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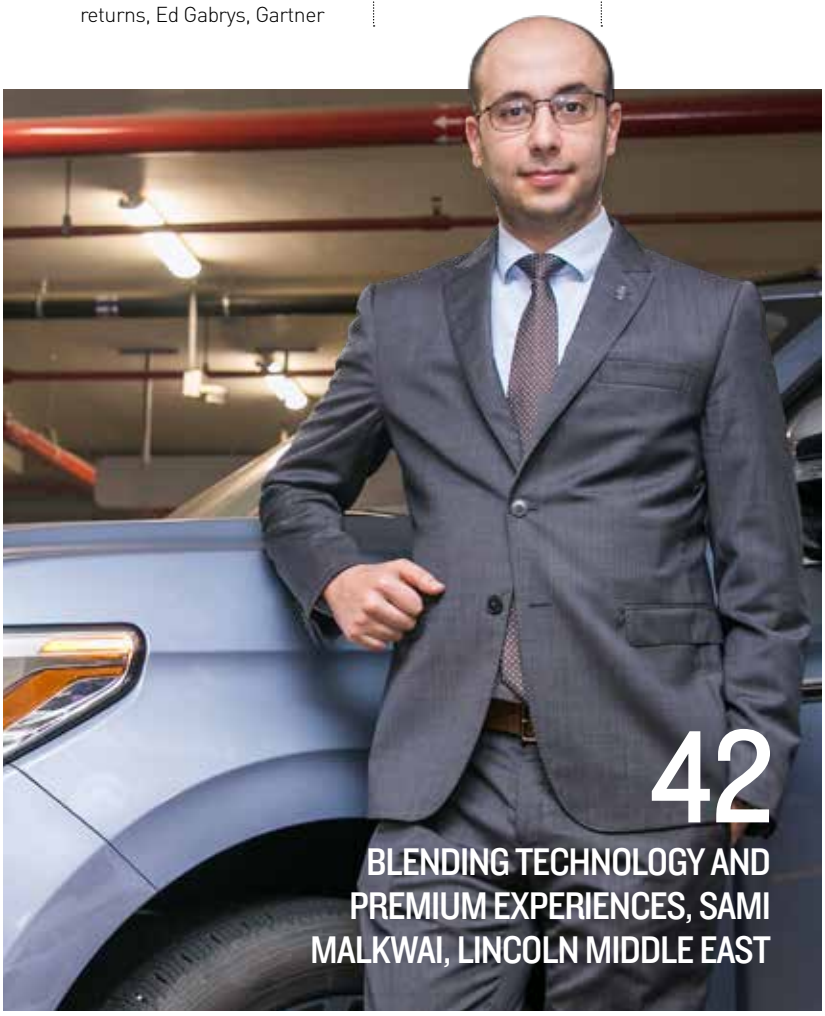

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Dear Readers,

As we come to the end of the year, it is the time for the traditional industry researchers and deep-seated vendors to come out with their year ahead forecasts. However, this time around, and increasingly so in the years ahead, we will face two types of forecasts. On one side we have the traditional industry growth or recessionary numbers. Of more importance are wider scale readings into the impact of transformational technologies and their influence on sales models, organisations, markets, supply chains, customer experience, and impact on lifestyles and human aspirations.

One such interesting announcement comes from Dimension Data. The global system integrator points out that many of the digital transformation projects initiated in 2018 and earlier, will begin to show fructification in 2019 and onwards. Group CTO Ettienne Reinecke claims that 2019 will finally see digital transformation become a reality and predicts a spate of industry-wide disruption as long-term projects bear fruit. "We will see the most innovative companies showing off examples of digital transformation in action in 2019, with many more coming to the market over the next three years."

Another interesting announcement comes from Gartner's Daryl Plummer, who spells out the technology disruptions that businesses may not see coming. The key here is for technology and business heads to work together in first identifying such threats and then going further learning how to work together in responding to these disruptive cycles. "The virtual nature of digital disruptions makes them much more difficult to deal with than past technology-triggered disruptions."

We then close this off with Gartner's David Cearley elaborating on the top ten transformation trends that are gathering steam below the carpet. Businesses need to be aware of these ten strategic trends that are likely to gather momentum, reach a point of inflexion, and impact businesses five years ahead.

One of the most visible areas of technology disruption in our everyday life is today's self-driven car. Self-driving cars are being loaded everyday with every possible digital technology, to chart the way forward in identifying possible form factors and possible use cases. We present our early experience with the Lincoln Navigator 2018, amongst the most advanced vehicles, in terms of loaded applications and devices.

Clearly the technologies that make possible lane assisted driving and adaptive cruise control today, are early variants of the applications that will finally steer and drive the autonomous and driverless car, ahead by a decade or more. There are few areas as visible and open to the impact of transformation technologies as the self-driven car today

Safe driving through our five-page overview of the Lincoln Navigator!

Arun Shankar
arun@gecmediagroup.com

TECHNOLOGIES ARE TRANSFORMING THE FINANCE FUNCTION

Transformative technologies offer finance an opportunity to change without replacing core systems explains Mahmood Bangara at the ICAI Dubai Chapter.

