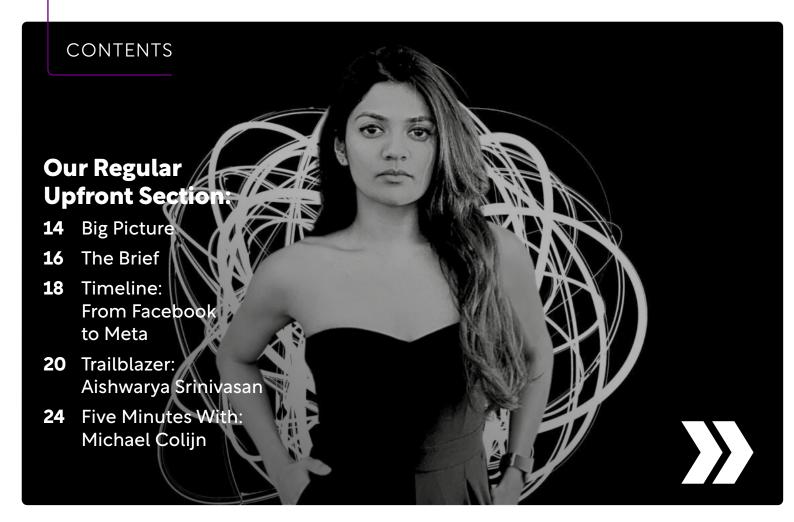
The frontend of your online store is separated or 'decoupled' from the backend. These two separated sides then work independently of each other and communicate via APIs (Application Programmer Interfaces), resulting in greater speed, flexibility, customisation and consistency of experience.

This month, Mihaela will share insight into this sea change and the vital role of the MACH Alliance.

ALEX TUCK
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> **"Headless breaks from the traditional 'monolithic' approach of eCommerce"**

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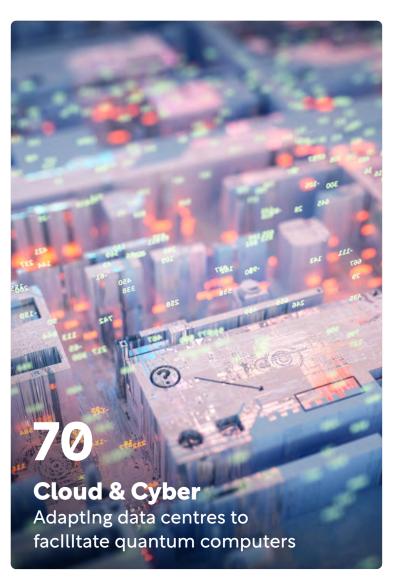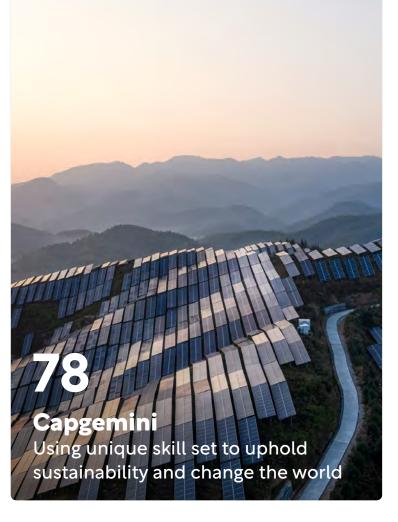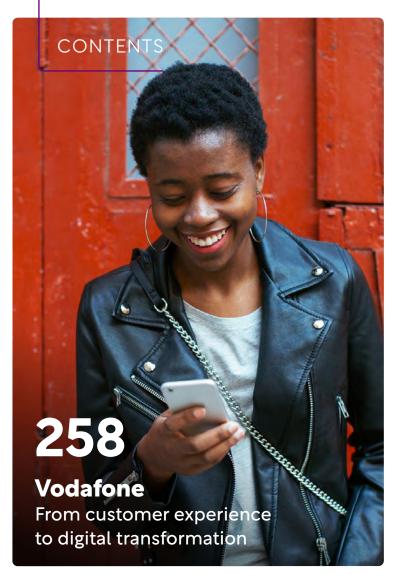
BearingPoint ®

TECH TRENDS 2022

After a year of enormous challenges in which leading companies ushered in a new era of progressive transformation, more and more decision-makers realize that companies must have a strong technology focus to succeed.

But which technologies are currently being discussed? Which ones are really relevant?

According to a survey of 1,000 of our IT consultants, who discuss with their clients on a daily basis which technologies support new business cases, the following five tech trends will be particularly in focus this year:

1. **Responsible AI**
2. **Cloud at the edge**
3. **Cybersecurity mesh**
4. **Embedded data and analytics**
5. **Connected sensors and machines**

We are in the midst of a revolution regarding technology and business models, and you cannot separate the two. The top 5 technology trends for 2022 from our survey are game-changers. The competitive advantages of these technologies increase the effectiveness of operations and solutions and can be the foundation of new business models. Our clients and all companies can benefit from these technologies.

WRITTEN BY:
Stefan Pechardscheck,
Global Leader Technology
at BearingPoint

RESPONSIBLE AI

AI use cases have matured, which is why they are facing increased scrutiny. It is no longer sufficient that AI systems perform well – their predictions need to be fair and easily explainable to clients and regulators. Frameworks and best practices are emerging to meet these requirements for more robust and improved AI solutions.

CLOUD AT THE EDGE

Sovereignty and edge computing needs are the new challenges for CTOs. Cloud adoption has transformed IT organizations, governance and operating models (FinOps, CloudOps functions). There is a need to bring computing capacities closer to users and resources for real-time processing and sovereignty requirements. Edge computing and sovereign clouds are now counterbalancing extreme cloud centralization.

CYBERSECURITY MESH

There should be a distributed approach to network security with individual perimeters around each access point rather than a traditional top-down all-encompassing approach. The cybersecurity mesh is a distributed architectural approach for scalable, flexible and reliable cyber control. The mesh changes the focus from protecting a traditional IT perimeter (analogous to a "walled city") to a more modular approach that centralizes policy orchestration but distributes cyber security enforcement.

EMBEDDED DATA AND ANALYTICS

Companies that succeed have a holistic approach and continuously embed data and analytics into the business. They keep an eye on new trends and adjust accordingly but always move along a roadmap with initiatives and use cases that drive them toward their goals. Companies must define and prioritize use cases, ensure that insights are actionable and work with a holistic plan. Without this harvesting value from data is costly and difficult.

CONNECTED SENSORS AND MACHINES

Connected sensors and machines are at the peak of an ongoing revolution that is leading us toward a world in which everything is measured. The combination of sensor data and powerful analytics on the edge and cloud will act as a springboard for innovation and predicting the future.

BearingPoint Top
5 Tech Trends

BearingPoint.

1.Responsible AI
Explainability and fairness are required

2. Cloud at the Edge
Central and distributed capacities must be balanced

3. Cybersecurity Mesh
Risk is increasing - security approach adapts

4. Embedded Data & Analytics
Without actionable use cases companies get lost

5. Connected Sensors & Machines
Everything around and within us can be measured

Furthermore, according to the new BearingPoint benchmark analysis on Resilience, the effective use of technology is a key characteristic of resilient companies and organizations.

Many analysts believe that IT trends are responsible for pushing and reshaping changes in the economy. In the process, it has become clear that pioneers must necessarily also be technology leaders. Due to the rapid digitalization push, technology has become an essential element of global market leadership.

Companies have also learned that pioneers do not wait for the "new normal" but shape it themselves. Big changes require courageous leadership – and the prioritization of technology. It's not just about continuing to run the business but also about breaking down conventions and creating a new vision for the future.

A new future lies ahead - one that is different from anything that has gone before. People are ready for something new. And it is time for businesses to join them.

BIG PICTURE

THAT'S THE *SPIRIT!*

Rolls Royce aircraft 'Spirit of Innovation' claimed three new world records (still to be officially verified by the FAI). The all-electric aircraft reached a top speed of 555.9 km/h (345.4 mph) over 3 kilometres, 532.1km/h (330 mph) over 15 kilometres and climbed to 3000 metres in 202 seconds. ◉

THE BRIEF
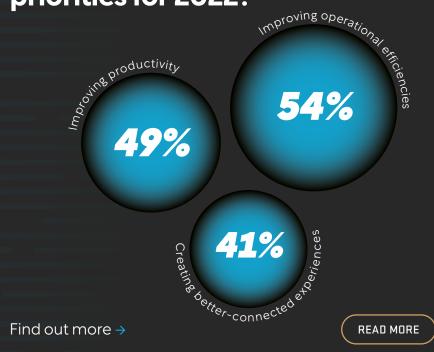
BY THE NUMBERS

What are the top automation priorities for 2022?

Improving operational efficiencies

Improving productivity

54%

49%

41%

Creating better-connected experiences

Find out more →

READ MORE

EDITOR'S CHOICE

» **MULESOFT OUTLINE SEVEN TRENDS TO WATCH IN 2022:** From delivering improved user experiences and innovation at speed, 2022 promises many new emergent trends. Software company Mulesoft, integration and API platform specialists outline these trends.

» **PROGRAMMATIC IN CHINA IS NOW A $50 BILLION A YEAR INDUSTRY:** China is the advertising opportunity of the decade, according to Alex Deats, EVP China, MiQ. Many things in this world have been uncertain, but China's growth has been a sure thing.

» **SIEMENS: FEMALE ENGINEERS ARE CHANGING THE WORLD:** Carl Ennis, UK CEO stresses the need for more women to consider careers in engineering, science and technology

The world's largest vertical farm

In a sleepy part of rural Norfolk, England, work has begun on a £25m farm that it's creators — Fischer Farms — claim will be the largest of its kind in the world.

How big are we talking?

The 25,000sqm site and its four-acre building will produce the same amount of produce as 1,000 acres of conventional British farmland. The climate-controlled building will also be run entirely on renewable energy upon completion in 2022.

How does it work?

No pesticides, herbicides or insecticides are to be used, everything is grown locally to stay fresher for longer with no need to rinse; therefore removing traceability issues and cutting food miles with shorter 'farm to fork' times. Energy-efficient, low-heat LEDs allow the lighting to be placed very close to the tops of plants, enabling tightly-stacked vertical layers. Data analytics tools will optimise automated growing, harvesting and reseeding systems.

↑ GENERATIVE ARTIFICIAL INTELLIGENCE (AI)

Gartner has predicted generative AI has a top tech trend for 2022. This technology uses machine learning methods and Gartner expects generative AI to account for 10% of all data produced, up from less than 1%.

↑ ROLLS ROYCE

Rolls Royce has set three new world records with its stunning all-electric 'Spirit of Innovation' aeroplane. During its record-breaking runs, the 'Spirit of Innovation' recorded a maximum speed of 623 km/h (387.4 mph).

↓ TESLA

Hundreds of people have been locked out of their Tesla vehicles due to an outage in the company's mobile app. 500 users reported an issue spurring CEO, Elon Musk to issue an apology.

↓ NSO GROUP

Apple sued the NSO Group, the Israeli surveillance company marking another setback for the beleaguered firm and the unregulated spyware industry. The lawsuit is the second of its kind, Facebook sued NSO in 2019 for targeting its WhatsApp users.

U P

JAN **2022**

D O W N

TIMELINE

FROM FACEBOOK
TO META

The social media giant, Facebook has changed its name to Meta to reflect the company's growing ambitions beyond social media. Changing its name to Meta is just one step the company has taken to transform its operations and focus on new and innovative technologies in the social media space. Here, we outline how the company transitioned to focus its work on the metaverse.

July 2021

Creating an executive team

In July of this year, Facebook (now Meta) announced it would create a product team to work on the metaverse. This team was part of the company's virtual reality group, Reality Labs. Vishal Shah, the executive in charge of product at Instagram, was named among those joining Facebook's new metaverse group.

May 2019

Introducing Oculus Quest

Back in 2019, when the concept of a metaverse was unknown to many, Facebook released its virtual reality headset developed by Oculus, a division of the company. A year later the company released its Oculus Quest 2 highlighting the company's drive to invest in and offer virtual reality (VR) technology.

Aug 2021

Facebook launches VR remote work app

Just a month after announcing its executive team to work on the metaverse, Facebook launched a test of a new virtual-reality remote work app where users of the company's Oculus Quest 2 headsets can hold meetings as avatar versions of themselves. Facebook's vice president of its Reality Labs group, Andrew Bosworth, said the new Workrooms app gives "a good sense" of how the company envisions elements of the metaverse.

Sep 2021

Facebook, Ray-Ban and smart glasses

With Ray-Ban, Facebook launched its first set of smart glasses, Ray-Ban Stories. These glasses allow users to capture photos and video, share their adventures and listen to music or take phone calls in a new way. CEO, Mark Zuckerberg calls the Ray-Ban Stories "one milestone on the path" to immersive augmented reality (AR) glasses.

Oct 2021

Facebook becomes Meta

Zuckerberg, at the Facebook Connect augmented and virtual reality conference, announced the company's plans to change its name to Meta to reflect the company's ambition to create technology to connect people. The name is based on the term metaverse and looks to describe the company's vision for working and playing in a virtual world.

Building solutions to real-world challenges

Name: Aishwarya Srinivasan
Role: AI & ML Innovation Leader - Business Development
Company: IBM, Data & AI

Aishwarya Srinivasan is the artificial intelligence (AI) and machine learning(ML) Innovation Leader at IBM, Data & AI and currently lives in California. She works cross functionally with the product, data science and technology sales team to research AI use-cases for clients by conducting discovery workshops and building assets to showcase the business value of the IBM Cloud Data & AI suite of products.

Showing great promise from an early age, while at Delhi University, she developed a handwriting character recognition system in MATLAB and used this software to perform research on forensic science and handwriting analysis. The model could estimate the characteristics of the handwriting notes based on inheritance of features like skewness, kurtosis, slant, margin-gap, inter and intra word space. Srinivasan's research was published in the International Journal of Research in Engineering and Science.

The Innovation Leader worked with Tata Consultancy Services to build a real-time video encryption algorithm to stream video over from cloud in collaboration with DirecTV, giving her a good understanding in cloud computing technologies.

By the time she graduated in 2017, Srinivasan had completed 10 internships in data science, AI, and cloud computing (including TCS, International Management Institute, Ernst Young, National Informatics Center, iTech Mission and Microsoft to name a few) along with four research publications.

Srinivasan's experience with solving real-world problems using data science and machine learning ignited her interest to pursue her higher education in the same field. So, she applied for her master's in data science to her dream school – Columbia University. Even though her family was not financially capable to afford her education at the Ivy League, her determination secured

LinkedIn Top Voices for Data Science & AI 2020

a scholarship with a Graduate research assistantship with Prof. Andreas Mueller, who taught Applied Machine Learning at the University.

As Srinivasan states: "If at any point, you feel your goal is unachievable, remind yourself that you have come a long way. Just keep your focus on the goal and be determined, you will eventually figure out a way to get to it."

Srinivasan loves to contribute to the data science community and has founded a nonprofit organisation called Illuminate AI, that aims to provide mentorship, career guidance and educational support around 5000 members, with whom she shares career talks, offers mentorship, offers educational resources, organises technical deep dive learning sessions and interview preparation sessions. She also collaborates with OReilly, deeplearning.ai and Packt to offer free educational resources to the learners.

A powerful influencer in her field, Srinivasan runs a Youtube channel in accordance with Illuminate AI where she hosts weekly sessions like AI guild – highly technical deep dive sessions, Weekend Musings – talking about AI trends and What's Tuning? – quick bites on data science advancements. Her powerful presence on social media platforms like LinkedIn and YouTube saw her spotlighted in the LinkedIn Top Voices of 2020 for Data Science & AI.

Srinivasan is also a board member for nonprofit organisations like AI for Good Foundation, who drive forward technological solutions that measure and advance the UN's Sustainable Development Goals.

Her work with the AI Education Project brings critical and fundamental knowledge about artificial intelligence to communities who are on the front lines of automation and economic disruption. She is working to build courses and educational sessions for high schoolers to dive into the space of data science and get engaged to work on real-world problems.

"*JUST KEEP YOUR FOCUS ON THE GOAL AND BE DETERMINED, YOU WILL EVENTUALLY FIGURE OUT A WAY TO GET TO IT*"

Srinivasan is also an ambassador for the Women in Data Science community, which originated from Stanford University. As an ambassador, she organises events and conducts sessions to spread awareness about opportunities women can attain in science, technology, engineering, and mathematics. **o**

MICHAEL COLIJN

CEO, HELIOX

Founded in 2009, Heliox is the market leader in fast charging systems within public transport, e-trucks, marine, mining and port equipment.

To learn more about the EV company, Technology Magazine speaks to Heliox's Chief Executive Officer, Micheal Colijn.

"WE ARE CONSTANTLY INNOVATING TO BRING SOLUTIONS TO OUR CUSTOMERS"

Q. WHAT IS YOUR DAY-TO-DAY ROLE WITH THE COMPANY?

» As CEO, my day-to-day focus is working across our teams to build the product that shapes the solution our customers require. I personally work closely on customer feedback and inputs to ensure we are developing in a direction that alleviates their pain points. We are constantly innovating to bring solutions to our customers that they don't know they need yet.

Q. WHAT'S THE MOST COMMON PROBLEM YOUR CUSTOMERS APPROACH YOU WITH?

» We have three key customers approaching us with concerns.

The first customers want to migrate to e-fleets but don't know the next steps. The second section of customers has to migrate due to net-zero compliances and require our support to help them understand and build a future-proof system. Finally, we also have customers who want to play a key role in smart energy ecosystems for whom we are building solutions of the future.

The EU has set a target of net-zero emissions by 2050, and more and more customers are wanting to contribute to this goal. As more customers move to electric and pressure on the grid increases, renewing the grid on a decentralised level will be the best way to avoid issues, and customers are equally interested in how this impacts them.

Customers also want to know how they make the best of their investment into electric,

and how they can see business improvements with the move to EV fleets.

Q. HOW DO YOU PREPARE FOR ALL THE UNKNOWN OBSTACLES WHEN RUNNING YOUR BUSINESS?

» 2020 has taught us that we cannot predict the unpredictable, therefore whilst we can mitigate visible obstacles, we don't quite know what we don't know.

However, we do know that our potential obstacles include supply chain disruptions, rapid changes in technology, and situations where teams are restricted from open movement. So we ensure that mitigating these is built into our continued strategies.

For the unknown, we prioritise adaptability and ensure we have an agile outlook across our teams.

Q. WITH ALL THE SUCCESS STORIES AROUND ENTREPRENEURSHIP AND HOW INNOVATIVE PEOPLE HAVE TO BE TO TAKE THE LEAP. HOW DO YOU THINK YOU'VE INNOVATED YOUR SECTOR?

» We started our humble beginnings listening to our public transport customers' pains and figuring out the best solutions along the way, which has always been at the heart of our business. We are now focussing on bringing this to fast-growing sectors in the years to come. We're expecting to see 45x growth for sales and adoption of e-trucks, and we know that this will require the appropriate infrastructure to survive.

In leading the way for rapid charging, we have also kept pace with the different types of vehicles being manufactured and, as such, have built strong relationships with OEMs including VDL and Daimler to prepare for interoperability across the spectrum.

"WE'RE EXPECTING TO SEE 45X GROWTH FOR SALES AND ADOPTION OF E-TRUCKS, AND WE KNOW THAT THIS WILL REQUIRE THE APPROPRIATE INFRASTRUCTURE TO SURVIVE"

We also are V1G and V2G ready which helps us to make sure the vehicles are charging and discharging in a smart way. This type of technology helps set a strong foundation for energy management and the money that drivers and fleet owners can make whilst their vehicles are plugged into the grid.

Q. WHAT PLANS DO YOU HAVE FOR 'YOUR BUSINESS' OVER THE NEXT TWO YEARS?

» For us, we will focus the next two years on keeping apace with the astronomical growth we're seeing in the EV sector. In the next five years,

we're anticipating 45x growth for e-truck sales, 10x growth for e-bus and 16x growth for electric vehicles, meaning we must be prepared to supply the infrastructure to support this increase.

We will ensure that we are continually providing rapid, high power, flexible charging, faster than ever before across bus, truck and passenger vehicle segments.

With an eye on the future, we are working towards playing an active role in providing smart energy management solutions - these will be software platform driven, based on large-scale Vehicle-to-grid technology. o

Confirmed Speakers Include:

Ben Clifford

Global Health, Safety
& Sustainability -
Associate Director

Fidelity International

Sarah Chapman

Global Chief
Sustainability Officer

**Manulife Financial
Corporation**

Roy Cheung

Global Head,
Sustainability Solutions,
Engineering Plastics

Covestro

Mary-Jane Morifi

Chief Corporate and
Sustainability Officer

Tiger Brands Limited

Øistein Jensen

Chief Sustainability
Officer

Odfjell SE

Sandeep Chandna

Chief Sustainability
Officer

Tech Mahindra

valtech_

WELCOME TO THE
HEADLESS REVOLUTION:

FLEXIBILITY FOR SURVIVAL

WRITTEN BY:
ALEX TUCK

———

PRODUCED BY:
TOM VENTURO

Valtech SVP of Technology Strategy, *Mihaela Mazzenga*, explains how headless technology is revolutionising modern enterprise

Headless is part of a modern enterprise ecosystem, anchored by Microservices, APIs, and Cloud-Native SaaS - coined MACH - and together, this open technology standard is poised to drive value to organisations like never before.

It unlocks value in the three pillars of people, process, and nology; modernising teams and ways of working, bringing back the true software engineering spirit of solving business problems with modern tools vs. restrictive suites or over-indexed bespoke solutions; allowing business users to operate critical system features; shaking up processes and allowing for fast iterations and innovation; while also breaking the old ideals of on-prem systems management and capped scalability, powered by the best of what the cloud has to offer.

You could also call this a revolution of Anything as a Service (XaaS), but XaaS is only a part of the picture, even as revolutionary as it is. Headless is the concept that ultimately provides direct value, enabling the expansion of customer experiences through modern architectures. The expectation is that XaaS, or more specifically Software as a Service (SaaS), will continue to grow and mature with products transformed into market-driven, pre-integrated, and commoditised offerings.

> "API-based digital commerce is being rapidly adopted (as) the standard approach for delivery of experiences by the enterprise"

———————————

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FOR DIGITAL COMMERCE, 2021

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The Power of Headless Commerce

Top 3 Benefits and the role of an Order Management System

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Deliver business value—faster

Get the flexibility and control you need to grow and scale

Your business needs are changing rapidly. You need to adapt—quickly. But your data is in siloed, legacy systems that you're afraid to touch. You need to modernize your tech stack, but the problem feels too big.

Not anymore. Enter the age of headless, API-first commerce. Now, you can architect the best solution for your business using the right modules from best-in-class vendors.

A crucial component to your tech stack? Distributed order management. Built for the cloud, **Fluent Order Management** has the feature richness of a traditional order management system (OMS) but with the flexibility of a true SaaS offering.

You need the platform you choose to be resilient. Scalable. Flexible. Here's how Fluent Order Management can help.

Business Benefits:

- Track stock availability in near real-time to reduce overselling and underselling
- Control what you sell in each market, channel or region
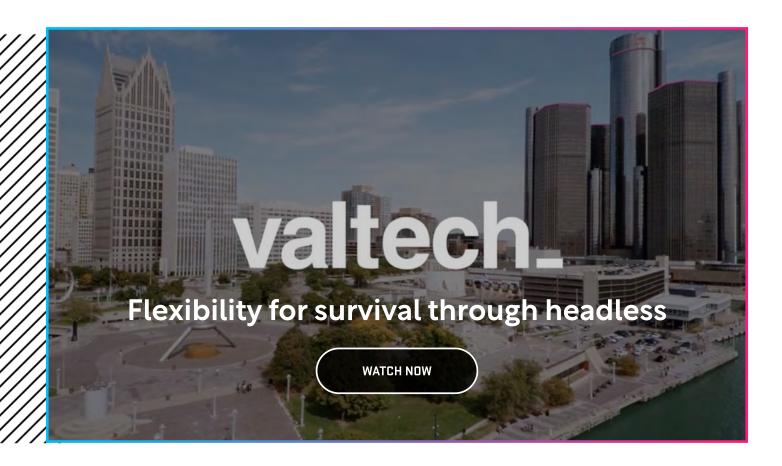- Optimize sourcing and allocation so you can deliver profitably
- Get more control over your fulfillment logic and manage split shipments
- Rollout in phases to reduce change management and business risk

Technology Benefits:

- Get a single view of inventory across all your systems (e.g., ERP, POS, WMS, etc.)
- Use the library of UI components and business rules to configure the UX and workflows to fit your business
- Use the SDKs to create new UI components and rules to extend the platform
- Extend the data model and add custom attributes
- Enhance your existing systems with better order and inventory data

What's more, Fluent provides low code tools so you can roll out faster.

In this current world of commerce, digital agility is critical to success. Your business users demand it. Now, it is no longer hard to achieve when you have **Fluent Order Management**.

Flexibility for survival through headless

WATCH NOW

Microservice-based software breaks apart monolithic systems and enables a focus on smaller components that can be designed, developed, and deployed independently. Long gone are the days of massive regression needs and large-scale risk; microservices localise risk by allowing smaller parts to fail and increase quality.

API-first solutions ensure that you have fundamental access to the entire platform via APIs; not that you've started to expose granular functionality iteratively, but that you've exposed all of the functionality from day one. APIs that are backed by elastic microservices are the gold standard. They allow you to seamlessly interact from anywhere.

Cloud-native SaaS brings microservices and APIs together, built natively in the cloud, utilsing elastic scale so that independent services access and consume resources relative to their footprints and apply updates automatically. You no longer have to wait months for system provisioning. Today it's as easy as clicking a 'free trial' button and you're off and running - infrastructure on demand. Previously, not only did you have to wait for servers to arrive, you also had to wait for specialists to configure them, you had to make sure that they were in compliance with security standards, and lots of other different implications which cloud-native SaaS handles for you.

Headless is an experience delivery approach, fully decoupling your frontend technology from your backend system. Contrary to the name, headless is meant to yield many heads, to open the world of possibilities and activate software everywhere and from any touchpoint. It allows you to reuse your core business logic, to compose the best solution for each channel, and delivers efficiency at scale. It is important to note that not all headless is created equal. The anchoring

Mihaela Mazzenga

TITLE: SVP OF TECHNOLOGY STRATEGY

COMPANY: VALTECH

LOCATION: DETROIT

Mihaela has over 20 years of experience driving digital transformations and architecting best-in-breed SaaS and business-critical software solutions in high availability environments. As an accomplished CTO, she has a strong focus on strategy, product development, and end-to-end technology operations; able to mesh a culture of innovation with driving business value through solutions ranging from behavioural engagement to composable and headless architectures. Mihaela has joined the global team at Valtech, as Senior VP of Technology Strategy, to help push the boundaries of digital revolution and provide technical strategy for value, relationship, and innovation growth. She is a member of the MACH Alliance and a strong advocate for the value that MACH can bring to an organisation.

"Headless is meant to yield many heads, opening a world of possibilities that activates software everywhere and from any touchpoint"

MIHAELA MAZZENGA
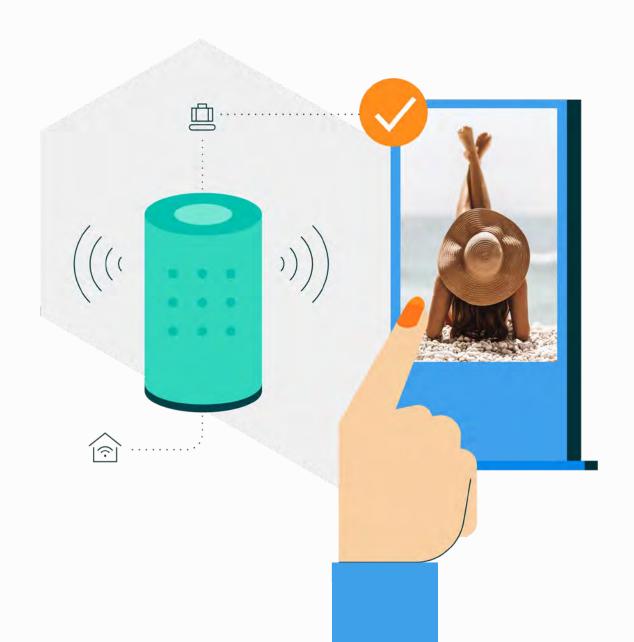SVP OF TECHNOLOGY STRATEGY, VALTECH

EXECUTIVE BIO

commercetools
Next generation commerce

Imagine limitless commerce possibilities

Headless commerce for a MACH based architecture.

It's pretty well understood that today's customers are looking for more personalized, relevant and convenient buying experiences, yet many of the world's most sophisticated enterprises can't deliver on this. The reason they can't deliver is because they have what many big companies have – a traditional eCommerce platform that was built 15 to 20 years ago as a single, integrated application that many refer to as a "monolith."

Now, there's a better way to do commerce – and it starts with a modernization of your architecture. Commerce has to be flexible to create innovative and seamless shopping experiences and meet business and marketing goals. And to get flexible commerce, companies need to go headless.

By going headless, enterprises can improve their customer experiences and roll-out new offerings much faster because they don't have to make time-consuming and complex backend system changes. In short, headless commerce is about freedom from monolithic platforms – the freedom to innovate when, where and how a company wants.

Here's how it works. Headless commerce involves the frontend (the user interface, AKA the "head") of an eCommerce platform being decoupled from the backend (where product information,

customer details and other data is stored). When a commerce platform is headless, APIs can push backend information to any frontend – which can include smartphones and personal computing devices, all the way to digital signages and even voice assistants – for a seamless, omnichannel experience between touchpoints.

As companies embrace this commerce approach, they can enjoy the main benefits headless commerce, namely being: it's fast; it makes it much easier to customize digital commerce experiences to reflect brand experiences; it gives companies the freedom to experiment, such as creating test scenarios for products or marketing campaigns; and it allows companies to quickly adapt to evolving customer needs.

In other words, going headless means that companies can provide top-notch and personalized shopping experiences across every channel and make every moment shoppable. This is modern commerce.
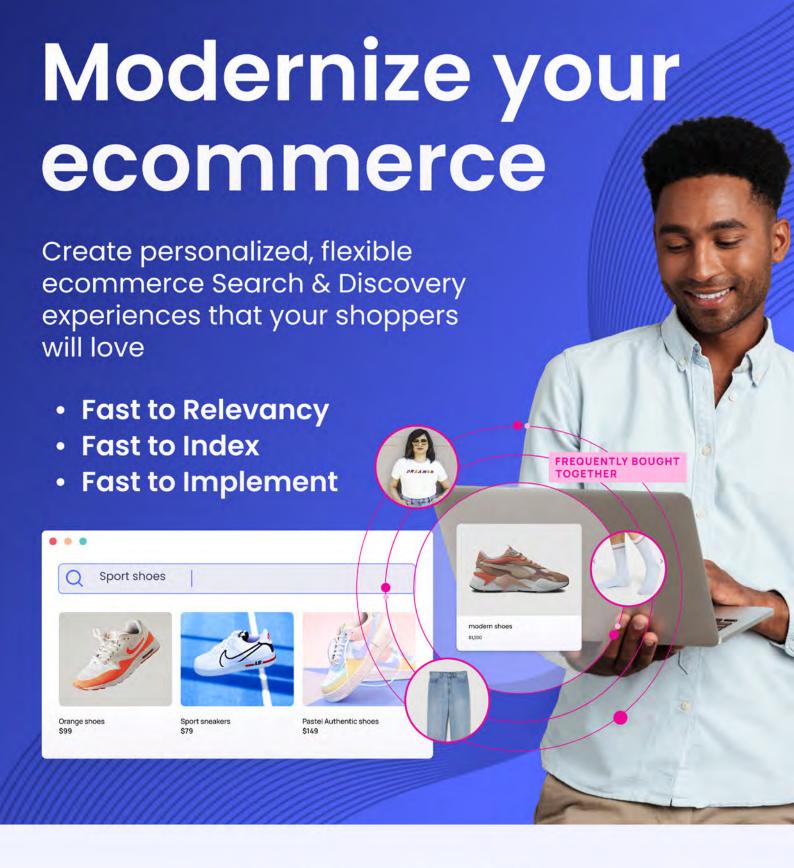
Learn more

technologies - microservices, APIs, and cloud-native SaaS - are critical to the delivery of truly innovative, scalable, and flexible headless solutions where the quality of the composition and orchestration will often dictate success.

The world is changing at a massive pace, and at no other time has it been more important to transform your digital operations. Companies cannot afford to stagnate, they have to implement forward-looking strategies to harness technology for acceleration or risk losing touch with their customers.

With so much specialisation of the technology tools, we continue to push the conversation farther into business enablement via technology - to discuss what's next vs. continuing to discuss the paradigm shift away from vendor-locked black-box solutions. We are now able to unlock enterprise bimodal capabilities, micro frontends, digitalisation, experience architectures, and commerce everywhere via the power of MACH as a whole. The headless revolution has arrived, and will soon be infiltrating all of your digital channels and delivering on the total enterprise experience. It's time for your business to focus on real value generation - at scale - leveraged by composable solutions.

VALTECH

The MACH Alliance

The API economy is now a foregone conclusion. One of the weaknesses of the API economy alone was a lack of a cohesive voice and holistic view of capabilities. Valtech, commercetools, Contentstack, and EPAM being founding members of the MACH Alliance, recognised this gap and realised that the most valuable story is written together, not in isolation. The MACH Alliance was the first attempt at presenting a unified and collective face, creating a collective vision that could guide global adoption.

The MACH Alliance certifies the brightest cloud-native SaaS and headless providers in the world. While headless can be applied to any industry, it has been especially impactful in the ecommerce space, as can also be seen by the heavy amount of investment taking place. The members below provide a great example of a complete end-to-end composable commerce solution:

- **commercetools** *($308.1mn raised through September 2021)* – headless digital commerce
- **Contentstack** *($89mn raised though June 2021)* – headless content management
- **Algolia** *($334.2mn raised through July 2021)* – headless search, discovery, and recommendations
- **Layer0** *(acquired for $55mn in July 2021)* – progressive web app and all-in-one dynamic Jamstack platform for sub-second websites
- **Fluent Commerce** *($28.8mn raised through August 2019)* – headless order management, inventory, availability, and fulfillment
- **Valtech** *(new investment, valuing company at $1.4bn)* – global digital agency focused on business transformation, strategy, and delivering technical solutions that scale

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Gartner notes that companies that leverage composable applications can outpace their competition by 80% regarding new feature implementation, and that cloud-native platforms will provide the foundation for most new digital initiatives by mid-decade.

GARTNER,
TOP STRATEGIC TECHNOLOGY TRENDS FOR 2022

Together, they represent a dream technology stack and solution set; providing end-to-end ecommerce technologies, coupled with strong solutioning and delivery and ready to take on your legacy monolith or bespoke build.

These are all organizations that are comfortable as masters of their domains, and happy to share the spotlight when delivering best-in-breed solutions together. Interest in the alliance continues to grow; from just five members to 30 as of June 2021, along with an expanding ambassador program hosting top technology executives.

The Alliance's mission is to future-proof enterprise technology and to propel current and future digital experiences with open and connected enterprise tech. Collectively

"One of the weaknesses of the API economy alone was a lack of a cohesive voice and holistic view of capabilities"

MIHAELA MAZZENGA
SVP OF TECHNOLOGY STRATEGY, VALTECH

their voice represents the next generation of technology and business. The ultimate goal is global knowledge sharing and education of these value-driven solutions. One day, everyone will know what MACH is, and their mission will be complete.

> # "Never has it actually been easier to let go of the past and to innovate on something new"

MIHAELA MAZZENGA
SVP OF TECHNOLOGY STRATEGY, VALTECH

Everybody embraces "modern technology," but many vendors take liberties with its definition (most commonly to align with what they currently offer). The MACH Alliance vendors offer a concise definition and zealously enforce it. They're the bouncers controlling the velvet rope at the entrance of the Coolest Tech in Town Club. They boldly proclaim to carry the flag of a new order in enterprise experience tech. And the wind is at their backs. They're starting fresh — without the anchor of legacy products and customers. They're not corporate monoliths. They're more akin to corporate two-pizza teams operating as a loosely coupled ecosystem that can be integrated together. The debate over the MACH Alliance's policies is vigorous — especially the point that only companies can be MACH Alliance certified. Why? Because vendors' products need to conform to the criteria. The MACH Alliance stamp simplifies things for tech buyers and complicates things for vendors. What else can everybody agree on? That taking friction out of a buyer's journey is a good thing.

JOE CICMAN,
SENIOR ANALYST, FORRESTER - JULY 2021

WHY GO HEADLESS?

IMPROVED CUSTOMER EXPERIENCE	51%
ABILITY TO INNOVATE	49%
BUILD NEW FUNCTIONALITY FASTER	40%
IMPROVED EMPLOYEE EXPERIENCE	38%

CONTENTSTACK,
HEADLESS CMS SURVEY

Flexibility for survival

These solutions really require a different mindset, one with flexibility at its core, and being comfortable working in the distributed cloud. All end-users have begun to expect a personalised, seamless omni-channel experience within milliseconds on every device and in every online transaction. Forward-thinking companies will ditch outdated platforms for headless tech stacks that allow them to select best of breed technologies for each layer in the stack. This composable approach provides businesses the ability to innovate quickly based on metrics and customer feedback, be flexible as changes are required due to logistics challenges and provide a future-proof, scalable platform.

VALTECH

Valtech ideates modern software solutions (including headless) while accelerating transformation initiatives for clients. This takes intimate knowledge about the clients' business domains, best practices in technology and commerce, and nurturing meaningful relationships with partners. Valtech sees it as their responsibility to bring the headless dream to life through these carefully crafted solutions. And it's not just about the technology, it's also about the people and process. Valtech's responsibility is not only to design and build the best solutions, but also to advise and craft the strategies that unlock value faster, so businesses can deliver the best experiences to their customers at record speed. Valtech understands that each client is unique and so are their technological landscapes. Different challenges require different solutions, which is where vendors like Contenstack, commercetools, Layer0, Algolia and Fluent Commerce, amongst others, come into play.

CONTENTSTACK

Contentstack headless CMS frees marketers and developers to work in parallel, instead of being locked into a cycle of interdependency. This MACH platform was built to handle enterprise-scale content needs with user-first design. Data, content, and logic can be shared across channels - whether classic ones like a website or app, or more innovative, like a VR experience or an audio-visual in-store display - ensuring businesses

can maintain a consistent and always up-to-date content ecosystem even as their digital capabilities evolve.

COMMERCETOOLS

Modern commerce that's at the forefront of innovation — ready for today, tomorrow, and beyond. Our headless commerce solution gives you far more agility and speed to connect to any touchpoint you want   now, as well as touchpoints developed in the future. We are challenging and changing the world of enterprise commerce software. By enabling brands to cross the Commerce Possibilities Chasm (TM), every new communications channel becomes a commerce possibility - from in-car, video content and A/R, voice, and IoT-enabled machines, to the devices of the future that we can only now imagine.

LAYER0

Layer0's mission is to make the Web instant and simple. Layer0 is the first Edge solution that streamlines development workflows by integrating edge logic into application code, and offers sub-second page loads by extending the edge all the way to the browser. For businesses, sub-second websites deliver real results. Leading companies, such as Shoe Carnival, Kate Spade, and Universal Standard have boosted website traffic, conversions, and revenue. For builders, the Layer0 platform offers a suite of caching, productivity, and observability tools that enable teams to release up to twice as fast.

ALGOLIA

Businesses are turning to Algolia's Search and Discovery platform to modernize their online user experience with a composable approach, allowing companies to quickly transform their sites and maximize ROI with a search plugin powered by AI. Algolia powered experiences enhance engagement, increase conversion rates, and enrich lifetime value to generate profitable growth. More than 10,000 companies including Under Armour, Lacoste, Birchbox, Stripe, Slack, Medium, and Zendesk rely on Algolia to manage over 1.5 trillion search queries a year.
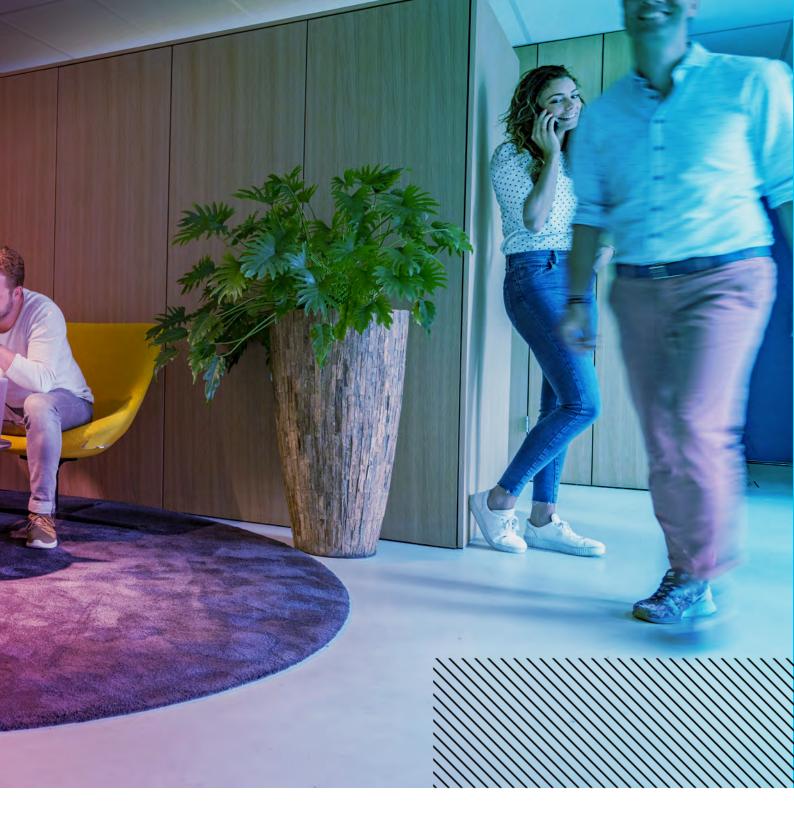
FLUENT COMMERCE

Fluent Commerce is focused on distributed order management and offers a highly flexible, extensible platform. Fluent Order Management supports agility so you can react quickly as market conditions change and includes the essential components for unified, headless commerce. Fluent Order Management allows you to track stock availability in near real-time, provides you with a single view of inventory to reduce overselling and underselling, the ability to sync inventory data across all systems, and optimization of order sourcing and allocation—by proximity, throughput, aging, markdowns, and more. Fluent Commerce works with global and regional brands such as JD Sports, L'Oréal, GrandVision, Aldo, Ted Baker and Marks & Spencer.

KEY PARTNERSHIPS

Never has it actually been easier to let go of the past and to innovate on something new. Not only can you break down the walls of all-in-one systems, you get to leverage the best tools on the market to build your next software solution and reuse them across multiple digital channels. What this means is that our business logic can literally run from anywhere at any time. One of the core software engineering concepts is reuse, and headless delivers reuse at its best.

Our world is exponentially more distributed and specialised, and of course the cloud had a massive part to play in that adoption. Now, headless and composable applications provide the perfect hybrid to bring all of us together and to focus on solving the real business problems. ○

Insights To Automation:
SHOULD BUSINESSES CLOSE THE LOOP?

WRITTEN BY: **ALEX TUCK**

A continuous cycle of insights to automation is the big trend in SaaS, but what are the pitfalls of following the crowd?

The partnership between ServiceNow and Celonis underlines a market trend plotted by acquisitions such as ProcessGold by UiPath, Signavio by SAP, myInvenio by IBM, and Lana Labs by Appian, as well as partnerships like ABBYY Timeline and Blue Prism. But what do these moves tell us about the trend, according to the leading research and advisory company, Forrester, of 'closing the loop from insights to integration'?

Speaking on the partnership, Forrester asks if competitors to ServiceNow in the automation platform market will shy away from partnering with Celonis based on the depth of the relationship, and questions if the partnership is "a precursor to an acquisition", like many before it?

Issues with closing the loop

According to Forrester, "organisations run the risk of tying process optimisation to automation and, even more concerning, to a particular vendor's automation solution."

Rob Koplowitz, VP Principal Analyst at Forrester, says that their data indicates that 76% of process optimisation efforts are in service of driving some form of end-to-end automation. As Koplowitz states, "including relevant stakeholders like customer experience professionals, governance, risk and compliance pros, etc. could provide critical insight as to when automation is not the right approach."

In Koplowitz's mind, there's two schools of thought at play: "By creating a tighter link

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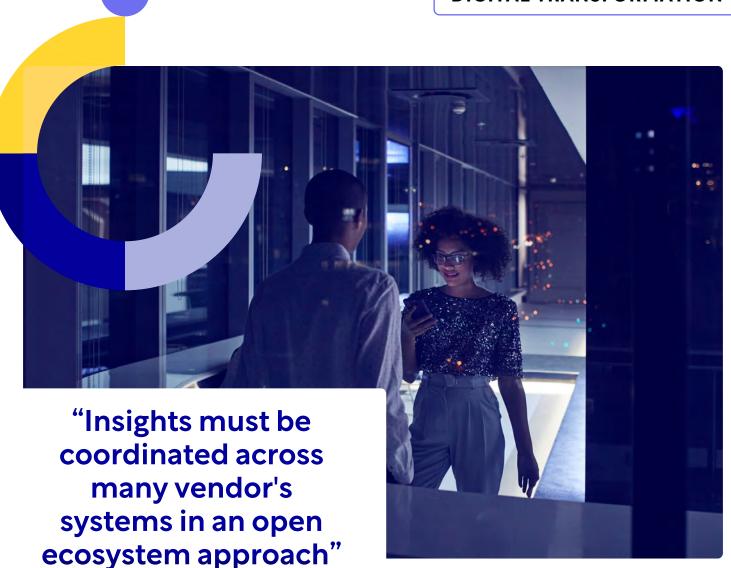Barcelona

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"Insights must be coordinated across many vendor's systems in an open ecosystem approach"

BRUCE MAZZA
SENIOR VICE PRESIDENT
OF TECHNOLOGY ALLIANCES
BLUE PRISM

between insight through tools like process and task mining, re-engineering through modeling and documentation and execution through tools like DPA, RPA and low-code, we can streamline insight to automation execution and drive greater agility".

Koplowitz believes this goal should be considered alongside a parallel approach that overly separates process optimisation from a prescribed automation approach, saying "if a vendor provides customers with a vertical stack, it's likely that their automation tools will be the solution. If you sell hammers, everything looks like a nail."

Tying process optimisation to automation

Bruce Mazza, Senior Vice President of Technology Alliances, Blue Prism, insists that it is all about balance, saying: "The best outcomes are possible when organisations find balance between automating existing processes, process re-engineering and optimisation across people, process, and digital workers."

He added: "Tying process optimisation to automation is important to increase business outcomes including speed, efficiency, cost, and risk reduction. Insight starts by finding hidden bottlenecks and compliance risks at the system level and uncovering user behavior. Technologies such as process and task mining help democratize insights and baseline the 'as-is' process in complex organisations. These

insights help bring process excellence business analysts and automation CoEs together to solve problems."

According to Mazza, "smart enterprises are using these insights to prioritize which processes are best to optimise and automate, then monitor and optimize the end-to-end performance to respond in real-time to remediate new bottlenecks. Without deeper insights, the wrong process variations may be automated, or rework may be required."

Mazza goes on to add that "insights must be coordinated across many vendor's systems in an open ecosystem approach including RPA, BPM, systems of record and engagement, and legacy systems. If the insights are limited to only a few systems, or can't feed the wide array of intelligent automation tools companies use, the business outcomes will be limited.".

Malcolm Ross –VP, Product Strategy & Deputy CTO at Appian, uses a real-world analogy to describe the process problem:

"Take a checkout queue at a traditional retail store as a sample process problem: if the queues are too long when a new product launches or during the holiday busy season, there are a number of ways to mitigate this, such as hiring more clerks, distributing checkouts across the store, or varying the product release days. These are all solutions achieved through process optimisation.

> ## "If a vendor provides customers with a vertical stack, it's likely that their automation tools will be the solution"
>
> **ROB KOPLOWITZ**
> VP PRINCIPAL ANALYST, FORRESTER

"But, treating this solely as a process problem can prevent sight of the bigger picture and opportunity to change operations or even the business model. Instead of being a process problem, the queue is really a customer experience issue and it could lead to poor customer satisfaction if the wait time is too long. Another way to solve it would be to eliminate the checkout que altogether and instead, enable staff with mobile devices and distribute them throughout the store to serve customers," he added.

Analysis and constant review vital to unlocking benefits

Russell Lawrie, commercial director at EAS, a consultancy specialising in robotic automation processes and a UiPath Partner, believes that fully understanding the process and pain points is vital in looking at automation:

"Too often automation is identified as an answer to a particular process or issue without considering the practical and financial improvements of automation across the whole business," he said.

Echoing Blue Prism, Lawrie says that organisations should "look at the people and ask what their tasks and roles are; learn what processes are undertaken and the issues they present; and know what the print volume is because paper is intrinsic to how a business operates."

He further added that businesses should "then analyse other aspects such as what applications are being used, time being taken on particular tasks and even the volume of keystrokes required to carry out those tasks. Having this knowledge will show where automation can be of benefit and what solution and software will give the greatest efficiency gains. Don't forget the right training is also vital for those using the system, otherwise value and benefits will soon be lost."

Rob's research focuses on digital process automation as well as artificial intelligence and cognitive computing

Previously, Koplowitz has led IBM's strategy for integrating Watson into the company's collaboration services. He has many years of experience in enterprise software consulting, product marketing, product management, and strategy. He was also a director of product management with Microsoft, where he played a strategic role with Duet, a joint initiative brought to market with SAP. Prior to Microsoft, Rob was a senior director of product marketing with Oracle, where he focused on Oracle's content, collaboration, portal, and business intelligence offerings. He also spent 15 years in consulting working for Lotus/IBM and other global software services firms with a focus on corporate collaboration.

Rob Koplowitz
VP, Principal Analyst, Forrester

"It is not essential for a company to buy into any one vendor's solution entirely"

—

MALCOLM ROSS
VP, PRODUCT STRATEGY & DEPUTY CTO,
APPIAN

and concentrated, to automate business processes based on that particular team's insights. Any bias on the automation team can have major implications to future business, since automation teams tend to automate, implement and forget. As time passes, people move on to other jobs, yet the automation in all its bias remains."

Huff says Kofax are thinking of future consequences, insisting they "must institute

Chris Huff, Chief Strategy Officer at Kofax, a California-based intelligent automation software provider, states bias as a potentially a huge issue: "Executives often call for transformation teams, often small

a continuous process review governance model that minimises early bias from automation efforts while providing oversight and review of automated business processes – so that they evolve as the business and macro environment changes. If not, we risk building modern digital business models today that have the potential to become legacy anchors to the business of the future."

Vendor lock-in undesirable

Richard Rabin, Head of Process Intelligence at ABBYY, believes that organisations today are not necessarily looking for an all-in-one platform that promises to deliver everything for their intelligent automation, he said: "While they may want best-in-breed solutions and the ability to quickly plug them into existing solutions –as well as the convenience of an all-in-one platform, with process insights easily discoverable on the next platform upgrade – what they really want is to use the best solutions on the market without being tied to one vendor. Organisations need to be careful of standardising on an all-in-one automation and process mining solution if it locks them into an inferior solution. In fact, easy interoperability between automation and

mining is better than full integration because it leaves open more options as far as finding the right insights."

Malcolm Ross of Appian added that "using an integrated automation solution is useful to simplify and speed up deployment of an application. But it is not essential for a company to buy into any one vendor's solution entirely, although having one software subscription for all automation needs allows organisations to have more control over the lifecycle of the technology, better security, as well as commitment from the vendor for long term maintenance and compatibility. Many organisations also use Appian with other existing automation solutions, such as RPA, process mining, and AI that we can integrate with easily. ◯

"We risk building modern digital business models today that have the potential to become legacy anchors"

CHRIS HUFF
CHIEF STRATEGY OFFICER, KOFAX

Discover
Process mining allows objective process discovery at scale

Analyse
Process mining reveals areas of friction and inefficiency

Document
Process documentation drives collaborative consensus

Re-engineer
Process re-engineering applies process excellence

Automate
Automation an be leveraged to routinise processes

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WRITTEN BY: | PRODUCED BY:
ALEX TUCK | **GLEN WHITE**

VODAFONE

Vodafone Technology is in the vanguard of telecommunications. CIDO *Scott Petty* speaks of new commercial opportunities and added social responsibility

As part of a newly created integrated European-wide Technology team, Chief Digital & Information Officer in Vodafone Technology, Scott Petty, spearheads the drive towards Vodafone becoming a New Generation Telco. Petty is championing a common approach to IT and digitalisation, helping to support a global product operating model through standardisation, simplification and leveraging Vodafone's considerable internal talent.

As CIDO, Petty's organisation is responsible for the launch of new products and services, driving increases in velocity and speed and leveraging new development capabilities and platforms to make sure they drive growth.

New Gen Telco
Regarded as a digital enabler for society and becoming more prevalent throughout the COVID-19 pandemic, Vodafone plays a critical role in enabling digital services for consumers, the economy and the public sector.

Petty is proud of the role Vodafone has played in keeping economies connected and functioning well: "In these difficult times, we are taking the opportunity to build platforms that move beyond connectivity. We have the world's leading connectivity services platform for IoT, which connects things to our network. Not just on the Vodafone footprint but everywhere around the world. Equally in Africa, we've built a fantastic financial services capability around M-Pesa, connecting people

and allowing money transfer and transactions for unbanked Africans to leverage those services. Another example is Vodapay in South Africa, which is a partnership with AliPay, where we launched a super app and lifestyle services, as well as financial management for customers on the Vodacom network, so even customers on with other operators can access a new set of lifestyle and digital services that ultimately grows our customer base. So we have a couple of good examples where that platform strategy is working. Our focus now is how do we extend that further into new areas like 5G and to mobile edge computing (MEC) and new services we'll be launching over the future."

Building a high-performing international team
Part of Vodafone's digital enabler strategy, Petty has overseen the shift from a market by market model to a single technology team across Europe - incorporating networks, digital and cybersecurity. In the product development areas, Petty's responsibility is to lead the digital and IT teams; bringing everyone together to build scaled, shared platforms, reusing code and capabilities and ensuring the business moves at pace to launch new services at speed across all of their footprint.

"It's a large team of about 15,000 people across our organisation. We run a mixture of onshore, people in our markets very close to our customers, developing solutions for our

SCOTT PETTY

TITLE: **CDIO**

INDUSTRY: **TELECOMMUNICATIONS**

LOCATION: **NEWBURY, UNITED KINGDOM**

Scott is the Chief Digital & IT Officer at Vodafone Technology, part of a newly integrated European Network and Digital & IT team that is driving Vodafone's transformation to a New Generation Telco and ultimate ambition to become a Technology Communications Company.