CA MAHMOOD BANGARA, Chairman, ICAI Dubai Chapter.

KEY TAKEAWAYS

- CFOs who take action now to understand digital finance may be able to provide their organisation with an edge.
- Block chain technology will have a role to play in safeguarding against hackers as it extends security beyond two factor authentications.
- While a handful of financial institutions recognised the value of artificial intelligence and invested early majority are catching on.
- Whether it is robotics, artificial intelligence or cloud, advances in technology present a golden opportunity for the finance function.

Digitisation is now a realistic goal for the finance function because of a range of technological advances. Digital technologies and their ability to transform the finance function with improved planning and decision making, streamlined processes, and better cost management, are critical to meeting today's business challenges. To achieve the most value, the finance function must develop a digital strategy that aligns with the company's digital framework.

Digital finance offers CFOs a way to deliver on ever increasing expectations and provide the kind of real-time financial insights needed in today's complex, incredibly competitive environment. It is a transformation that will not happen overnight, but CFOs who take action now to understand digital finance's potential, and start to plan their way forward, may be able to provide their organisation with a large edge.

Whether it is robotics, artificial intelligence or the cloud, advances in technology present a golden opportunity for the finance function. In addition, analytics and artificial intelligence are creating scenarios where a virtual finance platform can be built on top of core systems without having to change or update them. This gives finance the freedom to improve without moving or changing the core essential systems that typically have a large overhead to change.

For the financial services industry, block chain will become integral for transactions both within and between enterprises. This technology will enable all transactions to be recorded and traced and will provide the customer with a digital log of previous payments, receipts, timestamps, warranties, and contracts. Block chain technology will have a major role to play in safeguarding against hackers and improving security as it extends security levels beyond two factor authentications.

Customers will increasingly expect their financial providers to understand their needs and preferences. Providers that fail to do this, will lose valuable customers. Data analytics will enable businesses to store useful information on customer activities across all channels. Because of this, customer intelligence is going to be the most important predictor for revenue growth and profitability. While a small handful of financial institutions recognised the value of artificial intelligence and invested early, the majority are now catching on.

Through artificial intelligence and robotics, banks will be able to automate various tasks at much lower costs. Previous tasks conducted by people, can now easily be carried out through robotics and artificial intelligence, often at higher quality and lower cost. This change is going to have a knock-on effect on outsource financial centers around the world.

For the financial services industry, technology will continue to offer new ways to digitally spend, manage, invest, and protect money and investments. This transformation is forcing the entire industry to rethink how it operates and the services it provides. ■

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ALIGNING TECHNOLOGY INVESTMENTS AND BUSINESS RETURNS

In a disruptive environment it is necessary to align an organisation's technology investments with business objectives, writes Ed Gabrys at Gartner.

ED GABRYS,
Research Director, Gartner.

Traditional information and technology roadmaps fail to adjust to new business opportunities and threats. Clare knows it is her role to strategically shape the information and technology plan in a coherent way for the business. She has to do it correctly, but she is concerned. According to Gartner, fewer than 30% of CIOs believe their information and technology strategic planning is effective or very effective in delivering business objectives.

The strategic information and technology roadmap are like a GPS for the organisation's digital strategy. Similar to a GPS, the strategic roadmap establishes the direction of travel, but the exact route can change along the way.

Like Clare, CIOs must decide the information and technology direction that underpins their organisation's present and future digital ambitions, ensure it improves existing business activities and create an information and technology investment strategy that supports their enterprise's strategic direction.

Incorporate two key steps into your development of a strategic information and technology roadmap.

STEP 1: UNDERSTAND YOUR ORGANISATION'S DIGITAL AMBITION

Clarify the digital business strategy and work with business leaders to define digital ambitions. Ask questions such as, What does digital mean to the business leaders?" How likely is digital disruption? What is our competitive stance in terms of culture, risk profile and appetite for change?

The answers should clearly identify targeted digital business results and what information and technology capabilities can help achieve them. The CIO can align information and technology direction and resources to achieve the desired strategic intent.

STEP 2: DETERMINE THE INFORMATION AND TECHNOLOGY INVESTMENT PLAN

Once you define the digital ambition, determine the distribution of investments necessary to achieve that digital ambition.

The information and technology roadmap are not about sorting project lists. The information and technology roadmap are about investments.

Consider investing in three portfolio categories:

Transformation portfolios

These include exploratory or game-changing innovations designed to deliver digital business capabilities that seek to offer deeper customer insights from which to generate new revenue.

Optimisation portfolios

These include digital capabilities used to improve operations, customer experience or existing products and services.

Enablement portfolios

These extend and defend the core business by preserving existing operations or making small adjustments to current business processes.

Some CIOs may decide to mix digital business optimisation and transformation. If you are thinking of doing this, first look outside your organisation. If your industry is going through disruptive change, set a transformation course. If your industry is not undergoing a transformation, you have the option of pursuing a business optimisation course.

It is Clare's responsibility as the CIO to work with the executive team to develop a clear vision of where to go with the organisation's digital strategy. Otherwise, the organisation may end up making incoherent investments that fail to achieve strategic goals. ■

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DO YOU KNOW HOW YOUR APPLICATIONS ARE PERFORMING?

Digital organisations need to ask themselves if they know how their application are performing for their customers, writes Elie Dib at Riverbed.

ELIE DIB,
Regional Vice President
METNA, Riverbed.

The use of applications is pervasive in every aspect of our daily lives. In fact, the business focus on application use is particularly fast-growing, and increasingly application use is on the radar of digitally savvy organisations. In a recent Riverbed survey, 98% of business decision-makers identify the need to optimise digital performance as an essential component to business performance.

Given that our reliance on applications in a business context is significantly increasing, there is a corresponding rise in the importance of real performance. However, this is something that organisations are not currently managing effectively. According to the survey, nearly 80% of respondents indicate that poor performance impacts digital services at least once a month. With applications being such an integral part of achieving business results, clearly, this cannot continue. But how can companies get the best from their applications?

The challenge lies in integrating all the necessary solutions to perform optimally and deliver maximum benefit, particularly for customers. Creating a reliable application for consumers whilst balancing this complexity requires a clear understanding of the daily interactions and transactions that they experience firsthand. And in order for this to be possible, effective application performance management is required.

But often, legacy application performance management solutions do not provide this level of insight, because they were designed with a much narrower scope in mind. Rather than focusing on end-user experience, they are almost exclusively centred on capabilities that are best used for application development. However, the more advanced solutions have been updated to incorporate these crucial metrics.

To evaluate the effectiveness of your current application performance management solution, ask yourself the following questions:

- Do I know what end-users actually experience on any device?
- Do I know all the applications we are using including on-prem, cloud, SaaS and mobile?
- Can I capture all the transaction and business critical information regarding transactions at large scale?
- Can we easily and quickly analyse the data, identify problems and improve the business?

A truly digital business requires a solution that offers visibility over all users, applications, data and transactions on a continuous basis. Businesses simply cannot afford to gamble on the shortcomings of legacy solutions. Best-in-class solutions instead combine the merits of application performance management with end-user experience management.

This pioneering approach allows companies to track the end-user experience for all applications and provides a depth and quality of insight that is essential for the modern business. Further, cutting-edge technology such as artificial intelligence can further optimise the capability of application performance management solutions, and consequently the validity of the insights provided.

Investing a short amount of time to establish the application performance level in your business can pay serious dividends. Try it now, your customers will thank you for it! ■

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AUTOMATION CAN MAKE IT STAFF MORE INNOVATIVE

Changing the 80:20 rule by automating manual IT functions will give IT managers time to align with business, writes Chris Bedi at ServiceNow.

CHRIS BEDI, CIO ServiceNow.

Agility is a big deal. As companies embrace digital transformation, we have stopped defending the old ways of doing business. Instead, we focus on making sure appropriate change occurs. We reorganise people, processes and technology to empower change and drive tangible results.

In IT, we are used to thinking of agility in terms of the development team. Today, it means more. CIOs need to build and present an entire agile IT organisation, which requires giving some serious thought to the way the organisation works. We must move to a new IT operating model.

This sounds daunting, but it does not have to be. To start putting more action behind all this talk of IT agility, CIOs have to lead their teams through some fundamental shifts.

IT departments continue to fall into the same trap. Traditionally, 70-80% of IT spending goes to maintenance and upkeep of legacy systems—keeping the lights on—and only 20% on innovation to move the business forward.

Most of us have operated under cost pressures, more in some industries than others. Operating with half the IT staff, or sometimes less, is the new normal and we should not expect that to change significantly. Everyone across the entire business has to do more with less. However, the business needs IT to support new initiatives in order to grow. Therein lies the rub; with limited people and time, we cannot respond because we are too busy keeping the lights on.

It is time we dramatically shift the 80:20 ratio; until we do so, IT will be seen as just another cost center. CIOs need to lead their IT teams to root out their own manual, repeatable processes. All the routine, menial stuff that takes up valuable IT resources should be automated so that staff can tackle productive work that requires creativity and imagination and moves the business forward.

If a company is just starting to automate IT processes, it is typical to start with the simplest tasks like password resets and onboarding new hires. This makes sense. On average 25% of the helpdesk calls are password related. Resetting employees' forgotten passwords is an easy problem for the helpdesk to fix, but it still takes time. Automate it.

Automating the simple tasks will deliver incremental improvements but, for maximum impact, tackle some of the messier stuff first. Automating complex, multi-step, highly manual activities that touch multiple people can more quickly deliver the agility needed. Routine changes, diagnostics, performance monitoring and incident resolution are a few places ripe for automation.

Increasingly, machines are aware when something is not right. Automation should start with the creation of work incidents in the first place. Why cannot the infrastructure and end-user machines create the incident versus a human having to do it? To take this a step further, why cannot an intelligent machine

AUTOMATING SIMPLE TASKS WILL DELIVER INCREMENTAL IMPROVEMENTS BUT FOR MAXIMUM IMPACT, TACKLE THE MESSIER STUFF FIRST.

resolve the incident once it is received? All without requiring a human to intervene.