Prior to this, Scott was the Chief Technology Officer (CTO) of Vodafone UK, where he was responsible for operational excellence, delivering enhanced business capability and driving innovation to support business growth. Leading key strategic initiatives such as 5G and network evolution, which puts the power of connectivity in customer's hands.

Scott joined Vodafone in 2009 as Business Products and Services Director and was appointed Group Technology Enterprise Products and Services Director in 2012. Here he led product development across connectivity, IoT and converged communications. During this time, Vodafone established itself as a leader in hosted converged communications and IoT.

From 2015, when he was appointed Enterprise Technology Director, Scott played an integral role to the success of Vodafone's Enterprise business by managing all aspects of product development and Enterprise Customer solutions.

customers in markets, and we've built a distributed development model, enabling them to contribute to the whole Vodafone community across Europe and near shore strategy. We opened centres, primarily in Europe, to help us get access to talent and build great services for digital inside the European footprint."

Offshore is also a key strategy according to Petty, with the strategy "leveraging our great centres in India, Egypt and Romania, where we've been investing considerably over a period of time to build shared services that we can offer to all of our markets." he said.

"Our goal is to be 60% insourced, 40% outsourced over the next couple of years"

SCOTT PETTY
CDIO,
VODAFONE

Building a strong and resilient internal core

From being a predominantly outsourced organisation, where Vodafone used external vendors to build most of their capabilities, the business has and continues to move to a much more insourced organisation.

Petty remarks that "our goal is to be 60% insourced, 40% outsourced over the next couple of years, which will enable us to bring in software engineers to build our own platforms and take control of our technology, which will be critical to us as a digital enabler in the economy. We've announced that we'll be

"You'll see a big focus in consumer and business on leveraging AR and VR with new devices coming next year"

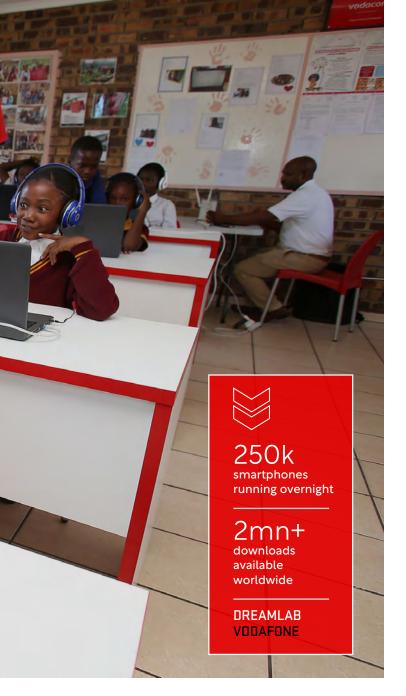**SCOTT PETTY**
CDIO,
VODAFONE

continuing that insourcing strategy. In fact, adding more than 7,000 software engineers to our organisation over the next three years to really make sure that we have the development skills we require to create, scale and build new platforms, which ultimately create new sources of revenue." he said.

Vodafone have invested in very strong internal cyber security capability, with their own defence mechanisms, but also closely collaborate with NCSC and GCHQ in the UK to help their TBS capability.

"We've been early adopters of the technology security requirements, which is a new set of legislation, capabilities and regulations that we need to meet in the industry. GCHQ and NCSC test our defences. TBS is a migration of a capability from the

"We've made big investments in many markets, building applications like Bright Sky, for victims of domestic violence, to give them access to services and capabilities that weren't available before. We've run a number of projects with Imperial College London. We've run scientific research projects with our free DreamLab app, which runs computational analysis on cancer and COVID-19, making use of people's smartphones when they're asleep in bed. It has more than 2 million users around the world." Petty continued.

The opportunities opened up by 5G

In regards to 5G, Petty claims that the industry is still in the early phases. Vodafone has been deploying 'non standalone 5G', which operates near 5G radios on base stations, but still leverages the 4G core network. When it comes to 5G, the primary benefit, according to Petty, is that the speed will increase and enhance other technologies: "The biggest next step is 5G standalone, where we stop using the 4G core network and only use the standalone 5G core network. This launches a whole set of new capabilities, leveraging ultra low latency which is really important for augmented and virtual reality applications. And I think you'll see a big focus in consumer and business on leveraging augmented and virtual reality with new devices coming next year."

5G also offers network slicing - the ability to separate traffic in busy parts of the network to offer higher levels of quality of service or higher levels of security, depending on the application that's required and network's licencing. Petty adds: "We'll create a whole range of new services from speed boosts for consumers to specific applications for smart factories, autonomous vehicles and security services. Another big benefit of 5G is MEC. We've launched a really exciting partnership with AWS that lets customers take workloads

250k
smartphones
running overnight

2mn+
downloads
available
worldwide

DREAMLAB
VODAFONE

financial services industry, called 'Cbest'. We're really pleased with what we're learning from TBS and the interaction that we're having with NCSC to raise the bar on cyber security for not just us, but for all of our customers." Petty said.

The Vodafone Foundation and making a social impact

The Vodafone Foundation is a charity organisation that Vodafone established to invest and bring the organisation's purpose to life. It invests in a number of projects to connect people to services that are in digital poverty; to drive education, both in Africa and in Europe, and to also invest in digital applications that improve society as a whole.

M-PESA provides over 49.7 million people with a safe, secure and affordable way to send and receive money, top-up airtime, make bill payments, receive salaries, get short-term loans and much more.

VODAFONE

Vodafone: Becoming a Next Generation Telco

WATCH NOW

"5G will be a key pillar in industry 4.0 initiatives around smart factories and smart buildings"

SCOTT PETTY
CDIO,
VODAFONE

already running on AWS and pushes them to the edge of our network, into our computer nodes in our technology centres, which dramatically reduces the latency for those applications. We're seeing some great early examples in drone detection, systems, security systems and energy management systems leveraging those capabilities. 5G will be a key pillar in industry 4.0 initiatives around smart factories and smart buildings."

Hyperscale partnerships

Building strong partnerships with the leading hyperscalers such as Google Cloud, Microsoft and AWS is critical for Vodafone,

through which they are jointly able to deliver innovative products and services.

As Petty explains, "that's really allowed us to take a big leap forward in our capabilities. With AWS, we've done a lot of work in building our digital platforms and scalability required to make digital a successful channel. It's already our largest channel, but continuing to have the greatest level of performance is really important. We use Microsoft in a number of areas as well."

Partnerships with traditional vendors, particularly in BSS, are also important in terms of core transactional systems. Big investments have also been made in Google's cloud-native technology suit as the whole ecosystem evolves to a cloud native world.
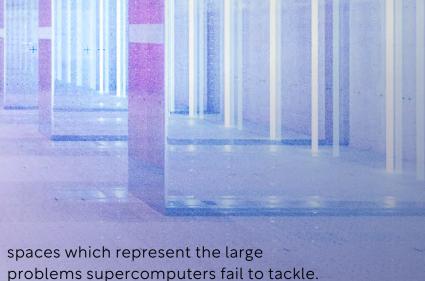
ADAPTING
DATA CENTRES
TO FACILITATE
QUANTUM COMPUTERS

As quantum computing becomes increasingly important to businesses, *Technology Magazine* explores why it is crucial data centres adapt to this technology

WRITTEN BY:
CATHERINE GRAY

Quantum computers have become increasingly important over the past few years. Historically, many have relied on supercomputers to solve problems, but this type of technology now isn't sufficient at solving all problems as technology becomes more complex and multifaceted.

Bridging this gap, quantum computers have the working memory to hold different combinations of information to tackle real-world problems, which supercomputers lack. As well as being faster, quantum computers can create multidimensional

spaces which represent the large problems supercomputers fail to tackle.

"Quantum computers represent a complete paradigm shift from classical computers," said Peter Chapman, CEO and President of IonQ.

"The key difference is that quantum computers harness the properties of quantum mechanics (namely, superposition and entanglement), allowing a new way of programming that is exponentially more powerful than what is possible with binary code. We don't expect them to completely replace classical computers, but to

"Quantum computers represent a complete paradigm shift from classical computers"

PETER CHAPMAN
CEO AND PRESIDENT, IONQ

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"Data centres are the computing backbone of businesses worldwide"

PETER CHAPMAN
CEO AND PRESIDENT, IONQ

alongside classical systems on the specific computational tasks that they can do faster and better than classical systems, much like GPU clusters are used today."

By incorporating infrastructure to host these computers into their facilities, data centre providers will be able to provide customers with better services to improve their businesses.

It is key that data centres evolve to facilitate these computers as businesses can tackle wide-scale and complex problems such as financial risk management, drug

discovery, macroeconomic modelling and molecular modelling with this technology.

Chapman explained: "Data centres are the computing backbone of businesses worldwide, and already, quantum computing is demonstrating how its unique capabilities can transform vital tasks like machine learning."

"Quantum computers' ability to optimise complex networks may indeed become helpful one day in streamlining future data centres," he added.

McKinsey estimated that the global market value of the quantum computing market will reach $1 trillion by 2035. With this huge growth, particularly only a few years ago this technology was considered nascent, businesses in many sectors have started to take advantage of its capabilities.

To remain the "computing backbone" of businesses, data centres need to respond to the changing computational needs of its customers.

Meeting the needs of this new technologies to improve data centre services

As businesses look to adopt new technologies to improve efficiencies, quantum computing is becoming the most beneficial option.

To shed light on the benefits of quantum computing, Andrew Jenkinson, Group CEO of Cybersec Innovation Partners, spoke to Technology Magazine, he said: "Speed and computation capabilities are the main advantages of quantum computing. I believe we will see cuantum computing as a service due to high investment costs and storage requirements."
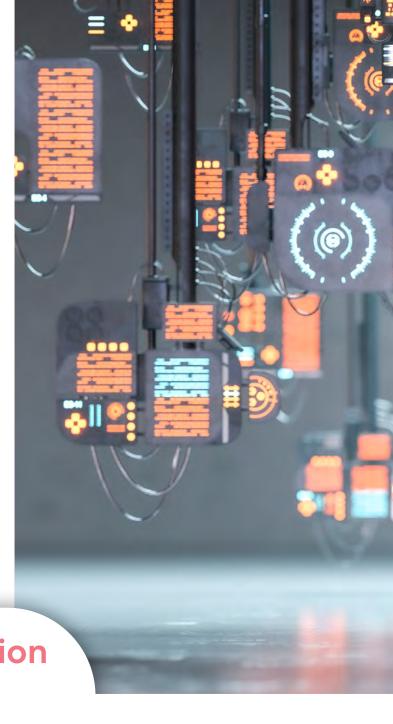
As the need for these computers grows, data centres and colocation services will need to adapt their infrastructure to host such technologies. Something that data centre providers need to consider when looking to implement this infrastructure is the data centre cooling quantum computing requires to keep up with its demand and instability of quantum bits (qubits).

"Speed and computation capabilities are the main advantages of quantum computing"

ANDREW JENKINSON
GROUP CEO,
CYBERSEC INNOVATION PARTNERS

A qubit is the quantum-mechanical analogue of a classical bit. In classical computing, information is encoded in bits whereas in quantum computing information is encoded in qubits.

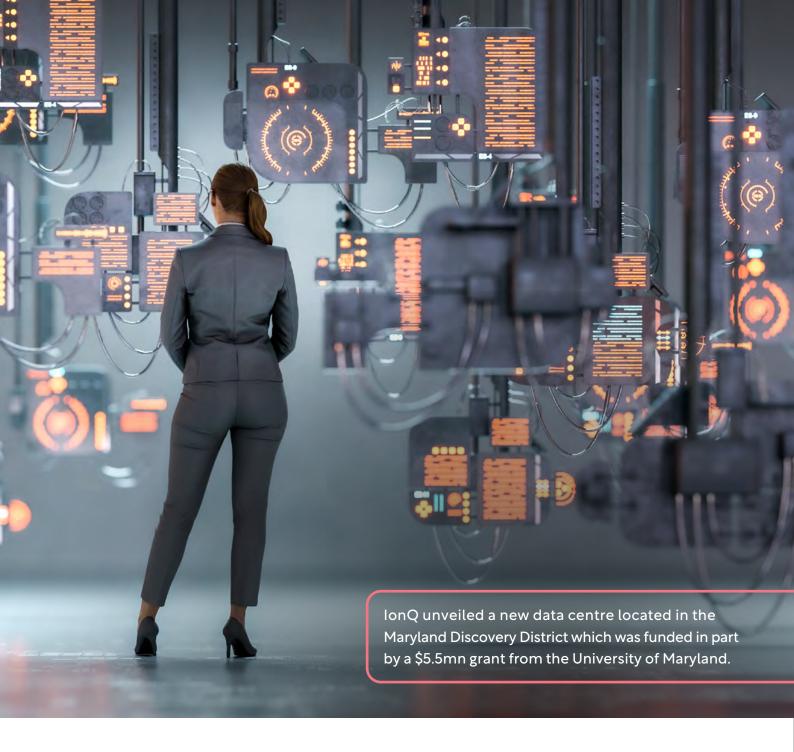Although this is seen as a large blockage in the introduction of quantum computing into data centre facilities, Jenkinson argues "the development of post-quantum cryptography (PQC) will continue to make life easier."

He continued: "The colder temperatures may always remain, however, this may simply mean cold storage data centres in addition to today's ambient temperature environments."

Interestingly, Chapman believes it is a common misconception that all quantum computers need cold temperatures. He explained: "Most data centres today are likely already suitable for quantum computers; what

IonQ unveiled a new data centre located in the Maryland Discovery District which was funded in part by a $5.5mn grant from the University of Maryland.

needs to change are the quantum computers themselves since it will become necessary for quantum computer manufacturers to create rack-mounted devices that fit in naturally with a data centre."

He continued: "This requires shrinking down the size of the quantum computers and networking them together to increase their power."

Remaining competitive with quantum computing infrastructure
Undoubtedly, the introduction of quantum computers at scale in data centre

infrastructures will, and already has started to, reshape the data centre architecture from both a networking and security perspective.

Chapman however stressed that data centres should not dramatically change in order to host these computers, he said: "As the technology matures and the market for these systems' unique abilities grows, data centres are likely to need to support both classical and quantum computing approaches to remain commercially relevant"

Jenkinson also commented on the commercial opportunities hosting quantum computing technologies, however, he added a

Cybersec Innovation Partners' mission is to provide high-level guidance and strategic solutions to its clients in all areas of cyber security and forensic data crime.

"I believe we will see quantum computing as a service due to high investment costs and storage requirements"

ANDREW JENKINSON
GROUP CEO,
CYBERSEC INNOVATION PARTNERS

note of caution to data centre operators. This is particularly significant as the introduction of these computers will also ultimately lead to the appearance of the quantum network and quantum security.

He explained: "Currently, there is much speculation and gossip and hearsay, our main concern is that history is repeating itself in as much that nobody is considering the security side, just going at 100 mph to achieve working quantum computers. That is the same for IBM, Honeywell and others. Cloud computing is inherently unstable and insecure and is what many rely upon. Security is an afterthought."

Adapting data centres to facilitate the new hybrid internet

Not only should data centre providers consider the security issues that come with quantum computing when they look to install the infrastructure to host it, but they should also "begin auditing the quantum computing landscape and identifying potential technological partners and geographies where investment makes the most sense," Chapman explained.

Continuing, he said: "Finance and quantum machine learning are emerging as two of the earliest places where quantum computing will have a revolutionary impact. Beyond that sector, pharmaceuticals, biological research and materials science are key areas to target."

Quantum computing won't replace typical computing, instead, it will run in conjunction with the classical internet to form a new hybrid internet. Although this will pose some key challenges, Chapman urges providers to recognise this technology to stay commercially relevant: "Data centres without a quantum strategy are likely to be behind the curve when quantum begins to propagate throughout the market and becomes table stakes."
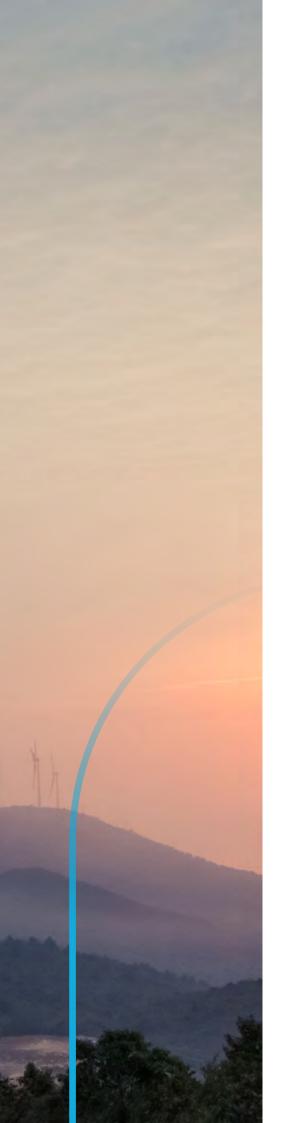
Capgemini uses unique skill set to uphold sustainability and CHANGE THE WORLD

WRITTEN BY: | PRODUCED BY:
JOHN PINCHING | GLEN WHITE

Capgemini boasts an expansive history of delivering information technology and consultation. In a changing world it is using its flexibility to spark an evolution

As a pioneering information technology service provider and essential partner to global companies, Capgemini employs 300,000 people across about 50 countries. Make no mistake, however, sustainability is right at the top of its agenda and it is using all of its experience and unique skills to address climate change.

Dr James Robey is Global Head of Corporate Sustainability at the company and is under no illusions about the scale but also the all-encompassing potential of the sustainability challenge.

He explains: "We have hundreds of offices and data centres which consume large quantities of energy. We also have a large number of people, many of whom have been very mobile in terms of the way we deliver services to clients. So the first focus we had was the reduction of operational impacts within the business.

"As early as 2016, we set science-based targets for Capgemini in terms of reducing our environmental impacts and – alongside that – we've been seizing the opportunity to inspire our clients."Indeed, Capgemini also uses IT consulting and engineering skills to help its clients with their business transformations. It is very clear that the company sees 'sustainability culture' as a massive opportunity, particularly from a decarbonising perspective. Many of its clients have carbon footprints – which can be upto 200 times greater than Capgemini's – and the company views action on climate change among those partners as a major priority.

That's why alongside its operational strand, it has systems in place which are all about helping clients reduce carbon emissions and recognise that it's one of the most fundamental contributions we can all make.

Change is coming

Sustainability is a 'business imperative' throughout Capgemini. "We recognise the dangers associated with runaway climate change," James explains. "And we also recognise that there are positive opportunities that come with being a more sustainable business. We know that the best people want to work for organisations which have a purpose – organisations which are making a positive impact on the world."

"It is essential that we are here to help partners with their own transformations, many of whom need assistance in that journey. From that perspective, sustainability goes far beyond image and much more into the substance of what we can deliver for our clients," he adds.

Amid the international pandemic, the company has also been able to focus on one of the major environmental impacts of the business – travel.

Committed to having a 100% electric fleet by 2030

Committed to 100% renewable electricity by 2025

> **"As early as 2016, we set science-based targets for Capgemini in terms of reducing our environmental impacts and, alongside that, we've been seizing the opportunity to help our clients"**

DR JAMES ROBEY
GLOBAL HEAD OF SUSTAINABILITY, CAPGEMINI

Now that travelling is beginning to return, Capgemini is striving to apply the principles it began pre-COVID; measures that were hastened by lockdown. Consequently, virtual collaboration and efficient remote delivery have gained considerable traction as a new era unfolds.

James says: "The whole industry has had a collective awakening in terms of what is possible. In that sense, I think the pandemic has really accelerated the potential speed of the transition to a low carbon delivery model."
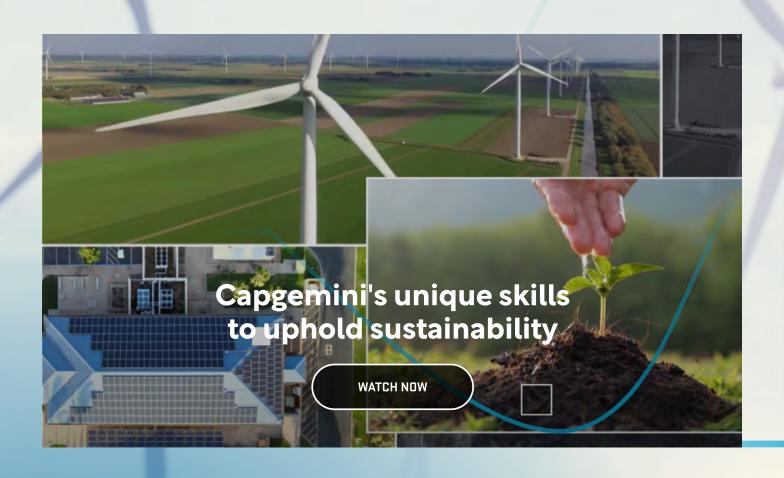
Capgemini has several programmes in place around energy – in data centres and offices – and that includes investment in renewables. It is signed up to RE100 and it is committed to 100% renewable electricity by 2025.

"In some countries that's easier than others," notes James. "Our largest country by far is India, where we have over 150,000 people working, and we've been investing extensively in solar and renewable generation, both onsite and offsite."

In another move, the company has been running an internal global awareness campaign – Capgemini Climate Circles Campaign – in the run up to COP26.
It involves business leaders participating in discussion circles with groups of about 10 people. There are two pivotal topics involved – the first is around the race to
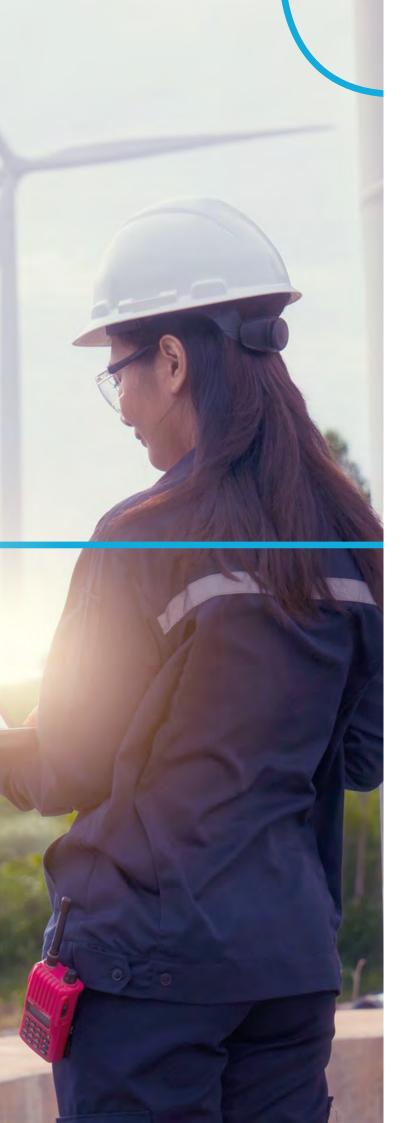
EXECUTIVE BIO

DR JAMES ROBEY

TITLE: GLOBAL HEAD OF ENVIRONMENTAL SUSTAINABILITY

LOCATION: UNITED KINGDOM

» Dr James Robey has led the sustainability agenda at Capgemini since 2008, creating and driving a broad ranging program to reduce the Group's own environmental impacts whilst identifying opportunities to support Capgemini's clients with their own sustainability challenges. In addition, he teaches at a number of leading universities on the topic of Sustainable Business.

Capgemini's unique skills to uphold sustainability

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Capgemini achievements

Capgemini develops framework of 8 priorities and 11 ambitious objectives

Believing in the benefits for all that digital transformation can bring, the company inline with its purpose, Capgmeini intends to be a benchmark for its contributions to society by building on its track-record with the establishment of a framework of priorities and ambitious objectives for ESG.

Capgemini recognised as a leader in tackling climate change

Being one of 200 high-performing companies out of the 12,000 scored, Capgemini has achieved a position on the 'A List' published by CDP. Capgemini has been recognised as a leader in corporate environmental ambition, action and transparency worldwide.

net zero and decarbonisation. The second is around how innovation and technology is applied to the challenges of climate change.

"It's proving a really effective way of engaging many thousands of our people in a conversation around climate change," says James. "The discussions are really getting people to think about how they can make a difference on a personal level, but also at a business level."

Culture club

Ultimately, sustainability is a business challenge and Capgemini has been aware of this for 15 years. James reflects: "I always describe sustainability as a business change problem, possibly the biggest business change problem we've ever seen. Given the size of our business, the level of change is significant, but we have a fantastic level of engagement from our people.

"This is a sustainability programme people want to engage with – they can see why we need to act and they want to be part of that cultural transformation. The biggest aspect around that transformation is the mindset around delivery."

This approach is changing mindsets; encouraging people to develop the art of what can be achieved and what can be delivered remotely. Key to this transformation has been the onboarding of senior leaders and building the right governance structures around the wider journey to carbonisation and the milestones the organisation wants to reach.

Underpinning these ventures is the digital age. So much of the sustainability roadmap has been reliant on companies adapting to the new world; the digitised landscape. While the solution relies on digital, however, it is digital itself that has also been part of the problem, as James recognises.

"When we talk about the digital era or technology, we need to start acknowledging that technology itself has a very significant environmental impact. If you look at the global emissions from the IT sector, it's about 4%. So therefore we have to take responsibility for that impact and recognise the mitigating environmental effects of other sectors.

"From a Capgemini perspective, it's vitally important that we see the responsible use of technology as absolutely critical in terms of achieving sustainable outcomes."

One for all
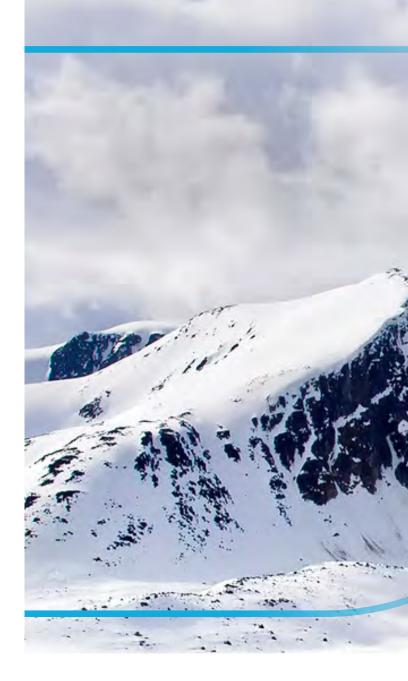
Diversity and inclusion is – alongside environmental sustainability and digital inclusion – one of the three pillars of Capgemini's approach to responsible business practices.

It is all about community outreach, empowering people to be included and, ultimately, transforming the performance of the company.

As well as a global programme, there are also a host of local programmes specifically focused on diversity and inclusion. And, as James is keen to point out, this means diversity in terms of diversity of background and also in terms of diversity of thought.

"We recognise that that diversity of thought brings real creative value to us as an organisation," he says. "Inclusion is clearly critical in terms of getting the best out of people and, in turn, it is the catalyst for being the most sustainable and responsible business we can be."

Major global organisations are recognising that leveraging partnerships is a fundamental element of the sustainability drive. Capgemini is at an advantage in this respect because collaboration has been the foundation stone of its business for decades.
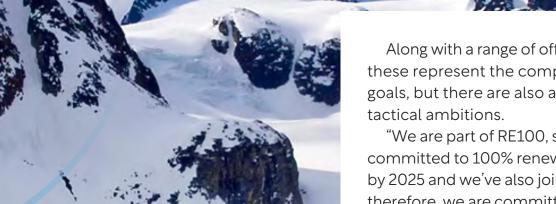
The company has various ecosystem or alliance partners that it works with across the whole technology industry in order to deliver the best solutions to clients, and this terrain has changed very noticeably in recent years.

"Increasingly we are seeing big transformation programmes with our clients," notes James. "We're increasingly seeing the complexity of systems, complexity of platforms and complexity of solutions. The only way you can deliver that is by having those close relationships with partners. We are working with those partners on sustainability as well, trying to figure out how we can most effectively impact the client's needs by bringing together the right combinations or alliances of suppliers."

> **"We know that the best people want to work for organisations which have a purpose — organisations which are making a positive impact on the world"**
>
> DR JAMES ROBEY
> GLOBAL HEAD OF SUSTAINABILITY,
> CAPGEMINI

Future proofing

Capgemini was one of the first in its sector to set science-based targets in 2016. These were aligned with the two degree climate science, and were achieved ten years early — a reduction in emissions across the business of about 30% per person. These were actually achieved before COVID lockdowns at the beginning of 2020.

The achievements prompted the company to reassess the aspirations of the business in the future — it realised that if the strategies were in place and mobilising was encouraged it could set much more ambitious targets across energy, travel, commuting, waste and water by 2020, with a view to include all supply chains by 2030.

Along with a range of offsetting projects, these represent the company's headline goals, but there are also a range of more tactical ambitions.

"We are part of RE100, so we are committed to 100% renewable electricity by 2025 and we've also joined EV100 and, therefore, we are committed to running a 100% electric fleet by 2030. This year, we have also taken the first step of removing all pure petrol and pure diesel vehicles from the company fleet list earlier this year."

During the sustainability process James and Capgemini have, above all else, been inspired by driving change; through the company, through partners, through the wider population and, critically, through individuals.

Having recognised the scale of the sustainability and climate change mountain, the company is determined to begin the climb by instigating positive change. And while the summit seems like a distant dream, the direction has been established and motivations have been calibrated. These constants will remain until the mission accomplished — and that's the reality for Capgemini.

WESTERN TECHNOLOGY'S ROAD TO CHINA

WRITTEN BY: **ALEX TUCK**

*The **Chinese tech market** is riddled with controversies and complexities, but for those who brave the journey, the rewards are infinite*
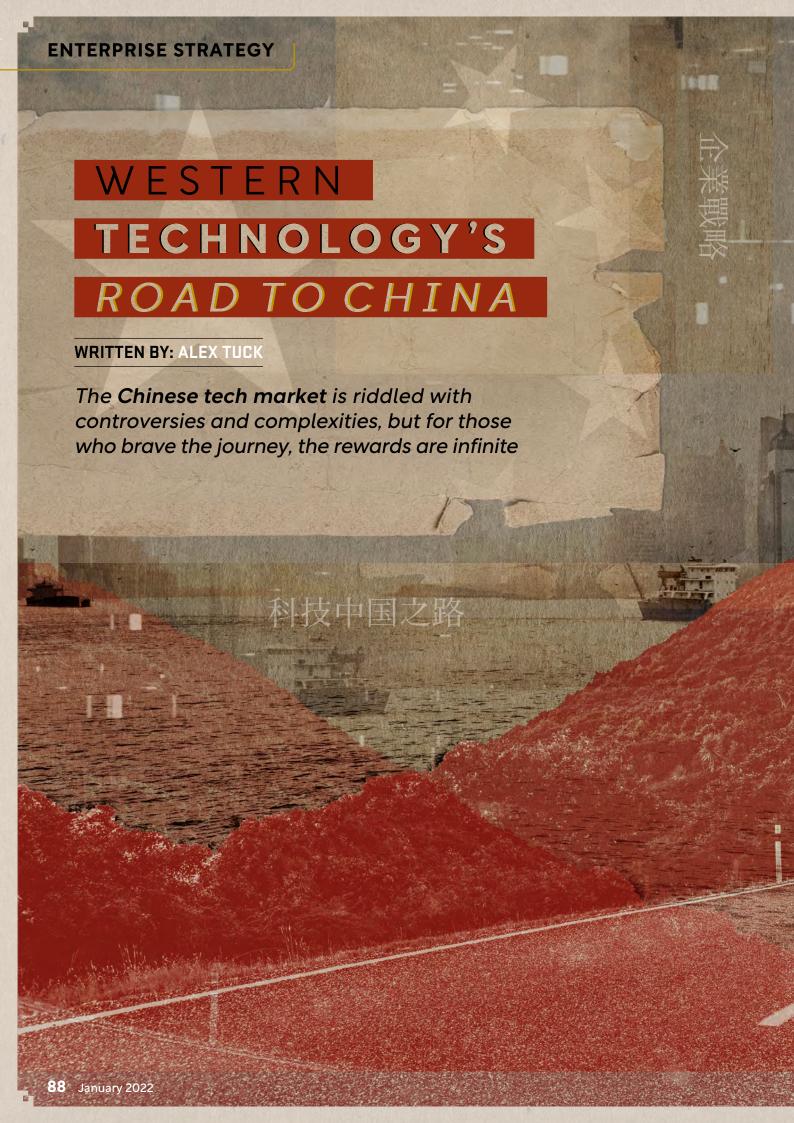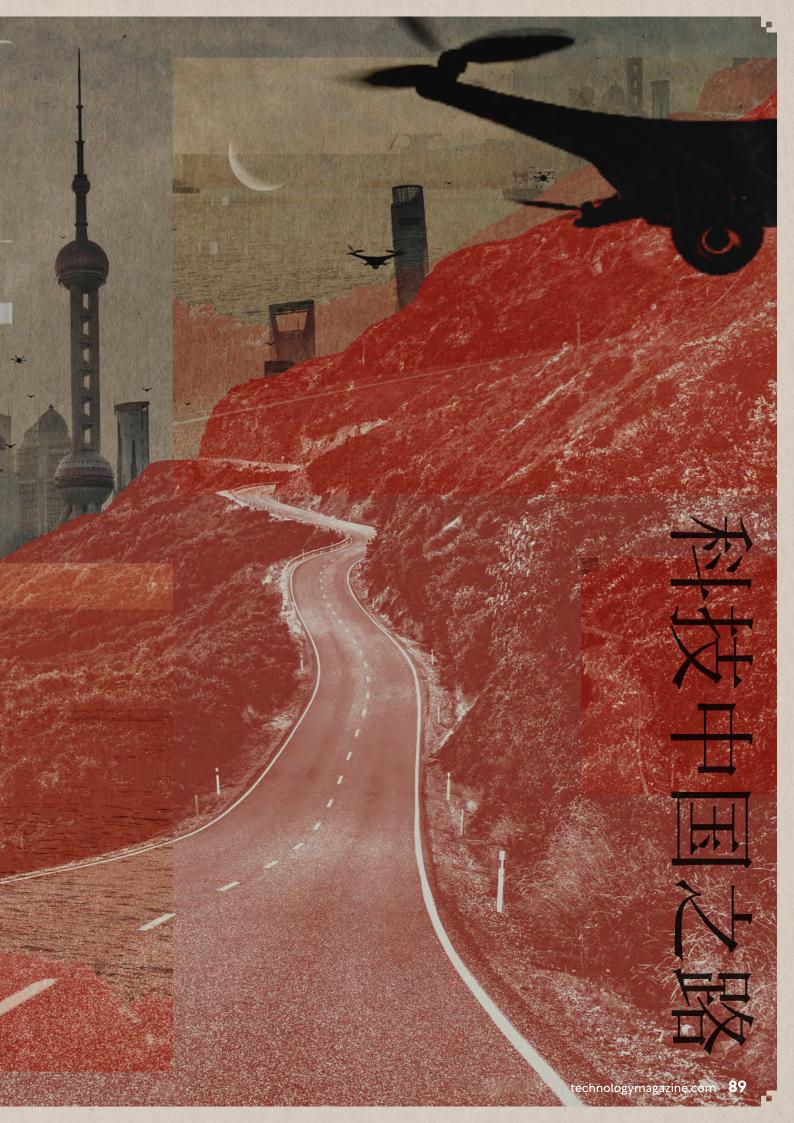
企業戰略

科技中国之路

科技中国之路

There is an old Chinese proverb that says 'a little impatience will spoil great plans.' With US and China trade wars escalating again, and warnings around ethics, rights and intellectual property, should western technology providers steer clear of the Chinese minefield or sail bravely into the dangerous winds that so often accompany this rewarding but fiercely competitive market?

China's rise to the second largest economy in the world is mainly due to foreign direct investment it has received since it started opening its economy, estimated to be around USD $1.6 tn.

Oracle remains in a strong market position but some would argue that it has come at a negative PR cost to the brand. SAP and Alibaba forged a successful partnership in 2018 and SAP continues to make in-roads in the country. Notably there have been recent exits for Yahoo and LinkedIn too, but does this bely a tech market that blossoms quietly in the shadow of Big Tech?

Dr. Edward Tse of Gao Teng Advisory is considered the "Father of management consulting in China" according to Australia's InTheBlack magazine. China Daily has also labelled Dr. Tse as "China's leading management guru". Author of several books including the PwC recommended 'The China Strategy', Tse elaborates on the possibilities of technology, saying that "after well over one decade of innovations that rode on the wireless internet, China has now entered into a new era of technology that is epitomised by new disruptive technologies such as 5G, AI, blockchain and cloud computing."

Tse cites evolving policies and regulations,

as well as demand pattern changes, as driving new tech innovations. In Dr. Tse's words, "new players, including both foreign and local, will emerge along the way, creating even more competition and collaboration across the board. As such, we can expect generations of newer and more competitive players emerging in due course, further underscoring China's role as an epicenter for innovation going forward."

Alex Barton is Managing Director of Intralink China, an international business development consultancy with a 30-year track record of helping western tech firms expand in China, Japan, South Korea and Taiwan. Barton leads Intralink's teams in

> **"CHINA HAS NOW ENTERED INTO A NEW ERA OF TECHNOLOGY"**
>
> ———
>
> **DR. EDWARD TSE**
> GAO TENG ADVISORY

Shanghai, Beijing and Taipei, which help western tech companies expand, do deals and form partnerships in Greater China.

He is first to admit that on one hand, things aren't getting any easier for outsiders: "Beijing is clamping down on international tech and there are many cultural and practical complexities for international tech firms to address if they want to break into China. But the country remains a lucrative market for tech firms that take the right approach," he said.

"China can't realistically shut itself off from the rest of the world, and the country's long-term drive towards technological self-sufficiency – especially in areas such as semiconductors – is actually creating big licensing and supply opportunities for western firms with the right enabling technologies to offer."

Despite some big name exits, Barton insists "the outlook among international firms here is generally optimistic, with most either maintaining or increasing their commitment to the market."

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> **"WHEN PLANNING THE ENTRY, IT IS EQUALLY IMPORTANT TO PLAN HOW YOU WILL EXIT"**

MARK SCHAUB
SENIOR PARTNER,
KING & WOOD MALLESONS

THE 'MADE IN CHINA' POLICY

A fly in the ointment is the 'Made in China 2025' policy, which aims to strengthen homegrown technology and decrease reliance on international tech longer term. Although Barton doesn't see it that way, insisting "the international firms that are in the best position to succeed are those which are licensing technologies to the growth industries identified in the policy."

Barton acknowledges the irony of the short-term situation, saying "many of our overseas tech clients are actually benefiting from this - supplying components and licensing technologies to strengthen Chinese corporations' developments in areas including EVs, biotech, robotics, new materials, renewable energy and machine learning."

Barton remarks that "Chinese investors are typically much more interested in investing in firms that have a clear 'China angle', rather than those who simply have a proven track record overseas."
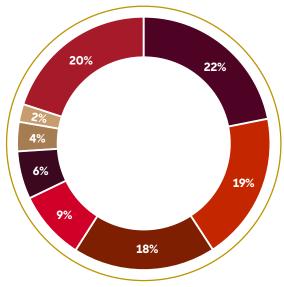
ATTRACTING CHINESE INVESTORS

Mark Schaub, Senior Partner at King & Wood Mallesons, states that "most joint ventures last around 10 years. China is dynamic so it's unlikely that a 20 year old joint venture contract will accurately chart the course of the JV. Tech companies should seek to own as much as possible of their IP; ensure they remain relevant to the China business and know the likely course if it falls apart (such as who will buy out who)."

Market share of major vendors

- 22%
- 19%
- 18%
- 9%
- 6%
- 4%
- 2%
- 20%

Legend:
- YONYOU
- SAP
- ORACLE
- KINGDEE
- INSPUR
- DIGWIN
- INFOR
- OTHERS

According to Schaub, if a younger company wishes to attract Chinese investors, they must consider the following factors:

- Do you have a China story?
- Are there any people in the company with a China background?
- For your product or service, does China provide wind in your sails or headwind?
- Are you willing to establish an entity in China and let the Chinese partner take a stake?

Schaub insists that most tech companies that are looking at China without a China investor "will tend to go for a Wholly Foreign-Owned Enterprise (WFOE). JVs are, however, more popular than they used to be."

Much will depend upon exit or operational intentions, insists Scaub, saying "if you're a Western tech company with a lot of resources

"THE COUNTRY REMAINS A LUCRATIVE MARKET FOR TECH FIRMS THAT TAKE THE RIGHT APPROACH"

ALEX BARTON
MANAGING DIRECTOR,
INTRALINK

and China is an important market, then you are likely to start with a WFOE as it offers more control and is easier to operate.

Partnership is another option, according to Schaub. "In such cases you will give up control and let the China partner run the show. leaving you to concentrate on other markets. There may well be divergence. If you are a Western tech company that faces legal restrictions in respect of investment or operation, then you may need to do a JV to set up in China (but this is rare). When planning the entry, it is equally important to plan how you will exit."
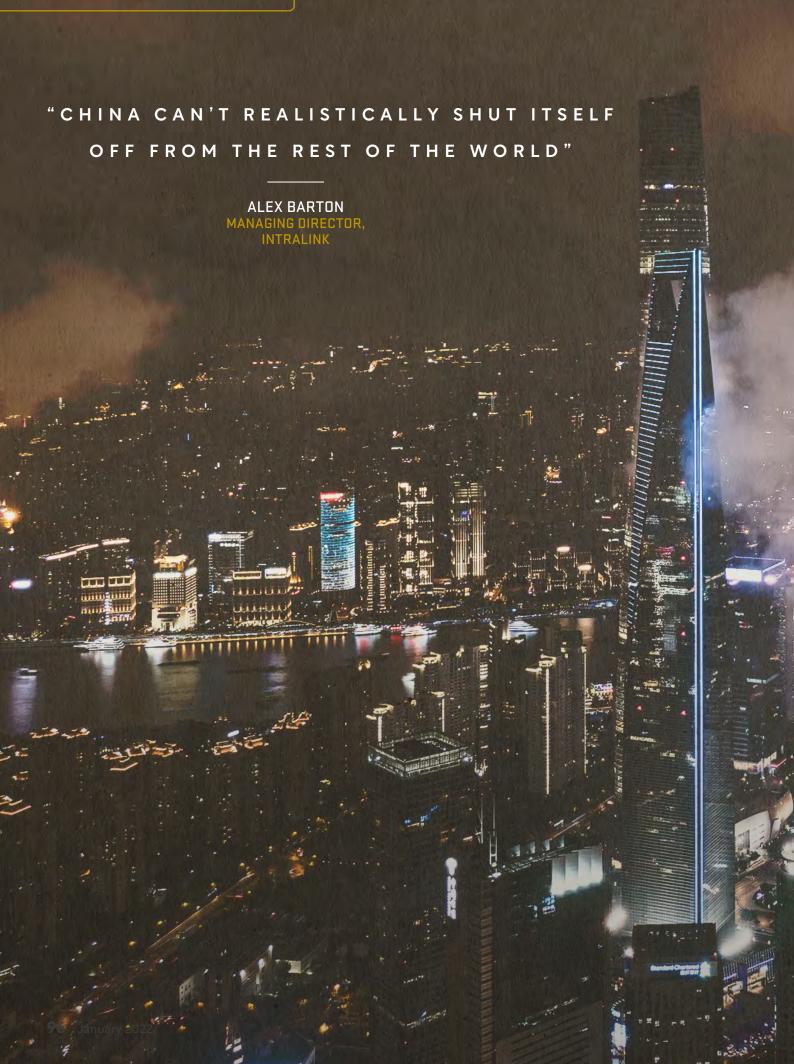
Heeding caution, Schaub says that IP protection is another natural fear for any business operating in the territory, with Schaub adding that China is getting better when it comes to this: "IP litigation is increasingly popular and Chinese companies are also taking action. It's important for western companies to secure rights to their brand (China is first to file jurisdiction for trademarks); create and own the Chinese brand; register patents asap; and for many tech companies, it's worth registering the copyright in their software (not legally required but does make enforcement easier and it is very affordable.)

MAJOR ISSUES FOR TECH FIRMS IN CHINA

China is an extremely fast-paced business environment, where innovation is rapid and local competitors move fast. As Barton says, "If you can't compete on pace, make sure you can compete well on features."

Service expectations are also exceptionally high from Chinese customers,

"CHINA CAN'T REALISTICALLY SHUT ITSELF
OFF FROM THE REST OF THE WORLD"

———

ALEX BARTON
MANAGING DIRECTOR,
INTRALINK

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>> Recognised as one of the world's most innovative law firms, King & Wood Mallesons offers a different perspective to commercial thinking and the client experience. With access to a global platform, a team of over 2900 lawyers in 29 locations around the world works with clients to help them understand local challenges, navigate through regional complexity, and to find commercial solutions that deliver a competitive advantage for their clients.

demanding a fast turnaround on requests, intensive customer support and strict deadlines for project deliverables.

It's about responsiveness, according to Barton: "you need to be geared up to be highly responsive at every stage of the pre-sales, sales and post-sale periods. Ideally, have a presence in the same time zone as your customer, staffed by people who speak the local language."

Undoubtedly, the challenge of local competition is massive too, with Chinese companies often willing to endure short-term losses for long term gains - frequently backed by cheap loans or government subsidies. "This necessitates a long-term view on investment in China, rather than expecting a fast ROI", as Barton sees it.

"Be prepared to subsidise your China business in the short term. And don't jump in before properly assessing the market and validating the competitiveness of your tech solution in the market. China represents a hugely valuable opportunity for international tech firms, but it's essential to know what you're getting into and to be prepared to do what it takes to compete," he continued. ○

FINASTRA

DELIVERING THE FUTURE OF OPEN FINANCE THROUGH TECHNOLOGY

WRITTEN BY:
JOANNA ENGLAND

PRODUCED BY:
TOM VENTURO

Finastra's Chief Information Officer, Russ Soper, reveals how 'Open Finance' benefits it's people, customers and the Finance Industry

Managing the enterprise systems for Finastra's global workforce of 9,000 employees, as well as overseeing the hosting and operations of its client-facing technology, is just part of the daily remit of Russ Soper, the company's CIO. But, with an extensive career in technology in the Financial Services sector, Soper brings the skills and mindset required for such a role.

Soper, who began his role with Finastra three years ago, is no stranger to business-critical operations in the world of banking and finance. He began his career as a developer, moving into trading floor support for the Investment Banking arm of ABN AMRO where he grew his expertise in mission-critical Financial Services technologies.

From there, he progressed through a variety of high-profile technology roles, serving as Americas CIO and later as Global Head of Infrastructure from London, UK, before moving to JPMorgan (JPM) to launch its Critical Infrastructure Operations capability; a program focused on driving "always on" capability for JPM's most critical platforms.

Excited by its vision of the future of Open Finance, he joined Finastra in 2018 as Global Head of IT Operations, before his promotion to CIO in May 2019.

Russ's keen interest in harnessing technology to deliver better outcomes has seen him become a passionate advocate for technology for good. He is a regular speaker on how innovation can be leveraged to go beyond improving efficiency, collaboration and productivity, to progress emotional, physical and social wellbeing.

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Innovating to support Finastra

Lumen Technologies' Ian Cunningham discusses how the company help Finastra modernise its networks and improve its customer service

Lumen Technologies is a multinational technology company that enables companies to capitalise on emerging applications and power the 4th Industrial Revolution. In doing so, the company integrates network assets, cloud connectivity, security solutions and voice and collaboration tools into one platform. This enables businesses to leverage their data and adopt next-generation technologies.

Discussing the company, Ian Cunningham, Vice President EMEA Sales and Customer Success said: "We support financial organisations, manufacturing organisations, and pharmaceutical organisations to name a few, but also we work very closely with leading cloud providers like Amazon, Google and Microsoft."

One key client for Lumen is the financial technology provider, Finastra. With a relationship spanning nearly a decade, Lumen and Finastra have worked closely to understand how each other operates.

Cunningham explained that in the last three years, this relationship with Finastra has developed into a more strategic one. This began with a programme to consolidate Finatra's WAN infrastructure. Supporting Finastra's 'One

Finastra' initiative, Lumen worked to consolidate what had previously been 13 different vendors into one managed WAN infrastructure.

"Finastra has been very open in sharing the strategy and vision for the organisation and the direction in which they're going. We've spent time developing a strategy with them on how Lumen can support that," said Cunningham.
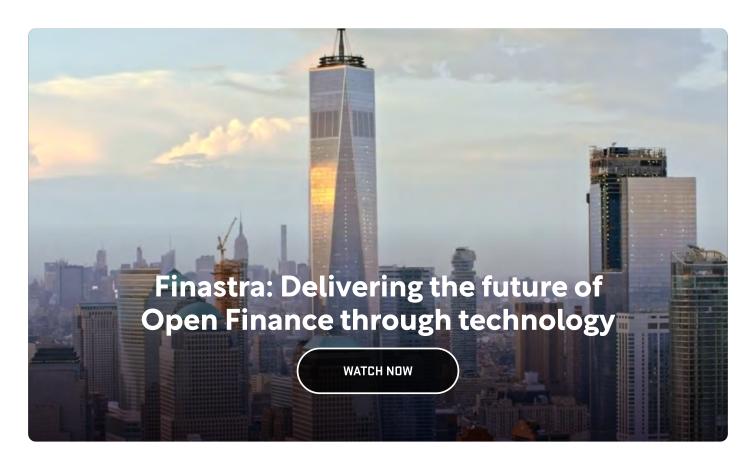
He added: "Building on from their network consolidation, we've worked very closely with Finastra in terms of modernising the contact centre and how they engage with their customers. We've introduced a new solution for them that effectively provides an omnichannel experience for their customers. It has allowed their customers to communicate with them and also engage with them through multi-channels in a way that is suitable to the customer."

On top of this, Lumen has helped put in place a unified communications solution for Finastra. This system was designed pre-COVID and was originally meant to be implemented just as the pandemic struck.

"With Finastra, we started talking about how they were looking to collaborate and move forward. This meant completely adapting the solution that we had designed," Cunningham said. He concluded: "Being adaptable and understanding exactly what our customers need is very important to us as an organisation; it is ultimately at the heart of it. We want to make sure that the success of our customers is paramount."

→ **LEARN MORE**

Finastra: Delivering the future of Open Finance through technology

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Leading with a customer-first technology mindset

Soper describes how his formative career years shaped the technologist he was to become. "I sat alongside traders on the equities, fixed income and ADR desks," he said. "This was key in instilling a sense of urgency and a view on how crucial technology was to business processes – traders simply could not miss a trade. It also provided a very direct perspective on the customer experience. This is something I've carried ever since."

From there, he has continued to focus on the applications of technology within Financial Services, to mitigate business problems and improve the operations and experiences of his broad range of clients; a task, he says, that brings variety and personal reward at Finastra.

Reflecting on his position, he says, "I'm not sure there is an average day, but regardless of the task, our primary focus is always finding ways to improve the customer experience at every step of their journey – whether the customer is a client or a colleague. It's about finding the balance between creating efficiency through streamlined operations, managing risk and compliance, and delivering innovation and better experiences that improve the day-to-day roles of our customers."

The pandemic further accelerated the need to deploy technologies to support a largely remote workforce. "Over the last 18 months, there was an immediate need

> ## "We see our role evolving to become the orchestrator in connecting [Financial Services] players. It's a really exciting time"
>
> **RUSS SOPER**
> CIO, FINASTRA

RUSS SOPER

TITLE: CIO

INDUSTRY: FINANCIAL TECHNOLOGY

LOCATION: UNITED STATES

Russ Soper is Chief Information Officer at Finastra, where he is responsible for hosting and operations of the company's client-facing technology, as well as managing the corporate technologies used by Finastra's global workforce of around 9,000 employees.

He began his career as a developer, moving into trading floor support for the Investment Banking arm of ABN AMRO where he grew his expertise in Financial Services technologies.

From there, he progressed through a variety of technology roles, eventually serving as CIO for the Americas region and later as Global Head of Infrastructure from London, UK, before moving to JPMorgan to launch its Critical Infrastructure Operations capability; a program focused on driving "always on" capability for JPM's most critical platforms.

He joined Finastra in 2018 as Global Head of IT Operations, before his promotion to CIO in May 2019.

Russ is passionate about the intersection of technology and humanity and speaks regularly on how tech can be leveraged to go beyond improving efficiency, collaboration and productivity, to enable emotional, physical and social wellbeing. Outside of technology, he is an active member of the non-profit community, currently serving as Board member for 18loop; a non-profit organization using innovative Virtual Reality technologies to aid pediatric cancer patients. He is also a Board Council member and former Chairman of the Brooklyn Conservatory of Music; a NYC-based non-profit providing music education and music therapy to over 8,000 inner-city children and teenagers.

Russ holds a BSc in Computer Science from the City University of New York, is an avid runner and life-long musician. He resides in Brooklyn, New York with his wife and daughter.

EXECUTIVE BIO

Unlock the Value of Cloud

Cloud financial management is critical to the success of your cloud journey. Do more than just reduce costs – manage your cloud spend to bring teams together and fuel innovation.

Discover how you can master the economics of cloud.

Apptio: Create cost visibility to support Finastra's agility and innovation goals

Mallory Beaudreau, Customer Portfolio Director (EMEA), Apptio, discusses Finastra's migration to the cloud for greater visibility with the help of Apptio

Offering a suite of software platforms for every aspect of IT financial management, Apptio provides actionable insights to connect technology investment decisions for better business outcomes.

Finastra has been using Azure as part of their own digital transformation journey for some time, but in July 2020, the company announced a strategic partnership with Microsoft Azure to accelerate their own roadmap and support the needs of their customers. "They chose Azure because it provided them with flexibility and scale," says Beaudreau.

"Azure had advanced technology solutions that meant Finastra could deliver mission-critical solutions to their own customers. Now, one of the results of that strategic partnership was that in March of 2021, Finastra migrated its entire core platform, called Fusion Phoenix, over to Microsoft Azure. But every migration

does come with its own challenges. For Finastra, the ramp-up in Azure spend created cost, visibility and allocation challenges.

"This is very normal for an organisation that sees a large scale-up in their cloud usage. On one hand, the benefit of cloud usage is that each product team has the flexibility to choose the resources that best suit their workload. But the challenge that comes with that flexibility is there are literally thousands of choices available and the central finance team loses control over which resources those teams will choose. Those choices have significant cost implications for the organisation. And so, waiting for a monthly invoice isn't an option anymore in a cloud-first world," says Beaudreau.

With Finastra struggling to gain that real-time visibility into their spend, making it harder to understand the value of that cloud investment, Finastra looked to Apptio to help make sense of the complexity. "When organisations like Finastra start to spend significantly on cloud, it is normal to turn to a third-party data platform to support their organisations' complexities and also to help you with best practices. So Finastra partnered with Apptio and leveraged its Cloudability platform for cloud cost management. Now, right out of the box, teams at Finastra got access to real-time spend data."