The time we get back by automating everything that simply makes systems work affords IT departments the much-needed room to be agile and deliver business value.

Most IT organisations struggle with talking in a language that speaks to business leaders. If IT sits down with the head of sales about a project and the question we ask is What do you need us to do? then we have become an order taker. We need to talk to stakeholders in their business terms and outcomes.

An agile IT organisation needs people who have half their brain in IT and the other half in sales, marketing, finance or whichever line of business is sitting across the table. These IT people work with the business leaders to define the outcomes they are after. They seek to understand why something needs to change, not just how. This skillset is what separates leading IT organisations from the rest.

To help IT to start using the same vocabulary, one of my CIO peers started requiring all IT staffers to listen to quarterly earnings calls with analysts. That helped IT to understand the strategic goals of the business and to ask some poignant questions. It did not take long for this IT organisation to start finding ways they could deliver results that not just align with business priorities but deliver business results.

As you free up IT's time to be creative, innovative and imaginative, there will be no shortage of good ideas. CIOs know we cannot be agile at everything that comes our way.

What is truly important will be grounded in tangible business results; what is not will waste valuable IT time and kill agility. It is critical IT recognise the difference. As IT staff become fluent in the business language and asks the right questions, what is important will become easier to spot.

We also need to consider that there is a difference between what is important versus what is urgent. Urgent is putting out fires, busywork or tasks IT staff tackle first because they are easier than the project list. But urgent requests that should only take a couple of minutes end up taking an hour. At the end of the day, we're wondering where all the time went.

As CIOs, we are focused on driving business outcomes and strategies for growth, efficiency and productivity. As we build agile IT organisations and focus on delivering business results, we cannot overlook the legacy internal structures—down to compensation structures—that need to change too.

It comes down to fear. Fear is a show stopper for building an agile IT organisation. CIOs need to have patience, train their IT teams and get them past the fear, uncertainty and doubt. Bear in mind it is not just fear of irrelevance that derails IT agility. Having the time to innovate and take risks in IT all in the name of better business outcomes sounds great, but what happens when an idea does not work? IT folks need to know it is OK to fail and that mistakes will not be a capital crime. It is the CIO's job to give their teams a safety net.

Building an agile IT organisation will not be easy. It will be uncomfortable at times, but it will be worth the effort. The agility we build into our organisations today will ensure IT does not become the order takers of tomorrow. ■

KEY TAKEAWAYS

- To help IT to start using the same vocabulary all IT staffers can listen to earnings calls with analysts.
- Fear is a show stopper for building an agile IT organisation.
- CIOs need to have patience, train their IT teams and get them past the fear, uncertainty and doubt.
- Traditionally, 70-80% of IT spending goes to maintenance and upkeep of legacy systems and only 20% on innovation to move the business forward.
- Business needs IT to support new initiatives in order to grow.

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TEN TRANSFORMATION TRENDS IN DIGITAL COMMERCE

Chat, speech, images, immersive reality, predicted purchases, are set to enhance the digital commerce journey, explains Sandy Shen at Gartner.

SANDY SHEN,
Research Director, Gartner.

Much has changed since the first products were sold online in the 1990s. Not only are features like inventory visibility, product reviews and package tracking, table stakes, retailers are now focused on more strategic initiatives that will give them competitive advantage in the future, such as providing a unified experience throughout the customer's journey and utilising artificial intelligence to offer personalised experience and streamline operations.

Digital commerce is getting more conversational, visual and intelligent. It is worth remembering the old maxim – a picture paints a thousand words. Conversational interfaces make the shopping experience more intuitive, but incorporating images, video and immersive technologies like augmented reality can make conversational interfaces more powerful for engaging and converting customers.

Artificial intelligence is the technology that will have the most profound impact on all aspects of commerce, according to Gartner.

> BY 2022 AT LEAST 5% OF DIGITAL COMMERCE ORDERS WILL BE PREDICTED AND INITIATED BY ARTIFICIAL INTELLIGENCE.

By 2022, at least 5% of digital commerce orders will be predicted and initiated by artificial intelligence.

These 10 hot trends will impact the future of digital commerce:

1 CONVERSATIONAL COMMERCE

Using voice or text, messaging platforms such as Facebook Messenger, WhatsApp and WeChat enable people and machines to discover and purchase goods and services via a dialogue. Although the first wave of conversational commerce bots met with mixed success, improvements are on the way thanks to maturing artificial intelligence and related technologies.

2 IMMERSIVE COMMERCE

Technologies like augmented reality and virtual reality allow customers to project virtual products into the physical environment to configure for fit or function. For example, people can view furniture in 3D then project the selected items into a physical space to check if they fit, or try on clothing and accessories for color and size in virtual fitting rooms.

3 UNIFIED COMMERCE

Customers use an increasing number of channels throughout both the buying and owning stages. They want to have a seamless experience as they hop across channels at various stages of the journey, and expect organisations to recognise and interact with them in a way that

builds on their prior experience and understands their preferences.

4 SUBSCRIPTION COMMERCE

Everything from socks to video games can be now sold on a recurring and automatically renewing basis. Subscription commerce enables organisations to generate repeatable, predictable revenue; customers also benefit from convenience, cost savings and personalised curation.

5 THING COMMERCE

Connected machines such as home appliances and industrial equipment can make purchases on behalf of human customers, either by directly taking requests from the customer or inferring demand based on rules, context and customer preferences. The primary benefit of thing commerce is to reduce customer effort and friction in purchases. For example, industrial equipment manufacturers can offer predictive maintenance to help customers keep a machine in its best working condition while keeping operational costs down.

6 ENTERPRISE MARKETPLACE

This is an emerging business model, as organisations shift from selling only products they own or source, to selling third-party products that are owned, priced and delivered by someone else. Early adopters such as airports, shopping malls, real estate developers and manufacturers already have large numbers of customers and partners.

7 APPLICATION PROGRAMMING INTERFACE COMMERCE

Businesses are building modular platforms instead of relying on a single monolithic commerce solution, to support new customer experiences, business models and an increasing number of ecosystem partners. API-based commerce enables organisations to decouple the frontend from the backend and quickly integrate new capabilities or systems without impacting the architecture.

8 ARTIFICIAL INTELLIGENCE

This comprises a group of technologies including natural language processing, machine learning and deep learning that can learn from data and make conclusions without being explicitly programmed. Examples of artificial intelligence in digital commerce range from product recommendation, content personalisation, fraud detection, price optimisation and virtual assistants to image search and categorisation and customer segmentation.

9 PERSONALISATION

This technology is more mature compared with other technologies in this list. There are many opportunities to personalise throughout the customer journey such as landing page, product page, search, product recommendation, banners and offers. Personalisation can directly contribute to the bottom line by increasing conversion and or order value.

10 VISUAL CONFIGURATION

A visual product configurator presents an accurate depiction of configurable and customisable products, allowing customers to have a compelling experience interacting with the product. Visual configuration includes a combination of technologies such as 2D 3D images and video, floor space planning and computer aided design, and can be used together with AR and VR.

Focus on no more than three items in this list at a time. Do not try to do everything at once. Check out the competition to see which technologies are must have or give you competitive advantages, move those to the top of the list. Prioritise the remaining options based on business value, time and cost to deliver. ■

KEY TAKEAWAYS

- Digital commerce is getting more conversational, visual and intelligent.
- Conversational interfaces make the shopping experience more intuitive.
- Images, video, augmented reality can make conversational interfaces more powerful for engaging customers.
- Artificial intelligence is the technology that will have the most profound impact on all aspects of commerce.

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BUILDING THE WORKFORCE FOR YOUR DIGITAL ENTERPRISE

To build a digitally savvy workforce requires innovative ways of recruitment, training, and retention, writes Anurag Agrawal at Canon Middle East.

ANURAG AGRAWAL, Managing Director, Canon Middle East.

Digital transformation is revolutionising the regional workplace, with its ability to streamline processes, reduce expenditure and enhance the service offering. Rapidly advancing digital technologies are already being used in hundreds of sectors, including farming, healthcare, transport, education, retail, home automation and logistics.

The demand for information and communications technology specialists is growing fast so much so that according to the World Economic Forum's Future of Jobs analysis, 21% of core skills required across all occupations will be different by 2020.

Businesses cannot expect governments to tackle this crisis on their own. Firstly, disruptive and revolutionary innovations will always affect private companies before they affect the state – because businesses tend to try out new technologies before governments do. As a result, nobody understands the implications of and reasons for the digital skills gap better than the businesses that are directly suffering the consequences.

Secondly, with a capable and trained workforce, businesses stand to benefit enormously from digitisation. Any organisation, large or small, can contribute to tackling the growing digital skills gap, either by addressing it within their own function, or by providing skills training more widely. Indeed, it is their responsibility to do so. Below we look at the three steps that businesses can take to do this.

REVAMPING RECRUITMENT

With the world of business and traditional job roles radically changing, so must human resources and recruitment functions as well. Fostering a culture focused around developing a digital mindset, and diversifying the recruitment approach, are much more likely to attract digitally skilled employees.

The diversification of the recruitment process requires serious thinking about what kind of initiatives best attract individuals with a great digital skillset. The traditional approach is not always going to work for the digital talent pool, but appealing to their core interests may result in the desired outcome.

No matter the industry, any company that employs a fresh new approach to recruitment has the potential to attract the right talent. The crucial thing is ensuring that the methods employed are congruent with what the company is aiming to achieve: if you are looking for digital talent for example, ensure your recruitment process is aimed at discovering this skillset by giving candidates the chance to perform and demonstrate their abilities.

FUTURE-PROOFING A WORKFORCE IS ABOUT INVESTING IN THEIR SKILLS AND, ENCOURAGING THEM TO ADOPT NEW WAYS OF WORKING IN DIGITAL ENVIRONMENTS.