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Revenue (USD)

9,000+
Number of
Employees

2017
Year founded

to support our employees to work from home. Almost 9,000 of our people found themselves in unfamiliar territory overnight. We had to fast-track ways to help them work, collaborate and find a digital balance in this modern, flexible working environment.
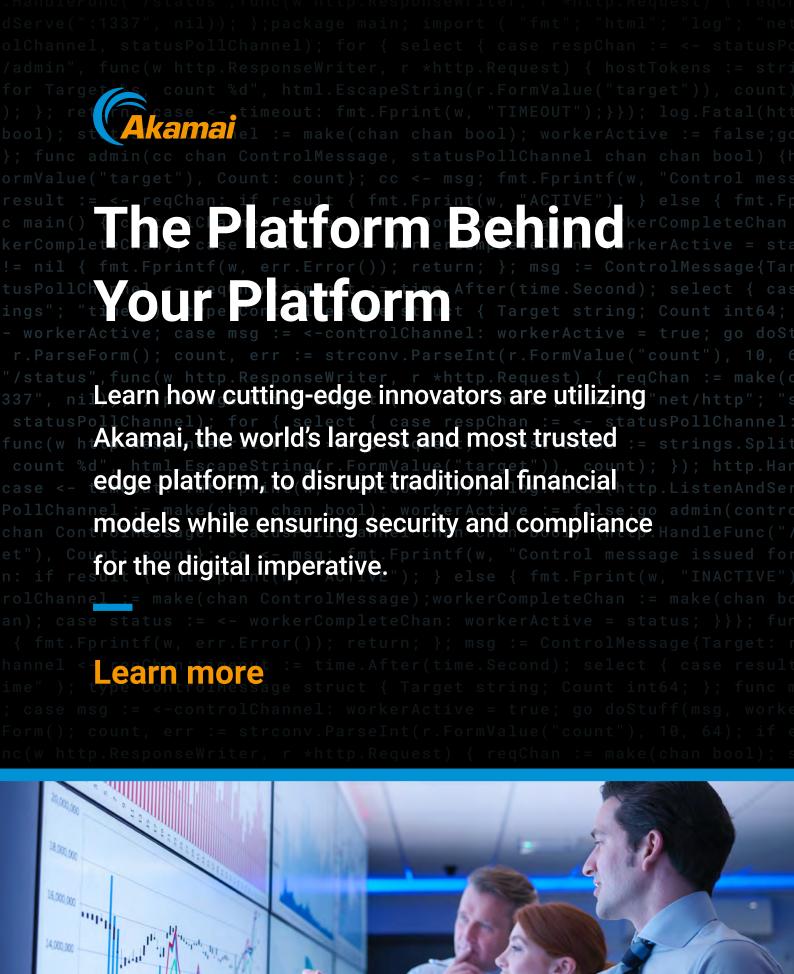
> **"We've moved many of our products to the cloud, improving agility. Automation also plays a key role everywhere these days, it's become table stakes"**

RUSS SOPER
CIO, FINASTRA

That's one of the things I find fascinating about my role at Finastra - the variety and broad scope of projects, technologies and people I work with on a daily basis."

This variety is, in part, driven by an industry that is continually evolving, both in the way consumers, businesses, corporates and other banks engage with financial institutions, and the technology and security considerations to support this evolution. Infrastructure, says Soper, is a crucial element of delivering innovation at scale and pace. "Years ago, the options were relatively straightforward."

"Institutions managed their environments on-premise in their own data centre. The services aspect of the industry evolved, giving rise to a wave of outsourcing deals. And these have now evolved further still; private cloud, public cloud, hybrid models, multi-cloud. Financial Services is just one of the industries that has seen a tremendous shift. And for those who were still on the fence, the pandemic has only accelerated the need for digital transformation."

Akamai

The Platform Behind Your Platform

Learn how cutting-edge innovators are utilizing Akamai, the world's largest and most trusted edge platform, to disrupt traditional financial models while ensuring security and compliance for the digital imperative.

Learn more

The Akamai Intelligent Edge provides security for billions

Keep apps, code, and experiences close and threats far away with the world's largest and most trusted edge platform, from Akamai

Akamai powers and protects life online. The most innovative companies worldwide choose Akamai to secure and deliver their digital experiences — helping people live, work, and play every day. The US-based company has the world's largest and most trusted edge platform, which keeps apps, code, and experiences closer to users and the danger of threats far away. "Our goal is to make life better for billions of people, billions of times a day," said Steve Winterfeld, Advisory CISO at Akamai.

"We protect and deliver world-class digital experiences for financial services in a sustainable way," said Winterfeld. "We support more than 400 financial institutions, including eight of the 10 largest banks in the world."

Akamai brings both depth and breadth to the cyber fight:

- 1,400 networks
- 135 countries
- 800+ Tbps capacity
- 24/7 monitoring
- 1,900 services experts

Winterfeld noted that threat risk tends to follow the money. "We use our deep threat intelligence to enhance our tools to stop, or mitigate these threats.

"Transformation today is built around DevOps and application programming interfaces (APIs), which we protect directly," Winterfeld said. Many Akamai customers are moving more toward APIs. According to the API-focused Akamai State of the Internet (SOTI) report there has been a threefold increase in attacks on APIs in the past year.

"As threats continue to evolve, Akamai helps our customers achieve situational awareness of where their risks are today," said Winterfeld.

Finastra relies on Akamai

Finastra — the world's largest pure-play financial services software company — uses Akamai web application and API security capabilities to protect its customers.

"If someone carries out a direct attack or denial-of-service attack against Finastra, Akamai security solutions step in to mitigate these types of threats so as not to impact its customers."

To find out more, visit www.akamai.com

DID YOU KNOW?

Technology & embedded finance is changing the future

- **Embedding AI everywhere:** This could be applied in numerous daily operational processes as well as product innovation – or help us better obsess about the customer experience.
- **The expanded use of "Open" through cloud and APIs:** The vast majority of innovation occurs outside your company's walls – leveraging the partnership ecosystem will be increasingly important.
- **Overall, technology evolution:** underpins how we deliver continued efficiency, expand our reach into new addressable markets, connect people and improve the way we serve our customers. Essentially, as the world shifts from creating products to solving problems, technology will be at the heart of every decision.

On managing challenge

Russ Soper shares his top three tips on managing challenges within the industry. He says,

- **Do the fundamentals to a high degree of quality:** As technologists, we can sometimes focus on new, exciting tech – but there is no substitute for doing the fundamentals well.

- **Listen, solicit ideas and build consensus.** Your colleagues and the industry will have great input to many issues you're likely to encounter. Broad ideation and consensus-building are force multipliers.
- **It's all about execution:** Get a straightforward plan together, get buy-in on that plan and execute. Don't let the plan become a great-looking deck that didn't deliver the intended value.

Technology designed to accelerate customers' growth

- **Finastra** provides essential core systems that institutions use to run their daily operations.
- **FusionFabric.cloud** enables customers to access these core systems and add new functionality via APIs; they can build themselves or choose from our library and fintech partners. This could be to solve a specific regulatory or reporting requirement, add a new product feature or capability, or a new third party innovation.
- **An agile approach to product development:** At the onset of COVID, the company created a solution in just two weeks to help community banks and community development financial institutions issue the Payment Protection Program in the US, which it offered free to approximately 400 smaller institutions.

"Open is the critical word here – the world of finance has changed and the emphasis is on connectivity, co-innovation and being part of an ecosystem to succeed"

RUSS SOPER
CIO, FINASTRA

The journey to Open Finance

So, how does a technology company stay ahead of the curve in a sector that is innovating and transforming at dramatic speed? The key, Soper believes, is a combination of expertise, innovation and collaborating with partners. Soper is proud of Finastra's vision – that the future of finance is open – and the bold moves that it makes to bring innovation, collaboration and growth to its customers through its technology and its culture.

He says, "Ultimately, we provide a complete range of Financial Services solutions to customers around the world, ranging from Tier 1 multi-national institutions to local community banks and credit unions. Our mission is to unlock the potential of people, businesses and communities by empowering financial institutions and opening up the world of Financial Services. Open is the critical word here – the world of finance has changed and the emphasis is on connectivity, co-innovation and being part of an ecosystem to succeed."

Finastra is the world's largest pure play Financial Services software company with over 8,600 customers and its solutions are used by 90 of the world's top 100 banks. As an entity, it is responsible for 8% of global FX trading, 6% of daily trade finance and 25% of all US wire payments.

"Open Finance is the only way," continues Soper. "95% of innovation is likely happening outside of your company walls. The scale and speed of it means it's impossible to 'own' it all in-house. Think of the time spent developing an app based on machine learning, or a new wealth-management tool. You could spend a year building and testing, and millions branding and launching, or you could collaborate and plug-in or co-develop with a fintech partner. Collaboration is the solution - which means being open. Open platform, open APIs, open standards, open ecosystems – open banking was just the start of the movement and it's exciting to see our mission coming to life," Soper says.

He goes on to give three examples of how Finastra is championing Open Finance:

1. First, through its core systems, which are designed to be enhanced and built upon through open APIs.

2. Secondly, through its open marketplaces – such as ICC TRADECOMM, an SME trade finance marketplace built in partnership with the ICC, designed to solve the SME funding gap by attracting alternative lenders.

3. And finally, through its open developer platform FusionFabric.cloud, which is home to around 200 fintechs and hundreds of APIs... and is growing every day.

Better Digital Workplaces Start with Understanding Your Users

- Gain visibility into the digital employee experience

- Implement automations

- Optimize IT assets

Hybrid work has fundamentally changed the relationship between employees and IT. We used to work at the office, now we work in a thousand offices. For IT, visibility into the true user experience in remote settings is critical for supporting a productive and happy workforce.

Lakeside Software's Digital Experience Cloud, powered by SysTrack, delivers that visibility by taking a more holistic view of remote environments so IT can quickly identify productivity roadblocks, thoroughly troubleshoot issues, optimize setups, and do more to improve digital experiences for remote workers.

When Finastra shifted to a proactive IT model to support a distributed workforce, it identified Lakeside as a partner that could provide rapid insights to prioritize and proactively address the most urgent challenges affecting employees' digital experience.

 "We identified that we needed to invest in a digital experience management solution so we could get that visibility and measure how well IT is doing," said Russ Soper, CIO at Finastra. "We wanted to be able to see when users are having issues without just waiting for employees to phone the service desk. We can't fix what we can't see."

Lakeside's Digital Experience Cloud monitors all the factors that impact end-user experience directly from the digital workplace and then analyzes that data to provide IT with an accurate view into the current state of your end-user computing environment.

Finastra can now intelligently calculate an end-user experience score and view the data it needs to ensure that score is up to the company's standards.
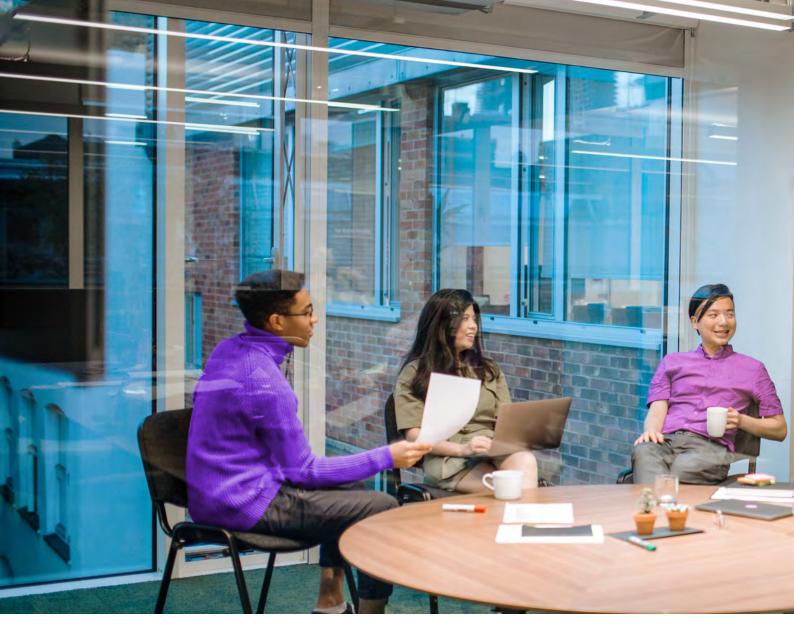
This depth of visibility has enabled the Finastra IT team to design proactive IT processes that ensure an optimal end-user experience and deliver better outcomes for the business. "Lakeside has enabled us to be far more data-driven and proactive in detecting an issue before it affects the user experience," said Soper. "We now see that quickly in a data-driven way, so we can now focus on addressing it before it manifests into an incident."

Learn more

It's moves like these that empower customers, Soper says, and gives them the keys to their own innovation roadmap. "We've moved on from a world where banks own every product or innovation. And as we move towards Banking as a Service and embedded finance, Open Finance will only become increasingly important."
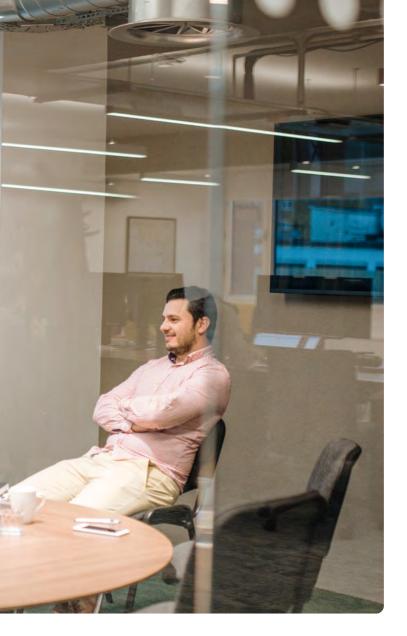
Customer services and digital transformation

The way customers engage today compared to ten years ago has been transformed, and digital is at the heart of it all. From neo-banks, super-apps and hyper personalization to wholesale offerings as-a-Service, the technology underpinning this new world needs to be fast, secure, efficient and highly scalable, says Soper.

Additionally, COVID has sped up digital adoption in multiple ways. Some analysts say cloud adoption was brought forward by five to seven years. Mobility and cloud became increasingly important as people needed accessible Financial Services in a remote world, he points out.

"As an example, when bank branches were closed, people needed to find alternate ways to send money or pay bills. Managing on-premise technical infrastructure also became increasingly challenging during travel bans. Cloud meant you could achieve this from anywhere, whether it was provisioning new capacity, upgrades or deployments."

Indeed, Finastra's own operations have shifted significantly, he explains, "We've moved many of our products to the cloud, improving agility. The pandemic forced us to

approach challenges differently, with digital as the only vehicle. For example, we had to reimagine our project delivery processes, which typically involved in-person meetings and onsite implementations.

After reengineering many of our processes, we were able to deliver 400 implementations already in play at the start of the pandemic, without missing a beat. While there's no substitute for a face-to-face relationship, we've integrated these lessons as we evolve. If you can deliver 99% remotely and you or your customer no longer needs to travel, that adds tremendous flexibility."

He notes that this aspect also cut down Finastra's carbon footprint significantly, which is a key part of the company's ESG mission, alongside social innovation and financial inclusion.

Strategic partnerships built on trust and expertise

With such a large-scale, global operation, Soper agrees that selecting the right partners and vendors to be a part of your ecosystem is key to your success. He describes the value of his relationships with several industry-leading companies that Finastra operates with.

"Microsoft is a key strategic partner for Finastra across a broad spectrum of areas, ranging from our journey to the cloud, to IPA (intelligent process automation), security and the employee experience," says Soper.

He adds, "We're a cloud-first company. Azure provides the scale and geographic reach we need." Finastra's 9k employees also rely heavily on Teams for daily use and Finastra has embraced the full Office365 suite as well as Microsoft's cloud-native Sentinel.

Apptio is another close ally, he says, "If you're running legacy platforms with limited elasticity, or if you haven't institutionalised certain operational rigor, it can be challenging to ensure you're operating as efficiently as possible in the cloud. Cloudability helps us ensure we run the right blend of commitment discounts, elastic workloads and optimise our financial efficiencies in the cloud."

"In Financial Services, trust is essential, and security is absolutely crucial. It's integrated into all of our processes, partnering with industry experts to ensure we maintain pace with best practices. Akamai is one of those key partners," says Soper. "We leverage Akamai's Global Business Intelligent Network with visibility to over 30% of global internet traffic, complementing Finastra's own operations."

Lumen also plays a significant role. The company partnered with Finastra to modernise its network, evolving from single fixed bandwidth circuits to a scalable and resilient SD-WAN architecture designed to be 'always on'. "Lumen partnered with us to flex our capabilities, particularly during the pandemic and as our location strategy evolved.

Reliable and scalable connectivity is absolutely crucial, as it underpins the increasingly interconnected world enabling digital collaboration. We're also modernising our UC&C portfolio, leveraging a cloud-based contact center fully integrated with Microsoft Teams," Soper says.

Finally, empowering Finastra's employees is another area where digitisation has transformed the experience. Lakeside Software has given Finastra the foundation to drive an improved user experience. "I mentioned earlier how COVID created new challenges for people working remotely –

Lakeside's Systrack enables us to be far more data-driven and proactive in detecting an issue before it affects the user experience," says Soper. "This is particularly helpful in modern flexible working environments, whether the employee is in the office, working from home or from a coffee shop."

An inspiring and technology-filled future
The evolution of Financial Services and the speed of change makes the industry incredibly dynamic, and an exciting place to work. For example, the acceleration and opportunities offered by Banking as a Service and embedded finance, which Soper sees as game-changers.

Embedded finance is a movement that sees banking services moving away from traditional channels, to be offered in the right point of context for the user journey. This could be, for example, embedded buy-now-pay-later lending features on a merchant website, right through to embedding wholesale trading capabilities to Corporate Treasurers through agent banks.

"This is a big area for us," Soper says, going on to explain that it relies on cloud and API connectivity.

"Banks can offer their specialties - products or services - 'as-a-Service' to a far wider audience at a far lower cost. They can wholesale to other banks, or provide banking capabilities to the hundreds of fintechs on our platform - we connect those parties together."

He adds, "FusionFabric.cloud connects buyers and sellers, manufacturers and distributors, so we see our role evolving to become the orchestrator in connecting these players. It's a really exciting time."

HARNESSING **AI** TO IMPROVE **SECURITY STRATEGIES**

As the world wakes up to the power of AI, we explore how this technology is perfectly placed to meet the needs of the new security landscape

WRITTEN BY: **CATHERINE GRAY**

With the potential to change how nations navigate security and military issues, artificial intelligence (AI) is now a prominent feature in many strategies around national security.

Although autonomous and intelligent systems have been used in military technology for decades, advances in this technology in the more recent years have marked a turning point for the use of AI and automation.

It may not be a strategic game-changer in isolation, but AI is a technological enabler leading to a conceptual shift in the way governments and military organisations think about navigating military and security strategies.

Undoubtedly, machines cannot replace decision-makers. But now AI has the ability to infer predictions from data which can ultimately accelerate decision making within military operations by providing actionable insights.

As John Cowan, CEO and Co-Founder at EDJX explained: "AI can analyse large datasets in seconds, helping a military team know which strategy is likely to lead to a positive outcome. AI in a military setting can provide insight into anomalies in the field, such as weapons types and to whom they belong, predicting when weapons systems will fail based on the amount they have been used, or developing strategies that will result in positive outcomes during conflict simulations."

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ICC Community Development Solutions is a subsidiary of the International Code Council, and provides software solutions for municipalities and building safety professionals. "Our solutions make it easier to get work done faster for local governments," said Dan Foster, General Manager, ICC Community Development Solutions, speaking from their headquarters in Rochester, New York.

With Laserfiche records management ICC Community Development Solutions is helping local jurisdictions digitize documents and records, giving you the ability to search, retrieve, and share files internally and with the public. And, you can automate paper-based processes to save time and increase efficiency.

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"Military organisations must ensure that AI systems are Utilised as a tool to help make decisions"

JOHN COWAN
CEO AND CO-FOUNDER, EDJX

Harnessing the power of AI in strategy

It is without a doubt that the power of AI is being recognised worldwide, with Boris Johnson's pledge to make the United Kingdom an AI superpower, as well as NATO's Artificial Intelligence Strategy, that encourages the development and use of AI in a responsible manner for defence and security purposes.

"AI will only increase in use in military applications. It can enhance productivity, reduce user workload and risk, and it can think more quickly than humans," Cowan said.

To gain further insight into the importance of AI when composing a security strategy, Technology Magazine spoke to a NATO

Official who explained: "Not everybody has realised that AI will be the backbone of our security in the future. We see an increased digitalisation, the battlespace and the battlefield. We also see an increased value of the importance of this digital backbone to our military forces.

They continued: "This applies both to the operational element of the forces themselves on how the tactics play out,

but also to our wider concentrations on deterrence and defence now. This is looking at how we leverage AI to increase our deterrence and defence and how we respond to applications developed, deployed by biodiversity competitors in order to defend ourselves."

By analysing big data sets AI has the power to provide organisations with situational awareness. Looking at short term applications of AI, this is where the technology can create links between military and security issues to "create a bigger, more comprehensive and more in-depth technical and operational picture of the situation," said the NATO official.

As a result, this acts as an assistive tool for decision-makers in providing certain courses of action, as well as the potential outcomes these decisions could create.

"AI technologies often increase efficiency, increase situational awareness, enable better decision-making and increase the pace of operation"

NATO OFFICIAL

AI as an enabler for faster decision-making
AI can ultimately improve safety challenges, as Cowan outlines: "Service members and first responders make quick decisions for mission success and for the safety and security of others who depend on those decisions. These individuals operate under intermittent connectivity, weighty

The Artificial Intelligence in the military market is projected to reach **USD 11.6** billion by **2025** and machine learning is expected to lead the market from **2020** to **2025**.

and complex gear, and with limited time to assess an environment before acting. The proliferation of sensors, unnamed vehicles, command posts, and mobile-enabled ground troops has resulted in a battlespace that is increasingly complex and sophisticated."

"AI and edge computing enable data processing at the tactical edge by decentralising decision-making changes, bringing the powers of data to the field,

providing better information for military first responders," he added.

Not only does AI improve safety by decentralising decision-making, but AI-powered technology at the disposal of military officials can replace humans where appropriate.

"Instead of putting humans at risk during search and rescue missions, the drone is the eyes and ears for what is happening on the ground," Cowan explained.

"Self-driving cars and robots can be powered by AI and improve operations by replacing humans in dangerous situations"

JOHN COWAN
CEO AND CO-FOUNDER, EDJX
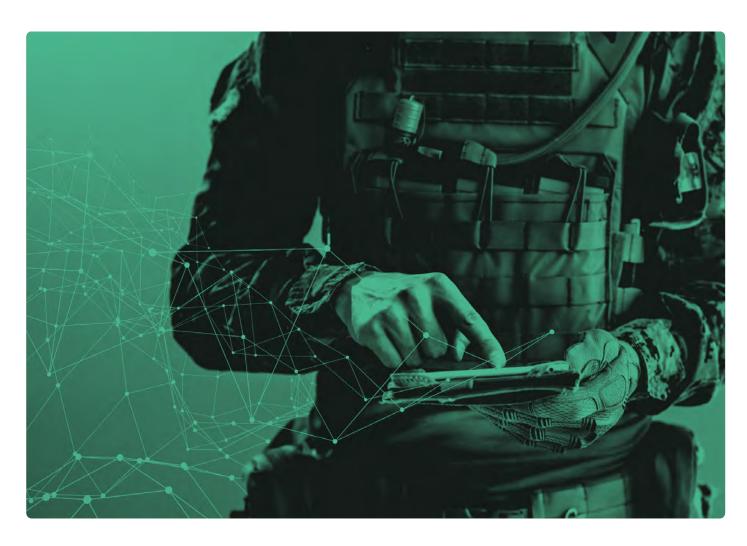
Adapting security strategies to meet the need of the new military landscape

Typically, military operations have focused on means of deterrents such as aircraft and missiles. However, with the rise of new technology, this has shifted. Cowan outlined the driver for this change: " Now, because of Industry 4.0 and the networked world that we're living in, it's very much about bringing the network and the operations together."

In the era of this technological revolution, it comes as no surprise that the battlefield has changed. Similarly to many industries, security and military officials are having to respond to new types of challenges, a key one being cyber threats.

"We're not fighting against the same in the same kind of security defence environment anymore. We're not only fighting against armies. It is imperative that organisations position themselves in a way where they leverage these technologies

to get better at tackling new things such as cyber security issues. These tools provide us with new mechanisms and new functions that will enable us to be a lot better at these things," explained the NATO Official.

As the world wakes up to the power of AI and its strategic importance in security considerations and responds to the changing battlefield, the NATO Official said it is important that security organisations "collaborate with new actors, startups and

with innovators" to keep up to date with cutting-edge innovations in the AI and security space.

They did stress that it is important that "trust is built between government organisations and the private sector. This relationship is key to the success of the implementation of AI."

This trust is to ensure that leaders, with support from the private sector, "proactively position themselves as thought leaders for the

Artificial Intelligence is one of the seven technological areas which **NATO** Allies have prioritised for their relevance to defence and security.

Matched

Matched

"We also need to adapt to a changing battlefield"

NATO OFFICIAL

ethical and moral use of these technologies in the security defence environment."

Considering AI in security strategy and operations is a relatively new concept, continuous research is imperative to ensure AI is implemented at the correct intersection of security.

Cowan concluded: "Ongoing research will continue to improve its capabilities and its ability to understand subtlety and context." ⊙

INTERNATIONAL العالمية
MARITIME للصناعات
INDUSTRIES البحرية

THE SMART SHIPYARD

WRITTEN BY:

JOHN
O'HANLON

———

PRODUCED BY:

BEN
MALTBY

Digitalisation can be achieved fast without too much legacy: we learn from IMI's *Emad AlHumam* about the Smart Shipyard of the future

MI's Ras Al-Khair site will become the region's largest shipyard when it reaches its full production. The construction work has been fast-tracked since its launch in 2017. The yard is spread at a five square kilometre area at Ras Al-Khair on the east coast of Saudi Arabia. It's a massive $5bn investment for the country, but the revenues it's expected to generate in the near term make it a sound one.
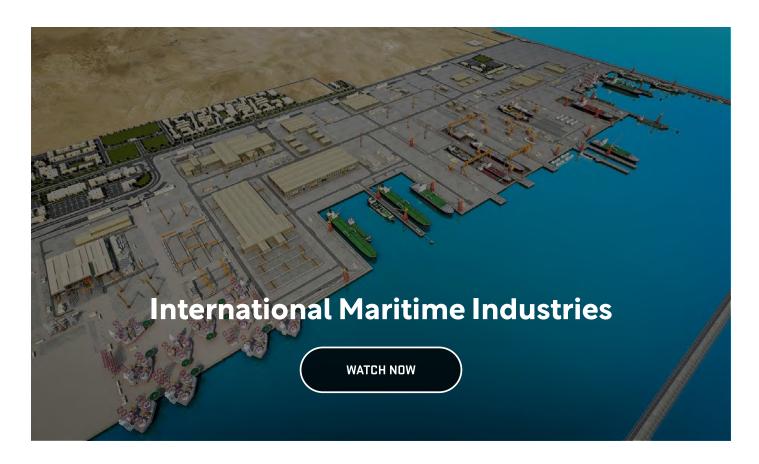
The success of IMI's shipyard, the anchor project at King Salman Complex for Maritime Industries and Services, is built on the collaboration of well-known leaders in the industry who have a proven track record. In addition to Saudi Aramco at 40% ownership, Hyundai Heavy Industries, Lamprell, and Bahri each have a 20% stake. Each one of these partners was strategically selected to add an area of strength to the maritime yard. This is done by leveraging the know-how of Hyundai and Lamprell, as well as, the initial offtake support from Saudi Aramco and Bahri, guaranteeing 20 offshore rigs and 52 vessels over the next ten years.

Combined, these strategically selected partners and governmental support will contribute to the overall success of the maritime yard. IMI was officially registered in Saudi Arabia as a limited liability company (LLC) in December of 2017.

The key enablers to ensure the success of the King Salman Maritime Complex and the shipping industry in the kingdom have

International Maritime Industries

WATCH NOW

been identified. To address these enablers, IMI has been working closely with the Saudi Government to create & enable an environment that will make the yard' globally competitive'. Thus far it has been able to secure the Government's support for infrastructure development and is working to leverage Government and other institutions to develop supporting financial services for our customers and suppliers.

IMI's Senior Vice President for Corporate Services Engineer Emad AlHumam was seconded to IMI from Saudi Aramco in 2016. During his assignment with IMI, he has covered various roles such as VP – IT, CFO, VP of Procurement and Supply

"WE CONSIDER THE ERP AS THE FOUNDATION FOR OUR DIGITAL STRATEGY"

EMAD ALHUMAM
SENIOR VP. CORPORATE SERVICES,
INTERNATIONAL MARITIME INDUSTRIES

Chain Management and Senior VP of Operations Services to his present position of Senior VP – Corporate Services in which he covers HR, Training & Development, HSE & Quality Management, Facilities Management, Industrial Security & Fire, IT, Digitalisation & Innovation and Cybersecurity.

"While leading the IT, Digitalisation and cybersecurity teams, I want to make sure that our strategic objectives can be achieved using the latest and state-of-the art technologies that will give IMI a competitive advantage in the maritime industry".

More than 120 employees are planned for IT, digitalisation, and information security functions.

Technology-led development and execution

The last couple of years have been critical to IMI's rapid growth strategy, so the onset of COVID-19 came at an awkward time – it could not be allowed to slow progress. Operations had to be maintained while enabling as many people as possible to work from home or remotely and making this possible fell to Al Humam's lot. This enabled him to drive forward the establishment of IT and Cybersecurity platforms to ensure zero interruption to the business. In fact, in many ways, the spur of the pandemic speeded up implementation of digital work and communication platforms.

"We had to follow government guidelines to allow employees to work from home and remotely. All our measures were very successful, though, and we did not even have a single case of COVID-19 spread case within our offices!"

A flexible work schedule was created to make it possible for staff from more than 20 countries around the world to collaborate remotely. Flexible working patterns, with four days on and three off, became a long-term strategy to keep operations going 24/7. These strategies have been a real accelerator and proved very successful for the business continuity during the pandemic.

The partnership road to digitalisation

Al Humam presented the IMI digitalisation strategy to the Board in 2020. "After securing Board's approval, we immediately set about implementing it by detailing more than 60 digitalisation and innovation initiatives, identifying a strategy for big data, data analytics and AI. Big data, Analytics, and AI platform will provide insights on predictive maintenance, digital twins, health & safety, energy & water management, and environmental aspects. These insights and

EXECUTIVE BIO

EMAD ALHUMAM in

TITLE: **SENIOR VP. CORPORATE SERVICES**

INDUSTRY: **RIG, SHIPBUILDING AND MRO**

LOCATION: **SAUDI ARABIA**

» Emad Al Humam is a visionary executive with an extensive experience that stems from his multi-faceted exposure that spans multiple disciplines in IT, oil & gas, and recently the Maritime industry. His current senior executive role as Senior Vice President of Corporate Services at International Maritime Industries allows him to utilize his strategic thinking, and expansive skills and strengths gained from his past CIO leadership roles or his impressive knowledge in Cybersecurity or his past CFO role. Add to that his previous role as VP of procurement and supply chain. He is skilled in corporate digital transformation, IT project management, IT governance, IT Infrastructure and Networks, risk management (CISM & CRISC), business continuity, applications & ERP. It is worth noting that in his current senior executive role he is leading multiple functions namely: Human Resources, Training and Development (HR - T&D), Information Technology (IT), HSE & Quality Management, Facility Management & Support Services, Digitalization & Innovation, Cybersecurity, and Industrial Security & Fire.

IFS: ERP and Applications for IMI

IFS is a key technology partner to IMI as it builds a smart shipyard in record time

Written by: John O'Hanlon

IFS

Why IFS Cloud?

#1
Unique industry depth

#2
One product, several class-leading solutions

#3
Innovation embedded and ready to use

#4
Choice and parity, wherever you deploy

#5
Delightful product experiences

"

This is such a large transformational project, and engagement at all levels up to the executive level has been outstanding."

Mehmood Khan, IFS Managing Director for the Middle East

International Maritime Industries (IMI) needed a modern, fully integrated ERP solution with robust functionality, designed for the maritime industry something few vendors can offer. Following a comprehensive evaluation process across ERP vendors IMI chose IFS, which now supports mission-critical processes and operations and fully integrates finance, human capital management (HCM), payroll, and procurement. It allows easy integration with third party vendors, and the success of the implementation is warmly acknowledged by IMI's Senior VP of Corporate Services, Emad Al Humam.

Mehmood Khan, IFS Managing Director for the Middle East, is keen to explain the strategic partnership between IFS and the Middle East's largest ship and rig builder, fabrication and maintenance facility. "Making sure that that ERP is industry specific is demanding. A shipbuilder like IMI is very different from a bank or retailer. But IMI is unique within its industry, by combining ship and rig building with operating and maintenance. They needed a business platform with ERP as well as asset management, finance, procurement, HSE and project management. We can enhance that solution, for example to enable mobile for the workforce, integrating robotic solutions etc.

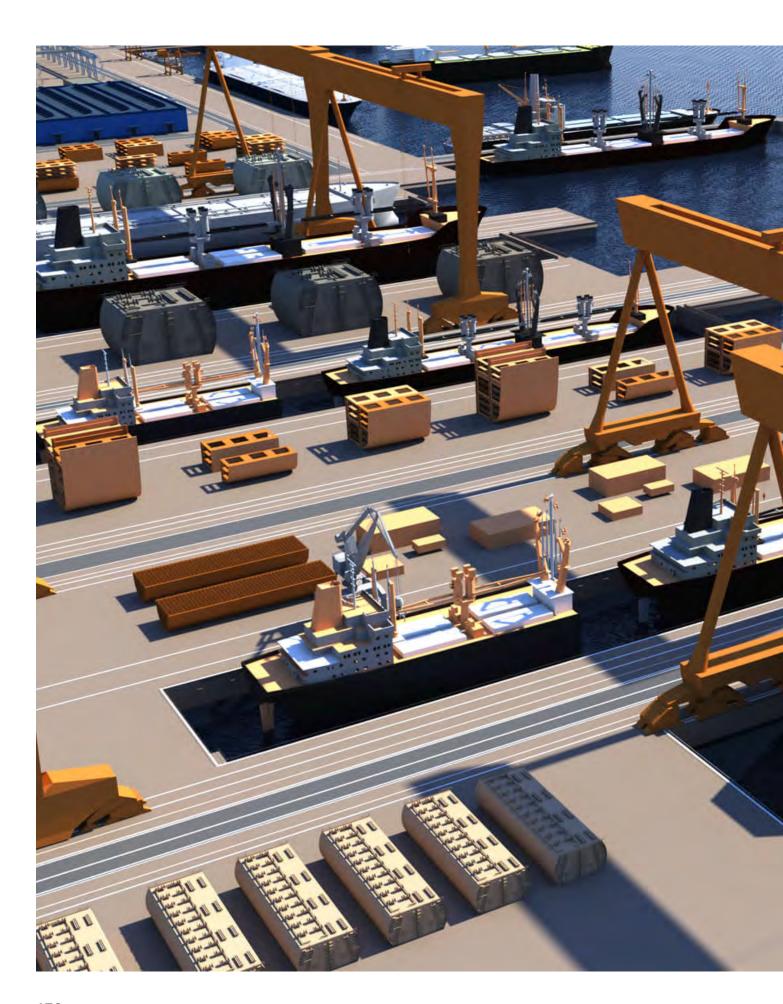As their activities ramp up they will be using IFS more extensively.

"Throughout the implementation, our teams collaborated closely on a daily basis and that engagement is ongoing as IMI enhances the platform. One of the key things for me is the ability for both parties to compromise in a positively. This is such a large transformational project, and engagement at all levels up to the executive level has been outstanding."

For Emad Al Humam too, the IFS relationship is pivotal in achieving IMI's digitalization and smart shipyard vision "By investing in a central, integrated platform, we have enhanced business insights through complete process visibility."

Find out more

Further information, e-mail info@ifs.com, contact your local IFS office or visit our website, ifs.com

IFS

analytics will be based on real-time data, environmental conditions and yard and fleet operations. We worked on fourteen business areas for this initiative of digitalisation strategy. It resulted in the identification and documentation of over 100 scenarios.

"Our yard is under construction right now – we are going to reap huge value in the way of operational efficiencies, from cutting material wastage to better employee output. Also through data analytics we will provide product lifecycle management and enhanced service delivery to IMI customers. As a result, IMI will be positioned to have a competitive advantage in the maritime industry."
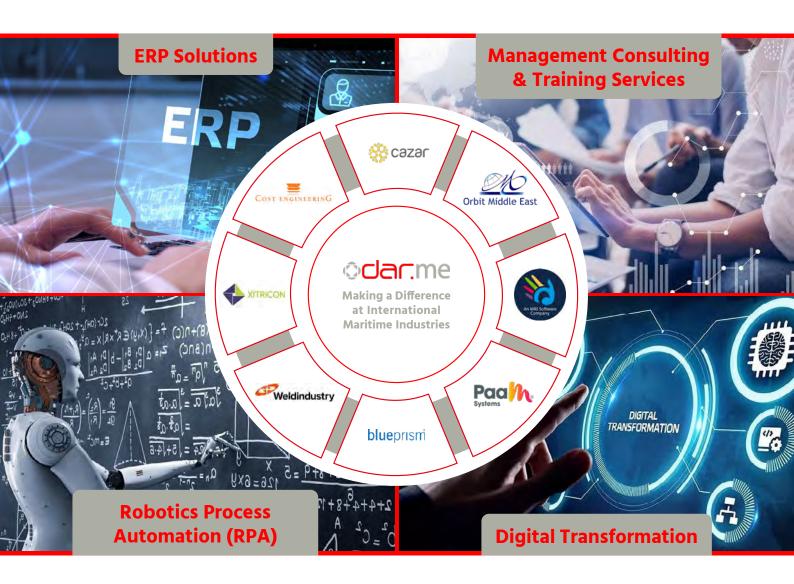
"WE ARE FULLY COMPLIANT WITH THE INTERNATIONAL MARITIME ORGANISATION (IMO) 2030 REGULATIONS ON THE ENVIRONMENT"

EMAD ALHUMAM
SENIOR VP. CORPORATE SERVICES,
INTERNATIONAL MARITIME INDUSTRIES

He points to two outstanding projects already successfully in place. The first is development of data strategy and implementation roadmap for data analytics and AI, working closely with Microsoft. The second is an ERP platform from IFS. IMI Business is successfully operating the IFS ERP system for support business functions such as Finance, HR, Payroll, IT, Procurement, Asset Management and maintenance, repair, overhaul (MRO) operations. Implementation is ongoing for the core functions. Dar Middle East Information Technology (Dar.ME) is the system Integrator, and IFS' local golden partner in Saudi Arabia has been

"I DON'T HIRE PEOPLE TO ENTERTAIN THEM – I NEED THEM TO DELIVER AND TO BE RELIABLE"

EMAD ALHUMAM
SENIOR VP. CORPORATE SERVICES,
INTERNATIONAL MARITIME INDUSTRIES

instrumental in the implementation and support of the IFS at IMI. IMI continues in partnership with Dar.ME as prime contractor for the implementation, integration and support of IFS and third party applications.

"We recently signed a long-term agreement with the Cambridge-based industrial technology company Aveva to help implement ship and rig building core processes and digitalise core operations to enable the establishment of the IMI Smart Yard by 2023," he adds. "Furthermore, since IMI and SATEC share the same long-term vision and inspiring ambition, we have signed an agreement with them to collaborate together to develop a state-of-the art, competitive, safe, and sustainable shipyard that will highlight IMI as a leader in the shipbuilding and MRO businesses. The agreement also include collaboration with Saudi universities for attracting and hiring fresh graduates and development of local talent for IT, cybersecurity and digitalisation.

"By investing in a central, integrated platform, we have enhanced business insights through complete process visibility," says Al Humam. "We consider the ERP as the foundation for our digital strategy. We are now integrating IFS with some best of the breed third party solutions

which are specific to the maritime industry. An integrated application portfolio gives us an end-to end solution for automated processes which are key for execution of our digitalisation strategy. Some of key features are personalised dashboards which gives us instant insight into the status of any situation making it easier for management to reach decisions. Actionable notifications via email allows the management to review, and provide approval decision on the go with just one click."

The HR module is automated from recruitment and onboarding to employee benefits and rights, training, performance and travel management. "This is reducing overheads significantly. Our employees are our number one asset and we care about them all.

"We know that whenever we deploy any technology, it will require training. We have professional and technical development programmes and an apprentice scheme where we put high school graduates into a two-year training and development programme, and so far around 1,200 young men and women have taken part and next year alone we'll take on a further 1,100. As well as that we put them into on-the-job training with our partners, sending some to Korea or Dubai to give them experience in ship and rig building."

All of IMI's strategy relies on long-term relationships with vendors, customers and partner companies. Good examples are found in Aveva, IFS and the private cloud provider Detasad and others. "It's not a matter of just deploying technology but also of the value it adds, its efficiency, the ROI it promises, customer satisfaction and sustainability. From our technical partners we are insisting on having a co-innovation

approach that will not only benefit us, but our partners and the entire market."

Sustainability in the sector

The recent UN COP26 summit has concentrated minds on environmental matters and sustainability. "We have an advanced environmental strategy to align us with the COP26 mandate and help our customers to do the same. We are fully compliant with the International Maritime Organisation (IMO) 2030 regulations on the environment. This is really crucial in our industry and we are pushing for a truly green environment and green yard."

A further pressure on the shipbuilders, and particularly on IMI since so many of

"FROM OUR TECHNICAL PARTNERS WE ARE INSISTING ON HAVING A CO-INNOVATION APPROACH THAT WILL NOT ONLY BENEFIT US, BUT OUR PARTNERS AND THE ENTIRE MARKET"

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its stakeholders are working in the O&G sector, is the focus the Glasgow summit, COP26, placed on reducing global fossil fuel dependency. "We were set up with Aramco and Bahri with a ten-year agreement to build 20 jack-up rigs and 52 vessels so this demand is not going to go away in the short term. Demand for oil and gas from the global market will continue for some time. But when market conditions no longer allow customers to commission new ships and rigs, we do have another big revenue stream. This is MRO – when owners can't buy new assets then this segment will become ever more important for them and they will need us to help them make the best use and get longer life out of their existing ones and retrofit solutions for dual and alternate fuels."

Smart Yard and Smart Products

IMI intends to build more than just the biggest in the world, but the smartest and most highly digitalised shipyard. "All of the 60 digitalisation initiatives I mentioned are designed with this objective in mind. We made sure that all the operations and assets are connected in a single network whether it's operations, via machines or robotics. In addition, we have the concept of the 'Digital Worker' through smart PPE and wearables that can track and monitor employees' health, safety and performance. The digital worker solution is also aimed at improving attendance and project time recording when workers move from one project to another. All of this data is collected and subjected to data analytics and AI to help us optimise our processes and helping our

> "WE CAN EXTEND THE MAINTENANCE PERIOD FROM AROUND FOUR TO SEVEN YEARS … AND ENHANCE THE DESIGN OF FUTURE VESSELS TO MAKE THEM MORE SUSTAINABLE"

EMAD ALHUMAM
SENIOR VP. CORPORATE SERVICES,
INTERNATIONAL MARITIME INDUSTRIES

people to be efficient and competitive in the market.

"The Smart Product concept is equally important. IMI is heavily investing in new ship design and establishing R&D capabilities with partners to design and construct digital ships. The digital ship will be built using latest technologies and will be fully equipped with technologies to efficiently operate and maintain the ship. Production lifecycle of Engineering & design, procurement & construction will be fully integrated with operations & maintenance lifecycle through the Digital Twin to help optimise the design for future orders as well as the performance of existing vessels.

IMI Smart Products design and development brings additional value for

warehouse via 5G and Satellite connectivity. All the systems onboard and onshore are fully secured and protected with robust solutions of IT/OT cybersecurity.

Ship Lifecycle Management is achieved by adopting digital solutions that provide fleet management, fleet optimisation, and optimal route planning for the operation of the fleet. In addition, while the vessels are in operation, it will provide machinery and structural insights, near real-time altering for fuel consumption, idling, emissions and environmental aspects. "In partnership with our customers, the operational data will be used for product lifecycle optimisation and future design improvements. The digital ship is developed on robust and state-of-the-art technology components. Using the latest engineering solutions, the digital design holds the data from the production lifecycle starting from basic design until handover of the vessel. This digital design also consume the data from operations lifecycle of the vessel and function as a digital twin of the vessel. The digital twin is used to run simulations and what-if analysis to optimise the design of future products and the performance of the existing products. "

All this can be achieved through the smart yard and the smart project vision. By designing this into its huge, brand new digitised yard IMI will set a benchmark for the future of shipbuilding and marine asset maintenance for decades to come. This vision is already here in fact – in October 2021 Bahri took delivery from IMI of a 'gas-ready', fuel-efficient very large crude carrier (VLCC) named 'Rayah' built by IMI – a big boost to Saudi Arabia's 2030 vision to maximise local content. ○

customers. The smart products result in reduced delivery schedules, improved quality and safer operations of the vessels. In addition, access to IMI digital solutions will reduce customer costs, as they'll need smaller project management teams on-site during production lifecycle. And digital twins will support customers' digital asset requirements and help to improve design and performance of the ship."

By creating an accurate and consistent Smart Ship in the project phase IMI can handover a high-quality Smart Ship to their customers, allowing faster commissioning and start up times, earlier crew training and a more comprehensive data set as a foundation for digital operations. Data from sensors installed on the fully connected ship is transmitted to onshore data

ROYAL AIR FORCE

TAKING DIGITAL TRANSFORMATION
TO *NEW HEIGHTS*

WRITTEN BY: | PRODUCED BY:
SCOTT BIRCH | **MIKE SADR**

THE UK'S RAF IS DRIVING DIGITAL TRANSFORMATION WITH RAFX AND ASTRA – THE CAMPAIGN TO BUILD THE NEXT GENERATION ROYAL AIR FORCE

The Royal Air Force (RAF) was born from technological transformation. The UK's air force formed in 1918 and became the world's first independent air force, playing a famous role in the Battle of Britain during the Second World War while also pioneering technology from radar to the bouncing bomb and jet engine.

The RAF has played a key role in keeping citizens of the UK safe and continues to innovate to maintain that protection – tackling new cybersecurity threats and digitising processes while also keeping pilots and commanders one step ahead of any potential enemy.

RAF eXperimental – or RAFX – is the innovation hub of the RAF. It's an ongoing and evolving mission largely taking shape in North Yorkshire at RAF Leeming – the perfect testbed for new technology and processes and unique in that it has representation from every Group in the Service. RAF Leeming is also home to 90 Signals Unit – the largest communications unit in the RAF.

The fact that the base is also a closed environment ("behind the wire") also means it is ideal for testing technology in a closed, controlled environment.

Group Captain Blythe Crawford OBE is Station Commander at RAF Leeming, a position he has held since November 2018 following a tour as RAF exchange officer within the Chief of Staff of the US Air Force's Strategic Studies Group in Washington.

He is now the driving force behind RAFX and Astra – the campaign to build the Next Generation Royal Air Force. He is empowering airmen with bright ideas to turn those into something tangible via RAFX.

"The challenge that we have is that we are still quite set in our ways and trying to run a fifth-generation air force with 1990s processes and technologies," admits Crawford. "What we want to do here at Leeming is unleash, empower and enable our people to maximise their full potential and create the Next Generation Air Force."

Crawford goes on to explain how Leeming is unique in its diversity, which makes it the ideal melting pot or petri dish to experiment and try out new solutions. From the "Aggressors" of 100 Squadron to the 90 Signal Unit comms engineers, RAF Regiment Squadrons, University Air Squadrons, training units and Reservist Squadrons – Leeming is a natural bed of cross-functional teams and

BLYTHE CRAWFORD

TITLE: **STATION COMMANDER**

UNIT: **RAF LEEMING**

» Blythe Crawford is a Tornado Navigator by background, but has spent the last 7 years of his career in the innovation space, initially with STRATCOM where he was responsible for realising Warfare in the Information Age in Joint Warfare Development and subsequently in the Pentagon where he was part of the Strategic Studies Group, developing the Innovation Strategy for the USAF. At Leeming he has established RAFX, an innovation hub 'at the edge' where RAF personnel can realise their ideas and solutions to problem sets across the Service.

"WHAT WE WANT TO DO HERE AT LEEMING IS UNLEASH, EMPOWER AND ENABLE OUR PEOPLE TO MAXIMISE THEIR FULL POTENTIAL AND CREATE THE NEXT GENERATION AIR FORCE"

BLYTHE CRAWFORD OBE
GROUP CAPTAIN, ROYAL AIR FORCE

each individual also brings their own skills, often beyond their rank and duties.

Being behind the wire also provides a closed environment, which proved invaluable when working with NHSX Track & Trace during the COVID-19 lockdown.

"We had some 400 personnel from across the base who all downloaded the Beta version of the NHS Test & Trace app," explains Crawford. "We had a couple of people who were 'guinea pigs', simulating that they were infected and who then went around the base testing the application under different conditions and different proximities, to make sure that it worked.

"There are mutual benefits for other partners to work alongside us, to develop some of their capabilities because of the unique testing ground that we have."

Crawford added that he is keen to promote this collaborative approach with everyone from startups to academia, as well as other UK government departments. He also laments that while the UK is strong globally when it comes to research, we lag behind when it comes to developing those ideas. By partnering with academic institutions, he hopes RAFX can help accelerate the development of these bright ideas.

Unlock the value of cloud for your organisation

KPMG UK: Helping clients unlock the value of cloud

Adrian Bradley, Head of Cloud Transformation at KPMG UK, outlines the power of connected technology in aerospace, defence and other industries

Consultancy KPMG UK is helping clients unlock the value of cloud with connected technology - from aerospace to other industries.

"Cloud has a tremendous catalytic effect," said Adrian Bradley, Partner and Head of Cloud Transformation at KPMG UK, who works with aerospace, defence and other industries to help make transformational investments with a focus on cloud and Artificial Intelligence (AI).

"Aerospace and defence organisations are using cloud because they want to deliver differentiating AI capabilities that improves their ability to perform in the field. Businesses use cloud to deploy analytics that enable them to operate more efficiently and deliver better value to their customers," he said.

KPMG's Connected Technology practice

"Connected technology brings together the disciplines you need to deliver a technology-led transformation. This ranges from advisory professionals who look at technology strategy such as how you use cloud to deliver business value to software-as-a-service (SaaS) and how

you execute those processes and build them into your technologies through SaaS platforms, ranging from SAP S/ 4HANA to Workday, Oracle, ServiceNow, Salesforce and beyond."

Cloud for Aerospace and Defence

Bradley said in the sector of aerospace and defence there is potential for AI, complex computing and Internet of Things (IoT). "In the future there will be better use of sensor data in a more automated fashion, or with AI to perform operations in a way that delivers better results and also protects human lives. Aerospace and defence clients in the private sector have realised that public cloud computing allows you to advance that agenda quickly and cost effectively."

Digital Strategy for Defence

According to Bradley, the Digital Strategy for Defence highlights the importance of this technology. "The importance of connecting that sensor data with people, or AI, means it can make quick decisions and drive actions from that. To drive that cost effectively, it's the public cloud that can supply the capability and give a development roadmap."
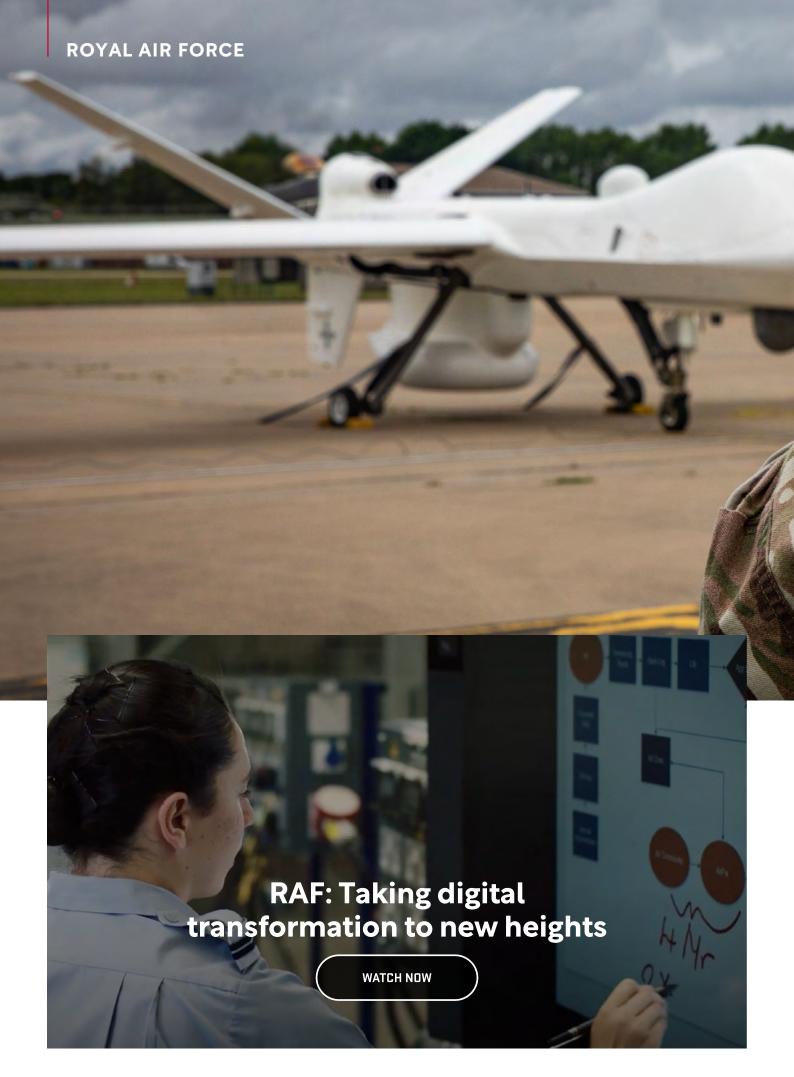
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RAF: Taking digital transformation to new heights

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EXECUTIVE BIO

MARTIN BROCKIE

TITLE: **COMMANDING OFFICER**

UNIT: **90 SIGNALS UNIT**

» Martin Brockie is a cyberspace professional with an engineering background. His career has seen him primarily involved in the delivery of information and communication services to operations. His roles have spanned commanding teams delivering and defending expeditionary information services, directing operations in the Permanent Joint Headquarters, to managing Defence-level communications risks, including prioritisation of capability development and informing strategic balance of investment decisions. He is currently the Commanding Officer of 90 Signals Unit that enables Air and Space power by generating freedom of action and mission assurance in cyberspace.

"Situated here in North Yorkshire, RAF Leeming is right in the middle of the Vale of York which we recently rechristened 'Silicon Vale' because we are surrounded by so much high-tech and such valuable academic research," says Crawford.

"We have Newcastle and Durham to the north, we have Leeds and Sheffield to the south, Teesside University is one of the world's leading gaming universities, and we have also partnered with Northumbria and York, and we are and bringing that rich tapestry of academic research in.