KEY TAKEAWAYS

- If business leaders hope to see return from digital investment they must ensure workforces understand these technology changes.
- Nobody understands implications and reasons for the digital skills gap better than businesses that are suffering consequences.
- Businesses must channel significant resources into employee development, to ensure existing and new staff develop a digitally focused mindset.
- Diversification of recruitment requires serious thinking about what kind of initiatives best attract individuals with digital skillsets.

INVESTING IN TALENT

As technology becomes more advanced, simply attracting the best talent will not be enough on its own – talent needs investment. It should go without saying that the organisations that are best placed to invest in the workforce, are those employing them. It is important for business leaders to remember that future proofing is not just about technology: people need to be effectively future-proofed as well.

Future-proofing a workforce is partly about training them and investing in their skills – and, partly about encouraging them to adopt new ways of working in increasingly digital environments. This could start with quite small things: for example, employees could be encouraged to mingle with other departments to foster a culture of sharing and learning.

But it can also include initiatives such as hiring external speakers to teach them about upcoming technology and technology trends, bespoke training opportunities to introduce them to new ways of working, relevant employee benefits and specific investment into entry-level roles in order to grow frontline workers alongside the ambitions of the business.

BOLSTERING TRAINING AND DEVELOPMENT

The potential value that digital solutions offer to a business is ultimately dependent upon the ability for staff to properly utilise these technologies. In other words: what use is the latest technology if your staff cannot use it effectively?

Businesses must channel significant resources into employee development, to ensure existing and new staff are comfortable with technology and develop a more digitally focused mindset. Encouraging background reading or the odd training session is no longer enough. Being proactive by assuming a need for training and organising staff training days; encouraging staff to find courses they want to partake in, these are all simple ways to make sure that upskilling is a hot topic of conversation and an always-on function.

Meanwhile, some businesses are taking an innovative approach, encouraging staff by organising hackathons to develop creative solutions to solve an issue. This not only engages staff but also improves their general IT knowledge. Digital skills training is not a one-off course, it is an ongoing process that must keep pace with the rapid rate of technological development we see today.

CONCLUSION

While many businesses are aware of the looming digital skills gap, they are not taking proactive steps to address it. This is ironic – because they would stand to benefit the most from a productive and highly skilled workforce from which to pick the best talent. The pressure for today's workers to stay abreast of digital trends is clear. If business leaders hope to see the maximum return from digital investments they make, they must ensure workforces understand these technology changes and are adequately equipped to take advantage. ■

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Siemens opens MindSphere Centre for AI digital solutions in process industries

Siemens has opened a new MindSphere Application Center in Abu Dhabi to focus on developing digital solutions, applications and services for process industries, including oil and gas, water and wastewater. The centre is the second of three to be built in the UAE, using the company's open, cloud-based IoT operating system MindSphere to support the Middle East's digital transformation.

Encouraging closer collaboration with customers, the new centre will leverage technologies including IoT, Artificial Intelligence and data analytics to address specific challenges in data-rich process industries, driving optimised operations, increased productivity and flexibility.

The new centre is already developing digital and artificial intelligence-based solutions for regional customers in the water and oil and gas industries. In oil and gas, Siemens is using artificial intelligence techniques, such as Artificial Neural Networks, to identify anomalies in flow-rate patterns and allow better decision-making in complex upstream, midstream and downstream operations.

With embedded self-learning algorithms, existing historical data can be used to process large quantities of incoming data, detecting anomalies to minimise downtime, production losses and protect customers' critical assets.

Based at the Siemens Middle East Headquarters in Masdar City, this is the second of three MindSphere Application Centers planned for the UAE. Earlier this year Siemens opened its first regional centre in Dubai to cater for the aviation and logistics market, joining a global network of 20 centres with 900 software developers, data specialists and engineers.

UAE MindSphere Application Centres are part of a $500 million investment Siemens is making over three years.

Economic diversification in the Middle East is being driven by significant investments in digital technologies such as artificial intelligence, 3D printing and smart cities, with many countries setting targets for key industries including manufacturing and logistics. The UAE recognises the importance of employing IoT, artificial intelligence and data analytics to build up industry 4.0 capabilities in the oil and gas and downstream industries, in order to maximise resource use, create higher efficiencies and drive down costs.

The nation also aims to increase the contribution of the manufacturing sector to overall GDP to 25% by 2025, and the MindSphere Application Centers will support this by driving the digital transformation, developing new business models, digital solutions and services as well as industrial applications.

In Abu Dhabi the teams will work according to agile Scrum methodology and customers are invited to co-create innovative applications with Siemens. With this approach Siemens will develop applications according to customer requirements, providing either cloud-based or on-premise solutions.

The three UAE MindSphere Application Centers are part of a $500 million investment Siemens is making over three years, to expand its digital presence in the Middle East. This also includes software grants for local universities to boost digital skills in Egypt, UAE and Saudi Arabia. ■

KEY TAKEAWAYS

- UAE MindSphere Application Centres are part of a $500 million investment Siemens is making over three years.
- Includes software grants for local universities to boost digital skills in Egypt, UAE, Saudi Arabia.
- Teams will work according to agile Scrum methodology and customers are invited to co-create applications with Siemens.