"Traditionally, we in Defence have been a laggard when it comes to adopting capabilities that wider society would use. We're still very much a paper-driven organisation when everybody else has gone digital, so how do we accelerate that digital transformation and how do we leapfrog from being a technological laggard to actually being at the cutting edge? By partnering with

The robotic dog (also known as Spot) was designed and by Boston Dynamics. It will be used to automate such routine RAF inspection tasks as perimeter patrols and airfield monitoring.

universities and with startups to accelerate that process and to get to the front of the queue with regards to technology rather than being a late adopter."

"PEOPLE TALK ABOUT DIGITAL BASES, THEY TALK ABOUT SMART CITIES, BUT TO DO THAT YOU NEED A DIGITAL BACKBONE"

BLYTHE CRAWFORD OBE
GROUP CAPTAIN, ROYAL AIR FORCE

One of the areas RAFX is focused on is the digitalisation of processes and practices right across the Station. At Leeming, these can be experimented with before scaling across the rest of the Service.

"People talk about digital bases, they talk about smart cities, but to do that you need a digital backbone and what we've tried to do here is to make ourselves a lot more connected," says Crawford. "We have business internet across the entire station. We've also recently installed are our own private 5G network to create an Internet of Things platform and backbone that covers the entirety of the station, which allows me to connect anything to anything else right across the site."

Crawford also explains how the digital backbone can help RAF Leeming meet its ambitious carbon net-zero by 2025 target by creating a digital twin of the base, brimming with smart sensors on energy management systems and waste systems to create a single dashboard.

"My Nirvana, for example, is where I could put on a set of augmented reality goggles, look at a 3D augmented picture of the station and – taking the data that we gather

from those sensors – be able to pick up a building, look at its carbon footprint, look at its energy management, and control all of that from a virtual reality environment," he says.

Asset management tracking can also benefit significantly from the digital backbone, especially over such an extensive site – RAF Leeming covers 1,260 acres. This still involves "running around the base with a clipboard and pen". Geotagging all of those generators allows the base to operate more efficiently and effectively.

COVID-19 naturally accelerated the digital transformation agenda, and also provided an opportunity to take proactive ownership of the outcome. Crawford says they knew they were going to reset to something different and decided to determine that for themselves.

The way they did that was with a project called Hacking for Recovery – a series of sprints right across the station that brought everybody in to see what 'good' looked like for Leeming. This forced everyone to challenge some of the previous policy demands and rules and look at a new way of working that exploits technology to deliver better results for the station.

Of course, being an RAF base, there is a continuous output – you can't just have everyone experimenting and innovating, which is why a separate team has been assembled to do just that, housed in a

WING COMMANDER DAVE COLLINS

Dave Collins is an RAF cyberspace professional who has spent a career enabling and delivering operations in, through and from cyberspace. As well as roles in the RAF he has worked with the Army and Royal Marines; in joint operational headquarters; and with wider government partners. Dave is currently the lead for cyber mission assurance in the RAF, which brings together cyber security, defensive cyber operations, and information service management in support of air and space operations.

DAVE COLLINS

TITLE: **OFFICER COMMANDING**

UNIT: **OPERATIONAL INFORMATION SERVICES WING**

"I've got responsibility for cyber defence, for information service management, and for innovation and DevOps when it comes to our communications information systems capability in the Royal Air Force.

"I think digital transformation is really important for the RAF because the world is changing quickly and we need to be able to respond to that to stay at the cutting edge. Also, who's got access to what technology is changing and that causes a whole range of challenges.

"Partnerships are really important when it comes to digital transformation because we not only need to access the technology that's out there, that's developing, but we need to access the skills as well. That whole ecosystem is really important. Maybe it's not about big primes anymore — it's about SMEs too. We need to take a more collaborative approach, recognising that we don't have a monopoly on good ideas but certainly the primes don't either.

"I would say come to us with ideas. Don't expect to come with fully-formed solutions, recognise that there is bureaucracy and that we are a public sector organisation. Recognise the environment in which we work then we'll have a better chance of succeeding together rather than relying on a fully-formed solution which might just never get over the valley of death because it doesn't actually fit in with the way we need to operate."

Pure Storage's Modern Data Experience™ is enabling competitive advantage for the Defence sector through data centricity

Pure Storage® delivers a modern data experience that empowers organisations to run their operations as a true, automated, storage as-a-service model seamlessly across multiple clouds. Pure helps customers put data to use while reducing the complexity and expense of managing the infrastructure behind it.

Pure Storage: Supporting the digital transformation journey

Driving competitive advantage by enabling data to deliver positive business outcomes

Pure Storage helps clients like The British Army, drive their information advantage by enabling data to deliver positive business outcomes such as 'evidence-based decision making' using real-time analytics. "Working with the British Army, as part of an ecosystem of best in class solutions suppliers, Pure is providing private cloud services on-premise but also has offerings via AWS and Azure, and at container level," explains Colin Atkinson Pure's UK Public Sector Account Director.

Digitalisation

"Pure Storage is supporting the digitalisation of the army as part of Programme THEIA," reveals Colonel Mark Cornell, Assistant Head of Army Digital Services. "THEIA is how we change our ways of working to adopt more efficient digital processes. Technology is actually the easy piece of the puzzle; the challenge is cultural and behavioural change". The army is a conservative organisation by nature, so how do we get its people – civilian, military, and contractors – to adopt the appropriate ways of working we want to deploy?

"We move away from labour intensive processes, and move further up the value chain to get the human adding value where they should be in the decision-making process."

Data Revolution

We're in the midst of a data revolution, highlights Atkinson. "We're seeing an exponential growth in data analytics, which can either create huge headaches for large organisations, or massive opportunities. Data will be the oil that fuels this revolution...."

It's a revolution that's been gathering pace; each year, since 2016 where 90% of the world's data has been created in the previous two years. Atkinson also points out that 99.5% of historical data goes largely unanalysed: "The corollary for large organisations is that if you don't have a data strategy, you could end up with very large, very cold data silos and miss the opportunity to create that competitive advantage. By partnering with Pure we can help clients develop a data-enabling strategy."

Learn More

See How Pure Storage is supporting Programme THEIA >

CORPORAL KYLE HARPER

Kyle Harper has spent 18 years within the RAF Communications world as a technician. Watching the trade and the force as a whole evolve as technology advances has given him the passion to drive the future of the Cyber Space Aviator forward. Working within the Application eXploitation flight at 90SU has given him the platform to bring his passions and aptitudes to light. Recently recognised as one of the MOD's most innovative minds he has embraced the Agile ways of working and is heavily involved in RAF Digitals vision of the next generation of the RAF's Cyber Coders.

EXECUTIVE BIO

KYLE HARPER

TITLE: **JNCO APPLICATION EXPLOITATION AND AIR HOSTING CAPABILITIES**

"I work in the Application eXploitation (AX) flight, which is part of 90SU.

"Application eXploitation looks into the innovation of applications, coding languages and hosting platforms. We look at low code technology, such as power apps and are now broadening into high code applications as well.

"We have customers within the military come to us requesting help and assistance with admin processes that could be digitised.We will carry out discovery phases with the customer and collate all information to prepare for the design and implementation phases of the low code applications. We are starting to look into developing in high code languages. Which is everything ground up utilising basic coding languages such as Python. This enables us to build bespoke applications from a blank canvas — exactly what the user requires.

"The digital aviator can come in many forms. At present, the aptitude test to become a digital aviator doesn't look specifically at coding elements. I personally believe we need to delve deeper into people's skills, passions and aptitudes, maybe look at seeing if they have those attributes in coding before we look at upskilling the individual— We need to start utilising our right people for the right job. Only then will we empower those abilities as an RAF digital aviator."

"WE FORM CROSS-FUNCTIONAL TEAMS BY PULLING A SELECT GROUP OF INDIVIDUALS FROM THE CORE FUNCTIONS OF THE AIR FORCE"

BLYTHE CRAWFORD OBE
GROUP CAPTAIN, ROYAL AIR FORCE

dedicated building at Leeming that will grow into an innovation incubator.

"One of the first things I did when I arrived here was a poll across the station asking everybody what are the top 10 things that annoyed them about the RAF," recalls Crawford. "They gave me a list of 64. So we

decided to roll our sleeves up, started at the top and addressed some of those – and the majority were to do with our processes and digital transformation in terms of the methodology that we apply here.

"We form cross-functional teams by pulling a select group of individuals from the core functions of the Air Force. We run sprints against that problem until we develop a minimum viable product. The core innovation team will then take that innovative product development a little bit further and then what we do is we put it back into the continuous

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performance engine here at Leeming and we beta test it to death on the station until we refine it into exactly what we want. At that point, it is then ready to be scaled across the rest of the service."

Astra is all about creating the Next Generation Air Force – an Air Force that can surpass the wider technological advancements happening in society. Crawford uses the analogy of the Red Queen problem from Alice in Wonderland where you have to run as fast as you can just to stay in the same place, but run even faster if you want to go somewhere else.

"That's the challenge we have in today's Air Force," admits Crawford. "Technological advancement in wider society is moving at an incredible pace and for us to keep up with it we need to change our cultural mindset about how we adopt those new technologies and processes, how we keep up with the digital transformation that the rest of society is going through, and keep at the forefront of that to create the Next Generation Air Force."

Group Captain Martin Brockie is the commanding officer of 90 Signals Unit which is responsible for providing the Royal Air Force with the freedom of action and mission assurance it needs in cyberspace to enable it to deliver air and space power on behalf of the nation.

"TECHNOLOGICAL ADVANCEMENT IN WIDER SOCIETY IS MOVING AT AN INCREDIBLE PACE AND FOR US TO KEEP UP WITH IT WE NEED TO CHANGE OUR CULTURAL MINDSET ABOUT HOW WE ADOPT THOSE NEW TECHNOLOGIES"

BLYTHE CRAWFORD OBE
GROUP CAPTAIN, ROYAL AIR FORCE

Brockie says one of the priorities for the unit is to drive innovation and see how to exploit the freely available technology now in the commercial sector and bring it into the military context. One way the unit is doing that is with Project Raven.

"Raven is something the team here came up with about five years ago," says Brockie. "They were getting frustrated with the equipment and thought they could do better themselves - systems and hardware - to actually deliver the services we need."

Raven has met a number of particular use cases — either as an experiment or to plug a capability gap. As an example of an experiment, the Raven team linked a Typhoon fighter pilot with RAF Regiment personnel on the ground and Air Command in High Wycombe with full-motion video, all on the same voice radio network and all seeing the same picture. Air Command is able to give release authority for weapons, effectively linking the sensor to the shooter to the decider.

Exploiting a software-defined virtual architecture, Raven is able to respond to the changing information requirements — pretty much how everything in the modern world is designed these days — and bring it into a military context.

One of the biggest challenges is dealing with legacy equipment that is often locked

CORPORAL TOM DAVIS

A Cyberspace Communications Specialist with thirteen years' experience, Tom has completed two tours of Iraq, a tour of Afghanistan and a tour of the Ascension Isles, recording over 750 operational days away. A deployed Communications Information Systems specialist, he is currently employed within the 90 Signals Unit Raven programme. An integral member of the team, he is responsible for pushing the boundaries of how Defence Communications Information Systems should be designed, procured and delivered into service. A highly respected Subject Matter Expert, he has recently been selected for promotion to Sergeant demonstrating that the impact he has made to Air Operations has not gone unrecognised.

TOM DAVIS

TITLE: **RAPID APPLICATION, INTEGRATION AND DEVELOPMENT FLIGHT JUNIOR NON-COMMISSIONED OFFICER**

TEAM: **PROJECT RAVEN**

"I'm part of the Project Raven team. Raven was initially invented to 'inform and disrupt' the way in which Defence designs, procures and delivers Communications Information Systems, it was never designed to be a deliverable piece of equipment, however, as time's gone on, its utility and innovative delivery mechanism has now been identified as a viable solution to a multitude of Defence capability gaps."

"The thing is with Raven it's just so embryonic and pliable, it can be pretty much whatever you want it to be. Everything is more about concept, where we approach a problem so Raven can solve it."

"Raven is essentially a digital backbone which is used to solve multiple Defence problems against certain systems, to integrate with other systems."

"With Virtual Control Reporting Centre, for example, we essentially have guys on the ground or out in out in theatres where you get direct radar import and that's turned into IP, delivered remotely to wherever it's needed. Rather than having your best guys out in specific theatres you have all your best guys in a certain location doing the same job."

into a particular vendor and designed on a particular set of hardware.

"The Raven team has proven that the talent is within the Royal Air Force and within wider Defence to design and deliver solutions rather than asking industry to come up with a range of solutions to meet our requirements," says Brockie.

"We know that Raven can deliver. By procuring from the commercial market at the time of need, it allows us to exploit the latest technology giving us the flexibility that we require to secure, sustain and deliver information services at the speed of relevance."

"THE RAVEN TEAM HAS PROVEN THAT THE TALENT IS WITHIN THE ROYAL AIR FORCE AND WITHIN WIDER DEFENCE TO DESIGN AND DELIVER SOLUTIONS"

MARTIN BROCKIE
GROUP CAPTAIN,
ROYAL AIR FORCE

Traditionally, Defence has worked with large 'primes' – large organisations that certainly helped achieve big capital capabilities like ships, planes and tanks. However, as the RAF moves towards a digital age, it needs to look at different partners that can exploit other areas of the RAF's needs.

To that end, the RAF is looking to partner with smaller companies, academia and startups, to transform how they do business in the future – moving away from the customer/vendor relationship to working in partnership. But how easy or attractive is it for nimble SMEs to consider working for an institution like the RAF.

"We recognise the fact that we are a very bureaucratic organisation – most government departments are," says Crawford. "But we also recognise the fact that in order to interact with the smaller companies and startups, we need to change some of those organisational structures and processes to make it much easier for them to interact and to collaborate with Defence

"We've been working quite hard to look at our organisational structures to create opportunities for the smaller companies to engage with us. A few years ago we set up the rapid capabilities office and the whole purpose of that organisation is to rapidly take technologies that are out there and accelerate them through the procurement process so we can incorporate them a lot quicker into the organisation."

So what might a Next Generation Air Force look like? Crawford says it will be informed by data, connected, and collaborative. It will have human-machine teaming, using artificial intelligence and machine learning to best deliver information to inform decision-makers.

And finally, how important is digital transformation for the RAF – an organisation with more than 103 years of innovation? Brockie says information is a key enabler but is not the "be-all and end-all".

"RAFX IS DELIVERING EXPERIMENTATION, SO WE FACILITATE THEIR ABILITY TO EXPLOIT TECHNOLOGY. WE SUPPORT THEM WITH THE TECHNOLOGY ROADMAP"

BLYTHE CRAWFORD OBE
GROUP CAPTAIN, ROYAL AIR FORCE

"We like to say we are the digital backbone of the Royal Air Force," he says, "because we deliver the information services needed, suitably protected. to allow air platforms to conduct their mission."

Brad Buck is the programme lead for digital optimisation, which is the Royal Air Force's digital transformation program and also the head of RAF Digital Services, which develops and delivers software and data products.
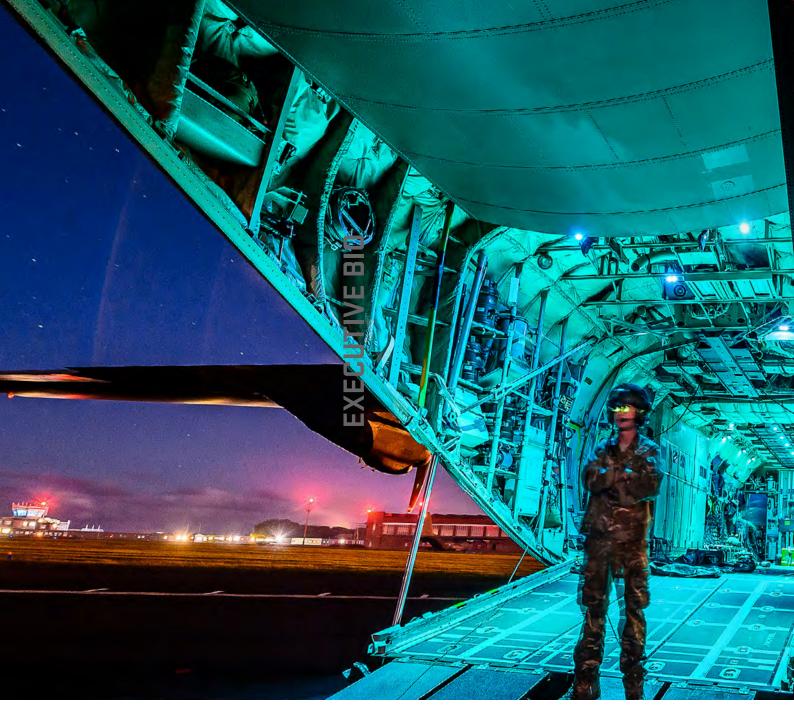
"RAFX is delivering experimentation, so we facilitate their ability to exploit technology," says Buck. "We support them with the technology roadmap, making sure that they have a path to production."

When it comes to working with 90SU, Buck and his team are responsible for tasking AX (application exploitation) flight – prioritising digital services and activities for their developers to work on, while also defining reference architecture and digital patterns which they can exploit and use moving forwards.

Buck believes the COVID-19 pandemic presented a significant opportunity in the way the Air Force wanted to be able to exploit its data and make sure its workforce was prepared for working from home – made possible by the digital backbone and cloud capabilities.

Buck says the RAFs digital transformation is built on civilians, contractors and a whole force spectrum of skill sets.

"We tried to capitalise on industry engagement when it comes to keeping up with the pace of technology. We then try to make sure that's sustainable by using the civilian resource as a backbone to that skill set, and then making sure that those skills can transfer to the military. Although we might be delivering some HR apps today, in the future those need to be deployable and able to solve real Air Force problems on operation."

1918
Year the Royal Air Force was founded

33k +
Regular and reserve personnel

33
UK RAF stations

4
Overseas RAF stations

Buck says there is a wealth of hidden talent with the RAF – capable of delivering digital skills, services and transformation.

"Cognitive diversity means that you can't always look at the rank on someone's shoulder and determine whether or not that makes them qualified or the best person for the role," says Buck. "Within digital services and the transformation programme, it doesn't matter what rank you are – it matters what level of capability you have and what value you bring to the project or product you're working on.

"Hierarchy is incredibly important when it comes to the military, but from our side

> "COGNITIVE DIVERSITY MEANS THAT YOU CAN'T ALWAYS LOOK AT THE RANK ON SOMEONE'S SHOULDER AND DETERMINE WHETHER OR NOT THAT MAKES THEM QUALIFIED OR THE BEST PERSON FOR THE ROLE"

BRAD BUCK
DIGITAL SERVICES DACOS,
ROYAL AIR FORCE

when it comes to being able to explain technical skills and technical capability, my flight lieutenant is a full-stack developer — there is nobody better qualified than him to be leading some of our application development. So why should I care if he's a flight lieutenant? He's better than me, and therefore I should trust his advice and guidance."

It's an exciting time in the RAF right now and that buzz comes across from all of the personnel involved in this vital digital transformation. Buck likes to use the line 'data at the heart' for the future of the Air Force fit for any eventuality.

"We need to make sure that we're capitalising on Defense Digital and all of the initiatives that they're delivering," says Buck. "I don't see this as being 18 months of activity. We are just laying the bedrock for the next 10 years.

"We need to make sure that we're getting the continual buy-in from the senior leaders across Defence, to make sure that digital continues to be at the heart of what it's trying to achieve, because the demands are only getting greater." ◉

BRIDGING THE
DIGITAL DIVIDE

WRITTEN BY:
JANET BRICE

PRODUCED BY:
MIKE SADR

1775
Year Founded

40 mi²
LTE service tower
coverage

6,500
Number of Employees

Drive for digital equality in Tucson with the rollout of a municipal broadband network which will eventually give 32,000 households free internet access

A polar vortex followed by a global pandemic sound like themes from a Hollywood movie, but for Collin Boyce, Chief Information Officer at City of Tucson, these are two very real challenges he has navigated during his digital journey working in government administrations.

"The City of Tucson is building innovation bridges while we are still walking along them," said Boyce, who set in motion a plan for free internet access, from the municipally-owned broadband network to 1,000 households during COVID-19 - despite being stuck in lockdown 2,420 miles away in New York City.

A total of US$4.4m from the federal CARES Act fund has been invested in a community wireless program for the second poorest city in the US (after El Paso, Texas). In partnership with Insight Enterprises, the City of Tucson is working to provide service and routers to eligible residents, schools and offices that lack at-home internet connections.

Boyce possessed a clear leadership vision to deal with the challenges of the pandemic and is now working to bridge the digital divide for many of the Arizona-state citizens living in the poorer neighbourhoods and drive ahead with the City's vision of becoming a smart city.

"Data is the new capital of our century," said Boyce, who also mobilised more than 6,000 local government employees to work

"THE CITY OF TUCSON IS BUILDING INNOVATION BRIDGES WHILE WE ARE STILL WALKING ALONG THEM"

COLLIN BOYCE,
CHIEF INFORMATION OFFICER
AT CITY OF TUCSON

remotely from his temporary base in New York. "The pandemic has shown the future of remote working for millions of people who now rely on being connected to a digital world - as does the future safety and security of a smart city.

"Tucson has a rich history, and the project to connect our citizens and close the digital divide has even included navigating archeologically significant sites," said Boyce, who pointed out it was shocking that 32,000 out of the city's 212,000 households lacked reliable internet access at the beginning of the pandemic.
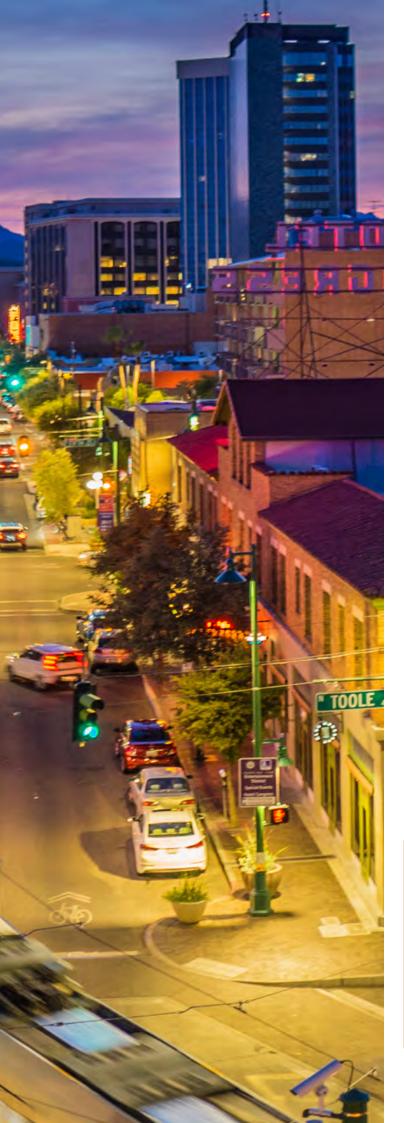
"We are trying to use the existing infrastructure, including cell towers and hundreds of miles of in-ground fibre for the project, and we are planning to operate the new network beyond COVID-19 as 16.8% of our 540,000 population function below the poverty line and need our help," he said.

Polar vortex shapes response to pandemic
Despite only joining the local government administration in 2019, Boyce had already experienced an unprecedented natural emergency while working as the CIO for the City of Lansing, Michigan, when a polar vortex ripped through the northern state. Citizens were advised to stay at home as the

COLLIN BOYCE

in

TITLE: **CHIEF INFORMATION OFFICER**

LOCATION: **CITY OF TUCSON**

>> Collin Boyce is the Chief Information Officer for the City of Tucson. Boyce spent 20 years in information technology leadership in multiple states with firms in New York, Georgia, and Michigan. His key areas of focus are workflow optimisation, risk and resiliency, agile project management, vendor and contract negotiation, vendor management, and using data to drive business decisions. He is currently leading a City Wireless and Smart-City Initiative in Tucson, AZ.

Boyce received his Bachelor and Master's degree from Fairleigh Dickinson University, CIO certification from Carnegie Mellon University and attended classes with Center for Creative Leadership and Dale Carnegie.

EXECUTIVE BIO

Making Communities Accessible, Transparent and Safe

Local governments – from Tucson, AZ to Bangor, ME – work with ICC Community Development Solutions to Improve Efficiency

ICC Community Development Solutions works with local governments from Tucson, AZ to Bangor, ME to develop and implement enterprise-wide document and records management solutions.

ICC Community Development Solutions is a subsidiary of the International Code Council, and provides software solutions for municipalities and building safety professionals.

"Our solutions make it easier to get work done faster for local governments," said Dan Foster, General Manager, ICC Community Development Solutions, speaking from their headquarters in Rochester, New York.

Established 20 years ago, the business has nearly 450 Laserfiche accounts as well as a large number of parcel management software accounts.

"This year, we had the highest retention rate of all of the Laserfiche solution providers with more than 100 customer installations. We are very proud of that achievement," said Foster. "We're expanding our solution offering through integrations and additional software."

With Laserfiche record management ICC Community Development Solutions is helping local jurisdictions digitisation of documents and records, giving you the ability to search, retrieve, and share files. And, you can automate paper-based processes to save time and increase efficiency.

ICC Community Development Solutions supported the City of Tucson with a built – in Laserfiche program at the height of the pandemic when the City was rolling out a community wireless program.

"They did an amazing job," said Collin Boyce, Chief Information Officer at City of Tucson who praised their seamless support. "The whole backend system was designed and built by ICC Community Development Solutions."

ICC COMMUNITY DEVELOPMENT SOLUTIONS
Formerly General Code CMS LLC

City of Tucson: Bridging the digital divide

WATCH NOW

temperature plunged to minus 50 degrees, and Boyce had his first taste of crisis management.

"During that time, I covered the territory and laid the groundwork for my colleagues to work from home, and this prepared me for what lay ahead. When I arrived at the City of Tucson, I had a three-year road map to make sure Tucson was self-sufficient if something terrible happened. But I was only a few months into my plan, and the pandemic hit."

Boyce had travelled from his new role in the warm southern state to New York for a family funeral when the pandemic struck in 2020, and he could not leave for five months. At that time, his children were kept busy with online lessons, and Boyce was struck by the fact thousands of citizens back in Tucson had no internet connection to access virtual learning or remote working.

"I realised 33% of the people in Tucson did not have internet connectivity. When

"TUCSON HAS A RICH HISTORY, AND THE PROJECT TO CONNECT OUR CITIZENS AND CLOSE THE DIGITAL DIVIDE HAS EVEN INCLUDED NAVIGATING ARCHEOLOGICALLY SIGNIFICANT SITES"

COLLIN BOYCE,
CHIEF INFORMATION OFFICER
AT CITY OF TUCSON

WHAT IS THE DIFFERENCE BETWEEN LTE AND WI-FI?

Long Term Evolution or LTE, as it's commonly called, refers to 4G technology or fourth-generation wireless broadband standard. It's a communication standard for data terminals, mobile devices, and smartphones and is being used by the City of Tucson to connect its citizens.

The LTE standard offers a high-speed, high-security wireless cellular network. LTE technology tends to have dedicated frequency bands for different applications, which ensures citizens don't have to compete with other technologies in the same bands, minimising the probability of a lag.

As LTE migrates towards 5G, it's expected to revolutionise the future of cellular networks, with not only its extended network capacity and lower latency but also faster response times and greater bandwidth.

Whereas Wi-Fi, as we know, represents a wireless local area network (LAN) protocol. A router helps several types of computing devices to connect to the wireless network and send and receive data, including files, audio, and video. The router transmits the wireless signal, which facilitates data communication within a fixed location.

Delivering Connectivity to Close the Digital Divide – Geoverse Makes it Easy

Connecting the city of Tucson with the Power of Private LTE/CBRS Networks.

Learn More

"LTE MADE A LITTLE BIT MORE SENSE THAN WI-FI... WHEN WE STARTED TO DO THE TESTING, WE WERE ABLE TO PUT UP 40 LTE SERVICE TOWERS AND COVER AROUND 40 SQUARE MILES"

COLLIN BOYCE,
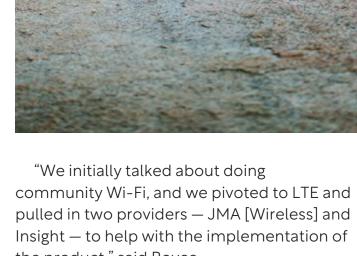CHIEF INFORMATION OFFICER
AT CITY OF TUCSON

you live in a desert, and your car breaks down, a cell phone is a lifeline and has more value to a family than internet connectivity. People were going without, so I felt that we should reach out and build a product to help our citizens."

The City of Tucson is funded by sales tax, so it has to be careful with funding when it is deploying services. "Our digital approach tends to differ from other cities as we take a private-sector approach," said Boyce.

Implementation of LTE
The City of Tucson chose to use Long Term Evolution (LTE), which offers a high-speed, high-security wireless cellular network, for the rollout of their broadband network. The 4G will be expandable to 5G.

SNAPSHOT OF TUCSON, ARIZONA

Founded in 1775, Tucson (known as 'The Old Pueblo') is Arizona's second-largest city, with a population of 540,000. It is historically a college town that blends American Indian, Spanish, Mexican and Anglo traditions. It lies on a plain of the Sonoran Desert and is surrounded by Saguaro National Park and the Santa Catalina Mountains.

"We initially talked about doing community Wi-Fi, and we pivoted to LTE and pulled in two providers — JMA [Wireless] and Insight — to help with the implementation of the product," said Boyce.

"LTE made a little bit more sense than Wi-Fi which would have meant putting up 7,000 access points to cover 19 square miles. When we started to do the testing, we were able to put up 40 LTE service towers and cover around 40 square miles and discovered this would be around the same budget.
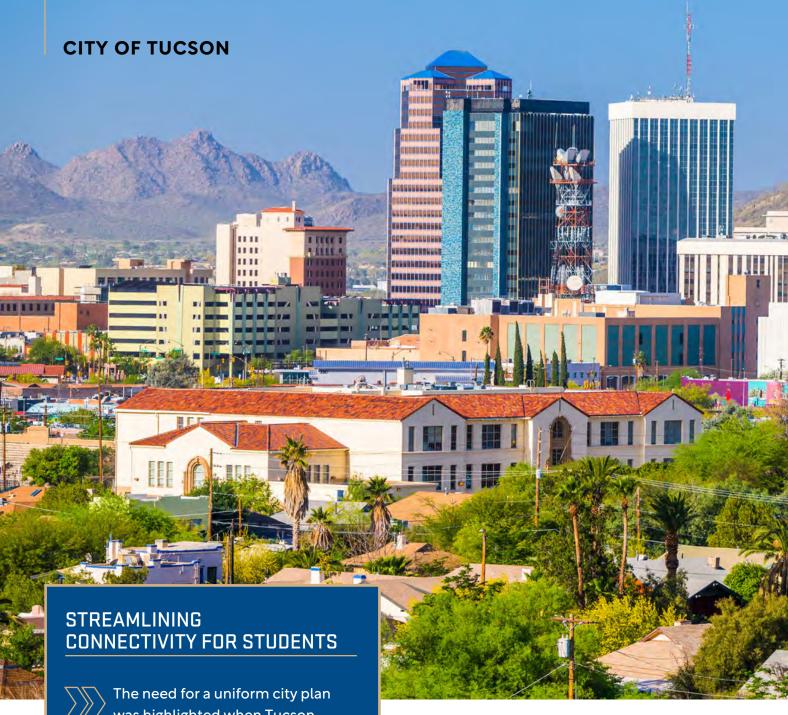
"The first 5,000 endpoint devices focus on connecting teleworkers, students and those at high-risk for COVID-19. Phase two involves deploying endpoints and network

STREAMLINING CONNECTIVITY FOR STUDENTS

The need for a uniform city plan was highlighted when Tucson Unified School District began distributing devices needed for virtual learning, but many students could not access them.
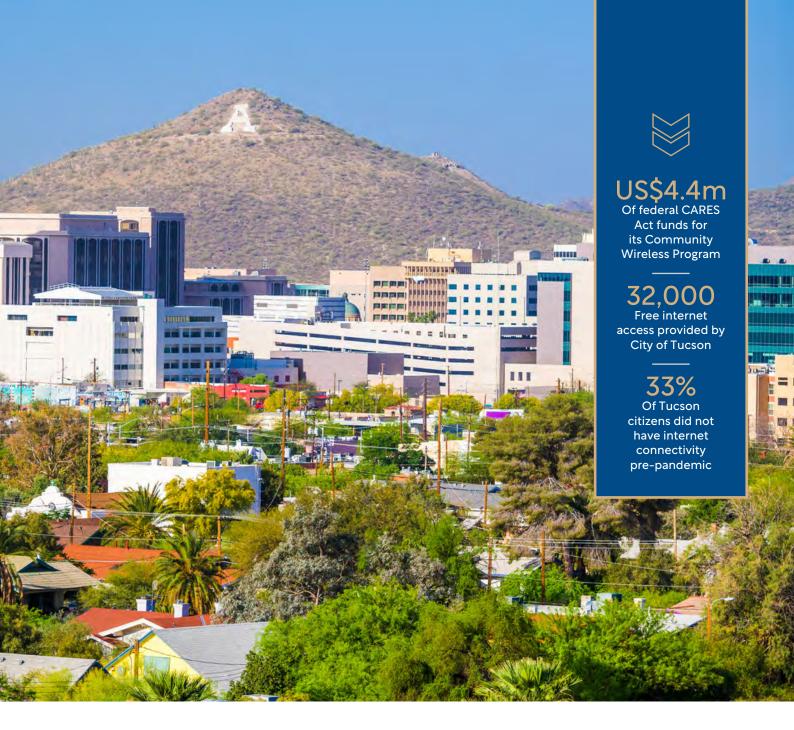
"By addressing areas that have the highest need, we can consolidate the school districts to just us being that one provider, so they no longer have to bounce between three providers," he added.

"It's probably the largest partnership since I've been in government with the local school district and the municipal government. Today, we're slating around 5,000 devices we want to get out into the community."

core infrastructure "with a strategic focus on public transportation and other public areas to maximise resident access." Boyce said the next phase of the plan would cover 70-80% of the city with LTE access.

"We are now starting to bridge the digital divide. There are some people who would prefer to use our service over the incumbents, even though we do provide some filtering. People are jumping on board and streaming church services and picking up educational programming from their schools.

"It's absolutely free – and a win for the City of Tucson on so many levels; we can provide connectivity to the citizens which we need

"DATA IS THE CAPITAL OF THIS CENTURY. WE USE OUR DATA IN A WAY THAT'S MEANINGFUL... WE WANT TO USE DATA TO DRIVE SMART DECISIONS"
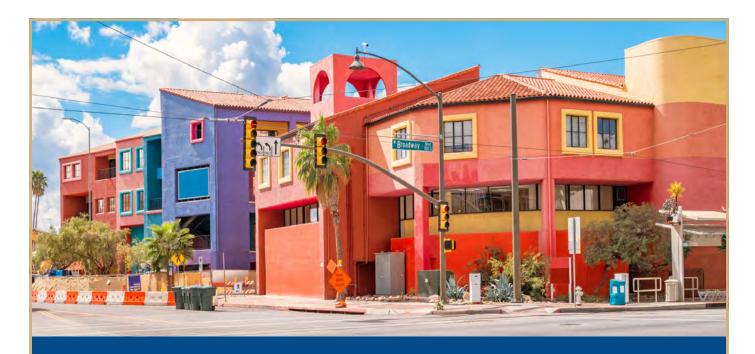
COLLIN BOYCE,
CHIEF INFORMATION OFFICER AT CITY OF TUCSON

as we move towards becoming a smart city, and we can also recoup the money we're spending as a cell phone costs the City US$60 a month while the network drops the cost to down to US$10 a month."

Internet access in real-time
A staggering 80% of people who applied to Tucson's program had no access to the internet. Boyce admitted that officials underestimated how many people had no connectivity, which prevented them from using the city government's website.

"When you have something as major as a pandemic taking place, citizens that don't

QUICK FIRE QUESTIONS

In the hot seat with Collin Boyce, Chief Information Officer at City of Tucson.

How does the digital approach at the City of Tucson differ from other US cities?
We take a very private-sector approach to how we use data at the City of Tucson. What makes us different is we try to be faster and more agile, and we're willing to push the boundaries a little bit more than our government contemporaries.

But as we are funded by sales tax, we have to be careful how we deploy services. We are using some AI, but we are not doing cloud yet. We tend to favour old licence models as it helps to keep the lights on when the economy isn't great.

How do you ensure that you continue to be agile to the needs of the citizens who are more environmentally aware today?
By keeping our finger on the pulse on what our citizens want. The City of Tucson has a unique approach as we have an employee whose full-time job is to connect with citizens. We are just about to release an app where we're going to crowdsource information. We also look at data in a meaningful way, and by doing this can start to find common problems and solutions. When you look at cities that are agile, it is always down to their hybrid approach, combining what the citizens want, the leadership vision and what the local government department needs. If you take those three things and put them together, you get the whole pie.

How do you see Tucson evolving as a smart city in the next two years?
We're using data in more meaningful ways to create an amazing footprint. We are using some AI with Google to do some natural language processing in routing citizens to the correct government department. Lots of little things are happening, but when they all come together, we'll be better able to serve the citizens.

"WE ARE NOW STARTING TO BRIDGE THE DIGITAL DIVIDE"

COLLIN BOYCE,
CHIEF INFORMATION OFFICER
AT CITY OF TUCSON

have internet connectivity ring our offices, and this overwhelms our phone systems. Providing access to our website allows for better communication and helps our citizens to get updates in real-time, especially on vital information such as the vaccine rollouts."

Boyce is now looking to increase awareness for the project with an advertising strategy to connect with grassroots organisations in a bid to spread the word.

"We can provide service to 32,000 homes, but so far, we only have 1,000 homes that are connected, so we have to get the word out there. Once they say they are interested, we will then deploy a device to their house, and we will transmit it out, and it will convert it into something that is usable for the citizen – very similar to a radio wave," said Boyce.

'Data is the capital of this century'

Commenting on The City of Tucson's digital journey, Boyce said the hard part of any innovative project is it doesn't always have a clear beginning, middle or end. "When we started on the project to get our citizens connected, we had a vision of what we wanted to do, but all of the steps to get there weren't well-defined, so we literally built the bridge while we were walking along it.

"It is a fun project, despite having to make a few adjustments along the way, as we march towards our vision. We even had to navigate Native American burial grounds. It was probably the most exciting project that I've

done in the sense that it was a lot of learning and impacted citizens in a meaningful way. It was also a risk, but taking a risk is an important part of leadership," said Boyce.

"Data is the capital of this century. We use our data in a way that's meaningful. We don't want to use it in a way that makes our citizens uncomfortable, but we want to use data to drive smart decisions. Where a lot of people see smart cities as highly technical, we see a smart city a little bit different. We are more focused on using the data to help drive the decisions and being able to connect citizens to the resources that we have.

"Our most precious resource in the City of Tucson is our citizens and being able to crowdsource what they're feeling, what their problems are and using that to drive our decisions. We are pushing on those fronts in order to better connect with our citizens and to be a smart city."

Phased approach for employees

Boyce said when the pandemic struck, the City had to initially categorise more than 6,000 employees and identify whose role was critical to that department - deploying 800 laptops in phase one.

"Our priority was to get them home and keep our employees safe. But we were surprised how many people did not have computer access at home. If they did not have a mobile device, we quickly got them one, and they were able to function.

5,000
Endpoint devices will focus on connecting teleworkers and students

40
LTE service towers cover 40 square miles

6,000+
Government employees worked remotely during the pandemic

"Once we got the wave of everyone who was critical to their department, we started to add in another layer that drove our digital transformation process. We onboarded a company called Laserfiche through our partner General Code, and they created a lot of the workflow forms for us.

"We gave them a smorgasbord of forms, and we started to convert them and create simple work for each department and slowly moved this into real-time. I like the analogy for this kind of digital transformation 'don't turbocharge caterpillars, let them mature slowly into

system - which was tied into Google - and a new intranet was deployed in order to help facilitate better city communications."

Partners – Geoverse and General Code

City of Tucson relies on an ecosystem of trusted partners, which include Geoverse, General Code, and Diversified - all praised by Boyce for their seamless support during the project. "Diversified is the core provider for the network that we built and immediately helped us to deploy towers when we ran into problems," said Boyce.

"Tucson is very historical, so when you go to deploy towers, there are sensitive archaeological areas, and it can take a while to get towers in those locations. But Geoverse flipped on roaming for our users, and through this partnership, the things they were doing made that possible."

General Code built the City of Tucson's web application for the Wireless program. "They did an amazing job. The whole backend system where we validated the address, whether the person was in the coverage area or not, was designed and built by the General Code team."

Boyce said the city is also planning to launch another network using the same infrastructure that will supply connectivity to the city's air-quality sensors and future devices, but that it won't interfere with the community network.

In a bid to reduce pollution, the City is in the process of optimising traffic lights to react to the number of vehicles. "This is an example of how we can use data-driven solutions to influence the traffic flow and reduce pollution as our Mayor, Regina Romero, is very keen to make sure we work towards a greener smart city of the future."

butterflies and grow the way they are supposed to'.

"During phase two, we upgraded 20 major applications inside of the City and consolidated them into the IT umbrella. We started to create self-service options inside of our Interactive Voice Response (IVR)

DEMOCRATISING *DATA STORAGE*

WRITTEN BY:
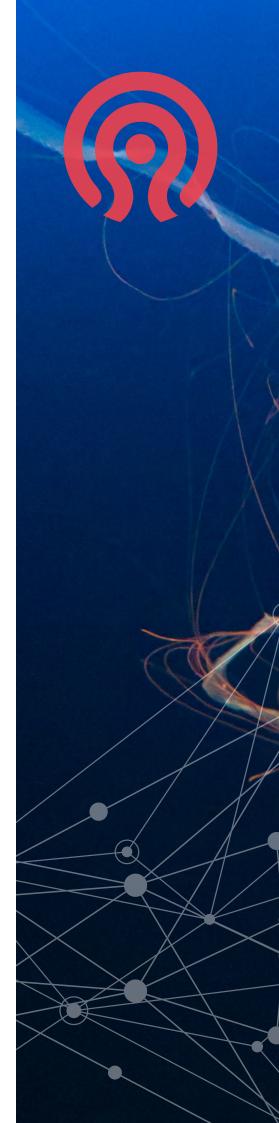**HARRY MENEAR**

———

PRODUCED BY:
LEWIS VAUGHAN

Meet Ceph: the open source data storage solution helping decision makers find the flexibility, reliability, and scale to navigate a changing IT landscape

It should come as absolutely no surprise to anyone who hasn't spent the past decade living under a rock that data has become the backbone, the body, the soul (the metaphor of your choice) of the modern world. Data storage, analysis, recovery, and management are mission critical capabilities for any enterprise - and the core value proposition for more than a few.

The data centre industry is experiencing an explosion of capacity throughout both mature and emerging markets, datasets are growing exponentially like some 1950s sci-fi special effect, and emerging tech trends like 5G, the IoT, artificial intelligence, machine learning, HPC, cold storage, and edge computing all conspire to pour gasoline on an already raging fire. Yet, the more critical that an effective data storage solution becomes to organisations and enterprises of all shapes and sizes, the more apparent it is that the solutions dominating the market today aren't necessarily the right tools for the job.

"In retrospect especially, but even at the time there was a glaring hole in the market. There was a clear need: everybody needed storage, it needed to be scalable, and there was no open source option; you had to buy expensive proprietary solutions," reflects Sage Weil, Principal Ceph architect at Red Hat, and the founder and chief architect of Ceph. "There needed to be an open source alternative that was good, and that's the niche we've tried to fill."

Massively scalable storage for demanding applications

Red Hat® Ceph® Storage, an open, massively scalable, simplified storage solution for modern data pipelines. Engineered for data analytics, AI/ML, and emerging workloads, Red Hat Ceph Storage delivers software-defined storage on your choice of industry-standard hardware.

Learn more

The Ceph Foundation

Since the first prototype of Ceph was launched back in 2007, the community of enterprises, organisations, and users that use it has grown to touch a huge number of spaces, from small businesses to large scale enterprises; from the scientific community to regional telecom carriers.

In November 2018, a cluster of organisations actively involved in the development, support, and commercialisation of Ceph formed the Ceph Foundation, launching the new initiative under the umbrella of the Linux Foundation. The founding members included Amihan, Canonical, China Mobile, DigitalOcean, Intel, OVH, ProphetStor Data Services, Red Hat, SoftIron, SUSE, Western Digital, XSKY Data Technology, and ZTE.

"I was pretty naive back then. I thought you just built something, open sourced it, and people would just start appearing to develop it, fix bugs, etc. and that's not how it works," laughs Weil. "We had spent several years trying to add all the features that we thought Ceph had to have before people would be willing to use it," before the launch of the Foundation in 2018. "There are a lot of industry stakeholders that are selling or using Ceph as part of their business. So the Ceph Foundation became a way for those organisations to contribute funds that could be managed and spent to further Ceph's development and the community. Prior to the Foundation, it felt a lot more like begging – going around asking 'who wants to pay for X or Y'," he adds.

"Ceph is designed to provide a reliable storage service out of unreliable components"

SAGE WEIL
CEPH PRINCIPAL ARCHITECT,
RED HAT

"The Ceph Foundation is essential to the Ceph community and our customers because its members are all invested in the development and progression of Ceph," says Aaron Joue, founder and CEO of Ambedded Technology – which combines Ceph technology with its own line of decentralised Arm servers.

The power of the Foundation, continues Kyle Bader, a Data Foundation Architect at Red Hat, lies in its ability to drive the industry to "deliver on the promise of democratising software defined storage through open source in a way that's very similar in the way that Linux led to the democratisation of the operating system."

That democratisation, adds Craig Chadwell, VP of Product at SoftIron, creates the necessary competition (centred around the foundation itself) to push the Ceph commercial ecosystem to even greater heights. "The Ceph community is very large and robust. The Ceph Foundation helps to enliven and support that community, which in turn ensures that there will always be other options out there so that we can maintain that no vendor lock-in value proposition," he explains. "It really forces us to continually challenge ourselves to deliver solutions that are uniquely solving customer problems, because the reality is, if a customer can move away and there's something providing more value out there, they will. It keeps us honest and on our toes."

Philip Williams, Product Lead at Canonical, reflects that "a funny thing about the open source world is that essentially we're all competitors, but we're also all working together to make something that is available for free even better."

Meet Ceph: Reliable, scalable, affordable. open source

Developed by Weil – in collaboration with data storage researchers at the University of California: Santa Cruz, as well as at researchers from the country's leading laboratories in Los Alamos and beyond – Ceph is a distributed, open source data storage solution that grew to fill that glaring hole in the market Weil and his colleagues saw back in the 2000s.

"Ceph is designed to provide a reliable storage service out of unreliable components. You take a bunch of individual hard drives that can fail, a bunch of networks that can fail, switches, servers that all individually are very fallible, you put them all together with Ceph and the net result is something that's highly reliable that tolerates any single point of failure – or in many cases many points of failure. It's highly available and highly scalable as well," Weil explains, adding that Ceph is

also capable of providing object, block, and file storage all in one system on the same hardware.

Ceph's distributed approach to data storage is hugely fault tolerant. Like a commercial airliner that can continue to fly with all but one engine out of commission, Ceph is robust enough to handle all but the most catastrophic of outages.
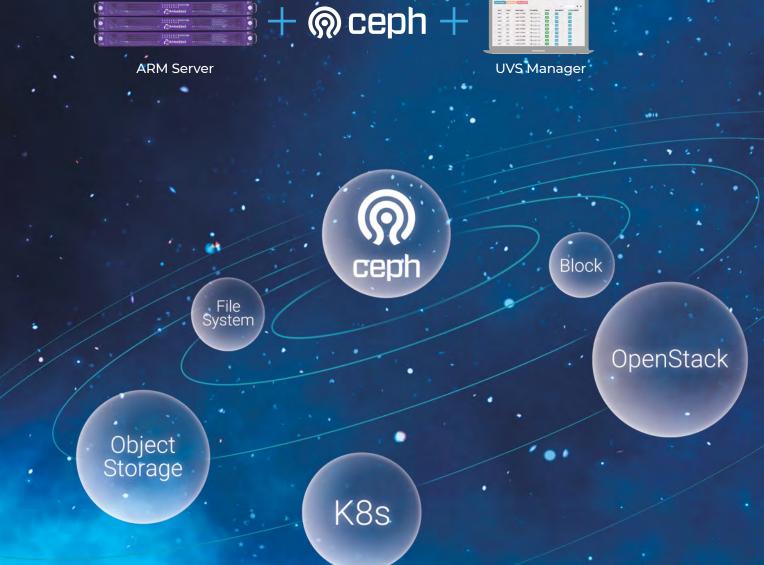
As a storage solution, Ceph's appeal also lies in its open source, software defined design that – in addition to delivering reliability and flexibility at scale – excels at adding up to far more than the sum of any somewhat meagre parts you might happen to have lying around. "Ceph is open source, software defined, and meant to be run on any commodity hardware you want to buy or already have," Weil says. "It doesn't matter which vendor you're buying your hardware from, whether you're using hard drives or SSDs, what kind of switches are in your network; it's fully software defined,"

CANONICAL - THE FULL SPECTRUM OF ENTERPRISE COMPUTE

Open source is the core of everything that happens inside Canonical. "All of our work is out in the open; it's free to use, which I think is super important for storage technology, because you can understand what is actually going on inside the system. That's impossible when you're using closed source or proprietary technologies," says Philip Williams, Product Leader at Canonical. "One thing that you see with traditional storage systems from the big players is that their growth is usually around scale up. They'll have arbitrary limits on the number of disks you can add to a system."

With datasets inside every organisation growing larger every day, Williams notes that "for people with quite significant amounts of data, public cloud and those traditional proprietary storage options typically aren't cost effective or feasible." As a result, Canonical – along with the rest of the Ceph community – is embracing the infinite scalability of Ceph to "demonstrate to enterprise users that there is this viable alternative to the big players, and that their organisations don't have to be developer centric to make use of Ceph."

and therefore a legitimate and long-awaited answer to market demand for alternatives to restrictive, proprietary storage solutions.

"Storage is quite an interesting industry. It's kind of hidden; people don't really think about storage until it's either too expensive or it's not available and, worst case, all your data has been lost," says Philip Williams, a Product Leader at Canonical. "So, it's this funny little world that's dominated by a number of very large players. The whole aim of the Ceph Foundation is not just to shepherd the upstream projects and this collaborative development work on Ceph itself, but also to demonstrate to enterprise users that there is this viable alternative to the big players, and that their organisations don't have to be developer centric to make use of Ceph."

Ceph's open source, software defined nature means that organisations looking to deploy it can "choose any hardware you like, choose any vendor you like – or even no vendor at all – but if you build a Ceph system and you want to switch vendors or run things on your own, you can do that very easily."

SOFTIRON - DELIVERING 21ST CENTURY INFRASTRUCTURE THE RIGHT WAY

» At its core, SoftIron asks the question of how to deliver 21st century infrastructure to meet the evolving demands centred around factors like resilience, performance, accessibility, and environmental impact. "We want to meet customers where they are. And we do that through building a set of task specific appliances that solve a variety of problems inside the data centre," explains SoftIron's VP of Product, Craig Chadwell. SoftIron's solutions range from software defined infrastructure solutions that touch the computing and networking spaces to specific solutions for media encoding. "If you take a holistic view of solving a problem, you can deliver a solution that is resilient, but with performance that's way beyond what a traditional commodity based solution could provide," says Chadwell.

SoftIron's suite of storage solutions are powered by Ceph, but the entire company's ethos is firmly aligned with the open source community as well. "One of the core premises of SoftIron's value proposition is this notion of no vendor lock-in. We provide solutions that enable our customers to effectively swap us out if they choose," Chadwell continues. "Because of the way Ceph works and because organisations that comply with Ceph's operating model can have products that work together seamlessly, it means that you can swap out a particular vendor's hardware without ever having to swap out Ceph, which means that everything above the Ceph layer from a service delivery perspective is unaffected by the lower level technology changes.

"Everybody needed storage, it needed to be scalable, and there was no open source option; you had to buy expensive enterprise solutions"

SAGE WEIL
CEPH PRINCIPAL ARCHITECT, RED HAT

In addition to offering the unparalleled freedom to start from scratch, move freely within its ecosystem, and avoid both the vendor lock in agreements and cumbersome, expensive upgrade cycles that define managed, proprietary storage solutions, Weil adds that the beauty of Ceph is that "Because it's so flexible and built to scale, Ceph doesn't require a lot of foreknowledge about where your organisation's going to be in a couple of years time. You can just expand your hardware footprint in whatever direction you end up growing."

Large storage systems – the kinds that are increasingly coming to define the cloud and data centre industries – are fundamentally dynamic. They grow and change in new and unexpected directions in response to the market and, with Ceph, organisations can grow and change with as little friction as possible. "You might start out with 10 servers from one vendor, and then five years later you're storing 12 times

KEY PARTNERSHIPS

SAGE WEIL

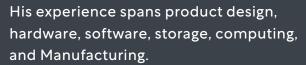TITLE: CEPH PRINCIPAL ARCHITECT, RED HAT

Sage Weil is the lead architect and co-creator of the Ceph open source distributed storage system. Sage helped design Ceph as part of his PhD research at the University of California, Santa Cruz. Since finishing in 2007, he has continued to refine the system with the goal of providing a stable next generation distributed storage system for Linux. Sage co-founded Inktank in 2012 to bring enterprise-quality open source storage to the enterprise. After Red Hat acquired Inktank in 2014, Sage has worked in Red Hat's Office of the CTO to improve Ceph and help shape Red Hat's overall storage strategy.

PHILIP WILLIAMS

TITLE: PRODUCT LEADER, CANONICAL

Philip is a Product Leader at Canonical responsible for Ceph and other storage solutions. He has over 15 years experience in the storage industry, having previously been responsible for storage infrastructure and products at a number of leading technology companies.

AARON JOUE

TITLE: CEO, AMBEDDED

Aaron Joue is the founder of Ambedded Technology. He is responsible for the business strategy and ensures the product development and support satisfy customers' needs. He accumulated experience when he worked for the defense and information technology industry.

His experience spans product design, hardware, software, storage, computing, and Manufacturing.

Aaron founded Ambedded in 2012 to create an innovative platform for software-defined storage to improve energy efficiency, availability, and performance. Before this, he was ever an outstanding engineer, factory manager, and VP of product.

KYLE BADER

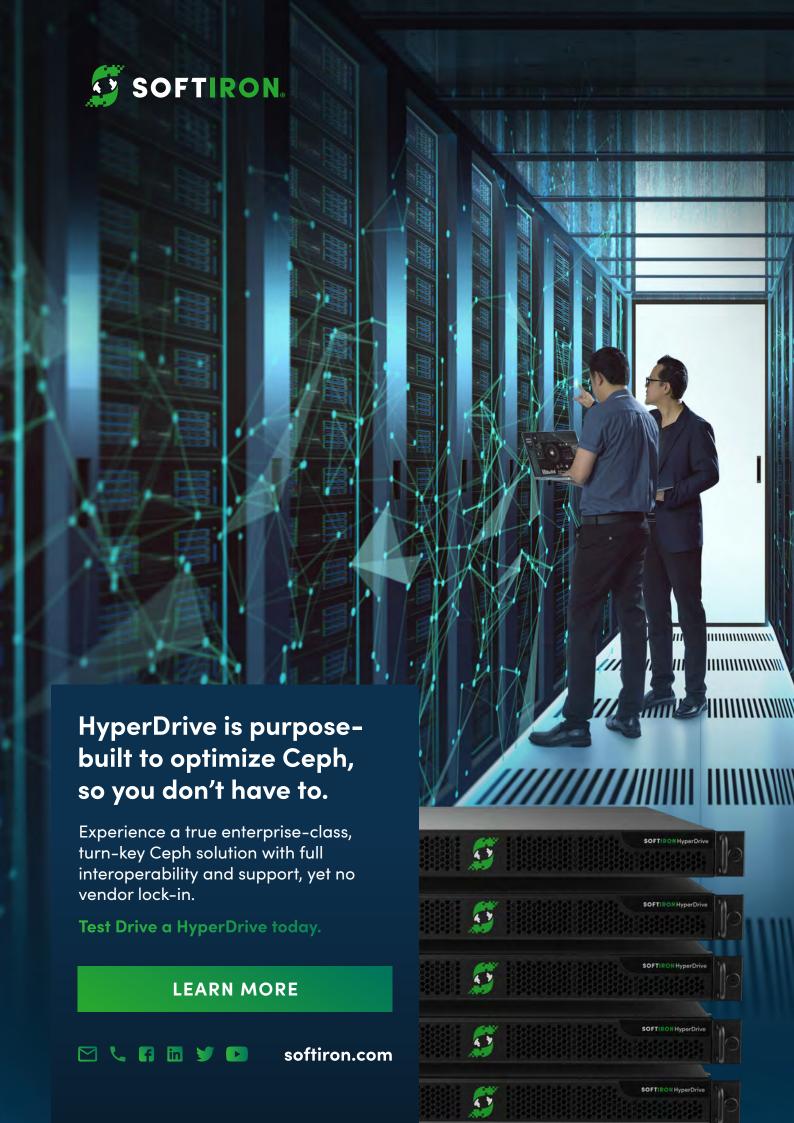TITLE: DATA FOUNDATION ARCHITECT, RED HAT

Kyle is the Data Foundation Architect covering both OpenShift Data Foundation and Red Hat Ceph Storage products at Red Hat. His focus is at the intersection of open source, distributed storage systems, data engineering, and machine learning.

CRAIG CHADWELL

TITLE: VP OF PRODUCT, SOFTIRON

Craig has spent over a decade engineering, marketing, and leading product management of cloud and software-defined data center solutions. Craig has held positions at Lenovo, NetApp, and High Point University where he gained first-hand buyer and administration experience across the lifecycle of data center operations. Craig has degrees in computer science, history, political science, and business administration.

as much data and you've been through three different hardware revisions all from different vendors, you've had to migrate data, change policy, and now you're storing a different type of data than you were before – it's all a total mess," Weil laughs. "Often, your net system is going to be a mixture of all sorts of different stuff, and open source lends itself to solving those problems really well because you have the neutrality to be flexible and adaptable. If you're buying a proprietary solution from a particular vendor, you're going to have to buy more of the X solution that they allow you to interoperate with. You're locked into a particular path." Ceph, he adds, not only frees organisations from those restrictive, vendor-defined upgrade paths, but opens up a huge, mature ecosystem of enterprises and community members to its user base.

Harnessing the Ceph community

When it comes to harnessing the true value of Ceph, its commercial ecosystem and user community are pivotal. From companies like Red Hat that deliver Ceph solutions to Fortune 500 companies, to SoftIron which simplifies the Ceph adoption process through curated, in-house designed

RED HAT - CEPH AT PETABYTE SCALE

>> Kyle Bader, Red Hat's Data Foundation Architect, comes from an operations background. As such, he's no stranger to the headaches that can accompany endeavours to be flexible in a large IT environment. "If you have a handful of proprietary appliances, that's probably fine and quite manageable, but at Red Hat we have several customers that are managing north of a hundred petabytes of data," he explains. The growth in the amount of data being stored and managed, he continues, "is not stopping by any means. So, it becomes challenging once you get to larger scales."

Red Hat's business brings the power of open source ecosystems to large scale enterprises, leveraging everything from OpenShift to Kubernetes in order to take its customers' IT infrastructure to the next level. Engineered for data analytics, artificial intelligence and machine learning, Red Hat's Ceph Storage delivers software-defined storage on industry-standard hardware to organisations at any scale.

AMBEDDED - ROBUST AND LOW POWER CEPH APPLIANCE

"We think reliability, scalability, and simplicity are keys to our offering to the enterprise storage market," explains Aaron Joue, founder and CEO of Ambedded Technology. " Ambedded integrates Ceph software, the Arm microservers, and its tailor-built ceph manager GUI (UVS manager). With the nature of arm microservers, enterprise storage customers could start deploying ceph from a tiny cluster to a petabyte-scale without an entry barrier.

Also, this ARM-based appliance results in an easy to operate, ultra-robust, minimum failure domain and low-power offering that enables customers to operate their desired cluster in a cost efficient way without complications.

"We had a project in Hong Kong where a customer wanted a very high availability storage system for CCTV applications," Joue continues. "The storage system needed to keep working, even if up to four storage servers failed at the same time. It will be costly by using a traditional storage solution and hard to achieve to keep the cluster running with 4 servers failing at the same time." However, leveraging the ceph storage and the Ambedded microserver architecture, this HK customer easily achieved their goal even with a relatively small scale cluster.

hardware that's tailor made to support its deployment, Ambedded, Canonical, and beyond, the Ceph commercial ecosystem provides support and services that allow companies of any scale, maturity, or specialisation to deploy and benefit from distributed storage - all built on Ceph.

"When it comes to getting started with Ceph, it can be an issue knowing which servers to buy, which hard drives and how many," Weil acknowledges. "That's where companies in the commercial ecosystem really add a lot of value, not to mention the open source community at large."

you're going to want something with a nice GUI that just works," Weil notes. "So, over the last three to four years, there's been a huge investment of time and resources in the Ceph community on the usability front. We've created a whole new, integrated GUI dashboard for Ceph for management. We've also developed an orchestrator layer for Ceph that can call out to whatever tools you use to deploy it, so that you can do just about anything you need to do from the new GUI. I think we've made huge progress."

Challenges

Enterprise storage is full of challenges. Apart from the obvious spiralling quantity of data being generated, the applications that create and use that data are also increasingly diverse and changing almost daily. Storage, of course, is also not immune to the broader IT skills crisis that enterprises find themselves dealing with every day. Add to that the constant revolving door of mergers and acquisitions in the storage industry and it's hard not to find a storage manager that hasn't been burned by obsoleted or sidelined proprietary solutions that have fallen out of favour. It's little wonder then that a platform like Ceph - able to flex and grow to meet ever changing demands across a huge variety of use cases - and do all that from within a vibrant open source community eliminating the lock-in problem, becomes deeply compelling.

The Ceph decade

Looking to the future, the intersection of market trends with Ceph's constantly developing capabilities (Weil stresses that a sizable portion of the Foundation's role is keeping up with cutting edge hardware developments to ensure Ceph continues to run smoothly, no matter what you plug it

Ceph for everyone

Since the dawn of the open-source approach to software design, open source solutions have often garnered "a reputation for being really complicated to use," Weil admits - adding that he and the Ceph team have spent the past few years painfully aware of that fact. Now, however, "A lot of the stigma surrounding open source in general has gone away in recent years," he explains, something that perfectly aligns with the latest evolution of Ceph's General User Interface (GUI).

"These days, if you're a small business and you need 100 terabytes of storage,

FUTURE

datacomm

Bloomberg

CEPH USER TESTIMONIALS

FUTURE PLC

NAME: TOBY JACKSON,
TITLE: GLOBAL SRE LEAD

"Future PLC has grown in recent years through acquisition of over a dozen media brands and technology companies, bringing a complex and diverse data ecosystem. Future operates services on both cloud and on-premises infrastructure, leveraging technologies that need to balance value and flexibility. Future's technology team has also grown and diversified to meet these demands, requiring their SRE team to provide ever more robust and flexible solutions without compromising on stability or performance. As a content publisher, data is integral to Future's operation, and Ceph was the clear choice to ensure its technology teams had the tools at their disposal to manage data at scale. Ceph allows Future to deploy storage across its datacenters, trusting that its data is distributed and available while enabling its development teams to self-manage storage requirements from Kubernetes with ease.

Future requires a storage solution that can not only grow in volume, but can handle diversity of locality, performance, distribution and access models; Ceph affords this flexibility under a common platform, reducing deployment complexity and simplifying its operational costs."

DATACOMM CLOUD BUSINESS

NAME: MR. LUK PHIN
        TIRTOKUNTJORO,
TITLE: CTO

"We have deployed, run and tested Ceph storage in our development environment for 2 years. Once confident with the solution, we decided to build Openstack Cloud using Ceph storage to provide IaaS, PaaS and SaaS to SMEs in Indonesia. We have considered several storage solutions to work with our OpenStack cloud, including legacy storage and software-defined storage. As our cloud service targets SMEs, we need a solution that is cost-efficient, cloud-native ready, scalable, reliable, resilient, and with good performance. We found Ceph storage to be a perfect fit after 2+ year trial experience. Furthermore, as we have three data centers located in 3 different sites, the RBD mirroring and simplicity to backup data from one data center to another in the Ceph cluster enhances our belief in choosing Ceph storage.

BLOOMBERG

NAME: MATTHEW LEONARD,
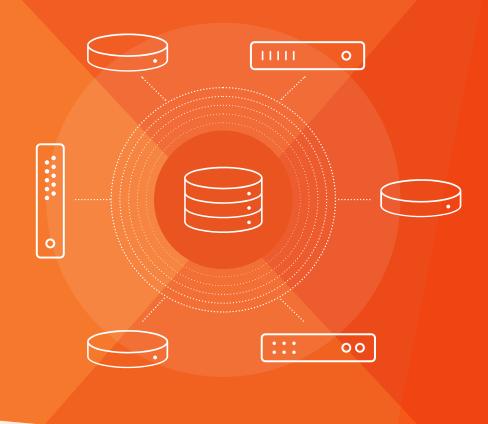TITLE: ENGINEERING MANAGER,
        STORAGE

Data is at the heart of Bloomberg's technologies, which produce and distribute some of the most critical and valuable data in global business. Maintaining the systems which store and process this data requires a unique mix of commodity hardware, open source software-defined storage, and vendor-agnostic appliance-based storage solutions.

In our diverse storage ecosystem, Bloomberg utilizes Ceph's enterprise-level scalability and durability to support different applications and varied workloads across our organization. Ceph plays a significant role in Bloomberg's OpenStack-powered private cloud computing infrastructure, as well as underpins Bloomberg's private S3-based object stores. As Bloomberg works toward contributing back to the Ceph project, we feel it is the right distributed storage technology for us -- both now and into the foreseeable future.
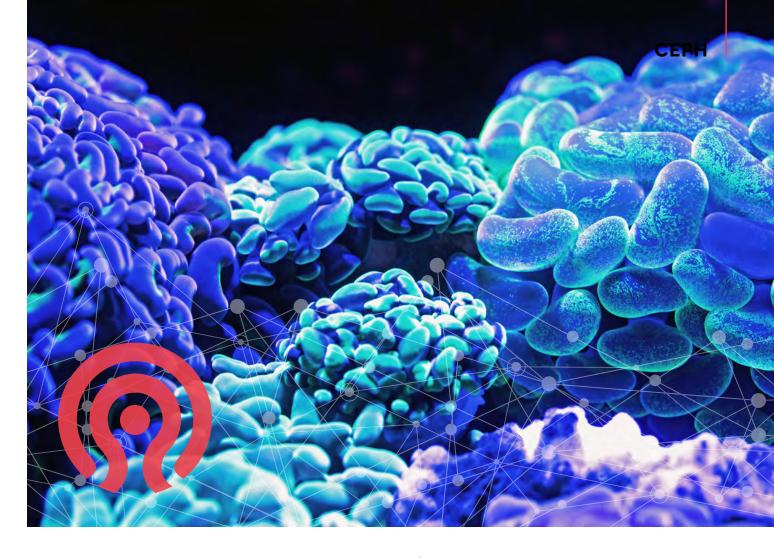
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> **"Because it's so flexible and built to scale, Ceph doesn't require a lot of foreknowledge about where your organisation's going to be in a couple of years time. You can just expand your hardware footprint in whatever direction you end up growing"**

SAGE WEIL
CEPH PRINCIPAL ARCHITECT,
RED HAT

into), as well as an ever-expanding ecosystem of vendors, users, and developers positions it ideally for a decade of meteoric growth. "Ceph is a pretty mature piece of software at this point," Weil reflects. "All of the important stuff is there and, in addition to building it out further, we're starting to add a lot of polish."

Craig Chadwell, VP of Product at SoftIron, reflects that "open-source infrastructure has rapidly evolved and matured over the last decade and is in all likelihood going to be the way that most organisations deploy their IT footprint going forward."

"People like to call Ceph the Linux of storage, which I think is appropriate," adds Weil. "Nobody thinks about which Unix they should buy because the open source one is the best, everyone's using it, and everyone is constantly improving it. Ceph is moving into that position in the storage space." ⭕

reckitt

Embedding Quality in a Changing Environment

WRITTEN BY:
MARK JACKSON

—

PRODUCED BY:
TOM LIVERMORE

We chat with **Valerie Sieurin,** the Senior Vice President Global Head of Quality at Reckitt, about how she has transformed the company's Quality systems and Quality culture, as well as its continuing commitment to creating a better future for all

I t is quite a task to implement systemic cultural change in a multi-billion company, but that is precisely what Valerie Sieurin undertook when she accepted the role of SVP Global Head of Quality at Reckitt.

Based in Slough, Reckitt is one of the world leaders in developing hygiene, health and nutrition products. Its list of world famous brands is endless including; Air Wick, Calgon, Cillit Bang, Clearasil, Dettol, Durex, Enfamil, Finish, Gaviscon, Harpic, Lysol, Mortein, Mucinex, Nurofen, Nutramigen, Strepsils, Vanish, Veet, Woolite and more. The company has a 200-year legacy and currently generates revenues of more than £14 billion, from its operations in 60 countries, where it employs over 43,000 people.

Valerie Sieurin was tasked with embedding a new culture of Quality across Reckitt, leading a global team and building strong internal partnerships to ensure Quality standards are embedded throughout the product life cycle, from marketing to procurement to manufacturing, and distribution to sales.

"Every day we sell more than 20 million products across the world," explains Valerie. "My role is to design and implement a Quality strategy to ensure we are providing everywhere and at every moment products

that are safe , trusted and preferred by our consumers, " she said.

Valerie, who has a master's degree in food science and food processes from her native France, has previously worked for major companies such as Danone and Cadbury Schweppes. She has worked in a variety of roles at local, regional and global levels, as well as having lived in three different countries. She has undertaken global roles for close to 15 years, placing her in an ideal position to implement a Quality transformation within Reckitt.

"This gives me quite a wide view of organisations and different markets," she says.

Valerie explains how the journey to the new culture was driven in parallel with a

43,000
Employees worldwide

digital transformation in Quality which includes implementing a new AI system for planning and scheduling quality control testing in manufacturing, a new cloud solution for consumer relations, and most recently the launch of an enterprise Quality Management system. All of these transformation projects were made possible thanks to strategic partnerships such as with partners, SmartQC and Veeva Systems.

For Valerie however, digitalisation is not the end game per se, but a means to drive forward Reckitt's purpose. "We see digital transformation as a way to achieve this relentless pursuit of a cleaner and healthier world," she explains.

VALERIE SIEURIN

TITLE: SENIOR VICE PRESIDENT, GLOBAL HEAD OF QUALITY

COMPANY: RECKITT

» As a global leader at Reckitt – a world renowned home of health, hygiene and nutrition brands - Valerie Sieurin is responsible for over 2,000 members of staff working across Quality worldwide. At Reckitt, Quality leaders are increasingly seen as strategic business partners. The disruptive leader is driving a culture change across the organisation, overseeing end-to-end Quality, coaching people to bring their best and driving consumers advocacy in the pursuit of excellence.

Valerie Sieurin is an ambassador for creative solutions and innovation in product, processes and Quality systems. She has initiated a digitisation journey of quality at Reckitt and championed new ideas from everyone to make the Quality team even more agile, connected, embedded and predictive.

She is also extremely passionate about sustainability & inclusion across Reckitt and the community.

EXECUTIVE BIO

Initially Valerie with her team identified those areas where Reckitt could improve its performance in pursuance of its overriding goals, the technology that could help them accomplish this, and the partners that could help drive this technology transformation. "As a Quality professional, you are always looking at what you can improve and combine with the strengths which you want to maintain. Continuous improvement is part of the DNA of the Quality leader." she explains. "But, with my team, we did not want small incremental improvement, with the new technologies available we had the ambition to leapfrog.

"We focused on two areas. The first was consumer relations to move from answering complaints to driving advocacy and win consumer preference. The second was

> # "We are here to protect, heal and nurture in the relentless pursuit of a cleaner and healthier world. This is what drives me every day in the decisions I take. It means that we are always looking at better solutions"

VALERIE SIEURIN
SENIOR VICE PRESIDENT,
GLOBAL HEAD OF QUALITY, RECKITT

eliminating repeated failures. Our vision was to make the organisation more predictive in order to avoid such errors, and to support this cultural transformation through technology."

To enable this transformation, Valerie and her team have built a very strong partnership with the Reckitt IT department. In order to transform its consumer relations, Reckitt worked closely with its project partners to design a cloud-based system to enable them to connect everywhere with consumers, using all media from emails to social media.

"Now our consumers can contact us from any place and at any time," she explains. "We can bring insights to the business to improve our products and service and delight our consumers, which ultimately will drive consumer advocacy and increase love for our brands."

The second cultural transformation concerned Reckitt's Quality processes and systems. The aim was to connect all the company's Quality processes to increase efficiency and, as a consequence, revenue. Valerie believes that Quality transformations can directly impact a company's business success: reduce time to market and improve first time right as two examples.

Previously Reckitt had Quality systems which were not connected with other systems within the organisation and therefore inefficient. This is why Valerie and her team decided to partner with Veeva Systems to develop a solution using the latter's Quality management platform QualityOne, which Reckitt is now implementing. "This will enable us

20mn+
Products sold across the world everyday

to connect all of our Quality management processes and be more efficient," she explains.
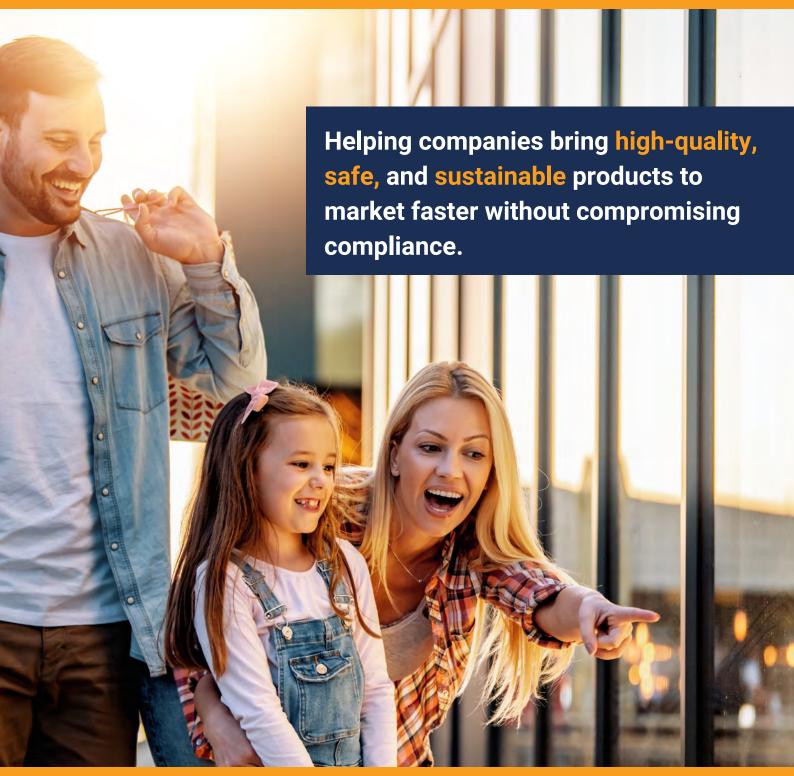
The transformation began with improving efficiency in Reckitt's Quality Control laboratories, which she refers to as a 'Lean lab Programme and lately renamed as LabEx for Laboratory Excellence'. "We quickly identified that implementing lean methodology wasn't enough, it was a good step to start improving a laboratory, but it wasn't enough," Valerie says. We needed to enhance our programme with technology and that is when the relationship with SmartQC commenced. The end game is to have paperless laboratories that will be fully integrated to the overall business systems. When systems are connected, this will improve product release times and get products to customers faster.
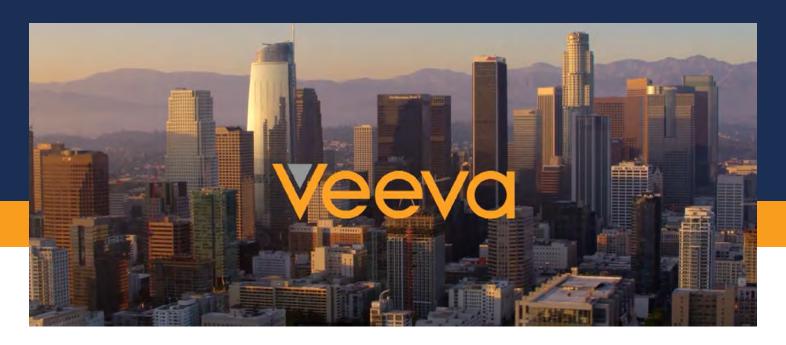
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Reckitt Embarks on Quality Cloud Transformation with Veeva

Why Consumer Goods leader Reckitt is partnering with Veeva Systems to transform its quality processes for greater operational agility

Consumer hygiene, health and nutrition leader Reckitt is partnering with Veeva Systems to realize Reckitt's vision for Quality's digital transformation.

By adopting Veeva cloud solutions, Reckitt is establishing a modern technology infrastructure that allows people and processes to operate with agility and speed, without compromising quality and compliance.

Reckitt selected Veeva's QualityOne software to replace disparate legacy systems and streamline activities, data, and documents into a single source of truth. This digital transformation effort improves collaboration throughout the organization, and enables greater transparency and agility.

"We're taking the opportunity to reduce complexity, because that is the enemy of progress and growth, and simplifying our processes with this intuitive platform. The system is not only user-friendly, but its ease of use allowed our team to re-imagine the process," said Breda Quinn, Global Transformation Quality Director at Reckitt.

"Veeva is an excellent technology partner for us. They are agile and empower us to focus on all the right things. They're driving the strategic thinking and inspire, and motivate us, to think long-term."

Partner to Industry, Customers: What Sets Veeva Apart from Other Vendors

Unlike transactional technology vendors, Veeva takes a partnership approach to its customers' digital transformation journeys. This includes maintaining deep expertise in industry challenges.

For example, Veeva employs "a unique team of strategists who have joined Veeva directly from industry; they are the voice of our customers" said Veeva strategy leader Ed Van Siclen. "And when we get it right -- the collaboration between our product organization, our customers and the strategy team -- we create magic."

Additionally, Veeva solutions are appreciating assets that allow customers to keep pace in a rapidly evolving business environment. "As a cloud-based, SaaS technology provider, we deliver software-at-speed," Van Siclen said. "We add features three times a year and become an appreciating asset for our customers."
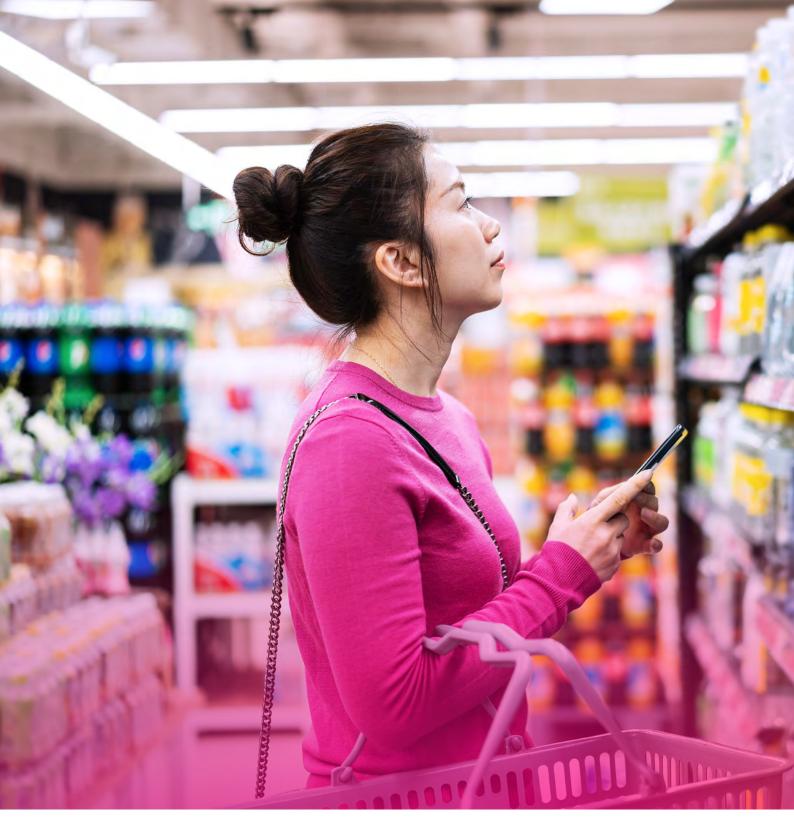
Read More

info@industries.veeva.com

Streamlining processes within laboratories leads to greater efficiency, while improving business, and maintaining standards to ensure customer confidence in their brands. Valerie believes that the introduction of these new technologies and systems will provide the Reckitt teams the access to the data in a digital format that they need to enhance

Generates revenues of more than

£14bn

their decision making within a more agile supply chain.

"Now there are a lot of different technologies that are available to us that we have started piloting and deploying. SmartQC for example, is a digital twin that enables us to plan and schedule our testing more efficiently. We are also looking at piloting and implementing SmartQA, which will

digitise quality assurance activities and ultimately improve product release times further. In our pharma factories we have hundreds of test methods for our products, so it is complex to manage the lab operation. These new technologies really enable our people to focus on what is important, adding value."

The transformative process is not one Reckitt could have undertaken on its own. Valerie places great importance on the role played by their partners.

When working out which companies Reckitt should work with, Valerie always initially asks the question, "what don't we know?". Then she identifies where Reckitt can collaborate with potential partners and those companies which could join them on their journey of transformation.

For Valerie the transformative process is continuous. As she observes "the technology of today will be obsolete soon," which she finds "fascinating."

Consequently, it is vital that companies such as Reckitt are choosing the partners who are innovative, invest in research and could evolve with them in order to improve the quality of both their processes and also their products in order to maintain both efficiency and customer confidence in their brands. "This is why we have partnered with Veeva Systems. This is also why we work with SmartQC," she says.

However, for Valerie improving efficiency and maintaining brand confidence is only part of a bigger picture. She believes that Reckitt serves a far greater purpose than would appear on any financial balance sheet. This is what motivates her.

"The reason why we exist is our purpose," she says. "We are here to protect, heal and nurture in the relentless pursuit of a cleaner and healthier world. This is what drives me

"Now we are able to have our consumers contact us from any place and at any time"

VALERIE SIEURIN
SENIOR VICE PRESIDENT,
GLOBAL HEAD OF QUALITY, RECKITT

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every day in the decisions I take. We are always looking at better solutions to fulfill our purpose."

As such, Valerie is energised by Reckitt's sustainability initiatives which lie at the heart of both the company's ethos and its global impact. To achieve these the company works closely with local communities to forge a brighter future.

"We are engaging together with our partners with 22 million people through programmes, partnerships and campaigns," she explains. "Our objective is to have a lasting impact on people and communities, and also to deliver the UN's Sustainable Development Goals in which we are engaged."

These initiatives are also designed to reduce Reckitt's own carbon footprint. "We have

Operates in

60

Countries

huge objectives and we are all working together on achieving them by 2030," she says.

Reckitt has targeted reducing greenhouse gas (GHG) emissions in its operations by 65% by 2030, as well as using 100% renewable energy and reducing its overall energy usage by 25%. This should lead to a 50% reduction in its product carbon footprint in the same timescale, with the ultimate goal of being carbon neutral by 2040.

The company has partnered with the WWF to preserve and restore 2,100 kilometres of freshwater across two major river basins in the Amazon and Ganges. In addition, one of its brands, Air Wick, is also working with WWF to raise awareness of

1819	Year Founded
Manufacturing	Industry
43,000	Number of Employees
£14bn	Revenue

"This is for the good of the people, the consumers, but as well for the planet"

VALERIE SIEURIN
SENIOR VICE PRESIDENT,
GLOBAL HEAD OF QUALITY, RECKITT

the importance of nature and how we can all do more to protect and restore it.

Valerie believes that neither Reckitt's culture of Quality transformation nor its sustainability drive would be possible without the strong and clear leadership provided by the CEO, Laxman Narasimhan and company's senior management.

"This transformation in Quality is only possible because of the leaders across the world that are engaged in this transformation," she says. "We are driving innovation in the areas of hygiene, health and nutrition, continuing, improving and working on our sustainability goals in order to have a positive impact in the world."

The aim behind the current transformation of the company's Quality processes is to ensure that all of the disparate parts of Reckitt's global family are connected and working together to achieve its purpose to protect, heal and nurture in the relentless pursuit of a cleaner and healthier world. This requires a state of constant evolution.

"This is for the good of the people, the consumers, but as well for the planet," Valerie says. ⭕

PRESIDIO®

BACK TO THE FUTURE

WRITTEN BY: | **PRODUCED BY:**
JANET BRICE | **TOM VENTURO**

Pioneering ransomware can now predict, identify, protect, detect, and respond to attacks by turning back the clock

S top ransomware in its tracks by turning back time." Sounds too good to be true? Well take a look at a revolutionary new platform launched by Presidio – a global digital services and solutions provider.
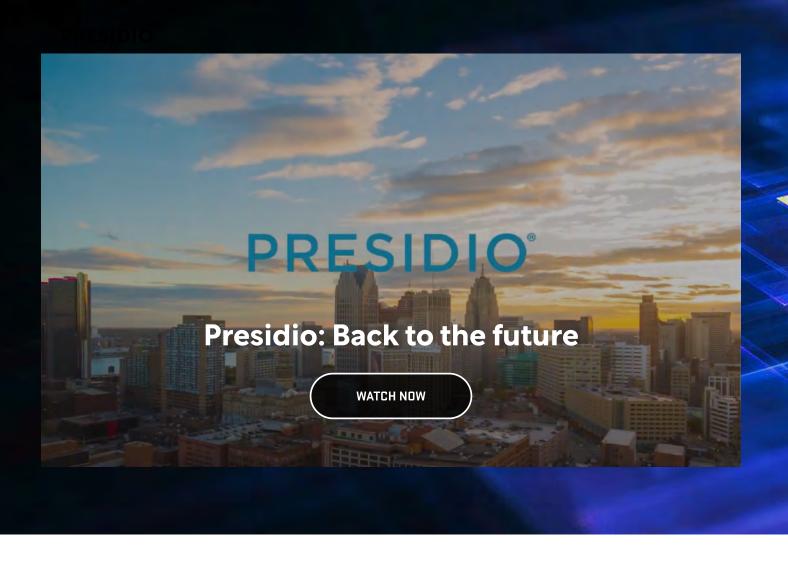
The Ransomware Mitigation Kit gives organisations an end-to-end white glove service to identify and protect against cyber threats, detect, and respond to risks as they occur.

"The ability for an organisation to identify and respond to cybersecurity incidents could mean the difference between a minor disruption and a potential catastrophic event," said Dave Trader, Field CISO at US-based Presidio who points out cybercrime is expected to grow by 15% over the next five years - reaching $10.5 trillion USD annually by 2025 according to Cybersecurity Ventures.

Trader, who can build a cyber security program from the ground up, joined Presidio in 2019 and has a background in the Marines. He notes that companies have to get the basics in place, digital transformation, cloud, data, cyber and network.

"We are pioneers with our ability to address and mitigate ransomware attacks. It is a new frontier against cyber crime which is not being done by other cloud providers," said Trader.

Presidio: Back to the future

WATCH NOW

Presidio recognises that there is no one silver bullet to mitigating ransomware attacks. The Presidio strategy requires a layered approach and a team that is on top of emerging threats. The Ransomware Mitigation Kit maximizes the benefits of best-in-class security technology, as provided with the combination of Presidio, CrowdStrike and AWS.

Back to the future

Clients will appreciate being able to recover to where they were one hour before the attack. Recovery time means a quick restart, rather than a complete rebuild of the backbone, infrastructure, or databases. The innovative solution essentially turns the clock back and takes away the weapon that cyber adversaries have been using which is to hold data to ransom and halt production.

"I've seen catastrophic ransomware attacks that have brought companies to their knees, because they were just not able to defend themselves. But once this is set up, we can roll back to an hour before it happened and restore everything the way that it was. Clients will appreciate being able to recover to one hour before the attack, instead of possibly recovering to a point from weeks ago. Recovery time means a quick restart with minimal loss, rather than a complete rebuild of the backbone, infrastructure, or databases.

"We can then take our security operations and point it at that incident response and look at the digital forensics of the system that was affected, register it with CrowdStrike and it's no longer a zero day."

The revolutionary new platform from Presidio defends against ransomware and sophisticated cyberattacks through a comprehensive service that combines leading security capabilities of Presidio, CrowdStrike, and CloudEndure, an Amazon Web Services (AWS) company.

DAVE TRADER

TITLE: **FIELD CISO AT PRESIDIO**

INDUSTRY: **TECHNOLOGY SECURITY**

LOCATION: **NEW YORK**

Dave Trader has been in Cyber Security for more than 20 years. Trader began his career as a Marine, where he specialised in encryption as a Signals Intelligence and Communications expert. He has spent time as a CISO prior to joining Presidio, and is certified in more than 70 different areas of CyberSecurity. Dave specialises in high-security environments, Incident Response, SOC Operations, and security architecture and has been a preferred cybersecurity consultant to Fortune 100 companies for securing their environments.

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DAVE TRADER
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info@lacework.net

"Tens of thousands of cybersecurity events occur on a daily basis that have the potential to cripple an organisation for weeks or months at a time. It's not a matter of if your organisation will experience a crippling cyber event, it's a matter of when. Preparation is critical. Our new solution can stop ransomware in its tracks, saving immeasurable time, resources, and money," said Trader.

The company has demonstrated its expertise in helping customers design, architect, build, migrate and manage their workloads by building close partnerships with all the major infrastructure, security, and cloud providers. Some of the strategic partners in this scenario include Lacework, Trend Micro and Fortinet. Presidio's relationships and deep understanding of all areas of technology has helped Presidio to achieve Premier Partner status within the AWS partner network in 2021.

The Ransomware Mitigation Kit offers:

• Visibility and breach protection across all digital assets

• Strong cloud security foundation to defend against ransomware and sophisticated cyber events

• Detection and attack prevention, leveraging community immunity

• Swift response and attack mitigation, preventing lateral spread of ransomware to other devices within or outside of the organisation

• Backup and recovery allow an organisation to reclaim and restore all lost or compromised data and applications to their state prior to the attack

"THE ABILITY FOR AN ORGANISATION TO IDENTIFY AND RESPOND TO CYBERSECURITY INCIDENTS COULD MEAN THE DIFFERENCE BETWEEN A MINOR DISRUPTION AND A POTENTIAL CATASTROPHIC EVENT"

DAVE TRADER
FIELD CISO,
PRESIDIO

According to Trader, previous approaches to ransomware mitigation and cyber protection were bifurcated, disjointed, and required reliance on mutable backups. As attacks and malicious activity become more sophisticated; prevention, detection and response to attacks must become more agile. Leveraging Artificial Intelligence (AI) and automation, the Ransomware Mitigation Kit eliminates most manual effort, dramatically cutting down on the time, money and resources needed to combat bad actors.
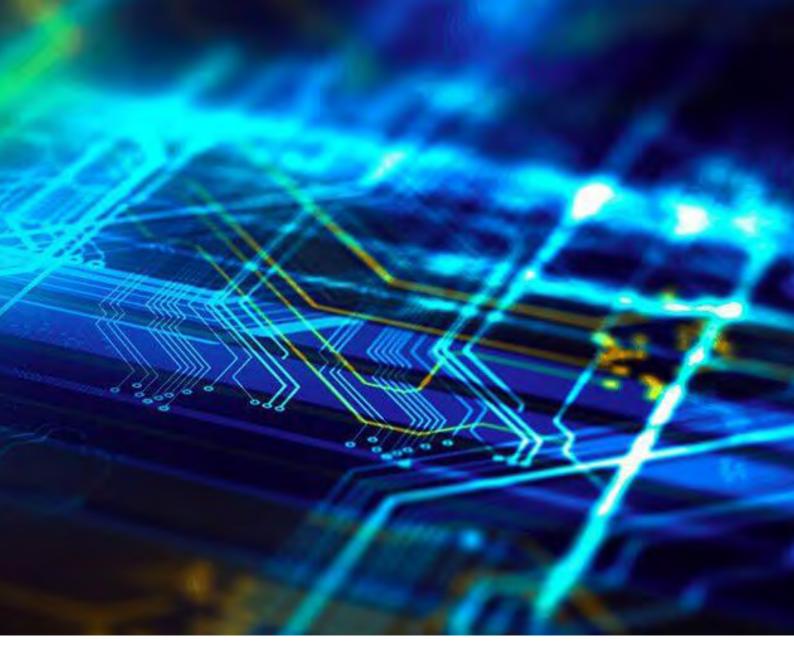
Founded in 2003, Presidio is a global digital services and solutions provider accelerating business transformation through secured technology modernisation. Highly skilled teams of engineers and solutions architects with deep expertise across cloud, security, networking, and modern data center infrastructure help customers acquire, deploy, and operate technology that delivers impactful business outcomes.

Virtual Security Operations Centre

Since joining Presidio Trader has doubled down on virtual security operations centre (vSOC) services. A vSOC is an outsourced, comprehensive, round-the-clock data monitoring solution that enables a company to identify threats as they arise.

Companies are recognizing that security can't be an optional add-on anymore. Security baked into everything from

code to the DevSecOps, right through to deployment at the edge. This is what Trader calls 'intrinsic security'. He believes that security be in the process every step of the way.

"We saw a gap in the market where we found companies building their own vSOC. It can work for a while, but companies end up overwhelming their entire team as the scope and scale of vulnerabilities continue to grow. They were looking for some help. We saw an opportunity to bring in our expertise and promote internal enterprise security teams so they can handle major events, while we dealt with the day-to-day incidents to protect their environment. We have been able to build tremendous client value in a close-knit relationship."

Another benefit for Presidio's vSOC is its portability. Clients can stay with platforms they have in place – automation enables the solution to run without the end user noticing any change.

The "Cloud Right" Approach

Since early 2020 the market has seen a rush to migrate to the cloud while supporting a remote workforce. "We are trying to get applications closer to the user, which raises issues around latency and security concerns about the right way to achieve that," says Trader. "We have moved from 'cloud first' to 'cloud right'. We start with an evaluation so that we can advise as to whether cloud is best for this client and if so - in what configuration.
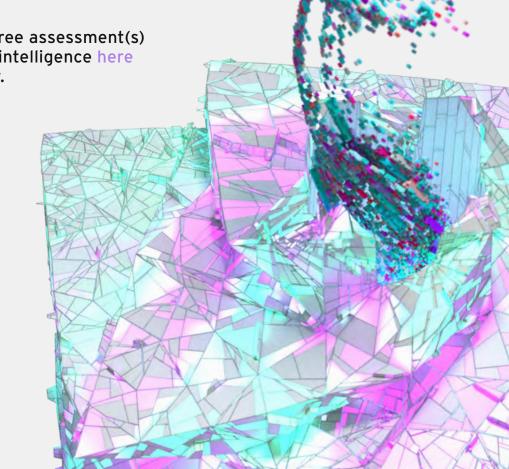
SIMPLIFY, CONNECT AND PROTECT YOUR ENTIRE CLOUD ENVIRONMENT

Trend Micro Cloud One™ and Presidio Cloud Services introduce a comprehensive offering designed to meet your cloud security needs.

Sign up to schedule your free assessment(s) for immediate, actionable intelligence here or scan the QR code below.

Please scan for your free assessment(s)

"Customers tell us they had no idea that level of automation was even possible and are really enjoying the insights and outputs they are getting through being able to leverage the automation we have baked in through APIs," he said.
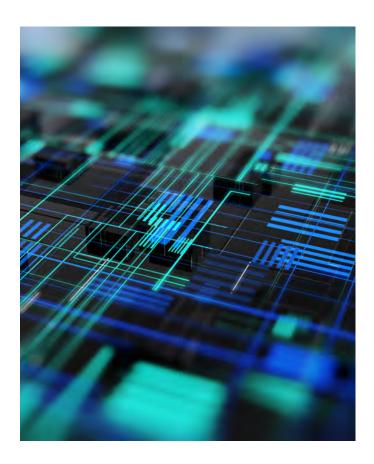
Secure Access Service Edge

The Secure Access Service Edge (SASE) is at the forefront of Trader's strategy for remote workers. "Latency became a problem. We had engineering companies and architects that were spending six or seven hours downloading blueprints they were working on at home, rather than the secure networks they had in the office. That placed a focus on identity access management and real-time assessment of the end user at the endpoint. That is why identity is so important: the perimeter has shifted."

Addressing the endpoint required User and Entity Behaviour Analytics (UEBA) is a process of gathering insight into the network events that users generate every day. One example describes the 'impossible traveller' where a user appears to interact with the same resource from two different locations but could not possibly have made that trip in that time. "We'd recommend the user add another layer of validation called two-factor authentication. We are seeing more companies adopt that approach, which is very encouraging," says Trader. To further protect the business, Presidio has incorporated Managed Detection and Response (MDR) to automatically detect such compromises, and to isolate or quarantine those offending users within seconds.

Partnerships with Lacework, Trend Micro and Fortinet

In the war against cyber attackers, a rich ecosystem of partners is vital, and Presidio's approach is to find the right partners for each client situation. "I rely on dozens of partners to bring to the table including vendors such as Lacework, Trend Micro and Fortinet," said Trader.

Lacework is the data security platform for the cloud which uses a patented Polygraph system which has cracked the code for how to leverage the massive scale, complexity, and containerisation of cloud computing to redefine a modern approach to security.

Presidio leverages Lacework to gain additional visibility on a decentralised model of the data. It focuses on anomaly detection and leveraging Entity and User Behaviour Analytics (EUBA).

Trader uses the analogy of sunspots to show how they can identify anomalies in data. "If you're looking at the sun and you've got different flares that pop off — those are anomalies. If we focus on normalised data, we're going to be pulling our hair out because that's massive, so we need to focus on those anomalies.

"YOU HAVE TO GET THE BASE FUNDAMENTAL RIGHT WHEN IT COMES TO SECURING YOUR COMPANY BEFORE YOU CAN THINK ABOUT BRINGING IN PRESIDIO TO PROVIDE THE FULL STACK, FULL STOP"

DAVE TRADER
FIELD CISO,
PRESIDIO

"Lacework has implemented a feature called polygraph that gives us additional visibility into cloud workload security. Lacework has done a fantastic job of applying machine learning and AI.They pull the covers back and show what that science looks like."

"It helps me to look into these cloud environments ahead of time and apply that technology to that cloud assessment. Then I can pinpoint the risk profile that I have for this particular workload and identify how to fix it. Lacework maps that right out for you. It's all about anomaly detection and focusing on EUBA."

Presidio also works with Trend Micro which uses advanced AI learning to enable resilience in cybersecurity for businesses, governments, and consumers with connected solutions across cloud workloads, endpoints, email, OT, and networks.

Trader appreciates Trend Micro's ability to scale effectively across the board. "When it comes to massive environments, they're able to get that data under control, scrutinise that data, help us mitigate, and remediate."

Another important player in this space is Fortinet which secures the largest enterprise, service provider, and government organisations around the world. The Fortinet Security Fabric architecture can deliver security without compromise to address the most critical security challenges, whether in networked, application, cloud, or mobile environments.

Trader identifies Fortinet as doing a tremendous job around identity access management. "With Fortinet, you're able to really leverage the entire ecosystem of all the different disciplines between their next generation firewall systems.

"They have the ability to have all those product lines working in harmony, and they can distill that information. We start with wanting to understand the success criteria, and figure out if this is allowed, or not, in the client's environment, and they manage it seamlessly. That harmony is so important. I have to stress this to my CISO friends that harmony allows us to really have bigger conversations around zero trust networking and new methodologies."

When Cyber magazine first spoke to Trader last year he predicted "monumental opportunities in what our security practice can accomplish in 2021" – how right he was. "I don't believe in silver bullets when it comes to cybersecurity, because I do respect the adversary, but I do think Presidio has shown a pioneering spirit to come up with this groundbreaking ransomware solution."

Bell

HARNESSING AI
TO EFFICIENTLY
SERVE CANADA

WRITTEN BY:
CATHERINE GRAY

PRODUCED BY:
CRAIG KILLINGBACK

Marco Sciarra, **Director of Operational Planning and Technology, discusses Bell Canada's diverse workforce and development of AI-powered technology**

Canada's largest communications company, Bell, leads the way in broadband and media innovation with its world-class wireless and fibre networks.

Looking at different ways to advance how Canadians connect with each other and the world, Bell consistently works on its own strategy to build on its own competitive strengths while embracing the new opportunities of the integrated digital future.
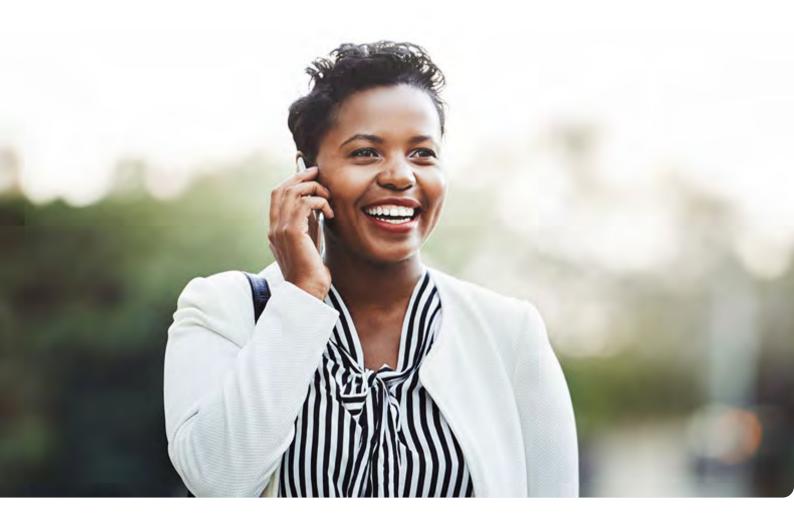
With its commitment to bring the best digital connections and next-generation services to Canadians, Bell is made up of three factions, as its Director of Operational Planning and Technology, Marco Sciarra explained: "There are three main segments to Bell, there's Bell Wireless, Bell Wireline and Bell Media."

He continued: "We have a wireline division that supports internet and TV, wireless for mobile devices and then we've got Bell Media. From a telecom standpoint, you would think that we're in the tech space, we've evolved over the past decade as a data-centric company, data is at the forefront of everything that we do. When we think about the future, everything really is linked to data."

Customer experience is at the centre of everything Bell does to ensure the company delivers continued success in a fast-changing communications marketplace. Adding to its people-first culture, Bell is also dedicated to combating mental health issues in Canada with its initiative, Bell Let's Talk.

Sciarra expanded: "Bell is a steward in the community that we serve and support. At the end of 2020, we were fast approaching about $121 million in investment from a mental health standpoint."

This initiative has been in practice since 2010 to increase awareness and create new conversations around mental health. Through Bell Let's Talk, millions of Canadians, including leading personalities, engaged in an open discussion about mental illness.

During these discussions, many offered new ideas and hope for those who struggle and the number of people joining the initiative grows each year.

As a result, institutions and organisations have received new funding for access, care and research from Bell Let's Talk and

"BELL IS ABOUT SHAPING THE FUTURE"

MARCO SCIARRA
DIRECTOR OF OPERATIONAL PLANNING AND TECHNOLOGY, BELL CANADA

from governments and corporations that have joined the cause.

Creating diverse and agile teams

To ensure the company maintains its innovative edge, Bell strives to create agile teams to improve efficiency. As well as a strong customer-first culture, the company is also dedicated to ensuring that its employees are in an environment that cultivates productivity and efficiency.

"We're really focused on engagement and that is extremely important from a Bell standpoint. We want to make sure that we have engaged employees. We know that folks that are engaged tend to perform better and tend to stay longer. Engaged team members tend to commit more to the cause," said Sciarra.

He then added how the company's diversity initiative feeds into this: "It's really important that we create the sort of an environment that is inclusive and diverse across multiple dimensions. Bell truly believes that it helps to create a more agile workforce that learns faster and is able to perform much better. We have realised that diverse culture leads to better results and a higher engaged workforce, so that is extremely important to Bell."

"By hiring a diverse set of skills, as well as diversity from a cultural standpoint, you get different perspectives and on how to approach opportunities. This tends to deliver better results," he continued.

Bell's innovation with artificial intelligence

Like many technology companies, Bell is dedicated to continuous evolution to ensure it remains best-in-class and offers its customers cutting-edge technological solutions.

"Bell is one of the most innovative companies out there," said the Director of Operational Planning and Technology.

"In my department, we created our own set of applications. We have millions of lines of code and we're tied to almost every facet of the business. From an innovative standpoint, building our own applications has really given us the opportunity to develop capabilities that are just not available today," added Sciarra.

#1
Bell 5G was ranked as Canada's best by network analysts Global Wireless Solutions

121mn+
Bell has committed $121,373,806.75 to mental health initiatives through its Bell Let's Talk initiative

EXECUTIVE BIO

MARCO SCIARRA

TITLE: **DIRECTOR OF OPERATIONAL PLANNING AND TECH**

INDUSTRY: **COMMUNICATIONS**

LOCATION: **CANADA**

Marco Sciarra is an accomplished business leader who has held multiple senior leadership roles within the telecommunications industry. Over the past two decades, he has accumulated vast expertise in the fields of financial and operations management as they relate to large, global, and complex customer support organisations. Today, Marco holds the title of director operational planning and technology, supporting one of the largest client support divisions in Canada, Bell Canada.

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Intelligent Automation
**that unifies your human
and digital workforce**

Enterprise challenges call for powerful
automation solutions at scale. By
integrating artificial intelligence and
machine learning. This increases
efficiency gains, provides fast time to
market, ROI and the future operating
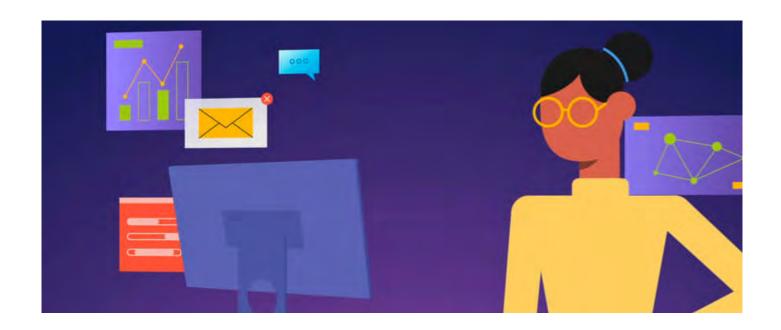model for agility and resilience.

Intelligent automation in telecommunications

Jann Gorske, Sr. Director for Telecommunications and Utilities at Blue Prism, reveals how automation plays a transformational role in contact centres

Jann Gorske is Blue Prism's North America Senior Director, Practice Leader Telecommunications and Utilities, with a heavy focus on contact centre transformation. Blue Prism is known as one of the founders of robotic process automation (RPA) and the company is leading Intelligent Automation (IA) innovation with the digital workforce in terms of a source of labour.

In 2020, the global RPA market size was valued at USD$1.57 billion and is expected to grow at a compound annual growth rate (CAGR) of 32.8% from 2021 to 2028. A big driver for this growth is the pandemic-induced work-from-home situation, that caused a big shift in the ways in which businesses operate and accelerated blueprints for faster, leaner operating models.

Intelligent automation in Telcos

According to Gorske, Telcos have put every aspect of human interaction front and centre, as much of it moved online and forced staff to work from home: "We supplemented that human workforce with our digital workforce to transform the end-to-end workflow, including handling of manual repetitive tasks. We have developed a 'single pane of glass' user interface, which provides the agent with a 360 degree view of the customer. This is where we're really focused and seeing significant results back to our customers, in terms of efficiency."
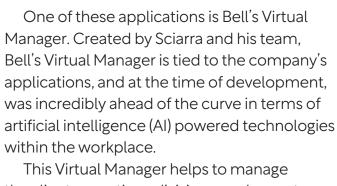
Blue Prism has already formed strong partnerships with Telefonica and Bell, leaders in their primary markets of Spain and Canada.

Contact centres are a key driver for telcos in terms of how they build their brand recognition, but Gorske remarks that "the strategy and the vision need to be aligned to the wider business needs, rather than just focusing on short term tactical types of activities to remove and develop efficiencies. We provide a pivotal and sustaining, enterprise-grade scale programme. We call it 'Robotic Operating Model (ROM)."

Learn more

One of these applications is Bell's Virtual Manager. Created by Sciarra and his team, Bell's Virtual Manager is tied to the company's applications, and at the time of development, was incredibly ahead of the curve in terms of artificial intelligence (AI) powered technologies within the workplace.

This Virtual Manager helps to manage the client operations division, reaches out to the employees in a real-time fashion.

"BELL IS A STEWARD IN THE COMMUNITY THAT WE SERVE AND SUPPORT"

MARCO SCIARRA
DIRECTOR OF OPERATIONAL PLANNING AND TECHNOLOGY, BELL CANADA

Sciarra said that he was keen to develop something that would respond effectively as the company began to respond to larger volumes of data, he explained that: "In the past, most organisations out there would rely on a workforce management team who are staring at dashboards."