Baidu invites Volvo Cars to partner and build autonomous cars for China market

Volvo Cars has reached an agreement with Baidu, the Chinese Internet search provider, to jointly develop electric and fully autonomous drive-compatible cars with the aim of mass producing them for China, the largest car market in the world. Volvo Cars is the first foreign car maker to collaborate this closely with Baidu to jointly develop customised autonomous driving cars. The partnership will allow both companies to develop and sell these vehicles to potential Chinese customers, underlining the Swedish company's aspirations to be the supplier of choice for mobility companies globally.

Volvo Cars and Baidu will pool resources to take the next step and prepare for mass manufacturing of fully electric and autonomous cars, according to the agreement. The collaboration with Baidu is Volvo Cars first of its kind in China and it was deliberately chosen as a partner by Baidu because of its long-standing safety credentials. Based on the collaboration agreement, Baidu will contribute with its Apollo autonomous driving platform. Volvo will provide access to its expertise and advanced technologies of the car industry.

Industry forecasts show that China is likely to become the single largest market for autonomous cars in the world in coming decades. Market research firm IHS Markit predicted earlier this year that around 14.5 million autonomous cars will be sold in China by 2040, on a total global volume of around 33 million. The report is Autonomous Vehicle Sales Forecast 2018, IHS Markit.

HÅKAN SAMUELSSON, President and Chief Executive of Volvo Cars.

"With Baidu we take a big step forward in commercialising our autonomous compatible cars, built on Volvo's industry-leading safety technology," said Håkan Samuelsson, President and Chief Executive of Volvo Cars. "There is a strong development in autonomous drive in China, where Baidu is a leading player, and the market there offers huge opportunities for us as the supplier of choice for autonomous fleets."

In the coming years, Volvo Cars will seek to capitalise on and lead the disruption currently underway in the industry. This ambition is reflected in a new set of longer-term ambitions that Volvo Cars announced earlier this year, which focus on establishing a leading position in electrification, autonomous drive and new models of car ownership and access.

The Baidu agreement serves as a further proof point for its autonomous driving ambitions. Volvo Cars aims to become a global and diversified mobility service provider and sees autonomous drive as a key growth area as part of this strategy. By the middle of the next decade it expects to generate one third of all annual sales from autonomous cars. For the full year 2017, global sales reached a record 571,577 cars, an increase of 7.0% versus 2016. ■

KEY TAKEAWAYS

- Volvo Cars and Baidu will take next step for mass manufacturing of fully electric and autonomous car
- Collaboration with Baidu is first of its kind in China.
- Baidu will contribute with its Apollo autonomous driving platform.
- Volvo will provide access to expertise and advanced technologies of the car industry.
- For the full year 2017, global sales reached a record 571,577 cars, an increase of 7.0% versus 2016.

Hyperloop appoints Dar Al-Handasah local design partner initiating project by Q3 2019

Hyperloop Transportation Technologies announced appointment of leading design and engineering firm, Dar Al-Handasah founding member of the Dar Group, to assist in bringing the Abu Dhabi commercial system to reality. Dar Al-Handasah joins the project as design lead and as the latest investor in HyperloopTT. Dar Al-Handasah's team includes Dar Group members: Perkins+Will architects, USA; TY Lin International Engineers, USA; GPO Group engineers, Spain; and Currie and Brown cost management consultants, UK. Construction of the Hyperloop commercial track as well as HyperloopTT's XO Square Innovation Center and Hyperloop Experience Center is targeted to begin in Q3 2019.

Earlier this year, HyperloopTT signed an MoU with Aldar Properties, Abu Dhabi's leading listed property development, investment and management company, which, when executed, will allow for the creation of a new HyperloopTT centre including; a full scale commercial Hyperloop system, an XO Square Innovation Center and Hyperloop Experience Center. The proposed site within Aldar's Seih Al Sderieh landbank is also conveniently located on the border of the Emirates of Abu Dhabi and Dubai, close to the Expo 2020 site and Al Maktoum International Airport.

KEY TAKEAWAYS

- Dar Al-Handasah joins the project as design lead and latest investor in HyperloopTT.
- HyperloopTT signed MoU with Aldar Properties, which will allow creation of a new HyperloopTT centre including full scale commercial Hyperloop system, Innovation Center and Hyperloop Experience Center.
- Proposed site is within Aldar's Seih Al Sderieh landbank.

"We are bringing the future of rapid transportation technology to all those living in the UAE," said HyperloopTT Chairman Bibop Gresta, "Today's announcement is a testament to the continued commitment and determination of all our partners, both within the UAE and abroad. As we move forward with the system we invite other interested organisations in the region and around the world to join us in making history."

"With today's announcement of the appointment of Dar Al-Handasah, Perkins and Wills, and Currie and Brown, we have achieved a significant milestone towards the construction of the world's first commercial Hyperloop system in Alghadeer," said HyperloopTT CEO Dirk Ahlborn. "We are looking forward to working with all of our regional stakeholders to build this historic piece of transportation infrastructure."