"Dashboarding is still 'in' today, but my philosophy is that if you're dealing with the amount of data that is coming at us in waves and streams, staring at screens is just not going to cut it. Our Virtual Manager now reaches out in real-time to make game-time decisions. We've found that it's really improved our overall output across a number of different dimensions," he continued.

Recognising the importance of data and analytics to the company's growth, Sciarra and his team are using different technologies within its applications to improve client operations.

Already, the company has seen benefits from utilising AI and ML-enabled technology:

"FROM AN INNOVATIVE STANDPOINT, WE'RE BUILDING OUR OWN APPLICATIONS AND THIS HAS REALLY GIVEN US THE OPPORTUNITY TO DEVELOP CAPABILITIES THAT ARE JUST NOT AVAILABLE TODAY"

MARCO SCIARRA
DIRECTOR OF OPERATIONAL PLANNING
AND TECHNOLOGY, BELL CANADA

"Since incorporating this technology into our operations we've noticed better sales and churn results from our employees. We're all about trying to not just predict the future, but rather leverage the opportunities that exist that appear in real-time."

Sciarra added: "Acting upon the opportunities as they arise is the most important aspect of AI/ML. So this is why we have introduced our Virtual Manager. When we step back and think about the outcome, better client experience leads to better results."

Outlining a use-case for this application, Sciarra said: "Let's say as an example we needed to add additional staff to deal with service level challenges or a spike in demand, our ML capabilities are where we re-run our forecast where we're looking at information in real-time."

Developing automated processes with Blue Prism

Robotic Process Automation (RPA) has become increasingly popular amongst businesses with its ability to automate repetitive tasks, freeing workers up to spend more time elsewhere.

In 2020, the global RPA market size was valued at USD$1.57 billion and is expected to grow at a compound annual growth rate (CAGR) of 32.8% from 2021 to 2028. A big driver for this growth is the pandemic-induced work-from-home situation many workers are in which has caused a big shift in the ways in which businesses operate.

Recognising this shift, Bell is keen to be a key player in the development of RPA technology. Sciarra explained: "Robotic process automation technology has really come into play and it's going to represent an even bigger new sort of digital workforce in the years to come. We're really excited in terms of what we've been able to accomplish on this front. Ensuring that the opportunity is shared between all business units within our division"

To support this desire to automate and robotise many of its processes, Bell has partnered with Blue Prism and recognises them as a key partner in its AI journey.

Blue Prism is the global leader in intelligent automation for the enterprise. Its technology transforms how companies carry out work and accelerates operational efficiency and agility by making it easy to automate processes.

Bell was recently awarded BluePrism's highest honour of the Pinnacle Award for 2021, given to organisations that are leaders in the automation space.

"WE'RE FAST APPROACHING ABOUT A HUNDRED PROCESSES THAT WE'VE BEEN ABLE TO ROBOTISE"

MARCO SCIARRA
DIRECTOR OF OPERATIONAL PLANNING AND TECHNOLOGY, BELL CANADA

Sciarra explained that Bell is keen to partner with companies that have "already mastered certain aspects of what Bell is trying to achieve. By selecting the right partner, we're able to focus on what we do best and incorporate what they do best."

He added: "Blue Prism has done a really good job of developing a suite of applications that are leading in terms of their capabilities."

Not only do Blue Prism and Bell work together to support Bell in its quest for automation, but Sciarra himself is also on the customer advisory board at Blue Prism and as a result supports the company with its own mission.

"We do realise that Blue Prism has much bigger clients out there that they do business with, yet they've always listened to us," explained Sciarra.

"They've always given us the opportunity to work with them and from our feedback, they've made some changes on their side, which has worked quite well for us," he added.

Readying Canadians for the metaverse
The internet today is often the main entry point for millions of us to access information and services, communicate and socialise with each other, sell goods as well as a form of entertainment.

As Canada's largest communications company, Bell is ready to adapt to the changing landscape with the introduction of the metaverse. Sciarra himself explained he is keen to expand his knowledge in this area to be readily equipped to understand the application of a virtual environment

"Bell is about shaping the future. We're at the forefront of technology, especially from a 5G standpoint. The immersive experience with the metaverse is going to be extremely important." he said.

Sciarra concluded: "We also want to continue to deliver the best experience to our client base. Bell is a very big company in Canada, and so we do have a responsibility to support our communities and I think that's also extremely important. We're heavily involved in SDG initiatives and looking at how that plays a role is extremely important as well." ◦

FROM
CUSTOMER EXPERIENCE
TO DIGITAL TRANSFORMATION

WRITTEN BY: | PRODUCED BY:

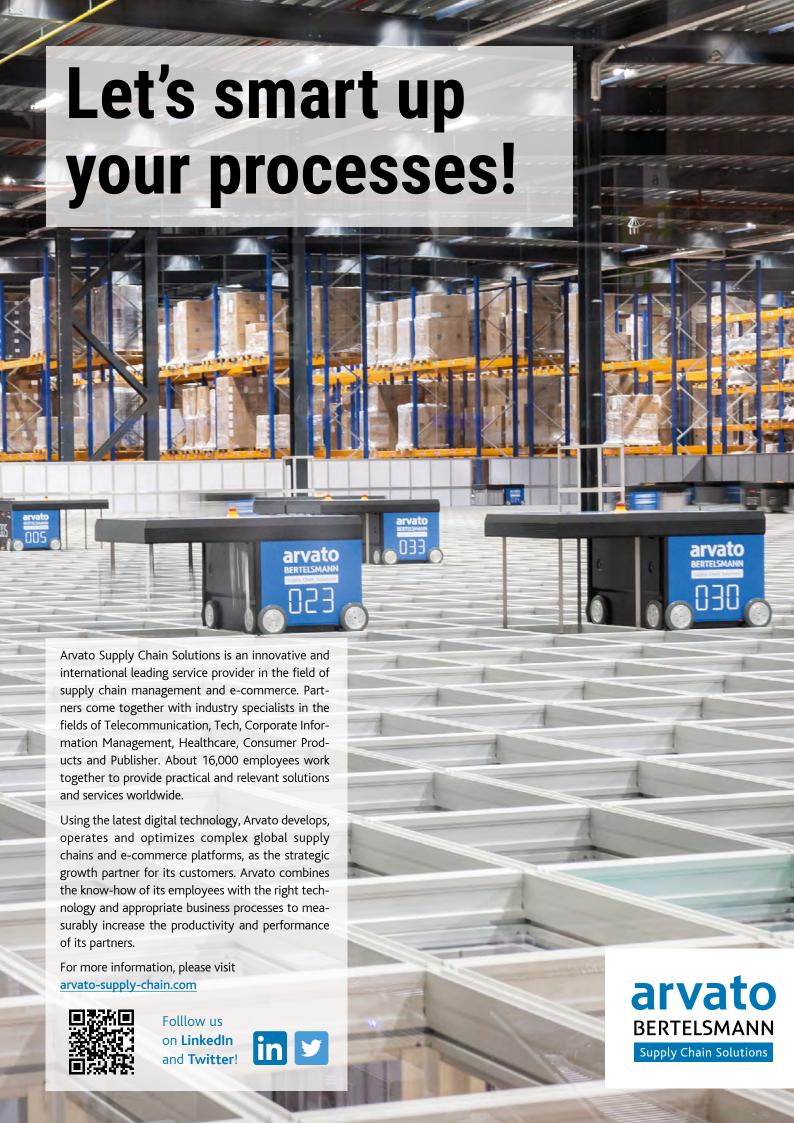GEORGIA WILSON | THOMAS LIVERMORE

vodafone

Hüseyin Ipiv, Head of Supply Chain Management, Consumer Business Unit, discusses Vodafone's supply chain digital transformation over the last two years

H ead of Supply Chain Management, Consumer Business Unit at Vodafone Germany, and father of three children. Hüseyin Ipiv grew up in the beautiful city of Bielefeld, Germany. "I am a fan of the local football club, Arminia Bielefeld. I would consider myself a European and a cosmopolitan. I studied in Germany and the Netherlands, and I have lived abroad for eight years now, in the US, England or Hungary. So far, I have moved around 23 times in my life, I always say 'change is with me'," says Ipiv.

"Today, I am working for a fantastic company called Vodafone. I have the privilege of working with a great supply chain team in Germany, managing the entire end-to-end supply chain for all consumer products (smartphones, tablets, accessories, IoT products, and fixed-line products)," adds Ipiv.

Since joining Vodafone in 2007, not just Vodafone but the entire telecommunications industry has changed during this time. "When I joined Vodafone, there were many companies like Nokia and Siemens Mobile selling mobile phones, however, today most of these organisations have disappeared. Today we have other great companies like Oppo, Xiaomi, Apple, or Samsung, which are now big players in the market. The supplier landscape is very volatile in this business.

Smart up Vodafone's processes

As Arvato celebrates its partnership with Vodafone –focused to be your digital change agent for a green, sustainable future

As Arvato Supply Chain Solutions celebrates its partnership for almost 30 years with Vodafone it is now focused on becoming your digital change agent for a green, sustainable future.

"We would love to be your digital change agent when it comes to transforming your businesses for a sustainable future," said Andreas Barth, President Tech Group and Head of Corporate Responsibility & Sustainability.

Arvato is the leading international provider of order-to-cash solutions for end-customer-oriented industries. During its long partnership with Vodafone it has set up a green location to pave the way for a zero-carbon future.

Arvato in numbers:

- **Euro 2 billion revenue**
- **85 locations**
- **20+ countries**
- **16,000 employees**
- **over 2 million sqm warehouse space**
- **470k sqm new only in 2021**
- **500mio shipments and returns**

Celebrating the partnership with Vodafone

Arvato has supported Vodafone to transform their supply chain from a pure mobile phone logistic into an multi device supply chain with solution for smartphones, broadband, IOT and eSIM, always making sure that Arvato provides a robust, reliable and flexible logistics solution which adapts to Vodafone's needs – also for the upcoming years.
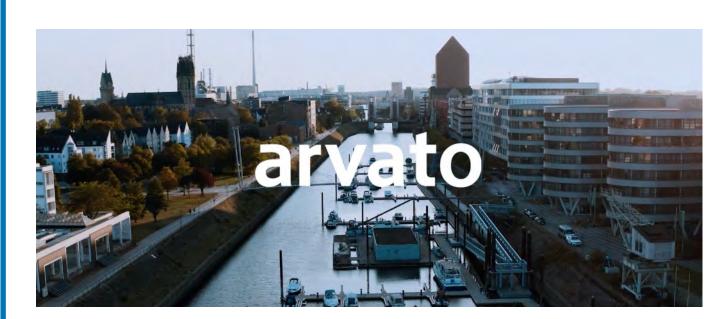
Future Warehouse with carbon-free footprint

As a supply chain company with a high level of IT expertise, Arvato has been quick to initiate the transformation to the Future Warehouse.

"The backbone of this is to have a solid IT solution. We strive to be the most data-driven supply chain company in the world that includes a cloud-only backbone, and includes that we use the data our clients provide us, along with the date we are generating, to invest in a new business model."

"We are thereby underlining the climate effects of digitization. The digital transformation is a relevant key to a successful climate policy and we support our clients!" said Barth.

$\rightarrow$ **Learn more**

"At the time I joined, it was only possible to make phone calls with mobile phones. Today, you can do everything on your smartphone like using Apps, surfing the internet, watch videos on youtube, paying invoices or making video calls with your friends This became possible with the upgrade of the mobile network. At the time we had 2G or 3G, then 4G and now we have 5G. We used to be a mobile-only company, but today we are also a fixed-line company, you can watch Vodafone TV or you can surf the internet using our cable infrastructure," says Ipiv.

Vodafone's supply chain digital transformation journey

When it comes to digital transformation, Ipiv explains that the first step to success is an effective strategy. "If you have a strategy in place, that is already a big achievement for many organisations. The next step is to drive that plan, determine how you want to implement it, how it can be achieved,

"If you have a strategy in place, that is already a big achievement for many organisations, the next step is to drive that plan"

HÜSEYIN IPIV
HEAD OF SUPPLY
CHAIN MANAGEMENT,
VODAFONE

what the next milestones are. You need to convince your stakeholders to believe in the goals that you want to achieve because you will need funding from stakeholders. You also need to convince your own team. I believe that is always the most difficult part as your teams can anticipate the challenges ahead since they know your supply chain in detail.

"When you start a journey like this you soon realise that a plan is nice, but the reality is much more difficult. We understood that we had to start with the basics. We upgraded our ERP System from SAP R3 to SAP 4 HANA to enable our digital journey.

At Vodafone Germany, we have a great Big Data team. Together, we initiated a project to improve our smartphone forecasting accuracy on SKU level which we successfully implemented after 12 months. We have benchmarked our forecasting in the industry with an external consulting company, which showed that we are industry-leading with our forecast process," says Ipiv.

EXECUTIVE BIO

HÜSEYIN IPIV

in

TITLE: **HEAD OF SUPPLY CHAIN MANAGEMENT**

INDUSTRY: **TELECOMMUNICATIONS**

LOCATION: **GERMANY**

>> Internationally experienced Commercial & Supply Chain Manager with a track record of delivering top-line and bottom-line results in global companies who have shaped the agenda in their industry. Held operational and strategic executive roles combining General Management, Supply Chain Management and Procurement over the last 20 years. Driven by a strong commercial and customer-centric mindset. Practices a human-centric leadership style, stimulates innovation & change. Currently transforms the Supply Chain for consumer devices of Vodafone Germany towards a more digital, simple, and agile organization with a clear focus on improving customer experience.
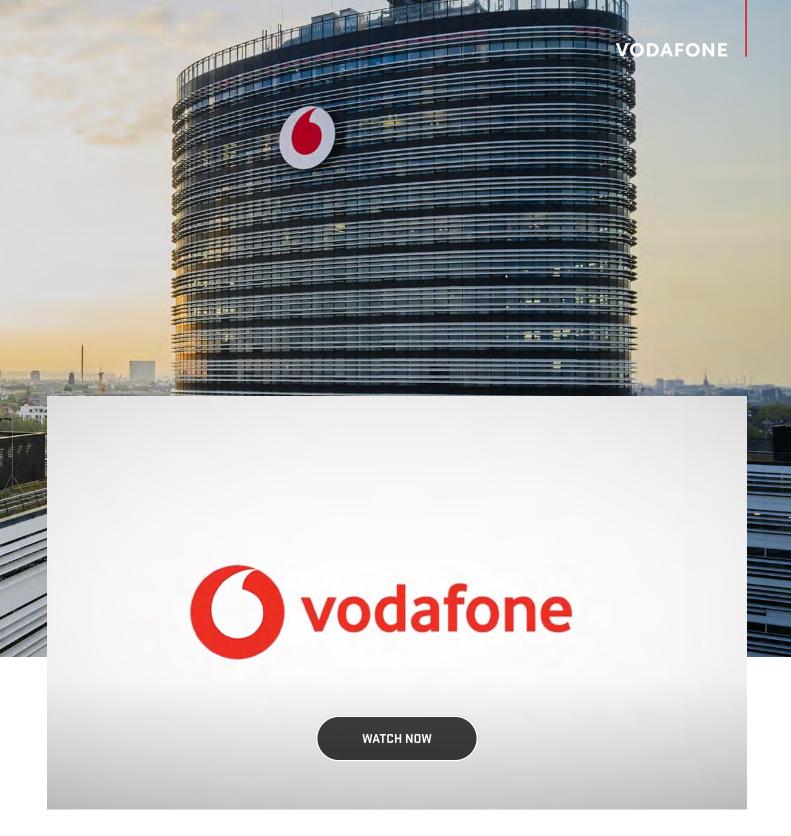
"You need to convince your stakeholders to believe in the story that you want to achieve"

HÜSEYIN IPIV
HEAD OF SUPPLY CHAIN MANAGEMENT, VODAFONE

"We have also implemented a digital return portal. If customers want to return their smartphones to us for whatever reason, we need them to use our online platform to provide us with data as to why they want to return their smartphones. Understanding the return reason, we can offer an immediate solution to the customer. This is a win-win situation for customers and Vodafone. The customers might not have to return their smartphones back to Vodafone and we are happy since we retained a customer and avoided process costs. If a customer does wish to return a smartphone, we no longer print return labels anymore, instead they can use their smartphones at a local DHL store, show the QR code and return the product, making it a fully digital process.

Another step for us was to implement "Click & Collect", allowing customers to choose a product online, and offer the customer a Vodafone Shop to collect their product immediately from. This way we avoid sending the product with a carrier from our central warehouse to the desired address of the customer, which is beneficial for the environment as well as the customer who is able to pick up the product immediately.

WATCH NOW

"We have also implemented in-store repair capabilities. Customers can walk into certain Vodafone stores with, for example, a broken screen and we will repair it within two hours. The customer experience is great, and customers love this service. This again furthers our circular economy vision and is part of our planet purpose not to do any business on the cost to our environment.

"In my opinion simplification is a key enabler for digitisation. During the last years, Vodafone Germany acquired various fixed-line providers like Unitymedia and Kabel Deutschland. Both companies had their own supply chain processes and systems in place. Therefore, we decided to harmonise our supply chain processes for our fixed-line and mobile business. This project is ongoing and beyond what we have done so far in Supply

THE PURPOSE OF VODAFONE

» Vodafone has three core purposes for its operations:

- Enabling a digital society – Connecting people, places and things through fixed and mobile networks

- Planet – Ensuring commercial success does not come at a cost to the environment

- Inclusion for all – Enabling the digital society to be accessible to all

"I always say, 'we are the digital backbone of our society'. During this pandemic period we became aware of the required infrastructure for working and learning from home. We provide the mobile network, but also the fixed-line network to our society. I believe that Vodafone delivered a great service by enabling everyone to work and learn from home," says Ipiv.

"When it comes to the planet, we do not want to do business that is detrimental to our environment. We believe that digitalisation can help businesses to become more efficient in using resources. From a supply chain perspective, we believe in a circular economy. Take for example a smartphone. We bring the products to market, collect them back, repair them, refurbish them and then reuse them again. In the fixed-line area, we refurbish and reuse up to 80% of our products, which we are very proud of.

"Inclusion for all focuses on access to connectivity, digital skills, and creating relevant products and services such as access to education, health care or financial services. Many people around the world do not have access to banking facilities. Vodafone Group developed the first mobile money transfer service, M-Pesa. This provides financial services to millions of people who have a mobile phone but limited access to a bank account." For example in Africa, 40 million people can transfer money using our M-PESA platform.

> **"In my opinion simplification is a key enabler for digitisation"**
>
> HÜSEYIN IPIV
> HEAD OF SUPPLY
> CHAIN MANAGEMENT,
> VODAFONE

Chain at Vodafone Germany. It will help us to reach the next level on our transformation roadmap delivering business growth by focusing on customer experience."

Why the people of Vodafone chose to put customers at the centre of its transformation

"People often refer to companies as human beings," says Ipiv. "It's not Vodafone who does something, there is no 'Mr or Mrs Vodafone' it is the human beings working at that company, and usually it needs one or two people to make a change in the company. If you believe improving customer experience is the right strategy, then you should drive for it.

"Two and a half years ago, we said: 'we need to change'. Digitalisation is all around now is the right time. We developed a cross-functional team from digital, retail, IT and supply chain. We sat down and assessed how traditional supply chain organisations are functioning. They are mainly looking at costs and processes to add value to the company, but we said that one element is missing, and that is the customer.

"This cross-functional team worked together four days a week for three months and defined a customer journey along the supply chain by asking: how should a customer perceive and feel the supply chain when purchasing a product from Vodafone? We used various creativity techniques, developed personas, analysed data, talked to customers, invited our partners to give us feedback on our ideas or talked to various experts to challenge our views. We had a clear focus on improving the customer experience and digitisation was the enabler. This is how we developed our supply

chain strategy and transformation roadmap thinking from the customer perspective first.

"After 2.5 years, we can say that this was absolutely the right approach. The supply chain team is delivering significantly more value to our customers and to Vodafone compared to the "traditional" supply chain approach focusing on cost and process optimisation only."

Vodafone and its partners

Along the way, Vodafone's partners have been fundamental in its supply chain transformation. "We have a few key partners," says Ipiv, including Arvato, Loxxess, CTDI, COMSPOT, UPS, GLS, and DHL. "These are the biggest partners that we have at Vodafone. In our supply chain functions, we decided to be as lean and as simple as possible, which requires dependence on your partners. You need to trust them and, at Vodafone we do!

"I always say that I want our partners to make Vodafone a better company. They should share the same values and support us in becoming better when it comes to customer experience, reducing costs, increasing efficiencies, and optimising processes. At Vodafone, we want to become better every day, and our partners should support us in that. Our partners should not be silent if they recognise that our processes are not good. This is what I expect from our partners to drive us to become a better company.

"A good example is our very close relationship with Arvato and their continuous support improving the customer experience. Arvato is analyzing our operational performance and providing insights on how to improve especially in the return and after-sales space, which is usually a very critical area of customer experience," concluded Ipiv.

HARMONISING THE REAL AND VIRTUAL WORLDS

WRITTEN BY: | PRODUCED BY:
SCOTT BIRCH | BEN MALTBY

Leading executives from Dassault Systèmes EuroNorth on using virtual universes to imagine sustainable innovations to harmonise product, nature and life
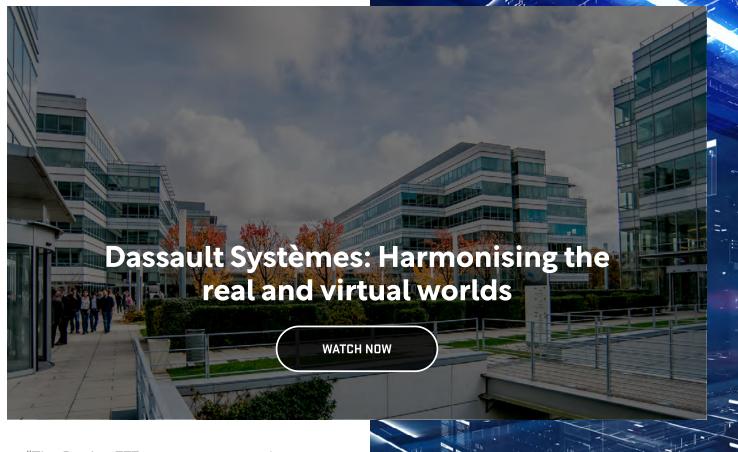
Making the world a better place. That's something we can all aspire to, but also an aim that drives and inspires Dassault Systèmes – the 3DEXPERIENCE company that creates virtual universes to model, simulate and evaluate designs, actions and impacts. Put simply, this software allows users to experiment – safe in the knowledge that trial and error leads to better outcomes.

"We are a 3D experience company, and we consider ourselves to be a real catalyst for human progress," says John Kitchingman, Managing Director, EuroNorth for Dassault Systèmes.

"We provide businesses and people with collaborative 3D experience environments to enable sustainable innovations. Our customers have pushed the boundaries of innovation and we do that with over 290,000 customers across 140 different countries."

Kitchingman says that the COVID-19 pandemic has also accelerated the adoption of virtual design, with teams of people now able to collaborate in ways that are simply not possible with physical prototyping.

The good news is, it's not just manufacturing giants that are benefitting from Dassault Systèmes' technology – SMEs and individuals are all reaping the rewards of virtual twins. The company was originally part of Dassault Aviation until emerging as its own entity 40 years ago, so it's not surprising to hear that that aerospace sector was one of the early adopters.

Dassault Systèmes: Harmonising the real and virtual worlds

WATCH NOW

"The Boeing 777 programme was the first real virtual twin of an entire product life cycle process – not just the design but the entire product development process," says Kitchingman. "We now see many other adopters, including the life sciences industry, the FMCG industry, and industrial equipment."

Kitchingman mentions various use cases in life sciences, boosted by Dassault Systèmes' acquisition of Medidata in 2019 which enables companies to create virtual clinical trials. He also cites the Living Heart project at Great Ormond Street (a renowned children's hospital in London) which is allowing cardiovascular researchers to explore treatments. Then there is Interstellar Lab, which is building modules for sustainable living on Earth and in space.

Dassault Systèmes provides a centralised system which fosters sustainability practices, allowing clients to take this into their supply chains, working to the same process methods, and making decisions earlier in the product development process.

"It's all about enabling decisions to be made earlier – increasing quality, reducing waste and replication of processes," says Kitchingman. "In many companies, simulation processing in the past and present has been about validating what design has already done. Now the finished design moves into the simulation department process to prove out those 'what if?' design questions. The platform enables far swifter interaction across the business. All of our 20,000 people use our technology every day.

JOHN KITCHINGMAN

TITLE: **MANAGING DIRECTOR, EURONORTH**

INDUSTRY: **SOFTWARE SOLUTIONS AND SERVICES**

LOCATION: **UNITED KINGDOM**

» John Kitchingman is Managing Director of the Northern European region. John joined Dassault Systèmes in early 2018, following a successful 15-year career at IBM where he held senior roles covering the Oil & Gas, Automotive, Aerospace & Defence, Electronics and Manufacturing industries. Most recently he was Global Sales Leader for Automotive and Aerospace & Defence, responsible for multi-billion dollars of business across IBM globally, defining and driving a programme that returned these industries to sustainable growth.

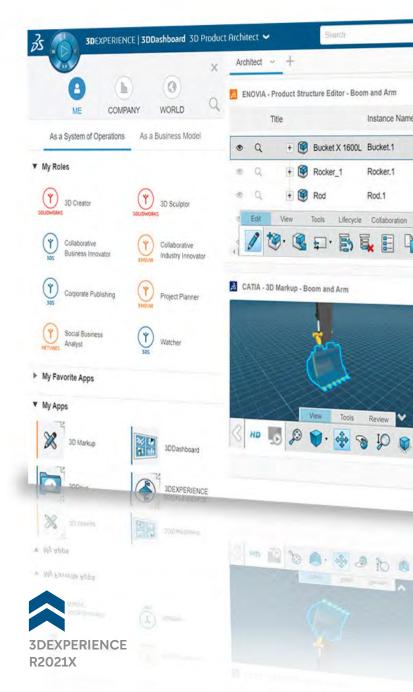Beyond John's long and substantial credentials working in business transformation enabled by technology around the world, he has dedicated energy to a number of causes close to his heart. He is Chair of the Marie Curie Development Board in the West Midlands, and also recently supported Warwickshire's 2017 Employability Charter for technology and new skills into education.
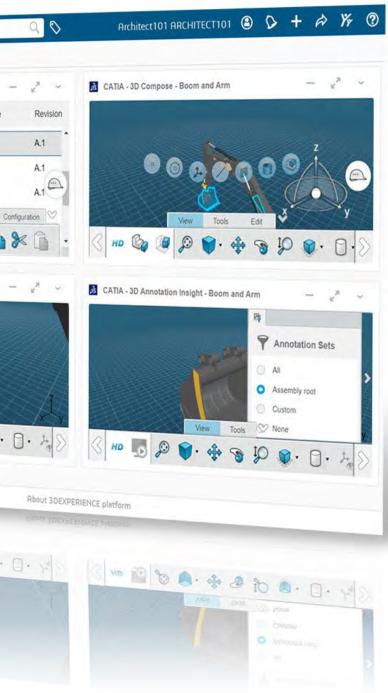
EXECUTIVE BIO

"The next industrial revolution is not just about digitising data — it is about virtualising the entire process"

JOHN KITCHINGMAN
MANAGING DIRECTOR, EURONORTH
DASSAULT SYSTÈMES

DASSAULT SYSTÈMES

ALAN PRIOR

TITLE: **VP OF INDUSTRY SOLUTIONS, EURONORTH**

INDUSTRY: **SOFTWARE SOLUTIONS AND SERVICES**

LOCATION: **UNITED KINGDOM**

Alan Prior leads the Industry Consulting organisation, supporting all the sales engagement teams for Dassault Systèmes in the EuroNorth region. In a 35-year career, Alan has held a number of senior positions in technical support, technical sales and major account management. He was UK General Manager of the Abaqus company, which was acquired by Dassault Systèmes in 2005 to form the SIMULIA brand, in which he then led the worldwide centre of excellence.

Alan obtained a BSc in Mechanical Engineering, followed by a PhD in Impact Dynamics. He is a Chartered Engineer and a Fellow of the Institution of Mechanical Engineers.

EXECUTIVE BIO

3DEXPERIENCE R2021X

"The next industrial revolution, industry 4.0, for us is not just about digitising data – it is about virtualising the entire process within which our clients work and want to work. "Virtual twins" is a process, is the method, and the technology that enables companies of all sizes to access this capability. As we recover from COVID, a lot of our small to medium-sized clients who may in the past have had different bespoke solutions for design, for analytics, for manufacturing, are starting to really adopt a platform approach."

"So it's not just about saving time. You could be saving material, you could be saving cost, you could be getting fundamentally a better product"

ALAN PRIOR
VP OF INDUSTRY SOLUTIONS, EURONORTH DASSAULT SYSTÈMES

says Alan Prior, VP of Industry Solutions at Dassault Systèmes. "Ultimately, to get better products and services."

"Essentially we have one source of truth, one source of data. All the stakeholders – the designers, engineers, analysts, marketing – collaborate on that same set of data in that one environment. However, they each see that data through the lens of their own role."

Prior says while time reductions are significant, there is greater value to be achieved.

"We can see opportunities for clients to use this technology in so many ways: to switch to more sustainable materials, for example," he says. "We can see opportunities for clients to build in better recycling capability or improved production methods before they get to full-scale prototype production. So it's not just about saving time. You could be saving material, you could be saving cost, and you could be getting a fundamentally superior product."

Prior goes on to say he believes there is market pressure on manufacturers to respond to demands from consumers – particularly when it comes to reducing packaging, reducing waste, and using more environmentally friendly materials.

Better products

The 3DEXPERIENCE platform approach has many obvious benefits for businesses, allowing previously siloed stages and departments to work together – fine-tuning designs, and optimising in a way that previously would have been prohibitively expensive and time consuming.

"The 3DEXPERIENCE is about freeing up collaborative communication and enabling people to innovate faster, to explore more, to be more effective,"

"Sustainability is about people, about product, and innovation and is also about the business models of the companies we work with"

SEVERINE TROUILLET
EDUCATION AND PUBLIC SECTOR DIRECTOR, EURONORTH,
DASSAULT SYSTÈMES

Although automotive and aviation were early adopters of the technology, Prior says what is "great about this job" is the opportunity to work with such a diverse range of clients across multiple industries with significant impact on our world – from nuclear power stations to shampoo bottles, electric cars to semiconductors.

Built for innovation

Prior also points out that the 3DEXPERIENCE, while it can improve processes and maximise efficiencies, does not replace human creativity and ideas, and that having a diverse team of creative thinkers is essential.

SEVERINE TROUILLET 🔗

TITLE: **EDUCATION AND PUBLIC SECTOR DIRECTOR, EURONORTH**

INDUSTRY: **SOFTWARE SOLUTIONS AND SERVICES**

LOCATION: **UNITED KINGDOM**

» Séverine is the Public Sector & Education Director at Dassault Systèmes, Northern Europe, where she leads their external engagement with public and education value networks. Severine focuses on key challenges related to business sustainability and the workforce of the future to demonstrate the role of virtual technology as a key transformation enabler. Prior to joining Dassault Systèmes, she worked as European Affairs Lead for Walgreens Boots Alliance, as Head of Professionalism for the Institution of Civil Engineers (UK) and Corporate Affairs Senior Manager for Louis Vuitton Moet Hennessy (Paris, Worldwide). She also worked in Brussels as a European Affairs' Lead at Interel and Cambre Associates, advising trade bodies and companies (L'Oréal, Xerox, EDF, Bridgestone, etc.) on their EU engagement. She started her career in the public sector, working in the UK local government (Lambeth Council, LACORS) and as a parliamentary assistant in France.

That is a view echoed by Severine Trouillet, Education and Public Sector Director, EuroNorth, Dassault Systèmes. Her role is to support those organisations looking to leverage the value of virtual technology to transform and to empower citizens and students.

When it comes to talking about people in 2021, it is impossible to not first address how Dassault Systèmes coped with COVID-19.

"We faced the same challenges as our customers," says Trouillet. "We wanted to continue to innovate and make sure their business models were suited to a more hybrid world. We used the 3DEXPERIENCE platform internally as a tool to collaborate

EXECUTIVE BIO

"The benefits go far beyond what the clients initially may think they are going to use it for"

JOHN KITCHINGMAN
MANAGING DIRECTOR, EURONORTH
DASSAULT SYSTÈMES

with our 20,000 colleagues — it allowed us to share information, communicate, and focus on wellbeing and mental health as a leadership team."

Trouillet says Dassault Systèmes is looking for creative, flexible people with a passion for technology as a way to solve some of society's biggest challenges, and a conviction that the company is the place for them to develop and grow.
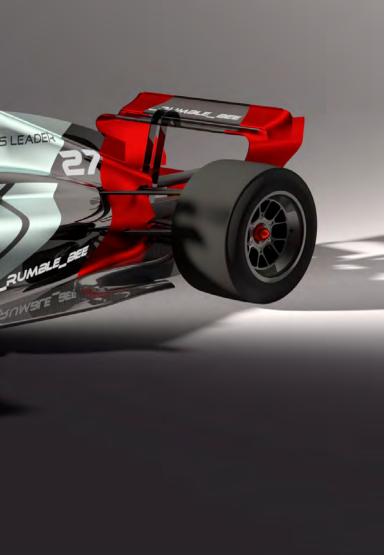
Purpose and sustainability are key for Trouillet, and for CEO Bernard Charlès, whose model is to harmonise product, nature, and life.

"As a business, we made a big leap last year when we hired our first Chief Sustainability Officer which really helped accelerate our commitment to sustainability," says Trouillet.

"We were ranked a few years ago as the most sustainable company in the world by Corporate Knights magazine, but since last year we have really committed to science-based targets and our aim is now to be net-zero by 2040.

entrepreneurs, have the right tools. With that in mind, it has created the 3DEXPERIENCE Lab – a startup accelerator to specifically help young companies which are addressing sustainability challenges. These include super-fast charging points for electric vehicles, affordable ventilators during the COVID crisis, and solar-powered drones.

"The idea is really to ensure that these tools are made available so that we can also open up the expertise within the system," says Trouillet. "Our colleagues are really encouraged to help startups whenever they can, to make sure these entrepreneurs can flourish and become the companies of the future."

Back to 2021, and Kitchingman explains how large multinational organisations, like Jaguar Land Rover, are adopting Dassault Systèmes for their engineering capability but also realising how that can permeate other aspects of the business.

"The benefits go far beyond what the clients initially may think they are going to use it for," he says. "What we have created are unified building materials so nobody else needs to recreate it in any other part of the business, so everyone is using the same platform. I think the biggest challenge is creating that process change in organisations for them to truly benefit from the technology that we provide."

In many ways, COVID-19 has provided organisations with the opportunity to change, to reshape their businesses, and their entire process. The 3DEXPERIENCE could be the tool to make that change happen in a way that is both smart and sustainable. ○

"We recently partnered with Accenture to try to understand the potential of sustainability for virtual twin technology and we discovered that there's a lot that can be saved in terms of waste management and energy consumption through virtual twins. For us, sustainability is about business sustainability, so it's about people, product, and innovation – but it is also about the business models of the companies we work with."

Dassault Systèmes aims to make sure that the workforce of the future, the

Glovo

Tech Unicorn
Multi-Category App Now Dining at Top Table

WRITTEN BY:
ALEX TUCK

PRODUCED BY:
BEN MALTBY

Director of Security at
international delivery app
Glovo, **Alex Antukh** reveals the
security strategy that has taken
the tech unicorn to the top

Alexander Antukh is the Director of Security at Glovo, a Barcelona based start-up. Having grown incredibly fast and currently sitting at unicorn status (meaning a start-up with a valuation of at least +€1 billion), they are looking at a number of global new market entries.

As part of this rapid growth, there is a significant job to keep their 'super app' (similar to the likes of Gojek), secure and safe as the backbone of their organisation. Antukh had to establish a security infrastructure, working closely with Glovo's technology partners to achieve this.

Antukh is a seasoned cybersecurity executive, who is passionate about strategy and enterprise security architecture. Knowledgeable on the principal security frameworks, he has a proven track record of building successful Information security programs from scratch.

"I joined Glovo a year ago and I think the most significant market changes were as a result of the pandemic. Our global, multi-category app was able to take the majority of our orders through food delivery. We saw record levels of growth throughout 2020, and we continue seeing the demand following ever-evolving consumer trends accelerated by the pandemic."

In Antukh's mind, the market is experiencing rapid change as more and more companies are racing to capture

"**We saw record levels of growth throughout 2020, and we continue seeing the demand following ever-evolving consumer trends accelerated by the pandemic**"
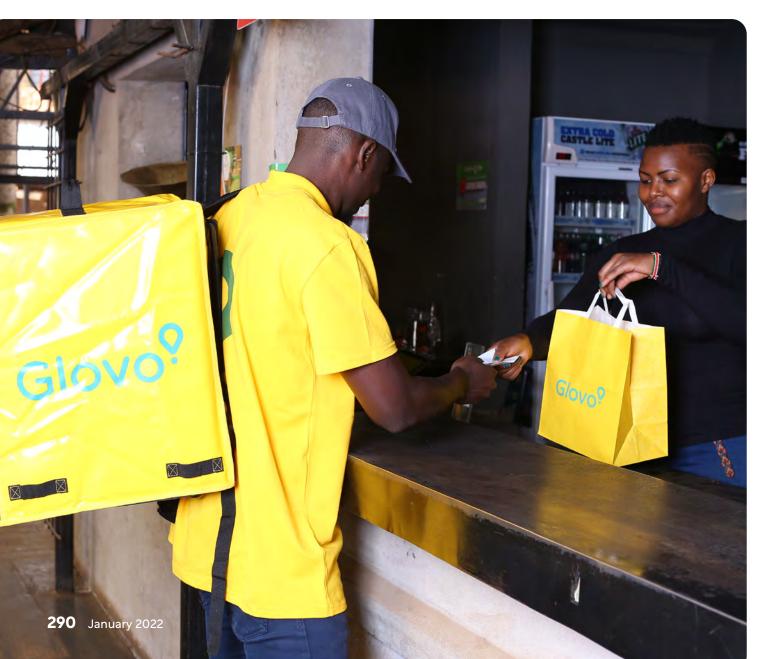
ALEXANDER ANTUKH
CISO, GLOVO

specific markets, meaning that "you can carve a niche for yourself. We were multi-category to the very big companies from day one. And I think that puts us in a very good position right now."
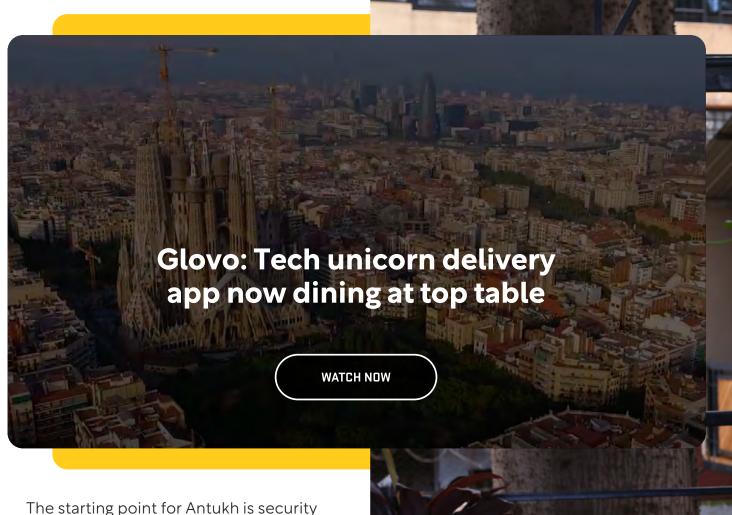
Glovo's security mission

The first task for Antukh's team was to formulate a mission for the company to buy into.

We see ourselves as a business and executive function, rather than purely a technical one. So our mission, as we say, is to drive efficient cyber risk management. And we have that goal, that mission in our mind, in whatever we do."

ALEXANDER ANTUKH in

TITLE: **CISO**

COMPANY: **GLOVO**

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Glovo: Tech unicorn delivery app now dining at top table

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The starting point for Antukh is security governance, risk management, and compliance (GRC), which guides the other teams and helps define Glovo's security objectives.
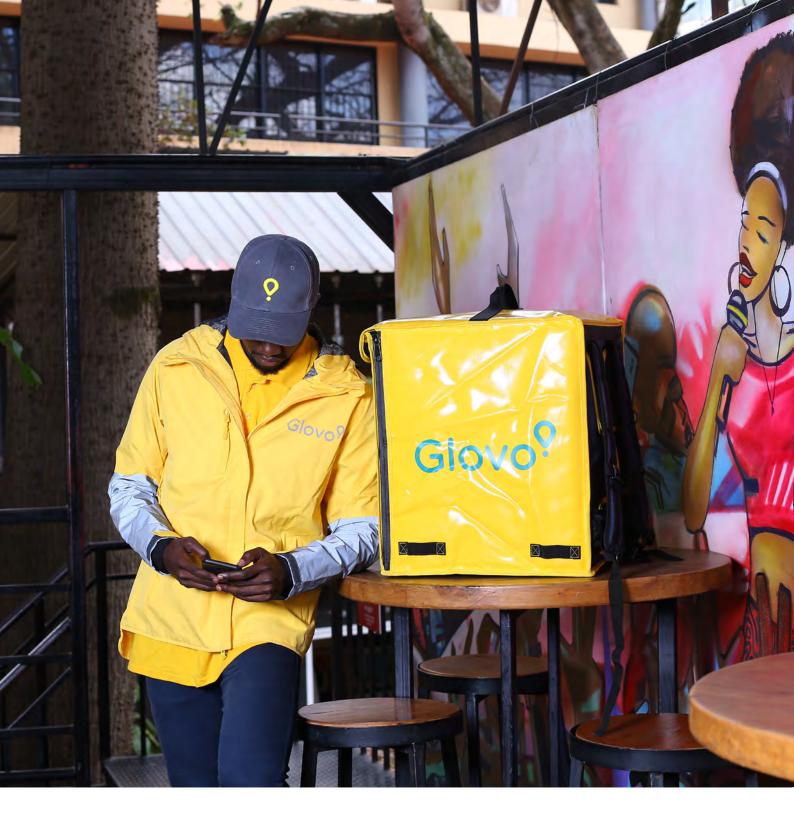
Next is product and platform security, which makes sure that whatever products and whatever code Glovo produces is secure by design. This is followed by corporate security, which is about protecting global work environments. Antukh adds that "that's about security awareness and phishing, secure configuration of our systems and generally everything around user devices."

Cyber defence is next, which ensures Glovo is prepared for security incidents; including protective and detective measures and timely response.

Finally, there's data security function – even though it's already integrated in other areas, we really wanted to be

"We see ourselves as a business and executive function, rather than purely a technical one"

ALEXANDER ANTUKH
CISO, GLOVO

focused specifically on sensitive data identification and protection. "And that's not just about compliance and GDPR, but also our commitment to care about our stakeholders." said Antukh.
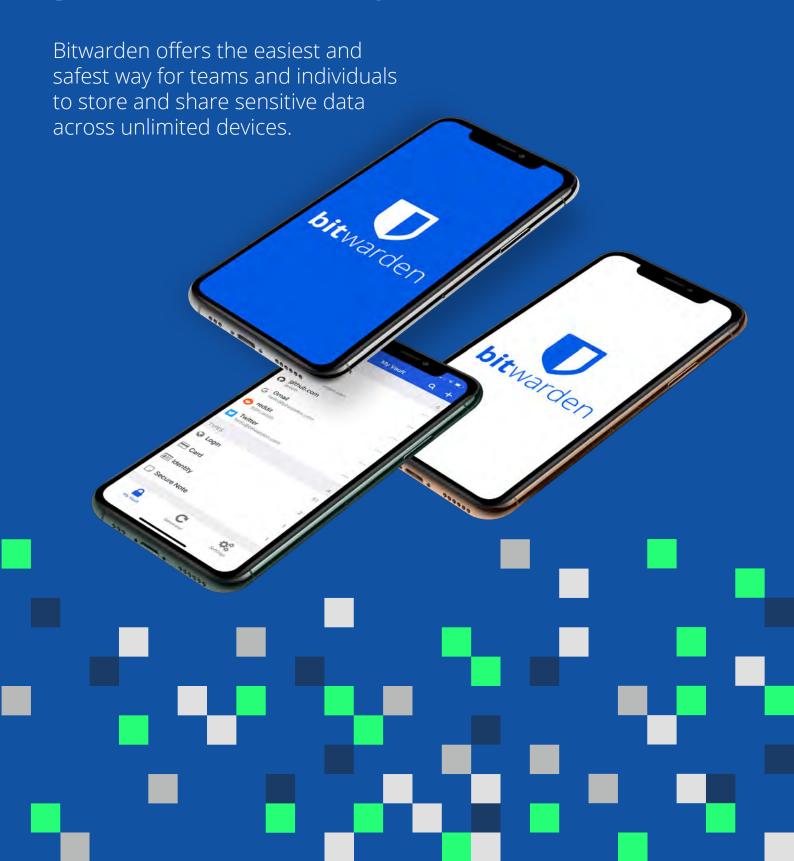
Trust built over time

Glovo has come a long way as a company in the general understanding of the threats posed to the IT infrastructure. "When we started, we had to develop security training for our employees. People were quite open-minded and that also helped us, as that attitude is part of our global culture."

The importance of explaining the need for security was very important in this process, according to Antukh; "Once we proceeded, it definitely helped not just to say, 'hey, I'm an expert, just trust me' .We were able to show why we believe so. We also needed others to believe in it to make it happen, so it was in our best interests to make them

bitwarden

The most trusted open source password manager for business.

Bitwarden offers the easiest and safest way for teams and individuals to store and share sensitive data across unlimited devices.

High-growth Delivery Startup Glovo Boosts Password Security and Compliance with Bitwarden

Operating in 25 countries at a current valuation of nearly $1billion, Glovo is one of Europe's fastest growing startups. Based in Spain, Glovo delivers restaurant takeout orders, groceries, pharmacy, and other products to +4.3 million urban users. The company aims to place in a leaderboard of the "quick-commerce" market in Europe with its convenient ordering app and ultra-rapid delivery times of less than an hour. In the past year, Glovo more than doubled its employee count to more than 3000.

When Alexander Antukh joined Glovo as its director of security, some employees used personal password managers while most used nothing at all. Weak passwords were frequent and people shared them among teams, often through the company's messaging platforms.

"Passwords were almost useless," said Antukh. "Yes, there is a password but if everybody knows it, or you can easily find that in the password lists through brute force, then it's not very good protection."

The security team began requiring more complex passwords, but a new challenge emerged. Because the complex passwords were harder to remember, people wrote them down or stored them on their computers, which undermined the point of creating a strong password.

Antukh was already a Bitwarden user prior to joining Glovo. He was especially drawn to the transparency and third-party security audits inherent in an open source solution.

At Glovo, Antukh made a pitch for Bitwarden. He touted the solution's end-to-end encryption and cross-platform accessibility that let users access Bitwarden from any device. He spoke of flexible integration capabilities that make it easy to add on tools such as two-factor authentication or single sign-on (SSO). And he showed how Bitwarden would simplify security audits and compliance with detailed event logs, as well as increase employee productivity.

Bitwarden is a vital solution within the Glovo security ecosystem. Antukh looks forward to further strengthening the company's data protection.
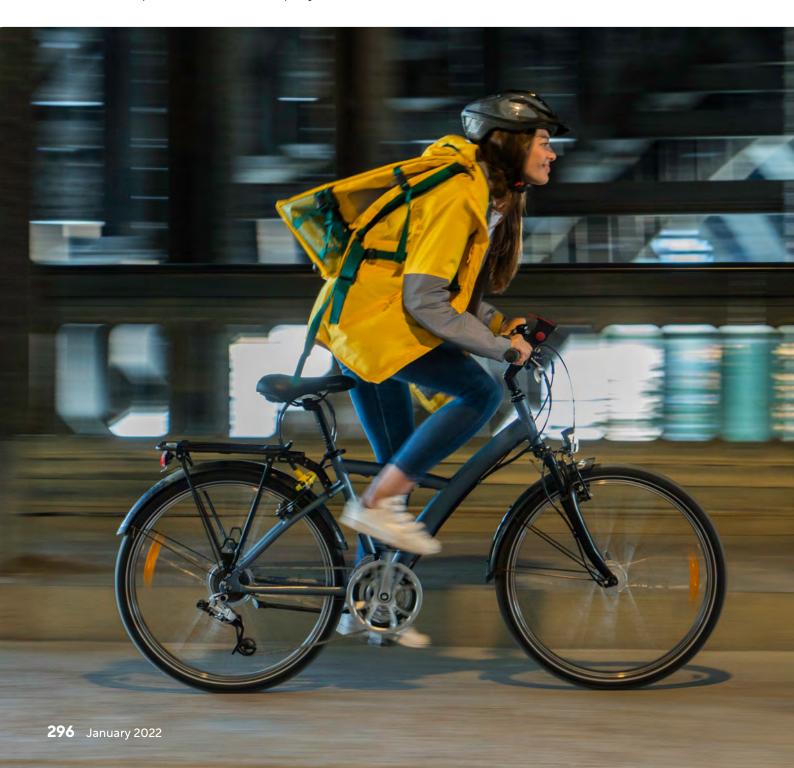
Start a free business trial

understand the importance of it, and as a result we were able to provide better and more effective training. This is something I'm really pleased about."

Another key starting point was to open a security help desk, speeding up (and logging) requests and generating security awareness campaigns, onboarding and materials for all staff. Glovo opened the central service desk of JIRA, so that they were able to register and track requests from our employees.

"People were quite open-minded and that's also helped us, as that attitude is part of our global culture"

ALEXANDER ANTUKH
CISO, GLOVO

As Antukh remarks, "that allowed us to be constantly in touch with our employees and to start changing the mindset towards a more security-aware one."

"We started the Security Champions programme in product security, so we are able to ensure the security by design of our code," he continued. Firstly, Antukh established guidelines and policies such as passwords, but the second factor involved Bitwarden, a key partner for Glovo.

Bitwarden helping to keep Glovo secure

Bitwarden is an open source password manager, and is considered one of the most secure and privacy-first options on the market. As Antukh explains, "when we started, we were tackling the problem of weak passwords at Glovo. I'd personally been using Bitwarden for some time. We just decided to try it for corporate security purposes, and it was a big success. Our primary use case is to secure the shared set of credentials files, and other sensitive information, among the team members. So we specified a list of authorised users and ensured that no one from the list had access to sensitive information Bitwarden helped us to comply with PCI DSS. They also helped us to cover a few important controls of our cyber security framework. So overall, they have become an integral security tool for the whole company. We are pleased to see how they can contribute in future to the overall protection of Glovo." he said.

Cyber concerns of now and the future

Like others in the tech space, one of Glovo's common enemies in the cybersecurity realm is the increase in rates and sophistication of ransomware and potential cyber attacks in general. Glovo has a complex approach to how they protect against this and that concerns all teams. One of the key adoptions is that of zero trust, which aims to tackle the major problem of phishing attacks.

Antukh is aware that "there are many talks about zero trust, and I think that's a very good strategy overall, but then of course, we need to remember the foundations, such as asset inventory and visibility of what we have in our networks, and patch management. It is, however, keeping security by design in mind in how we build our products. I think it is really important that we tackle security

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Solution: Bitwarden makes password management simple and consistent

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authentication or single sign-on (SSO). And he showed how Bitwarden would simplify security audits and compliance with detailed event logs, as well as increase employee productivity.

Antukh's argument for Bitwarden convinced company leaders. Glovo purchased a flexible subscription that can scale for the future.

Antukh appreciates the open source nature of Bitwarden that "brings transparency in how it helps to verify security and to quite openly say, 'This is how we operate. This is what our values are."

"We found that it [Bitwarden] is very easy to work with," he said. "When we created our first collections, when we were able to audit the access log, when there were granular permissions, and I saw the work for new features such as Bitwarden Send—that was all quite useful. User experience is also quite good."

Simple integration with SSO without compromising security

Glovo uses Bitwarden with SSO, which allows employees to use one set of credentials to access multiple cloud applications. Bitwarden integrates with SSO to improve the user experience of accessing applications, while maintaining the zero knowledge encryption approach to password security.

Convenient features to simplify compliance

Bitwarden provides audit trails that let Glovo security teams track user and group access

to sensitive data. Antukh liked "the fact that we can inspect audit logs, and we could use that for compliance purposes. It's easy, and it's nice to set the permissions in the way we want to."

Hassle-free password protection for peace of mind

Glovo has seen adoption steadily increase as people cared more about the security of their passwords and reduced unnecessary or unsecure sharing. Now, when they share passwords, they do it through Bitwarden.

"We saw more and more that security champions, who are genuine security-minded people in our company and who are not part of the security team, also started to promote [Bitwarden]," said Antukh. "Once people started to experience that ease of use and security can go together with Bitwarden, adoption was natural."

Building a more secure future

Bitwarden is a vital solution within the Glovo security ecosystem and Antukh looks forward to further strengthening the company's data protection.

"Once we build that strategy, we will pursue it in the next year," he said. "It will be mostly related to how we improve processes, how we improve access management and user management. And for sure, Bitwarden will be an important part of it."

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as a whole company. So there is the risk ownership and there is awareness of what it means to own the assets. And always asking what risks are there"

Speaking on the impending explosion of quantum computing over the next decade, Antukh cites quantum computing and quantum cryptography as a major issue. He adds, "I think it's again more about the mindset. So whenever there is a new technology, whenever there is a new approach, there are inherent risks in that. So it's about how we are able to build that threat model, how we're able to identify those risks. And what are the controls there?"

One example Antukh evokes is that of the Metaverse from Facebook/Meta, which is moving to a new reality. "Hacking that reality might have some consequences, which we don't even think about right now, but might be quite serious. And there's also deep fakes, for example, or imitating the voice of somebody to pass some of the traditional controls, for banking transfers, among many others threats."

How Glovo stays ahead of the pack
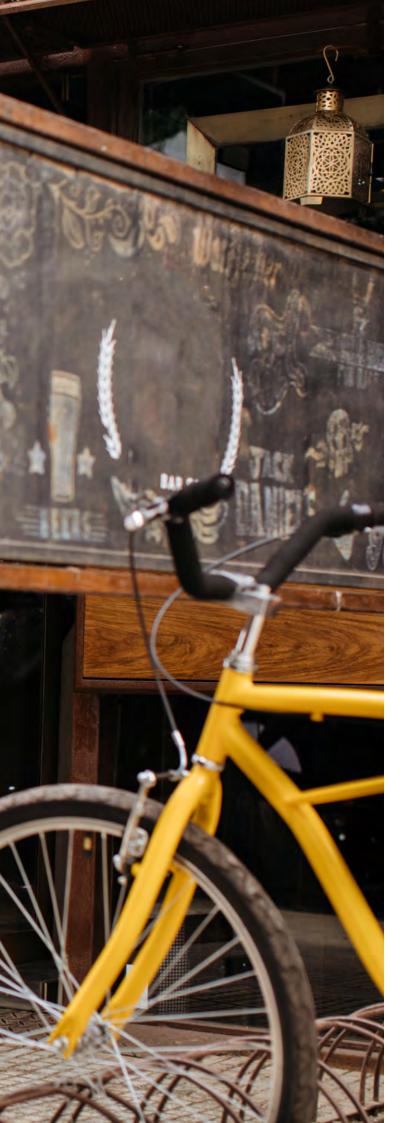
The focus for Glovo is to keep growing and expanding into countries and continue to strengthen their footprint in existing markets in which they currently operate. "We are in 24 countries, in more than a thousand cities worldwide, and we have over 4 million users. So I believe that Africa is going to be a focus for us. And over the next 18 months, we'll look forward to expanding further."
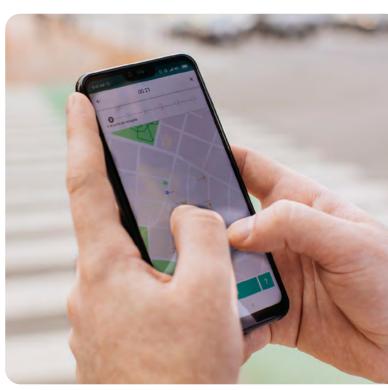
When asked to describe Glovo's competitive edge, Antukh says that it is two-fold to him personally, starting with an amazing culture that employees strongly believe in. "This is about how we work all together and we support each other. However, from the market perspective, I

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ALEXANDER ANTUKH
CISO, GLOVO

would say it's the fact that we are a multi-category app from day one. So again, many companies are now entering this field and are focusing on groceries. We've been there already, so it helps us to anticipate the next moves and be the market leader where we already are established."

Another example of Glovo's uniquely forward-thinking culture was embodied by the recent announcement that they're becoming an official signatory of The Climate Pledge (TCP), alongside more than 200 other businesses, making a commitment to decarbonising and reaching net-zero by 2040 or sooner. Glovo had already made a commitment to becoming carbon neutral across all its operations by December 2021, through a combination of emission reductions initiatives and investments in carbon offset from internationally certified nature-based and technological projects, in conjunction with partners Pachama and South Pole.

BUILD-TO-SUIT
DATA CENTRES
OFFER CUSTOMISED
SOLUTIONS

WRITTEN BY:
JANET BRICE

PRODUCED BY:
LEWIS VAUGHAN

US$11bn

Combined Revenue

31

Companies Coming
Together

40,000

Number of Employees
Worldwide

57

Countries Creating a New
Global Footprint Across
Five Continents

US$3.6bn

NTT Group annual average
investments in R&D for the
next five years

2000

Year Founded

NTT Global Data Centers Americas spotlights their new Phoenix data centre in Arizona designed to deliver scalable power configurations for its clients

Rising from the heat of the Arizona desert is a vast campus which has been designed to be flexible and scalable for clients of NTT Global Data Centers Americas. The 102-acre campus is taking shape in the form of NTT Phoenix PH1 - the first of seven planned data centres on the site.

Historically, the Phoenix economy was known for its 'Five C's' - cotton, cattle, citrus, climate, and copper, but with the arrival of these data centres, aptly located on the Elliot Road Technology Corridor, 30 minutes from the city's Sky Harbor International Airport, another C will be joining the list - connectivity.

NTT Global Data Centers Americas (NTT) was quick to seize the opportunity of creating their latest campus in the desert landscape, allowing them the luxury of space, which will benefit their clients seeking a scalable site - especially those on the west coast looking for a new location.

"The new campus has substantial expansion capability which will enable us to build out and benefit our clients," said Brittany Miller, VP Design, Construction and Supply Chain at NTT Global Data Centers Americas who lives 20 minutes from the campus and watched with interest as her first campus project with NTT rose from the desert dust.

"Our build-to-suit design responds to client specific requirements for data centre builds. It's not a one size fits all anymore - being able to adapt and rapidly implement

"**Our build-to-suit designs respond to what clients need from their data centre builds. It's not a one size fits all anymore - being able to adapt and rapidly implement is where I see NTT leading the pack**"

BRITTANY MILLER
VP DESIGN, CONSTRUCTION AND SUPPLY CHAIN AT NTT GLOBAL DATA CENTERS

is where I see NTT leading the pack," said Miller who leads the construction and supply chain team for NTT Americas in all their infrastructure builds.

Global neutral operator

The global company, which is a carrier neutral operator offering access to multiple cloud providers, enjoys a large footprint with locations in North America, Europe, Africa and India. Clients from Phoenix to Mumbai benefit from NTT's tailored infrastructure and experience consistent best practices in design and operations across all their scalable and customisable data centres.

Global Data Centers Americas was originally founded in 2000 under the name RagingWire. "In (add year) NTT also incorporated DPA, e-shelter, Gyron, Netmagic, NTT Communications Nexcenter,

BRITTANY MILLER   in

TITLE: **VP DESIGN, CONSTRUCTION AND SUPPLY CHAIN**

LOCATION: **SACRAMENTO, CALIFORNIA**

» Brittany Miller, Vice President of Design, Construction and Supply Chain at NTT Global Data Centers Americas, leads new data centre construction projects which feature global industry standards, multi-story buildings, and massive capacity.

Prior to joining NTT, Miller spent four years leading teams in Microsoft's Cloud Operations and Innovation business unit. She led a team that was responsible for global program management and governance along with AMER lease execution.

Miller also held multiple positions at Intel over her 10-year tenure. She led a global team of supply chain professionals from setting construction delivery strategy through the execution of large-scale construction projects.

to form the global data centres division. In 2019, NTT began the process of integrating the companies into a single division globally.

Today, the company is the world's third largest data centre provider by IDC in their Colocation and Interconnection Services MarketScape report. NTT extends to more than 20 countries with a total of 500,000 sqm of server space.

Build-to-suit data centre design

Miller is keen to focus on NTT's first data centre on the Phoenix campus which is due to open in February 2022 which has been built with a capability to expand.

She pointed out why NTT selected Phoenix as a safe site for the campus as the market offers reliable and affordable power, a low risk for natural disasters, a robust fibre network, connectivity to leading cloud providers, and comprehensive tax incentives.

EXECUTIVE BIO

Kohler: supplying NTT's customer needs

Kohler provides generators for NTT and helps them meet the needs of their customers, explains the company's Engineering Solutions Manager, Lori Domaschk

Originally founded by the Kohler family as a manufacturer of farm implements, Kohler has been operational since 1873. Fast-forward more than a century and in 2008, the family set up and entered a partnership to work on large diesel generators. They continued on this journey before launching their own KD series of generators. Lori Domaschk, Engineering Solutions Manager of Kohler's data centre business, said the KD Series created the company's newfound "strong focus" on the data centre industry.

"Now Kohler provides a wide range of generators of up to 4MW which allows for greater flexibility in design as well as business direction," Lori said. Kohler is becoming increasingly more involved with large builds and hyperscalers, the needs of which are somewhat varied and require the customization, collaboration, and partnership that Kohler can offer. "At Kohler, we're really able to take those concerns - anything that we want to change or modify and we have a lot more control over them," Lori said.

Partnering with NTT

As a provider of generators with enclosures, Kohler's relationship with NTT is closely knit. "The best way to explain the partnership that we have with them, besides just being another supplier to them, is making sure that they are meeting the needs of their customers. So we have daily, weekly meetings with their team and with the procurement team to make sure that deadlines are getting hit; that they're able to build in the way that they need in order to meet their own customer needs," Lori said.

Looking to the future, Lori describes Kohler's growth goals as aggressive. "I would say COVID has intensified the need and the speed for growth in the data centre industry. For us, there are extensive growth plans, and we're continuing to build and expand our data centre team to meet these growth goals and growth needs," she said.
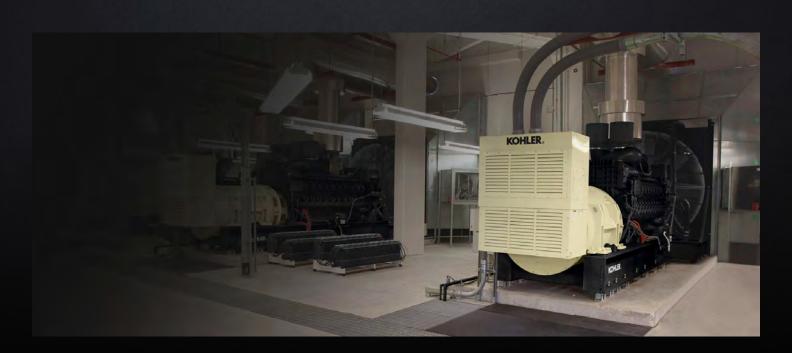
Learn more

"NTT has grown exponentially, this gives clients the convenience of coming to one provider"

BRITTANY MILLER
VP DESIGN, CONSTRUCTION AND SUPPLY CHAIN AT NTT GLOBAL DATA CENTERS

» SNAPSHOT OF PHOENIX, ARIZONA

Located in the south-west of the US, Phoenix, Arizona is the largest state capital with a population 1.6 million and lies only 150 miles from the Mexican border at Sonoyta.

Its canal system led to a thriving farming community. Cotton, cattle, citrus, climate, and copper were known locally as the "Five C's" anchoring Phoenix's economy. These remained until after World War II, when high-tech companies began to move into the valley.

In April 2021, Arizona adopted updated tax incentives for data centres. The bill extends tax breaks for an additional 10 years, through 2033. It also expands tax exemptions related to data centre equipment.

"The campus is phenomenal," said Miller, who is also responsible for the global construction and supply chain standardisation.

"I live in Arizona, so I've seen this project rise from the sand into a vast building in the desert - I think this shows why I love construction as I can see all the hard work of the teams showing in the bricks and mortar of a data centre building.

"We're focusing on the build-to-suit concept as another channel for customers. NTT has the ability to expand quickly with partners and build to their requirements which is becoming more important for larger customers. We are leveraging our internal expertise to build and design exactly what they need," said Miller, who pointed out her team has the "knowledge and capability" to understand what a client is looking for.

"In terms of sustainability in construction and engineering, we're always looking at ways to make our data centres more energy efficient, using renewables in certain regions and always looking at sustainable data centre standards like LEED."

Miller leads a unique team of diverse talent
During the past year Miller and NTT have invested in a diverse engineering and construction team that is focused on the customer perspective and requirements.

"My team has diverse talent from Amazon, Google, Facebook and Microsoft and this allows us to understand the client perspective and deliver to those requirements."

Part of Miller's team is Toby Stapleton, Director of Business Operations Construction, Critical Facilities Engineering & Design, who has 20 years of experience in the mission critical and data centre space.

He pointed out why NTT's build-to-suit approach is unique. "I think our most unique qualities that set us apart are our team's speed, flexibility and agility to react to client needs in the way that they are used to within their own organisations. This goes a long way with the stakeholders as that level of trust is needed especially with the significance of the builds we are being entrusted to deliver," said Stapleton.

"Having been on the owner's side as with many of my colleagues here at NTT, we know in depth what our client partners go through on a daily basis. Building off our experience is key in that initial engagement, the trust is achieved quickly, a hyperscale approach is assumed and communicated early on, and this allows our customers to get into eliminating risk day one with a sense of certainty on deliverables," he said.

Dylan Borvansky, Director of Preconstruction, previously worked for large hyperscale clients, and with this wealth of experience on a global stage, he was able to see first-hand the challenges these large companies have and worked directly with them to create cost effective solutions to enable data centre build portfolio success.

"This exposure to a multitude of designs from globally recognised teams has encouraged me and my team to always present the options as there are multiple ways to deliver projects," he said.

Commenting on how that experience better positions NTT to deliver build-to-suit projects he said: "I understand, as do many in our industry, that it is hard to remove internal legacy design elements. By working with the NTT team with a focus on providing the best quality, cost optimised and on-schedule projects, our customers are able to tap into that arsenal of information and ways to do it better with the data to back it up.

"My team has diverse talent from Amazon, Google, Facebook and Microsoft and this allows us to understand what the client really needs in terms of what we're building and cater to those requirements"

BRITTANY MILLER
VP DESIGN, CONSTRUCTION AND SUPPLY
CHAIN AT NTT GLOBAL DATA CENTERS

SIX OTHER NTT CAMPUSES IN THE US

Sacramento
Located in seismically-stable Sacramento. The CA1/CA2/CA3 combined data centre campus is the largest in California with 53 MW of critical IT load. It features 100% renewable energy and 24x7 staff.

Silicon Valley
Silicon Valley SV1 Data Center in California is strategically located in the heart of the tech capital of the world. With 16 MW of critical IT load the centre provides scale and a rich ecosystem of connectivity options. This facility is the first in Santa Clara to use an earthquake-resistant design featuring an innovative base isolation system.

Ashburn
The 78-acre fenced campus at Ashburn, Virginia data centres are located outside Washington DC in the heart of "Data Center Alley" which contains one of the largest fibre carrier densities around. More than 70% of the world's internet traffic passes through the region's digital ecosystem. The newest data centre on the campus, Ashburn VA5, offers 32MW of critical IT load and is the fifth of nine planned data centres.

Chicago
Located on a 19-acre data centre campus in Illinois, NTT Chicago CH1 features 36 MW of critical IT load and is the first of two planned data centers on NTT's 72 MW campus. With high-density vaults it can support both single-user and colocation requirements of hyperscale cloud and enterprise customers.

Hillsboro
The Hillsboro HI1 data centre, the first on NTT's 126 MW Hillsboro Data Center Campus in Oregon, offers 36MW of critical IT load and Subsea Connect, a trans-pacific network service providing connectivity between Hillsboro and Tokyo, Japan using NTT's Pacific (PC-1) Subsea Cable System.

Dallas
Dallas TX1 Data Center in Texas has been recognised by Datacenter Dynamics as one of the "most beautiful data centres in the world". With a total of 230,000 sq ft and 16 MW of critical IT load, Dallas TX1 has waterless cooling using indirect air exchange cooling technology.

"Each company that is interested in a build-to-suit has their own unique challenges. Our approach is to provide the flexibility to partner with our clients to find a resolution in a timely manner. Our team is unique as is our approach, and our clients realise early on that the lasting relationships formed are reciprocally beneficial."

NTT Phoenix PH1 Data Centre

When the new build-to-suit data centre, Phoenix PH1, opens its clients will benefit from tailored infrastructure and experience consistent best practices in design and operations across all the scalable and customisable data centres.

The features of the data centre includes:

- Two-story data centre designed to LEED-certified specifications for minimum water usage and maximum energy conservation, and featuring a reinforced concrete slab floor design that increases floor loading and variable rack densities
- 36MW of critical IT load, N+1 distributed redundancy for each 6MW vault, diverse power distribution to data hall, and dedicated on-site sub-station
- Air-cooled chillers with airside economisers and fan coil wall cooling design with hot aisle containment
- Three diverse fibre entry points and two Meet-Me-Rooms to provide access to multiple leading cloud providers, along with global and regional carriers and ISPs offering dark and lit services
- 24x7 security and facility operations team

Miller points out the new scalable campus will enable enterprises to meet strategic business objectives - by accelerating time to market, improving operating efficiency and avoiding costly downtime.

Overcoming supply chain challenges

Starting at the height of the pandemic brought many challenges for Miller – the main one being supply chain but partnering with suppliers has helped her overcome this major stumbling block.

"Supply chain is one of the largest challenges in the past year, but by partnering with our suppliers we have done a really good job mitigating risks. Without the partnership of our suppliers and risk mitigation measures , we wouldn't have been able to deliver on our commitments this year."

Partnership with Kohler

Miller pointed out Kohler as being one of NTT's most important partners.

"Globally they have been instrumental in helping with some of the supply chain

"We're focusing on the build-to-suit concept as we own a lot of land and have the ability to expand quickly with a partner and build to their requirements which is becoming more important for larger customers"

BRITTANY MILLER
VP DESIGN, CONSTRUCTION AND SUPPLY CHAIN AT NTT GLOBAL DATA CENTERS

issues we've had in the past. We're working through a lot of first-of-the-kind with them to shorten the lead times and ensure equipment for generators are delivered on time. This has been a longstanding relationship and Kohler is definitely one of our key suppliers, especially in the US."

Expansion to benefit hyperscalers

During the past few years NTT has expanded its global footprint and will continue to do so over the next 18 months, when they'll increase by 20%. Miller commented on how this will benefit hyperscalers around the world.

"NTT has grown exponentially, this gives clients the convenience of coming to one provider. By having one NTT and the rapid expansion that we've seen in the last couple of years, we'll offer them the ability to have

one provider and one service globally which will simplify their business model. We've expanded into places that are very desirable to some of our clients so I also think this interconnection will help.

"Our build-to-suit designs respond to what clients need from their data centre builds. It's not a one size fits all and being able to adapt and quickly implement is where I see NTT leading the pack."

Commenting on how NTT will continue to retain its leading market position, Miller said it was based on continuing to partner with their clients and expand further into the markets along with their focus on build-to-suit. ○

Christian Scholz,
Arvato Systems

arvato
BERTELSMANN
Arvato Systems

CHRISTIAN SCHOLZ OF ARVATO SYSTEMS ON DIGITAL TRANSFORMATION

WRITTEN BY:
HELEN ADAMS

—

PRODUCED BY:
BEN MALTBY

Christian Scholz **of Arvato Systems discusses digital transformation, system integration and successful leadership**

When a newly founded company grows or an existing company needs to be digitalised, the complexity increases with the new technical possibilities. Companies are often in the situation where they need specialists who know which services are the most suitable, where the strengths and weaknesses of the providers lie and which security levels are required.
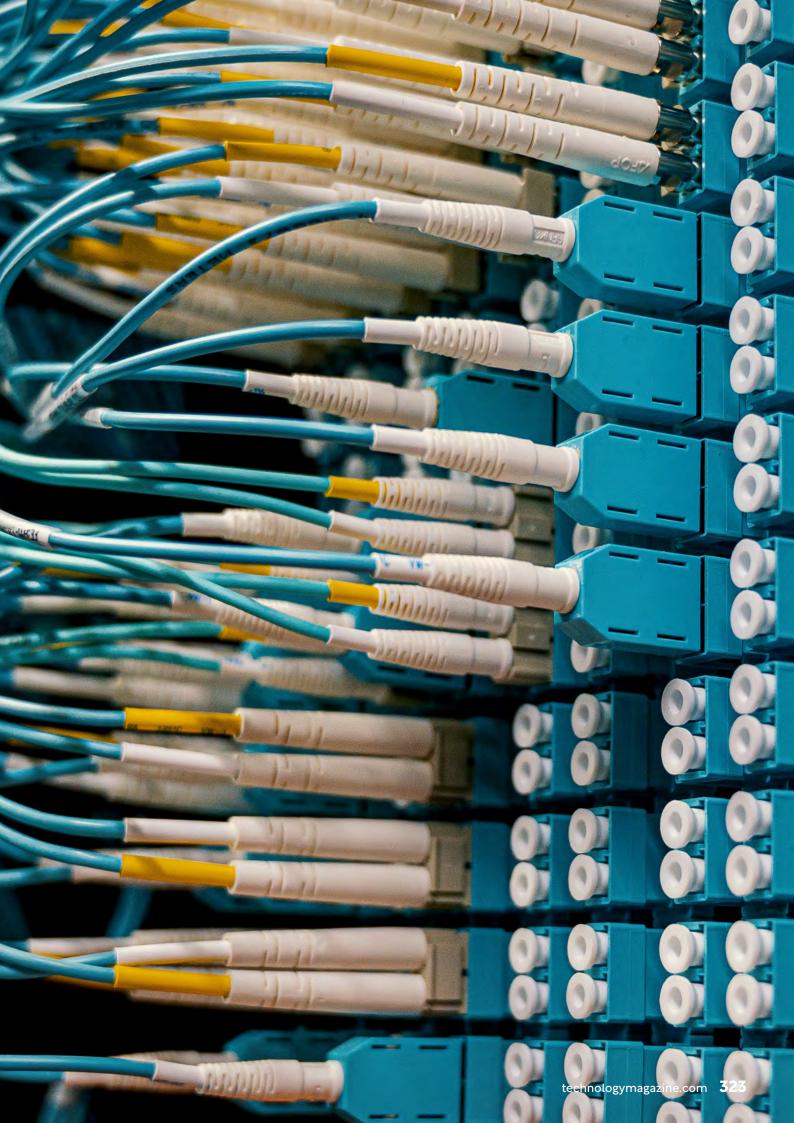
This is where Arvato Systems comes in.

"We are a system integrator that offers exactly these kinds of services," says Christian Scholz, IT Director Cloud Business at Arvato Systems. Christian has been with the company for 19 years. He started as Lead Architect and became IT Director in 2014. "The future belongs to all of us, but it is shaped by those who have the courage to break new ground. Because IT is changing our world." This insight of Christian's originated in 1984, when his parents gave him a computer on which he could play games. His soft spot for computer games soon turned into an interest in computer software and that became a passion.
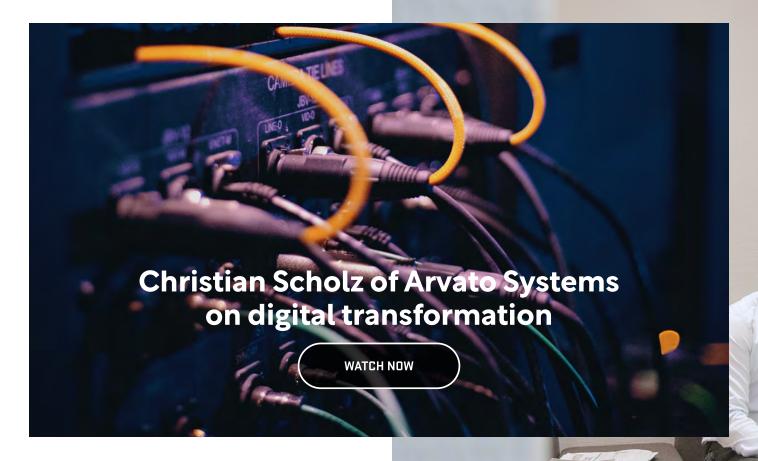
"What do you need for your life?"

"Goals!" laughs Christian. "My personal challenge was to build large IT systems. To try out what is possible. I started at Arvato Systems 19 years ago and I kept getting the chance to work with IT giants, like Microsoft

Christian Scholz of Arvato Systems on digital transformation

WATCH NOW

"The future belongs to all of us, but it is shaped by those who have the courage to break new ground. Because IT is changing our world"

CHRISTIAN SCHOLZ
IT DIRECTOR CLOUD BUSINESS,
ARVATO SYSTEMS

and Google, on various projects. These projects were large, complex and very challenging. I had the freedom to make my own decisions and do things differently. This allowed me to test myself, gain new experiences and grow. That kept me interested and subsequent management level positions have made it all even more exciting. Today, I'm happy to be able to help shape the company in my position."

Successful leadership and digital transformation

For Christian, successful leaders are not above the team, but part of it.

"One of the tasks for good managers is to put together a team that achieves the desired goals", says Christian. "It is important to understand that the team determines the path to the goal and not necessarily the manager. Successful managers include people with different skills in their teams and give them tasks they can grow with. In other

CHRISTIAN SCHOLZ

in

TITLE: **IT DIRECTOR CLOUD BUSINESS**

INDUSTRY: **TECHNOLOGY**

LOCATION: **GERMANY**

>> Christian Scholz main responsibilities as IT Director at Arvato Systems is the setting-up and implementation of IT strategy. His further duties include the company's expanding strategy in the cloud market and he works closely with large customers in Europe. Before becoming IT Director he worked as an IT Architect and Senior Project Manager on large scale project for companies like Google, Microsoft, Volkswagen.

His in-depth IT knowledge derives from over 30 years in different positions as IT architect, software developer, network admin, CAD- and graphics expert, project manager, and IT consultant. He has worked in many different industries such as finance, engineering, automotive, e-commerce, media, publishing houses, broadcast, and surveying.

Christian's passion is to develop people; he has the ability to see people's skills and to develop their strengths. He has built these skills both in his work environment and in his spare time, where he writes plays and musicals and puts them on stage with people who have never acted before.

words, the team is given the space it needs. In an open and trusting atmosphere, it can communicate freely and honestly. This is the prerequisite for developing as individuals and as a team. Everyone in the team has different abilities. You have to put people in the right place and see if their skills develop.

"Good leaders therefore also give pointers on where their team members can improve,and some employees may not even know what their strengths are yetI have the space and freedom to develop the team."

Using technology to reach a large audience
In the 37 years since Christian started playing computer games, technology has of course changed a lot. IT has definitely become more normal, more commonplace.

"You don't have to be a computer scientist to build a web shop today. We are in the digital age. It has never been easier to reach an audience that is geographically and demographically larger than ever before," Christian explains. "It has also never been easier to build new businesses that could, in principle, have anyone with internet access as a customer. Services like payment systems, web shops, warehouses or delivery services are easily available online. Even advertising works via search engines or social channels. All these elements can be used to set up a new business relatively quickly and without much prior knowledge or technical know-how."

However, the situation is different for established companies, which were often founded in the last century. This is because they already have successful processes – and an existing IT environment.

"...Good leaders therefore also give pointers on where their team members can improve. And some employees may not even know what their strengths are yet"

CHRISTIAN SCHOLZ
IT DIRECTOR CLOUD BUSINESS,
ARVATO SYSTEMS

"In order to be successful in the future, these companies need to build new technical capabilities and develop new, digital business models", explains Christian. "This is where our support comes in. Arvato Systems helps companies on their way to new digital business models. One approach can be to simply set up a digital interface between the existing business and the audience - to combine everything. An API management layer (Application Programming Interface) makes it possible to have apps and address customers digitally. The company needs to store information in its new systems, and the storage is done through API management. This gives a company a greater and safer interface that allows the outside world to use the legacy systems in a digital way. If there are, say, three different legacy systems that manage addresses of customers, business partners and perhaps goods, all of this can be combined into one API for each need. We've done that for some clients and it's really easy to implement."

Today, the cloud offers everyone the opportunity to install servers and access services from the cloud with just a few clicks, from databases to developer tools to machine learning. The role that the cloud now plays at Arvato Systems is correspondingly large. "Today, Arvato Systems acts as a service integrator for many of our customers", says Christian.Quite a few years ago, we recognised that the cloud was on the rise and would become a cornerstone of IT. Since then, we have earned a very good reputation in the German market with our service and our knowledge of the cloud. The cloud and the business transformation it brings to our customers: This is our bread and butter business today. We have a broad knowledge about multi-cloud environments

1999

Year Founded.

3,000+

Number of Employees.

€413mn

Revenue in 2020.

and have good, close relationships with the various cloud partners."

Strong partnerships

There are three big players in the cloud market: Amazon, Microsoft and Google. Each of them also offers native services, but these may cause a certain vendor lock-in.
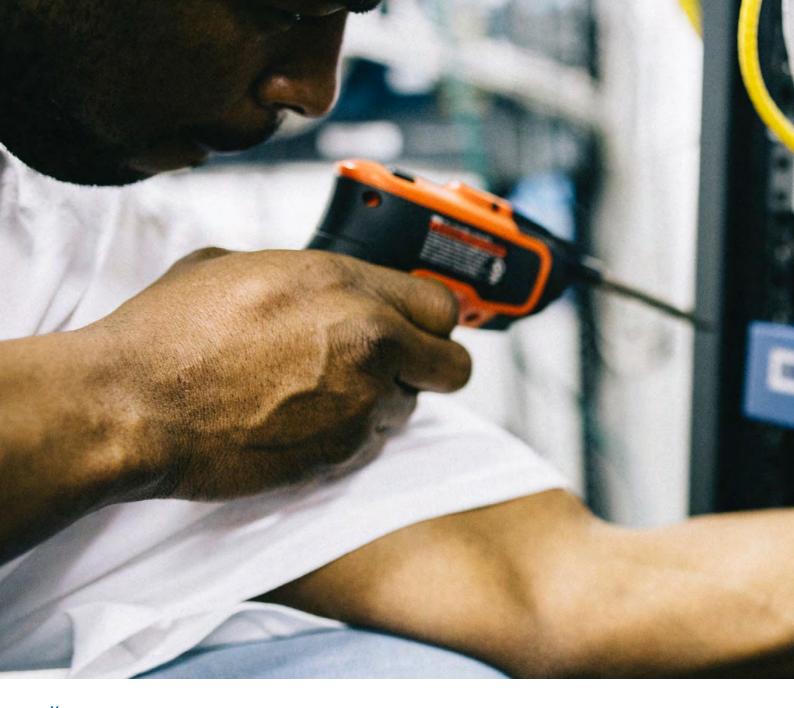
"If you use Kubernetes for container applications from Google, you will be able to move it to Microsoft perhaps 98% of the time", Christian explains, in an example. "But if you then leave Microsoft and move to AWS (Amazon) you may need to adapt the service or use a new one. We are aware of these limitations and take them into account when we create the ideal cloud or multi-cloud environment for a customer.

"At the same time, our partnerships with all these strategic partners are really very close. Microsoft, for example, has already been a very important partner for us for decades. Arvato Systems works with Microsoft in various areas, even with their internal processes. We have also been working with our partner Google on internal products for well over 15 years. We fit so well together because we have the same mindset. When we work on projects, I'm dealing with a lot of cool and experienced people from Google. Their knowledge, this collaboration also improves my own skills. The same is true for Amazon (AWS). We learn from and with each other in our long-standing partnership and have implemented very many different customer projects."

Together into the future

Cooperation and team spirit are also important goals at Arvato Systems.

"As a manager, you simply have to make sure that the team feels valued. We usually have events twice a year," Christian
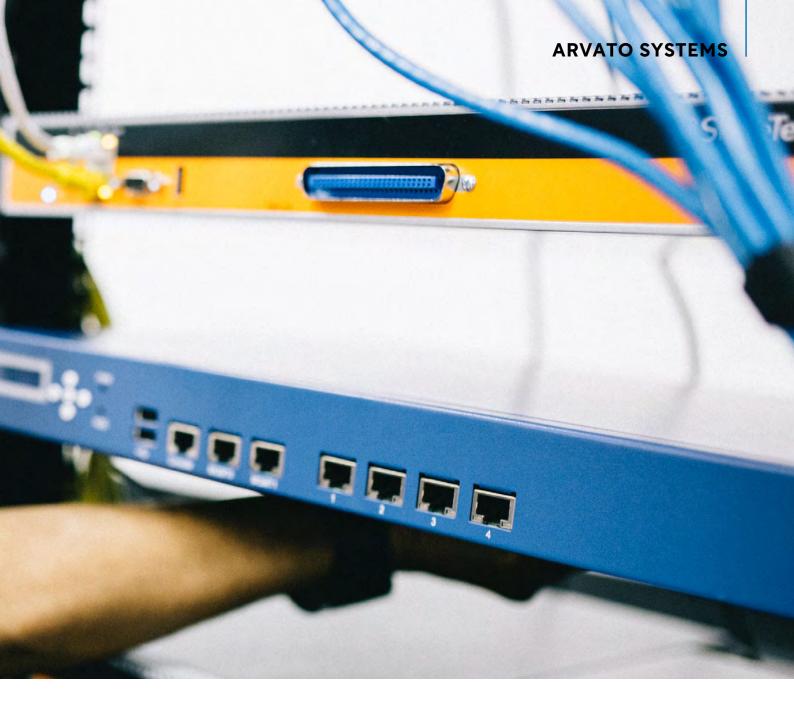
"You don't have to be a computer scientist to build a web shop today. We are in the digital age. It has never been easier to reach an audience that is geographically and demographically larger than ever before"

CHRISTIAN SCHOLZ
IT DIRECTOR CLOUD BUSINESS,
ARVATO SYSTEMS

reports. "Only this year, due to coronavirus, we switched to live events that take place via camera and video. Smaller teams cooked together, for example, and we had a professional chef with us – that was a lot of fun. Then there was also a quiz around the world."

At Arvato Systems, too, the hope is that life will return to normal, that team members will soon be able to enjoy each other's company in person at the office again. Nevertheless, in our digital world, the most constant thing seems to be change. What do the next five years look like for Arvato Systems?

"I think we will continue to expand our connections and partnerships", says Christian. "From a business perspective,

we will certainly continue our growth course, and even accelerate it. From a technological perspective, I expect a dramatic development in the field of artificial intelligence (AI). So far, AI's are highly specialised - they have a kind of savant syndrome: one AI navigates me to my destination while driving, another plays chess with me, the third monitors my fitness. But the great leap forward for future AI generations will be to understand human needs in their complexity, i.e. to support people through a more comprehensive, connected intelligence.

"At Arvato Systems, we are already helping companies to use artificial intelligence in a targeted way for their business processes and business models. This will expand significantly in the future with the advancing capabilities of AI. "

Many new ideas, in-depth know-how, team spirit and strong partnerships are just some of the attributes that distinguish Arvato Systems, and with creativity, plenty of room for innovation and the right sense for customers' needs, Arvato Systems is ideally positioned for the future and will continue to stand confidently at the forefront of digital transformation. ○

FERREXPO

WRITTEN BY:
DOMINIC ELLIS

PRODUCED BY:
ASHLEY KIRBY

FERREXPO FIRES UP DECARBONISATION AND AUTONOMY

Interim CEO Jim North is firmly focused on decarbonisation, renewables expansion and autonomous fleet development

Ferrexpo Interim CEO Jim North's "big three" are probably not that dissimilar from many of his counterparts: growth, decarbonisation and technology. But the fact that we spend the best part of an hour discussing them underlines their vital importance to the iron ore pellet company's overall strategy.

North has been with Ferrexpo for seven years and Interim CEO since 2020. He speaks clearly and in an assured manner, which again is indicative of his focus.

As Group COO between 2014 and 2020, operational efficiency and discipline were priorities, but now as CEO, the task is how best to execute the growth and decarbonisation strategy for the Swiss-based commodity trading and mining company, listed on the London Stock Exchange, whose operations are in Ukraine; North is actually speaking to me from central Dubai, which seems strangely appropriate too for such an international entity (the Gulf city serves Kiev with two flights a day).
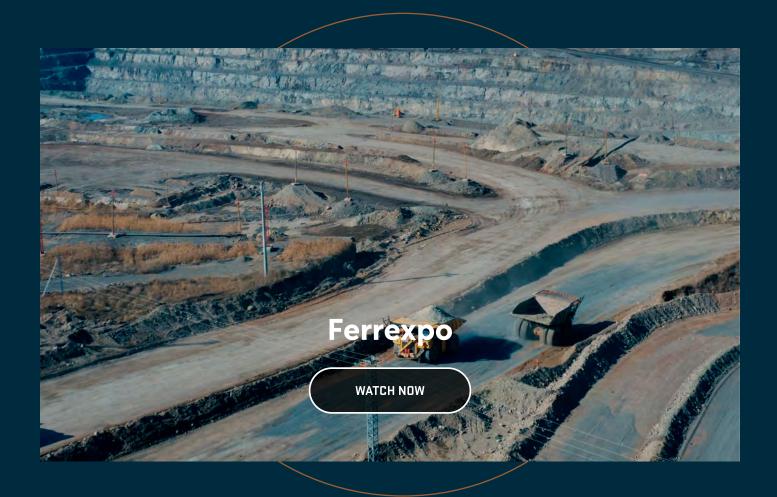
So to growth first. In its half-year results for 2021, revenues rose 74% to US$1,353 million, profit after tax came in at $661 million, and pellet production totalled 5.6 million tonnes; the pandemic-defying figures were attributed to a 'multi-year investment programme in our assets'.

North remains humble though. "You never conclude business improvement – there

Ferrexpo

WATCH NOW

> **"Transitioning from a manned operation to autonomous is not just a case of buying the technology, bolting it onto the truck and letting them go. It's about learning to live with autonomy"**

———

JIM NORTH
CEO,
FERREXPO

different rates of implementation," he reflects.

Operations and sustainability are now clearly two sides of the same coin.

Ferrexpo is aiming for 30% reduction in combined Scope 1 and 2 emissions by 2030 and to be carbon neutral by 2050. After achieving 16% and 6% reductions in 2020 and the first half of 2021 respectively, North is confident it will get there "well before" the scheduled date.

"We're well down the path to achieving 30%," he said. "We have no intention of using carbon offsets — we want to do real carbon reduction. We like to be conservative and over deliver. As we progress, you need to put more work in to get smaller gains."

There are substantial amounts of renewables in the Ukrainian grid already but that will only take the company part of the

way in addressing Scope 2, so it is targeting solar and wind as possible solutions. It is already trialling a 5MW solar plant, and so far North is happy with the performance. "We want to run it for a period of time to test the seasonal variations before we do more internal investment in renewables."

It is also developing a small hydrogen test plant, and initially use it to replace natural gas in one of four pelletiser lines. Construction and commissioning will start by the end of next year.

Green hydrogen, for Ferrexpo, has two uses: as a gas replacement in the pelletisation process, and possibly to provide an alternative power source for mining auxiliary fleet.

"In terms of the overall renewables strategy, there has to be a blend. It isn't cost effective to use hydrogen for power generation.

"We don't want to take on significant tranches of debt. The commodity price will determine the rate of implementation of our decarbonisation plans."

Electrification and energy efficiency are increasingly key subjects, especially as its fleet of 86 trucks is forecast to grow to 134 units. It has set a deadline for the first diesel engine replacement by 2027, though no manufacturer has been selected yet, and he said the "expectation" is that its primary mining fleet will decarbonise by 2032.

Meeting its own emission targets is just one element in the sustainable equation, and there are many uncertainties in the wider steel industry.

"We recognise that steel industry will need to significantly reduce carbon inputs to meet their obligations. We're seeing car manufacturers under pressure to have carbon-free steel by 2030, which will be tough — 2040 to 2045 may be more feasible." He said the bigger question is

EXECUTIVE BIO

JIM NORTH

TITLE: **CEO**

INDUSTRY: **MINING**

LOCATION: **DUBAI**

» Jim joined Ferrexpo in November 2014 and since then he has successfully managed the Company's operations and introduced world class operating practices. Previously, Jim was Chief Operating Officer of London Mining plc, where he was accountable for setting the company's operational and investment strategy around the world. Prior to this, he held a variety of senior operational management roles in multiple commodities with Rio Tinto and BHP.

ZEPPELIN – CATERPILLAR »

Sustainability is imperative to Caterpillar and our customers

We are committed to contributing to a reduced-carbon future, and to reduce our own greenhouse gas emissions while also developing solutions that will help our customers meet their own carbon reduction goals.

This year, Caterpillar released a Sustainability Report which included seven new 2030 Sustainability goals. These goals include a science-based Scope 1 and 2 goal to reduce absolute greenhouse gas emissions from our operations by 30% from 2018 to 2030 and that 100% of Caterpillar's new products through 2030 will be more sustainable than the previous generation.

Caterpillar has a suite of solutions available today to help customers reduce emissions and will continue to develop into the future.

EMISSIONS AND FUEL REDUCTION THROUGH AUTONOMY AND AUTOMATION
As of May 2021, over 407 autonomous Cat® trucks equipped with Command for Hauling have accumulated more than 110+ million kilometers of autonomous driving and moved more than 3+ Billion tons safely. Depending on application and mine site, Command for hauling has demonstrated up to 30% increase in production efficiency.

ADVANCED POWER SOURCES
Caterpillar's advanced power offerings facilitate fuel transition, increased operational efficiency and reduced emissions. Our approach is to provide multiple solutions made to match our customers' work: making established power sources even more efficient and fuel flexible, pairing established power sources with new technologies in a hybrid format, replacing established power sources with stand-alone new technologies, and delivering after-sale services to help optimize and sustain the value of the advanced power technology solutions throughout the lifecycle. Caterpillar is focused on five technology areas: Renewable Fuels, Fuel Cells, Electric & Hybrid Powertrains, Batteries and Microgrids.

RENEWABLE FUELS
Current offerings include U.S. EPA Tier 4 Final engines that use dynamic gas blending to displace up to 85% of diesel fuel with natural gas, and reciprocating engines that run on low-carbon-intensity fuels including biodiesel, renewable diesel, and hydrogen blends.

FUEL CELLS
Fuel cell technology uses renewable hydrogen fuel to create zero emissions electric power. Fuel cells can be part of efficient and reliable power systems but are currently limited in market acceptance due to availability and economics of renewable hydrogen. Many governments and industries are working to resolve those concerns to make renewable hydrogen a viable future energy source. Caterpillar is currently developing fuel cell power system solutions for both mobile and stationary applications.

DIESEL ELECTRIC
Caterpillar is committed to improving the efficiency of our machines as demonstrated by the development of the 988 XE wheel loader and the D6 XE dozer. These machines were developed with fully integrated Cat diesel-electric drive systems. The high efficiency drive systems improve production by up to 10% and reduce greenhouse gas emissions through fuel burn reduction. Depending on the application, the machines provide fuel efficiency improvements of up to 35% on the D6 XE and 25% on the 988 XE. In addition, the machines operate at more consistent engine speeds which helps extend engine life and extend powertrain oil change intervals, both providing sustainability benefits.

MICROGRIDS
Microgrids enable integration of renewable energy sources into electric power systems. Today, Caterpillar provides worksite solutions that pair diesel and gas engines with solar, energy storage and advanced controls to help meet customers climate-related and operational objectives. These reliable and durable systems boost production by reducing power interruptions and providing better load acceptance, while helping customers reach their greenhouse gas reduction targets.

BATTERY ELECTRIC VEHICLES
The Cat® R1700 XE, Caterpillar's first battery electric powered, zero-emissions underground Load Haul Dump (LHD), has been introduced alongside its mobile equipment charger, the MEC500. The R1700 XE is rated for 15 tonnes of payload, matching the performance of the R1700 diesel, and delivers a top speed of 18 kph. The batteries on the R1700 XE stay on the machine to maximize 2.5 hours of aggressive run time between charges.

A first of its kind in the industry, the new portable Cat® MEC500 Mobile Equipment Charger is designed to charge fast, charge safely, and charge where the work is taking place. Utilizing our industry leading Cat® connector, its 500kW capability offers an impressive range of 300-1000Volts and up to 700 Amps. This fast charger can be used as a single unit to deliver a full charge to the R1700XE in less than 30 minutes or in parallel to charge the LHD in less than 20 minutes. The MEC500 has adjustable output voltage and current allowing customers to trickle charge the battery, maintaining optimal performance for the R1700XE.

TROLLEY ASSIST
Caterpillar trolley assist systems are available today and can help customers reduce fuel consumption, lower greenhouse gas emissions, and improve engine life. Trolley provides energy to electric motors instead of a traditional engine while the truck is moving and connected to the trolley line. While under trolley power, trucks in the field have demonstrated a 90% reduction in fuel burn while doubling on-grade machine speed. Depending on the length of trolley line at site, customers could reduce greenhouse gas by up to 60%. Cat® trolley assist is currently available on the 795F AC and is compatible with the 794 AC, 796 AC, and 798 AC.

Caterpillar will enable our customers to achieve their climate-related goals as they build a better, more sustainable world. Collaboration is key. We'll continue to work alongside our customers to identify their challenges, understand their requirements and deliver solutions that help them be successful today and into the future.

TROLLEY ASSIST SYSTEM
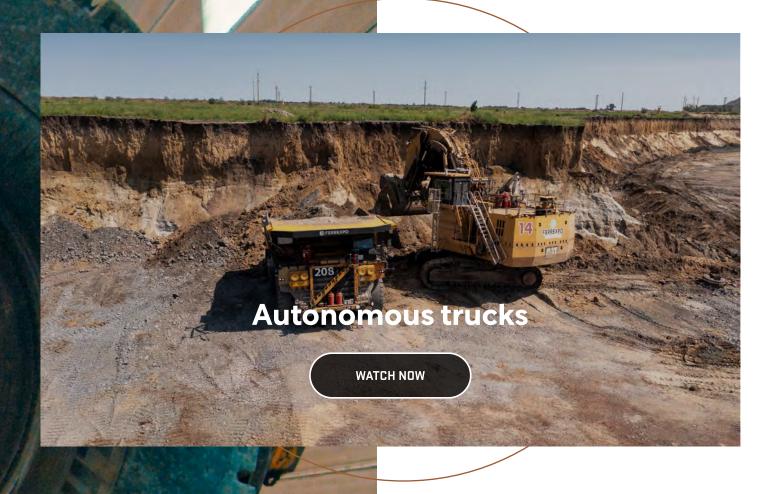## FOR CAT® ELECTRIC DRIVE MINING TRUCKS

Reduce carbon emissions

Lower fuel and engine costs

Boost speed-on-grade for greater productivity

ZEPPELIN CAT

"As we expand our business, we need to add lab and analysis capacity, and robotics is well advanced in these areas"

JIM NORTH
CEO,
FERREXPO

Autonomous trucks

WATCH NOW

how are steelmakers going to fund the transition from traditional blast furnace technology to processes with reduced carbon inputs?

"China has invested a lot in traditional steelmaking processes over the last 20 years — for them to scrap all that, and implement direct reduction processes, would be a significant cost. It's not yet clear how European steelmakers are going to fund decarbonisation — that's going to be multiple billions of dollars. Ultimately the cost of this transition will be passed onto the end consumer and steel will be more expensive, but it's clear it's needed."

Autonomous focus drives digital growth
Autonomy is an increasingly core focus within fleet development, and currently six trucks (CAT-793, 220 tons) are self-driving.

"We broke the project into two phases, the first is six trucks, the second is nine. We're holding off the deployment of the further nine until we've operated the six for a significant period," he said.

"Transitioning from a manned operation to autonomous is not just a case of buying the technology, bolting it onto the truck and letting them go. It's about learning to live with autonomy. The computer doesn't have any judgement – it will only do what you tell it to do."

Productivity is very important, and using robotics is going to play an increasingly key role. Jim says Ferrexpo is thinking about implementing robotics in its future mining labs.

"As we expand our business, we need to add lab and analysis capacity,

RISING TO EMISSIONS CHALLENGES

Currently, global steel production accounts for 7% of global carbon emissions, representing more than all of the emissions from the world's cars put together
• Ferrexpo's iron ore pellets reduce carbon emissions by 40% for every tonne of sinter fines replaced with pellets
• Ferrexpo has invested over US$2.9 billion in its operations in Ukraine since its IPO in 2007
• It invested $17 million in environmental projects in 2020

and robotics is well advanced in these areas."

With pellets firing at 1,400 degrees, AI is also being courted to measure variability in off-gases to manage process variation.

"That will be a significant advantage for us in future. AI can manage more variables than a traditional control room operator."

He doesn't envisage that jobs will go in the new digital age, more that skills will evolve.

"A good example of this is we employ 12 surveyors who are 'autonomous road builders' mapping the routes – that's a role that didn't exist before autonomy. We also have more network engineers in our business now to manage the communication networks – and if you'd said to me 10 years ago we'd have a team of drone pilots today, I wouldn't have believed you." ○

"I changed the leadership development programme, which was largely focused on hard skills, and now there's a greater focus on cultural change"

JIM NORTH
CEO,
FERREXPO

OPEN PLATFORMS, HPC & INDUSTRY 4.0

WRITTEN BY:
GEORGIA WILSON

—

PRODUCED BY:
LEWIS VAUGHAN

TAURUS GROUP

2005
Year Founded

Computer Hardware
Industry
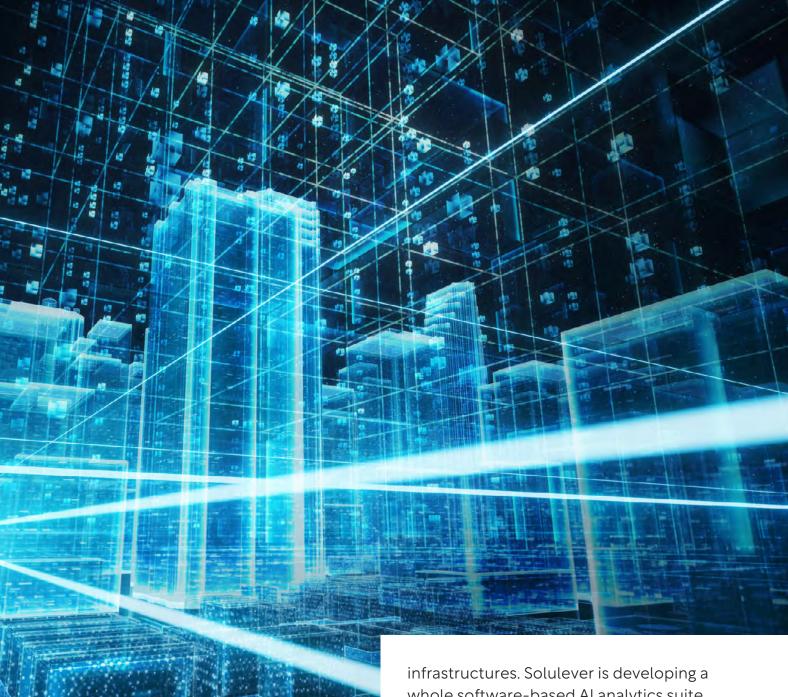
120
Number of Employees

180mn
Revenue (Euros)

Arun Garg (Taurus Group), Menno Kortekaas (Circle B), Alex Ninaber (ClusterVision), and Jitesh Kohli (Solulever) discuss their collaborative ecosystem

Being in the technology business for over two decades, Arun Garg heads Taurus Group as its current CEO. "We have multiple disciplines within our company with a physical presence in the Netherlands, Belgium, Germany, and India. Founded in 2005 in the Netherlands, the business has been expanding since 2016, as it makes successful investments and acquisitions in several companies: 2BY2, Taurus Germany, Circle B, Solulever, and ClusterVision. Today, we proudly stand as an ISO 9001 company and are in the process of being ISO 27001 certified."

Taurus Group is a specialised and focused company that operates in a niche market with a good reputation. It provides its customers access to its global distribution infrastructure and, together with its enterprise integration, offers software-defined data centre solutions.

"As the parent company, Taurus Group has six operational entities. Taurus Europe is the main entity that carries out the distribution aspects," mentions Garg. "Acquiring ClusterVision, Circle B, and Solulever coincided with our vision to grow and expand our product offerings. We have a great circular economy within these entities. In The Netherlands, we all operate from the same office and make good use of each other's expertise and knowledge. Taurus performs the role of 'component supply'; Circle B designs, builds, and manages rapid-scale sustainable data centre OCP server

> ## "Taurus Group has six operational entities. Taurus Europe is the primary entity that carries out the distribution aspects"
>
> ARUN GARG
> FOUNDER & MANAGING DIRECTOR,
> TAURUS GROUP

infrastructures. Solulever is developing a whole software-based AI analytics suite which happily runs on OCP hardware whilst ClusterVision is a turn-key solutions provider for HPC, AI and data at scale."

Garg adds, "Being a business that very much revolves around storage components, the majority of our revenue comes from storage products, which we sell as a barebone product or as a complete solution." He explains, "we do not have any standard storage solutions for our customers as we offer tailor-made solutions based on the specific requirements of individual customers."

"Our business interests are split into two broad areas: the first being distribution, and the second being solution, development and R&D. Our core products and services include

ARUN GARG

TITLE: **FOUNDER & MANAGING DIRECTOR**   COMPANY: **TAURUS GROUP**

Arun, Founder and Managing Director of Taurus, has over two decades of extensive experience working in the technology business. With a strong focus on a niche IT market, he strives to be a specialist in this domain. He believes in making successful business investments and acquisitions of companies dealing in specialised services to build a holistic business solution. His mantra of success lies in the few keywords: dedication, perfection, commitment, and meeting deadlines. His unabated dedication towards his goals from the beginning has led him to monumental success.

ALEX NINABER

TITLE: **CO-FOUNDER & DIRECTOR HPC, CLOUD & STORAGE**
COMPANY: **CLUSTERVISION**

Alex, Co-founder and Director ClusterVision, has vast experience of over 20 years in developing high-performance computing solutions. Having completed his PhD at Birkbeck College (London) with his colleague, he was inspired by large scale calculations in molecular dynamics, which led him into developing innovative HPC solutions. Owing to a strong background in chemistry and physics, he believes in being practical and always attempts to find answers to complex problems.
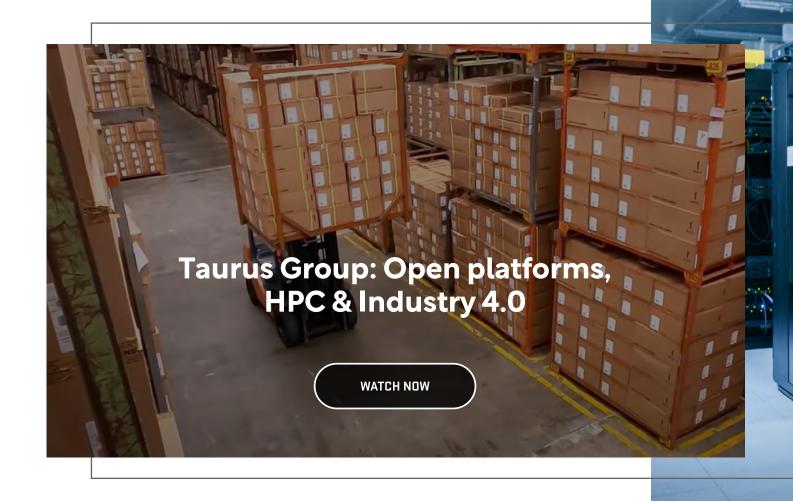
MENNO KORTEKAAS

TITLE: **FOUNDER & CTO**   COMPANY: **CIRCLE B**

Menno, Founder of Circle B, has a vast experience in OCP and aims to deliver the power of open compute to most organisations as a scalable solution. Having an extensive background in IT and networking and being acquainted with the concept of OCP in his consulting years, he looks further to apply OCP hardware for data centres as an innovative way of building servers. The founder believes in combing sustainability with innovation which he delivers in his solutions.

JITESH KOHLI

TITLE: **CO-FOUNDER & CEO**   COMPANY: **SOLULEVER**

Jitesh, the CEO and co-founder of Solulever, has 18 years of experience working with IT services and consulting giants. He leads a rich team of Industry 4.0 thought leaders, technologists, data scientists and domain experts, with a passion for bringing unparalleled platforms and solutions to the manufacturing industry by building unique Edge Platforms and industry-specific solutions. Over the years, he has built trusted relationships with customers, colleagues, advisors, and partners across a multitude of industries and countries in Europe and beyond.

Taurus Group: Open platforms, HPC & Industry 4.0

WATCH NOW

> **"Typically, we provide software solutions to complex business environments, along with HPC installations and knowledge to make these environments successful"**

ALEX NINABER
CO-FOUNDER & DIRECTOR HPC,
CLOUD & STORAGE SOLUTIONS, CLUSTERVISION

the distribution of key components, building and managing HPC infrastructure, EMEA OCP specialists, and software application focused on Smart Industry 4.0 with a development office in India," says Garg.

"Taurus Group is also a specialist in software-defined networking. The solutions we bring to our customers involve using software layers that provide flexible, efficient network fabric management when used to define the functionality of the hardware. Hardware agnostic partner solutions such as those from Pluribus Networks help network operators manage the entire network consistently and holistically," says Garg.

He also adds, "Taurus is a great company uncovering endless possibilities of growth. We can now offer end-to-end solutions to our customers, from components procurement to seamlessly managing
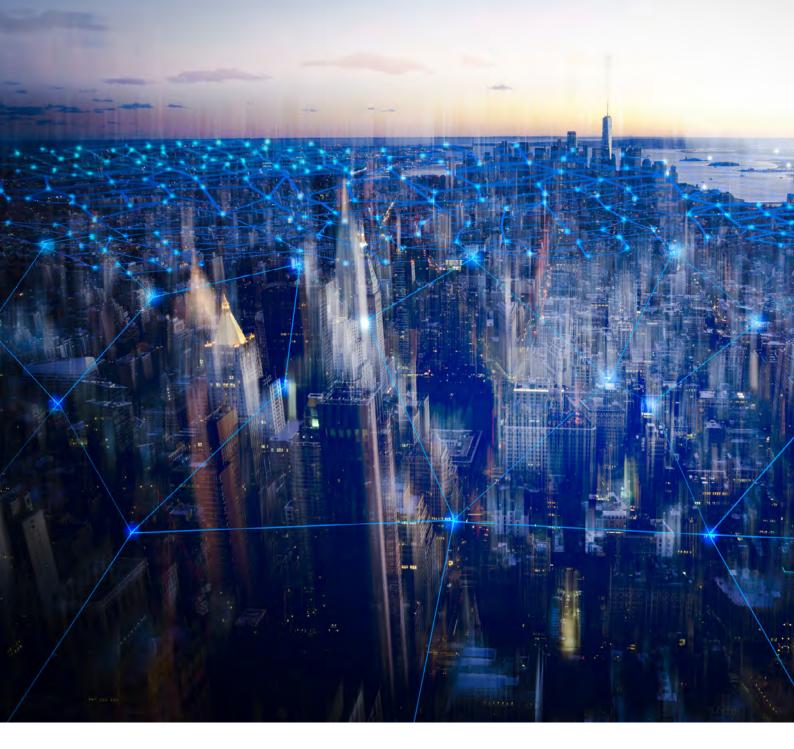
their infrastructure. The journey has just started, and there is a lot to achieve. We are confident of bringing greater offerings to the market, making us a stronger company and a stronger brand."

DISCOVER TAURUS GROUP'S ROBUST ECOSYSTEM OF PARTNERS

Circle B

With a background in IT and networking, Menno Kortekaas, Founder of Circle B, was introduced to the OCP hardware during his consulting years. Looking further into the application of OCP hardware for data centres, Kortekaas found that a particular company was using Facebook designed hardware for their own open stack solutions. "But, I found that this was not readily available in Europe, apart from a few smaller companies in the US. So, I founded Circle B to operate in this space," says Menno.

Kortekaas explains that Circle B sells solutions based on specific building blocks, providing its customers with hardware. "We have the IT rack that goes into the data centre, that's our biggest building block, which we then integrate into the rack, the power infrastructure, converting AC into 12 Volt DC. Then we add servers, storage, networking, cables and external connectivity. We work with the customer based on their application, workload, and software application to match the hardware design to meet their requirements. We help them design a certain system layout, rack layout, or multiple rack layouts. We have also recently released a new service called 'Eclipse' which allows customers to choose between a CapEx model and an OpEx model, including

housing and connectivity to the internet or their public/private cloud."

Being focused on the technical aspects — getting knowledge and making technical solutions work along with concentrating on promoting OCP hardware adoption, Circle B combines its expertise with the financial capabilities and logistics capabilities of Taurus Group to deliver its solutions. "Circle B makes use of Taurus Group's financial department, marketing department and logistics department, which includes its warehouses, contracts, shipping companies, insurers, website managers, and event

"[OCP is] more energy-efficient, easy to maintain, and more scalable. But this type of all-in-one solution wasn't available in Europe"

MENNO KORTEKAAS
FOUNDER & CTO, CIRCLE B

and more scalable. But this type of all-in-one solution wasn't available in Europe."
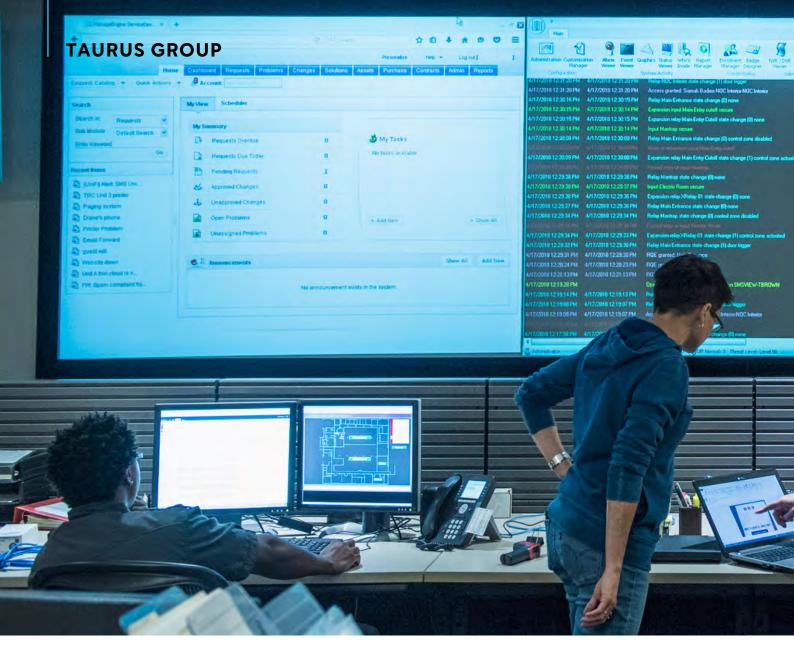
Sustainable operations form a core pillar for Circle B. It is committed to taking sustainability a few notches up, promoting more energy-efficient and easier to maintain solutions. "By offering these solutions that are efficient and easier to maintain, customers can easily replace parts so that they don't throw away a whole device when a small part ceases to work. With the modular design, it is much easier to make replacements of parts for the customers," says Kortekaas.

"We are also working on open-source firmware development," says Kortekaas, who compares this service to a mobile phone. "At some point, the manufacturer stops supporting the operating system, so the device no longer has new applications. The open-source firmware initiative called OpenBMC offers customers much longer support in these scenarios, supporting the firmware and updates to extend the life of the product."

ClusterVision

Founded almost 20 years ago by Alex Ninaber, Director of High-Performance Computing (HPC), ClusterVision specialises in high-performance computing and managing extensive scale data. "Typically, we provide software solutions to complex business environments, along with HPC installations and knowledge to make these environments successful," says Ninaber.

Ninaber adds, "one of the challenges in HPC is that generally, we are dealing with relatively large installations; between €300,000 and €20mn. So, one of the challenges is that one needs a good financial underpinning to provide reliable solutions to the market. Taurus Group provides the

organisers. By combining these skills, Circle B can focus on providing its customers with valuable solutions," says Kortekaas.

Inspired to do something innovative, Kortekaas founded Circle B in 2015. When working for a large consumer goods company, he began to see the shift from physical load balancers handled by a single person to an application that a team can manage. Kortekaas adds, "I saw that shift happening and was introduced to OCP hardware, which led me to the thought that it was a more innovative way to build servers. It's more energy-efficient, easy to maintain,

financial infrastructure and distribution services to complete various solutions, ranging from small to huge scale. Solulever opens up different paths for us as it provides us access to specific types of customers we otherwise would not normally be dealing with. Circle B typically takes care of the colocation and data centre for us, which is something that we didn't use to do."

Studying his PhD at Birkbeck College (London), Ninaber found that he had a specific need to do large-scale calculations in molecular dynamics. "At that time, large HPC installations were usually located centrally in a country. To do large scale calculations, one had to request time on these machines. So, we figured that we could be much more efficient by buying off-the-shelf hardware,

together with a network and software to create our own HPC installation. This led us to be approached by a business customer to install an HPC division for them within their business. It turned out to be extremely successful, and three years later, we started our own company in the Netherlands."

When it comes to harnessing HPC in manufacturing, Ninaber says: "typically in manufacturing, HPC is used in computational fluid dynamics (CFD) calculations of airflow and similar complex yet intricate calculations. For example, wind turbines that we spot everywhere are carefully planned as before they are built; calculations are performed to identify the optimal wind shape in that area. In addition to this, HPC is used heavily in the automotive

industry. Any process that requires a lot of CPU or GPU calculations, HPC comes to its use. For instance, manufacturing, physics, chemistry, finance, anything AI and even psychology are using HPC solutions today."

Solulever

Jitesh Kohli, CEO of Solulever, co-founded the company in 2019. "We operate within the space of industry 4.0, in particular digital manufacturing. We build industrial platforms to simplify our customers' journeys as they digitally transform their manufacturing operations. Our core products are called Brabo Edge Platform and Brabo Factory Cloud. This proposition is called Brabo Edge Platform, a unique platform that makes multiple layers of technologies required

to digitise manufacturing operations redundantly. We focus on batch and process manufacturing companies in Europe and India and have started making inroads in North America," says Kohli.
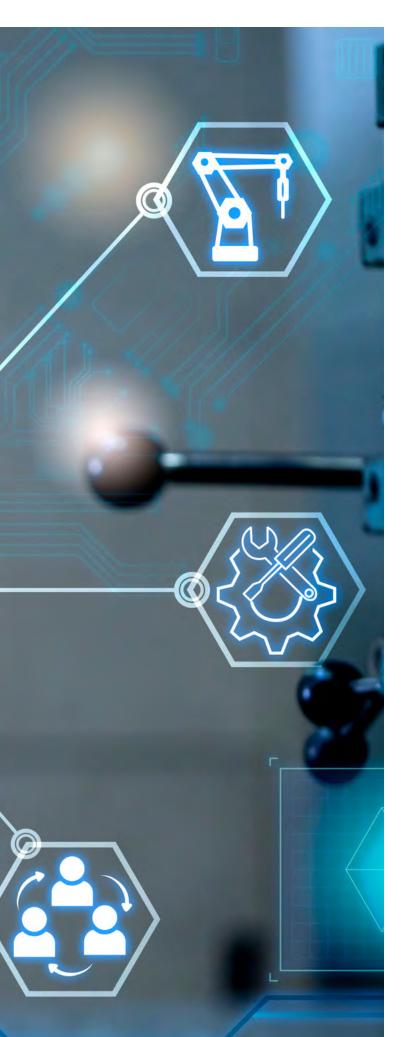
He mentions, "founded in 2019, Solulever, since its inception, was invested into by Taurus Group. Being a part of the family not only provides us with investment into its product development and market expansion, but we also benefit from the collaboration with sister companies, ClusterVision and Circle B, to drive the digitalisation of manufacturing."

Delivering hybrid solutions, Solulever offers its customers large scale manufacturing capabilities in batch and process control to digitise their plant

operations with real-time insights. "Our foundational product Brabo Edge platform covers 'all nine yards' of digitalisation needs when it comes to manufacturing. Brabo helps manufacturers optimise their manufacturing operations through real-time insights, automation, and transparency into finer operations. Brabo is an open architecture and microservices architecture-based platform. These architectural choices set the platform aside from generic industrial platforms and offer unparalleled flexibility and scalability at a fraction of the cost otherwise possible. Brabo offers comprehensive integration possibilities covering varying complexities found in a shop-floor situation." adds Kohli.

Dividing manufacturing into three pillars, Kohli explains that "you are either trying to improve the utilisation of assets, which have been invested into or trying to improve the quality of production or trying to reduce the variable cost of manufacturing. To achieve any of these, there has to be a consistent architecture that is data-led and a continuous innovation programme is driven by common principles. Our platform essentially operates as that common architecture for continuous innovation and continuous optimisation." ◉

Taurus Group:

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ClusterVision:

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Circle B:

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Solulever:

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INNOVATION
CORE TO
THEIR DNA

WRITTEN BY:
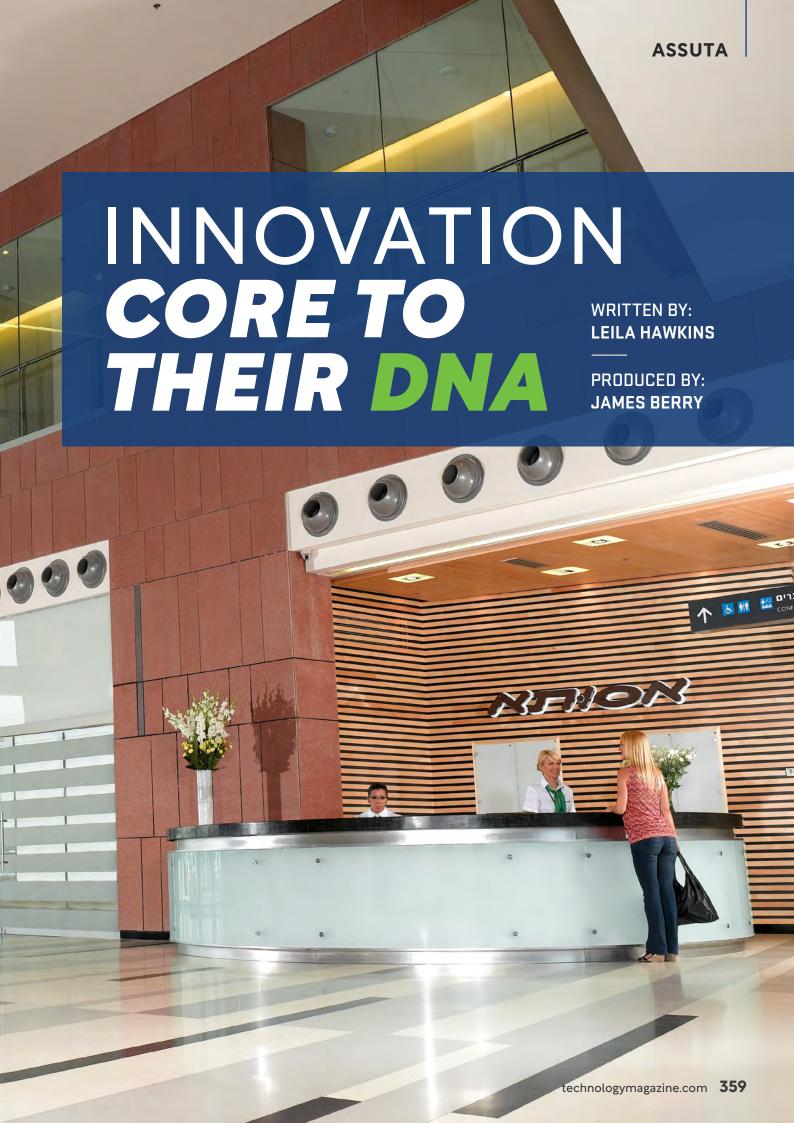**LEILA HAWKINS**

PRODUCED BY:
JAMES BERRY

Gidi Leshetz, Assuta Medical Centers Chief Executive Officer, says innovation is at the core of the Israeli hospital chain's DNA

Assuta Medical Centers operates Israel's biggest chain of private hospitals and medical centres, where 2,400 specialised physicians are providing care to over 1.5 million patients a year. It operates elective activities at large-scale, performing over 100,000 surgical procedures and over 800,000 diagnostic tests annually, as well as specialised treatments to tens of thousands of patients, mainly around diagnostic oncology, ophthalmology and fertility.

Assuta's strategy aims to always be at the vanguard of modern healthcare services. Gidi Leshetz, Assuta's Chief Executive Officer, says that "innovation is at the core of Assuta's DNA. We always strive for excellence and for setting the top standards of care and patient experience. To achieve these goals, we have to continuously innovate ourselves, while looking for new technologies and ways to improve our existing services and to offer new breakthrough services, which will later become the standard of care in the Israeli healthcare system."

RISE — scaling HealthTech at Assuta

To this end, Assuta established RISE, its vehicle for expediting the development of applicable medical innovations, led by Dr. Michal Guindy and Daniel Rabina. RISE fosters the rapid development, clinical testing and scale-up of medical technologies, within Assuta's clinical workflows.

"We believe that a smooth collaboration between developers, medical teams and healthcare organisations is the key for success when developing clinical technologies"

DR. MICHAL GUINDY
HEAD OF INNOVATION
AND VENTURES

Rabina describes the role of RISE as "the oil in the engine of our organisation. We spark new innovation activities, and we run them until we can hand them over to another player in the organisation, which could be a clinical player or a tech player."

RISE's aim is to ensure collaborations with R&D partners are smooth. As Rabina explains, sometimes it's difficult for a healthcare organisation, especially a hospital, to collaborate with a young company or with R&D units, because they work in completely different frameworks. "We sometimes own a project and take it end-to-end, and sometimes we're just holding the hand of someone else in the organisation who owns the project. But basically, we're the ones that are pushing the collaborations, and we do it because we want to make our clinical environments more accessible for technology developers and therefore provide better healthcare services."

Dr. Guindy explains that physicians at Assuta are coming from different medical education and experience backgrounds and therefore tend to bring different approaches to a procedure in the same department. "The potential for medical R&D that derives from our way of work is tremendous. Developers working in our institutions are gaining

rise

Scaling HealthTech at Assuta

a variety of insights from clinical opinion leaders, representing multiple approaches and perspectives. When combining it with our large traffic of patients, the result is that working with RISE is sometimes similar to working with three or four major hospitals, under one roof."

Developing Artificial Intelligence in clinical settings

Each of Assuta's workflows runs from a single centralised data centre. "This allows RISE to take a part in the rapidly evolving world of clinical AI and analytical tools," Rabina says. "We've built strong IT infrastructures and a network of innovation around us with

many startups and tech companies that are developing, testing and implementing new AI products within our clinical workflows."

RISE recently announced its AI innovation centre, dedicated to making Assuta's data and clinical workflows more accessible for collaborations with AI researchers and developers. The AI centre includes a secure advanced image and data processing platform, developed and operating in collaboration with NVIDIA and AWS, which enables accelerated product development in collaboration with Assuta's clinicians. There are currently at least 10 AI research studies ongoing in the area of radiology alone.
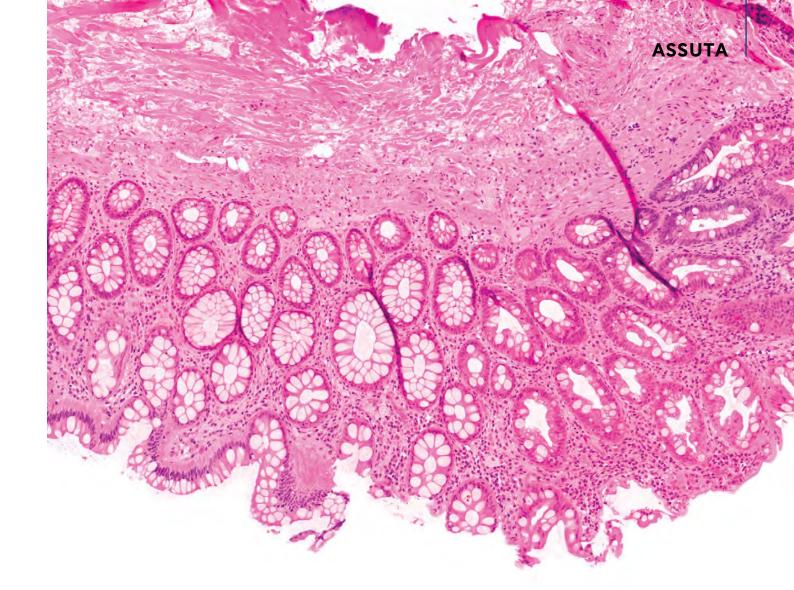
"We are the oil in the engine of our organisation"

DANIEL RABINA
DIRECTOR OF INNOVATION AND
VENTURES DEVELOPMENT

Additionally, RISE is leading the way in advanced technologies for surgical procedures. Surgeons at Assuta are pioneering the use of robotics, both small robotic devices such as the O-ARM for spinal surgery, and the Da Vinci robot for larger procedures. "The best knee surgeons are often using robotics," Guindy says. "The results are very interesting – the operation time is shorter and the satisfaction is higher. We are starting to see more AI and automation around surgery and robotics and we are putting great efforts into leveraging our knowledge and experience for pushing this field into new exciting directions."

Digital Pathology as a showcase for innovation at scale

One of Assuta's new developments is found in the pathology lab it recently acquired, PathoLab Diagnostics, with the aim of transforming the services it provides to tens of thousands of patients yearly into digital pathology. "We are looking to change the landscape of pathology for two main goals. One is to promote best quality services for our patients" Guindy explains. "The other is to leverage this new layer of digital data for developing and using new tools, that affect the workflow and support our clinical services."

This benefitted them during the pandemic, as it meant clinicians were able to view samples from home. It also ensures quality control and opens up the possibility of using AI to assist with scanning the images to detect anomalies. This potential starts to bear fruit when now deploying their first operational AI, with a decision support tool for pathologists that diagnoses different kinds of cancer.

Digitising the process required a big change to the way pathologists work. "We needed to make sure that our pathologists undergo a form of transformation, because there really is a big difference between working with a microscope and working with a computer."

Assuta partnered with Sectra, a Swedish medical technology company. "We chose Sectra because their solution is open and enables us to integrate with other IT vendors for enabling access to pathological images and clinical data on a single platform, Guindy says. "This is critical for providing the best possible diagnosis. We are putting strong efforts for our clinicians to be able to join information from various sources and have a holistic view of the patient as part of their diagnostic decision making.

"Innovation is at the core of Assuta's DNA"

GIDI LESHETZ
CHIEF EXECUTIVE OFFICER,
ASSUTA

GIDI LESHETZ

TITLE: **CHIEF EXECUTIVE OFFICER**

INDUSTRY: **HOSPITAL & HEALTH CARE**

LOCATION: **ISRAEL**

>> Mr. Gidi Leshetz is the CEO of Assuta Medical Centers, the largest private network of hospitals and medical centers in Israel consists of 8 hospitals and medical centers.

Mr. Leshets joined Assuta in June 2020 and prior to that, he severed in several senior management positions at Maccabi Health Care Services for more than two decades. His last position was Director of Jerusalem & Shfela District and Head of the Service & Operation Innovation Unit.

Mr. Leshets holds bachelor's degree in Physiotherapy (BTP) from Ben Gurion University and Master's degree in Health Systems Management (MHA) from Tel Aviv University.

EXECUTIVE BIO

DANIEL RABINA [in]

TITLE: **DIRECTOR OF INNOVATION AND VENTURES DEVELOPMENT**

Mr. Rabina is an advocate of data-driven healthcare solutions.

Rabina is Director of Innovation and Ventures Development at Assuta Medical Centers since November 2020.

Previously, he served as an Innovation and Business Development manager at Clalit Health Services, Israel's largest Health Maintenance organisation.

Before that, he was an official at the Israeli Ministry of Health's Digital Health department, where he established legislations and national incentive plans for developing the Israeli digital health ecosystem.

DR. MICHAL GUINDY [in]

TITLE: **HEAD OF INNOVATION AND VENTURES**

Dr. Guindy first joined Assuta Medical Centers in 2014 as the Head of Medical Imaging, a position she has retained while also becoming Head of Innovation and Ventures in November 2020.

Before this, she worked at Maccabi Health Care Services, one of Israel's four Health Maintenance Organisations, first as Head of Risk Management later becoming Regional Medical Director.

Guindy is a Doctor of Medicine and has a Masters in Public Administration from the Harvard Kennedy School, part of Harvard University, and is a faculty member of Ben-Gurion University of the Negev, a highly acclaimed public research university.

"Sectra worked with us on installing the solution. They understand the need to provide service to the clinicians – which is the key to success for this whole transformation. Pathologists, work requires a meticulous and organised approach and answering their needs requires deep understanding and diving into details. We've had a really good experience with Sectra, working with our team to ensure satisfaction and usability by our working staff, as well as having the necessary foundation for developing and testing AI solutions in PathoLab."

Precision Preventive Medicine leverages technology advancements for better care
A key priority for the coming years is preventive medicine, for which Assuta has

"**We've built strong IT infrastructures and a network of innovation around us with many startups and tech companies that are developing and implementing new AI products within our clinical workflows**"

DANIEL RABINA
DIRECTOR OF INNOVATION AND
VENTURES DEVELOPMENT

established a new clinic for Precision Preventive Medicine – providing molecular and genomic testing and assessing patients personal risk levels for developing a medical condition in the future.

They are looking solely at actionable and treatable conditions, such as cancer and heart disease. "We are dealing mainly with preventable or detectable oncology and cardiac diseases. We also detect treatable or preventable medical conditions such as malignant hyperthermia, which occurs when someone is given a specific anaesthetic, so we can prevent it by simply administering a different drug for a specific patient," Rabina says.

They do this by checking the patient's medical and family history and genetic tests. "Then we build a specific plan for each patient, for prevention or for screening and testing over the coming years, that enables us to detect the occurrence of the medical condition before it is becomes symptomatic. For example, a lot of different oncology patients may have some history of breast cancer or colon cancer in the family. If we know the risk of a patient, we can decide when this patient should come to Assuta and conduct different diagnostic tests, such as an MRI, mammography, different blood tests, colonoscopy or ultrasound tests. Then we can build a personally tailored screening plan according to what we learn from this."

Accelerating collaborations as the key to achieving future clinical goals

In the next few years Assuta's main goals are to continue driving patient-centred care and choice. "We want to give our patients the personalised care that they need, and be leaders in this approach, in Israel but also for the world. For doing so we will accelerate our collaborations with industry partners." Dr Guindy says.

"We believe that a smooth collaboration between developers, medical teams and healthcare organisations is the key for success when developing clinical technologies. We hope that Assuta's holistic combination of elements and assets, together with RISE's agility and expertise, will allow our clinical workflows to be more accessible for R&D collaborations while allowing us to continue to set the standard of quality of care and patient experience for the Israeli healthcare system and for other systems around the globe."

OnProcess

MISSION ONPROCESS: POWERING THE WORLD'S CIRCULAR SERVICE-SUPPLY CHAIN

WRITTEN BY: | **PRODUCED BY:**
SEAN ASHCROFT | **BEN MALTBY**

OnProcess Technology is on a mission to digitise the after-sales supply chain, to help businesses save time and money, and reach net zero into the bargain

We live in crazy times, in which volatility and uncertainty seem to be the new normal for businesses. Pandemic-fueled demand has outstripped supply to such an extent that supply chains now seem inflexible and unresponsive. Then there's labour shortages and soaring inflation, and of course all of this is taking place against the backdrop of net zero - as countries push to be carbon neutral by 2050.

From this maelstrom two business buzzwords have emerged: transparency and agility. These are the qualities needed if companies are to first survive the chaos, then go on to thrive. One thing is for certain: transparency and agility are not to be found in spreadsheets nor filing cabinets. The future of trade is smart digital technologies.

Enter OnProcess Technology, a company that helps its customers simplify complexity and harvest meaning from vast fields of data, with a view to finding ways of doing business better.

More specifically, OnProcess helps its customers optimize their after-sales service supply chains. This is the part of the supply chain that provides services around a product once sold, such as parts and materials, repair and maintenance.

OnProcess provides this help normally as a managed business process on behalf of its customers using its proprietary platform,

OnProcess Technology

WATCH NOW

OnProcess Agora, which is an integrated stack of tools that offers insight and untangles problems. "Agora provides full control and visibility across the service supply chain," explains Oliver Lemanski, CEO of OnProcess. "It allows our people to automate processes and dramatically improve efficiencies across the service supply chain."

A typical service supply chain is a web of disconnected, manual processes managed by siloed departments, says Lemanski. "It's in desperate need of digitisation and automation," he adds. This is why OnProcess built Agora: it unites the requisite tools for control and visibility across the service supply chain. "It gives us the ability to reimagine and

> "ONPROCESS IS IN A REMARKABLE POSITION. WE HAVE A PHENOMENAL LIST OF MARQUEE CUSTOMERS, AND A GREAT TEAM"
>
> **OLIVER LEMANSKI**
> CEO,
> ONPROCESS TECHNOLOGY

automate processes on the fly," he says. "And this is the secret to dramatically reducing costs, transforming the customer experience and helping our clients hit their sustainability targets."

Lemanski says many service supply chains lack agility because businesses have been slow to join the digital-transformation party.

His view is borne out by a recent McKinsey study, which reveals the average supply chain is just 43 per cent digitised. The same McKinsey research suggests that if firms are going to digitise only one part of the supply chain then it should be the post-sale service portion because doing so can deliver an uptick in efficiency of around 65-70 per cent.

This is because in many non- or partly-digitised service supply chains there's a lack of internal coordination and cooperation, Lemanski explains. "This leads to a silo mentality, where decisions are made in isolation. Plus cost savings are also hard to achieve where there's no clear central purchasing strategy."

OnProcess addresses such problems by leveraging Industry 4.0 technologies, such as internet-of-things (IoT), robotics, virtual reality, artificial intelligence and big data.

Through Agora, it combines synch-tech to automate and augment post-sales service operations. "We also gain insight into new ways of working that can benefit the customer," Lemanski says.

This ability to deliver significant gains through digital transformation feeds the company's evangelical zeal on digitisation, which is summed up by its 'Go Digital' vision.

"Our aim is to energise employees, delight customers, to innovate, while consistently deliver solid financial returns both for our customers and ourselves," Lemanski says. The company also has a loftier mission: to power the world's circular service supply chains.

Since the beginning of time, supply chains have been linear - 'take, make, use and throw away'. This might have kept the wheels of industry and commerce turning for millennia, but it has also ended up poisoning our planet. "When I started in this industry 20 years ago bits of kit were manufactured in factories, went through a forward supply chain, were sold through some sort of retail network, then ended up in the bin or landfill after they had been used," says Lemanski.

The circular supply chain is an antidote to this because manufacturers and distributors recover products and parts from the field when no-longer needed and re-purpose them back into the value chain either as raw

EXECUTIVE BIO

OLIVER LEMANSKI

TITLE: **CEO**

INDUSTRY: **SUPPLY CHAIN**

LOCATION: **UNITED KINGDOM**

Oliver Lemanski is CEO of OnProcess where he is leading the company into its "Digital" chapter, providing technology solutions that drive the world's circular service supply chain. Prior to this, Oliver was Managing Director EMEA for five years at OnProcess, successfully driving year-on-year growth in the region while establishing strategic relationships with Elekta, HPE, Cisco, Varian, SAP Ariba and others. Before OnProcess, Oliver held senior management positions at TNT Express where he led its Global Service Logistics business, and at MGH Consulting and Accenture Services where he worked with leading brands to define and execute their Aftermarket strategies.

"WE USE A COMBINATION OF TECH AND VERY CLEVER ANALYTICS TO HELP CUSTOMERS PLAN AND DELIVER INVENTORY, AND THEN TO GET IT BACK"

OLIVER LEMANSKI
CEO,
ONPROCESS TECHNOLOGY

materials for new products or as refurbished or remade new products. And because the service portion of supply is the point at which products and parts are identified as no longer needed, companies such as OnProcess are vital if the circular supply model is to gain traction sooner, rather than later.

With the 2050 net-zero target looming large in the rear-view mirror, the clock is ticking on sustainability. Lemanski says: "Sustainability is in our mission. On one front, of course, we have a personal responsibility as employees to do all we can to help OnProcess be net zero. But on a much wider front, we operate a global network of supply chain activities for our customers. We've thought very carefully about the tools we've built into our platform, and how they can empower our customers - and also their end users - to achieve more sustainable outcomes."

"We can help companies reduce carbon emissions by facilitating the use of local tracking, recycling or disposal offerings. And we can help reduce the use of earth's resources by improving product and part returns and driving greater circularity into their service supply chains."

Often, waste can run into tens of millions of pounds, dollars or euros.

One example of this is an OnProcess customer who is a leading provider of TV entertainment services, through set-top boxes. With subscribers to such services often moving to another provider, or deciding they can no longer afford the fees, many boxes become obsolete, which was the case with this company. But because its focus was on helping its customers use the boxes, rather than on returning them, its box-retrieval record was patchy. For voluntary disconnects its retrieval rate was 81 per cent, but for non-pay disconnects it was a paltry 37 percent. That's a lot of waste - both in terms of money and carbon. The provider realized that they needed to outsource asset recovery, and that's when they sought out OnProcess.

Today, the company's returns process is much simpler for consumers, who no longer have to find a shipping container, package up their set-top boxes and take them to the provider's store or UPS facility.

HELPING OUR CUSTOMERS WORK TOWARDS THEIR NET ZERO TARGETS

Sustainability is now a must-have rather than a nice-to-have, and OnProcess is helping its customers work towards their net zero targets. It does this by helping businesses move away from linear supply chains and adopt circular ones instead. This model of supply chain helps by:
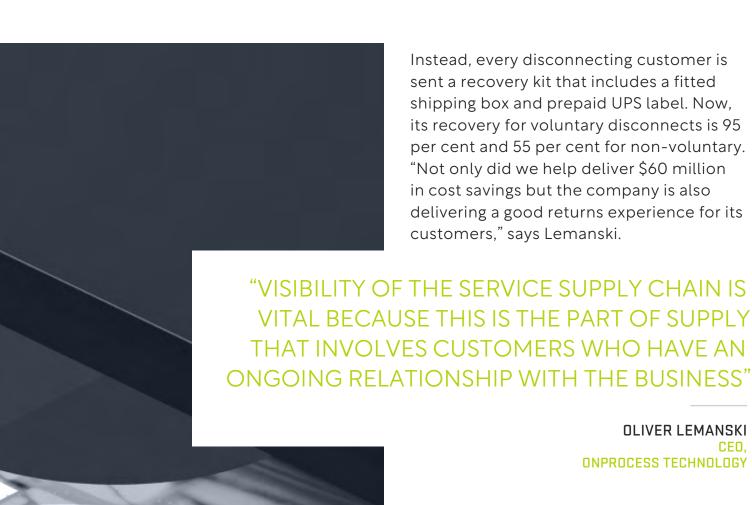
• Cutting waste and pollution out of processes
• Keeping products and materials in use for as long as possible.
• Regenerating natural systems.

Asset and parts recovery is a crucial part of the process. By introducing post-sales service supply chain management, OnProcess helps customers become part of the solution.

A recent project for Hewlett Packard Enterprise (HPE) illustrates this nicely. Working with OnProcess, HPE was able to help its customers recover and refurbish IT assets across the globe. In doing so, HPE saved:

• 5,547 metric tonnes of CO2 (the equivalent of the CO2 emissions from 1,206 cars).
• 19,815 MWh energy (the average energy consumption of 14,007 households).
• 577 metric tonnes of waste from being dumped in landfills (roughly the same as 19,583 moving boxes full of waste.

DID YOU KNOW...

Instead, every disconnecting customer is sent a recovery kit that includes a fitted shipping box and prepaid UPS label. Now, its recovery for voluntary disconnects is 95 per cent and 55 per cent for non-voluntary. "Not only did we help deliver $60 million in cost savings but the company is also delivering a good returns experience for its customers," says Lemanski.

> "VISIBILITY OF THE SERVICE SUPPLY CHAIN IS VITAL BECAUSE THIS IS THE PART OF SUPPLY THAT INVOLVES CUSTOMERS WHO HAVE AN ONGOING RELATIONSHIP WITH THE BUSINESS"
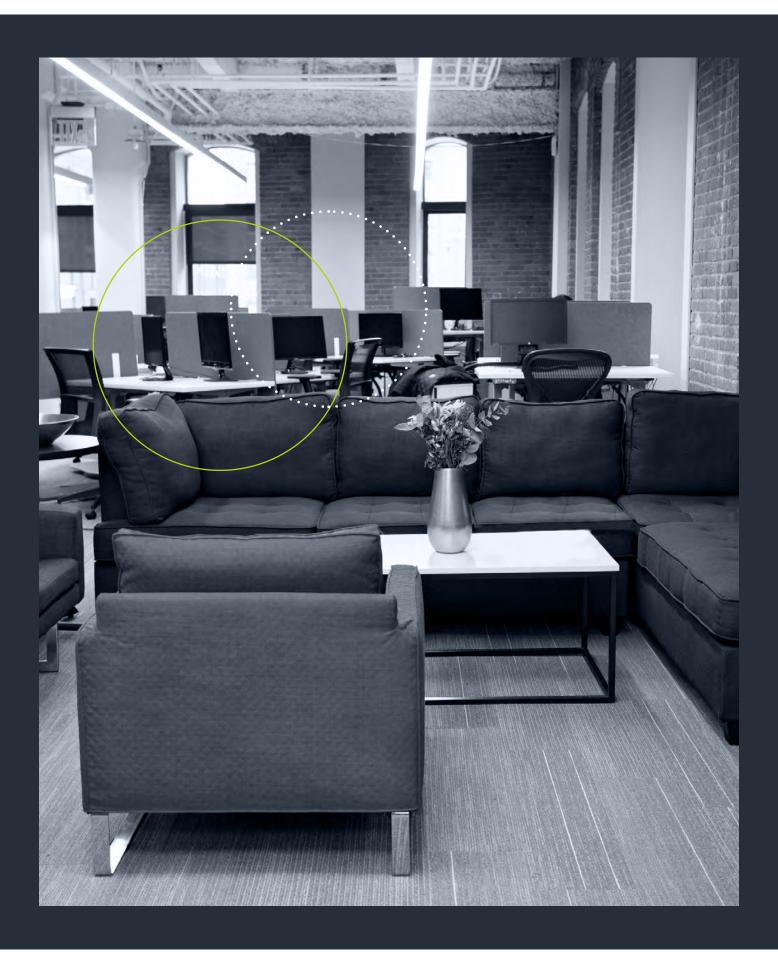
OLIVER LEMANSKI
CEO,
ONPROCESS TECHNOLOGY

So this is what agility and transparency in the service supply chain looks like on the ground, and at the heart of this case study is data. Or more specifically, data that offers a big-picture view of processes and issues, rather than a fragmented view - like jumbled pieces of a jigsaw - that's all too common in businesses that have not embraced digital transformation.

"Many service supply chain functions work in data silos, '' says Lemanski of such companies. "Applications don't talk to one another, data is not properly shared, and cross-functional visibility is poor. The result is that when a crisis hits — such as the Suez being blocked for more than two weeks — then this lack of visibility does not allow companies to re-adjust processes and mitigate risk."

Lemanski continues: "Our approach is to build a standardized data-layer that pulls together all these silos of data. It cleans it,

"One reason OnProcess is so good at helping our customers on their digital journeys is because we've been on that same journey ourselves"

OLIVER LEMANSKI
CEO,
ONPROCESS TECHNOLOGY

then structures it around the customer and the post-sales experience they should have."

By joining these siloes together in a circular fashion, OnProcess gives customers full visibility of recovered assets. This can bring endless benefits, in terms of time-, money- and carbon-savings.

"Visibility helps cut purchasing levels, and can also give a company before-it-happens visibility of soon-to-fail parts, allowing it to be more proactive when it comes to dispatching spares, '' Lemanski explains. "And that's just two examples among many."

This aspect of OnProcess's work - bolstering customer satisfaction - is a crucial part of what it offers clients, because the service supply chain has a huge say in whether customers remain with a company, or leave.

According to research from the Kellogg School of Management at Northwestern University, as few as 15 per cent of a business's most loyal customers can account for up to 70 per cent of its total sales. One reason OnProcess is adept at helping its customers take the digital plunge is because it has been on the same journey itself. Years ago, before digitisation, Lemanski admits the company had itself "disappeared into our silos."

"As a business process outsourcing company, we had got into a bit of a rut, so

we looked at our mission and strategy, and decided the key for us had to be how we could go digital, and also how fast.

"We realised we needed to drive a completely new culture, and that our culture needed to be about collaboration - not only among ourselves, but also with our customers. And the thing about collaboration is that it's inclusive, and it welcomes diversity. You innovate together, and you think about what you can achieve together."

But with OnProcess, 'collaboration' was never going to be the final word, however important. "Ultimately, it all comes down to data," says Lemanski "There's data from our customers' systems, from their end customers and their supply vendors, and from the machines themselves, through the Internet of Things."

He adds: "Everyone is giving off data the whole time, and this creates opportunity. Technology vendors like us are able to provide solutions that can help businesses understand what their ecosystem looks like in its entirety."

Which takes us back to visibility. Only with visibility can a company make sound decisions, and it is this that builds resilience in times of difficulty. ⊙

DEDICATED
to Becoming the **BEST** in the Market

WRITTEN BY:
CATHERINE GRAY

—

PRODUCED BY:
ASHLEY KIRBY

2002
Year Founded

140
Number of Employees

$15mn
Revenue USD

Moritz Kerler, CEO and **Christian Drewes,** Technical Director and Deputy General Manager discuss the huge impact technology has made on the industry

Quarry Mining LLC design, manufacture and install industrial mineral processing plants, bulk handling systems and environmental technologies in any plant configuration. The company aims to provide the best value for money to its clients and is a reliable partner for suppliers.
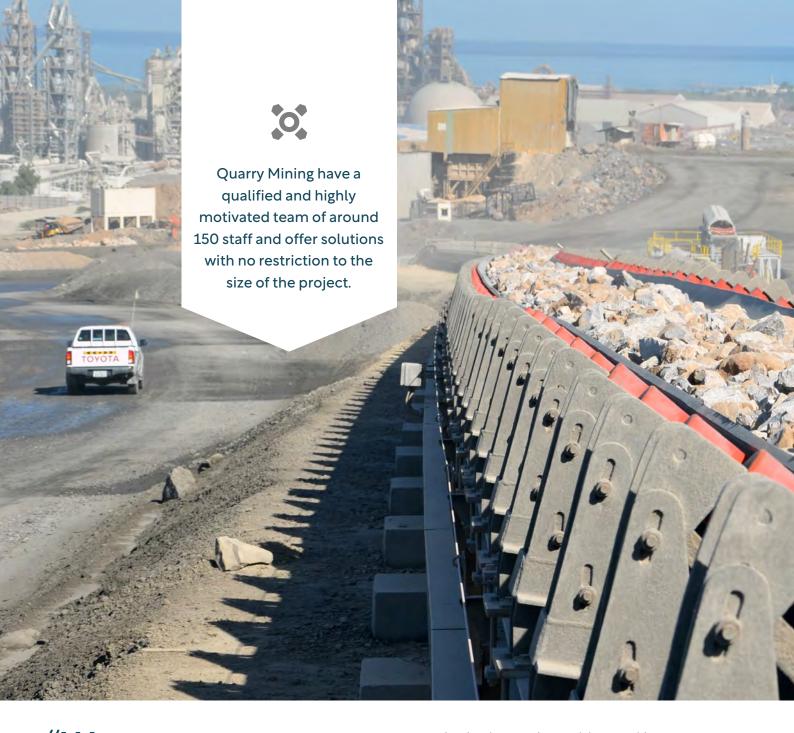
Supporting industries in the MENA region, Quarry Mining has developed different, successful systems for bulk material handling, designed and built mineral processing plants for its market and has introduced dedusting filter systems for various applications.

CEO of Quarry Mining, Moritz Kerler, explained how he founded the company 19 years ago in the United Arab Emirates where the company now carries out its operation.

Kerler emphasised his drive to support the quarry and mining industries, saying: "We want to become the best in our field, so now we are focusing on the growth of the company."

As with many companies across the globe, Quarry Mining had to adapt to the restrictions brought about by the COVID-19 pandemic. The company's Technical Director, Christian Drewes explained how the company has changed over the past year, he said: "We have moved from being on-site and now, more or less, everything is digital."

However, he did add that these changes don't come without their downfalls: "Although you can get far more information within a far shorter time, it can feel far more impersonal because you don't have close contacts to your clients or to other people

Quarry Mining have a qualified and highly motivated team of around 150 staff and offer solutions with no restriction to the size of the project.

"We want to become the best in our field, so now we are focusing on the growth of the company"

MORITZ KERLER
CEO,
QUARRY MINING

on-site in the projects. It's good in some ways but it's also bad in others. Ultimately, digital technology is helping a lot to make things easier and improves the ability to gain information faster and more efficiently."

To support workers as they adapted to this new way of working, Drewes explained that Quarry Mining utilised a lot of different technologies to facilitate remote working, he said: "To keep people remote where we could, we provided a VPN connection and access to all files from people's homes. This is when we realised that working remotely was possible and the business still operated effectively."

MORITZ KERLER

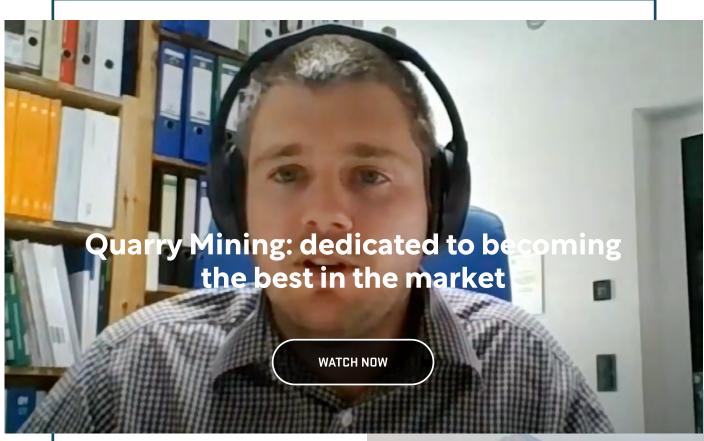TITLE: **CEO**

COMPANY: **QUARRY MINING**

Moritz Kerler is a German National and was born in 1949 in a small village in South Germany. After a thorough Commercial Education, he was lucky to gain experience from various mentors, company owners and CEOs. One of them was Dr. Reihle, CEO of Maschinenfabrik Weingarten (Press maker for the automotive industry) for whom he worked as a personal assistant.

In 2002 at the age of 53 Kerler moved to the Middle East, to UAE where he established Quarry Mining LLC. He managed to group a great team of brilliant and dedicated experts around him, was choosing business opportunities very careful and been extremely successful. He wishes to offer all his future for his company family "Quarry Mining" and try to make it the best in its field and its territory.

"Now, we have all of our information stored in the cloud and we also use Office 365 so we can share things via Teams. We have had to learn a lot about how to communicate efficiently to adapt to this new environment," he continued.

Determined not to slow down business operations throughout the pandemic, Quarry Mining learnt they were able to do tasks, such as complete commissioning, online. Drewes said: "Although it is a new way to work and handle things, we have adapted well. Our business operations have changed, but the result of our product has remained high quality."

EXECUTIVE BIO

Quarry Mining: dedicated to becoming the best in the market

WATCH NOW

Utilising the latest technology to promote zero-harm

Not only has technology been a huge support for Quarry Mining as it adapted to remote working, but it has also helped the company with its zero-harm ambition.

Workplace injuries occur in manufacturing industries at a significantly higher rate than in other industries. A zero-harm workplace would mean employees, contractors and visitors would not need to calculate the safety of their own movements as the worksite is designed to guarantee safety.

As a key player in the quarry and mining industry, Quarry Mining operates a lot of different machinery which has the potential to cause injury. Drewes explained how technology has helped them begin to create a zero-harm workplace: "As an example we use the newest technology within our welding helmets to automatic darkening the glass the

"It is really important to us that the people we work with are also climate-conscious. We only have one planet, and we believe it is everyone's job to protect it"

MORITZ KERLER
CEO,
QUARRY MINING

moment the spark will occur. This helps us reduce risk as in the past we have had a lot of injuries and hospital visits. We always make sure we protect people in our factories."

The company is also realizing the benefits of automation to the general running of its business operations, but also as a support for its zero-harm and safety initiative.

As a driver for greater efficiency, Drewes explained where the company is implementing this technology to improve: "We are using the latest technology such as welding tractors, welding robots and automated machines in the factory to make things more automated. This takes the people away from dangerous situations to reduce the amount of harm on site."

Adding to this, Quarry Mining has decided to digitalise its training process, including safety regulations, so all employees have the opportunity to remind themselves of safety processes if needed.

"We provide supporting videos with our training sessions to show people how to do certain things and how to manage different situations as well as safety instructions. We can use these for new employees to make sure they are up to speed," said Drewes.

Promoting sustainability in both production and manufacturing

With its ambition to become the best in its field, Kerler explained his plans to develop a climate-conscious company: "Especially after what the pandemic has shown us, we are now dedicated to looking at the sustainability side of our business."

Although the company looks to many of its strategic partners, including FLSmidth, ThyssenKrupp, Kleemann and Stiebel, Kerler stressed the importance that these companies' sustainable targets and goals align with Quarry Mining.

He said: "It is really important to us that the people we work with are also climate-conscious. We only have one planet, and we believe it is everyone's job to protect it. We like to deal with other companies that have sustainable goals aligned with our own. This brings more joy when working with them because they have the same philosophy as us."

Echoing this, Drewes empahsised the importance of sustainable operations to the company: "We would rather lose business than work on a project where we know they are using polluting machinery or materials because that is not what we stand for. We want sustainable products which take everything into account throughout the value chain."

As the world fights against climate change, it is particularly important industries in the mining and quarry industries take responsibility for the impact their operations have on the environment. Not only can

CHRISTIAN DREWES

TITLE: **TECHNICAL DIRECTOR AND DEPUTY GENERAL MANAGER**

COMPANY: **QUARRY MINING**

Frederic Carl Christian Drewes is a professional Engineer and holds a Bachelor of Engineering in Electrical Engineering and a Master of Science in Electrical Engineering and Business Management.

He has worked for 'Quarry Mining LLC' in Ras Al Khaimah since 2014 as its Technical Manager and since 2021 as Deputy General Manager. He successfully leads several projects worth multi million Euros and works to further develop and grow the company, strengthening its position within the market. He does not only focus on the technical elements of his role, but he also works to ensure the economy of all projects, via efficient financial controlling, contract management and project management.

EXECUTIVE BIO

The company can design, manufacture, and install mineral processing plants, bulk handling systems and environmental technologies in any plant configuration.

mining pollute air and drinking water and harm wildlife and habitat, but it can also permanently scar natural landscapes.

Understanding the importance of incorporating sustainability into its operations, Quarry Mining has realised the potential of digital technology, but this time as a support to its sustainability ambitions.

"We are using the latest 3D technologies for all our engineering and designs," explained Drewes.

"The introduction of this technology means we are now using less raw material and using all resources efficiently. We are using automated program to calculate how the raw material can be used in the most efficient way. Now, we have nearly zero cutoffs from the material we use, which also saves us money. The less waste you get from a material, the more efficiently you use it," he added.

Quarry Mining is also looking at ways to tackle sustainability in the production side of the company as well as the manufacturing.

To reduce energy consumption the company Quarry Mining has installed energy-saving meters to track its energy consumption and aim to reduce energy use where it can. Drewes added: "The aim is to make different processes more efficient by using less energy."
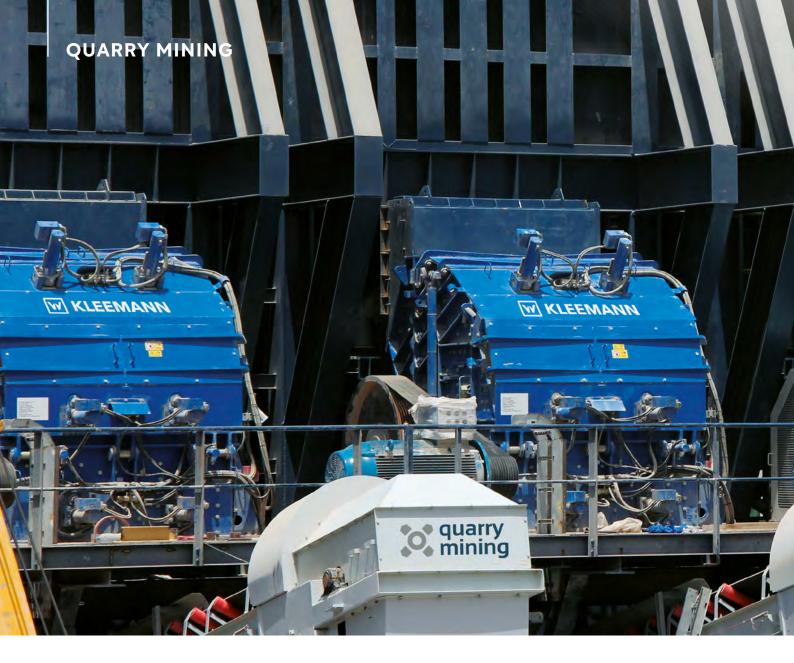
Responding to the changing needs of the quarry and mining industries
Undoubtedly the quarry and mining industries have massively changed over the years and as with many industries, technology has played a massive role in driving this change. Having worked in the industry for a long time, Kerler explained that in the last decade he has stepped up his company to meet the industries' growing demands.

"The introduction of technology means we are now using less raw material and using all resources efficiently"

CHRISTIAN DREWES
TECHNICAL DIRECTOR,
QUARRY MINING

He said: "Things have definitely changed over the last decade in the quarry and mining industry. Operations have become increasingly bigger and as a result, smaller companies closed, and businesses concentrated on larger projects."

"We designed the biggest crushing and screening plant for limestone. This plant is operating at a much lower cost per ton than it ever would have been able to achieve in the past. There are also many new products around that we can use to support our operations. I have seen a big change in the way the industry operates throughout my career," added Kerler.

Expanding on this, Drewes highlighted what catalysed this change, he commented: "Operations are only increasing in size. The

bigger you can get, with lower operational costs, the better your company will be. It's only the development of new technologies that have made it possible for operations to grow."

"To have large operations, you need new, larger machines and complex control systems; this is not possible without the development of technology. Things like the introduction of cloud connection, integrated systems and improved electronic offerings mean we can operate differently than ever before. It is technology that has brought us up to this level of efficiency," Drewes continued.

With rapid advancements in technological innovation, including automation, digitisation, and electrification, it comes as no surprise that both Kerler and Drewes are seeing fundamental changes within their industries.

"We want to utilise this technology to become even more efficient"

CHRISTIAN DREWES
TECHNICAL DIRECTOR,
QUARRY MINING

Adapting Quarry Mining to be fit for the future

In order to respond to these changes, Quarry Mining is keen to adapt and grow to meet the demands of the market, and as Kerler previously explained, become the best in the market.

Drewes outlined Quarry Mining's path to becoming the best in its field: "To do so, we want to have a product that is of very high quality. We also know the importance of technology to get there. We want to utilise this technology to become even more efficient."

Adding to this, Drewes said: "Everything is becoming digital. If you look at the mining industry, very few mines and quarries have the old setup without some technology. If you don't continuously replace and upgrade plants without the state-of-the-art technology, you will miss out on opportunities.

"We have a lot of plants where we want to upgrade the technology, so they are fit for purpose. We want to upgrade the electrical systems and make the data from the plants available on the cloud. This will allow the clients to gain more information from the plants and digitalisation will help us make older plants more efficient in the future," he concluded. ◉