Hyperloop Transportation Technologies is an innovative transportation and technology company focused on realising the Hyperloop, a system that moves people and goods at unprecedented speeds safely, efficiently, and sustainably. Through the use of unique, patented technology and an advanced business model of lean collaboration, open innovation and integrated partnership, HyperloopTT is creating and licensing technologies.

Dar Al-Handasah is the founding company of the Dar Group, an international consortium of professional service firms. Through its 18,600 staff members, Dar Group assists clients in over 100 countries around the world. Dedicated to planning, designing, engineering, and project management of facilities, installations and structures, Dar Group further contributes to the sustainable development of communities worldwide. ■

Referenced but rarely accomplished transformation projects come to life in 2019

Dimension Data, launched its Tech Trends 2019 report developed by its team of technology experts. In the report, Group CTO Ettienne Reinecke claims that 2019 will finally see digital transformation become a reality and predicts a spate of industry-wide disruption as innovative companies see long-term projects bear fruit.

Tech Trends 2019, has been developed by Dimension Data's technology experts and identifies trends that will come to define the business technology landscape in 2019 which include:

ROBOTIC PROCESS AUTOMATION WILL RESHAPE CUSTOMER EXPERIENCE

The exponential growth in robotic process automation – such as machine learning, artificial intelligence, and heuristic neural networks – will give companies the ability to combine scenarios, increase understanding, and make real-time predictive decisions about their customers' needs and behaviours.

ORGANISATIONS WILL FOCUS ON CLOUD-BASED CYBERSECURITY PLATFORMS

Regular high-profile cyber security breaches in 2018 will cause cloud-based security providers to gain traction in 2019. Cloud-based security systems are built with open APIs, meaning security teams can integrate new technologies into the platform quickly and with relative ease. This will ensure clients can keep up with the rapidly evolving threat landscape.

ETTIENNE REINECKE, Group CTO, Dimension Data.

INFRASTRUCTURE WILL BECOME PROGRAMMABLE FROM END TO END

Companies will start subscribing to multiple cloud platforms and increasing their use of Software-as-a-Service SaaS. End-to-end programmability means organisations will be able to quickly adapt to changing business landscape and demand more from their applications and data.

KEY TAKEAWAYS

- 2019 will finally see digital transformation become a reality.
- Spate of industry-wide disruption as innovative companies see long-term projects bear fruit.
- Referenced but rarely accomplished transformation projects will start coming to life.
- Game-changing technologies like artificial intelligence, machine learning, robotic process automation will make difference.

APPLICATIONS WILL BECOME MORE INTELLIGENT AND CUSTOMISED

In the coming year, we will see applications gathering input from users and making changes to their own functionality to improve the user experience. Artificial intelligence and machine learning will play a significant role in helping employees work more productively.

VALUE OF DATA WILL BECOME THE CENTRE OF VALUE UNIVERSE

In the coming period, the focus will increasingly shift to the true value of data, driving a renewed quest to embed telemetry, collect and enrich data. It is data that will form the core of true digital transformation and become the source of new revenue streams that will surpass traditional revenue streams. This will lead to a change in information architectures, with the need to establish rich data starting to drive IT investments.

Commenting on the report, Ettienne Reinecke said: "Until now, our industry has spoken about innovative technologies somewhat theoretically, without providing a clear picture of how these powerful new innovations will be used. The application of disruptive technologies is becoming more pervasive and their adoption is growing steadily. We will see the most innovative companies showing off examples of digital transformation in action in 2019 with many more coming to the market over the next three years." ■

Riverbed announces certified training to build skills in digital performance

Riverbed, announced the availability of the Riverbed Certified Performance Engineering Programme RCPE, designed for all IT professionals, from technical staff to leadership to CXO, involved in managing digital performance across end-user experience, applications, networks, infrastructure, support desk and operations.

The RCPE Programme focuses on building career skill sets and capabilities in digital performance to enable significant business results and outcomes across different roles in an organisation and at differing levels of technical experience. The Programme delivers a solution-oriented approach on the principles and capabilities of digital performance engineering and management by leveraging a combination of eLearning, instructor-led classes, and hands-on labs that replicate real world scenarios.

"The new Riverbed Certified Performance Engineering RCPE Programme is a first of its kind training curriculum that teaches career-based skills and capabilities in digital performance. It fills a serious gap in the industry for much needed experts to deliver high-performing applications, networks and infrastructure as companies increasingly look to digital services to improve business value," said Dan Smoot, Chief Customer Officer at Riverbed.

"The programme is part of our larger customer success and partner strategy that when put into practice, enable significant business results and outcomes. Our goal is to build expertise that takes advantage of long term and successful digital performance management strategies that solve the challenges of the modern day enterprise."

DAN SMOOT, Chief Customer Officer at Riverbed.

The framework of the RCPE programme covers the full spectrum of the digital performance engineering and management domain and provides breadth and depth.

It consists of five specialisation tracks:

- End User Experience and Application Visibility
- Network and Infrastructure Visibility
- WAN Optimisation
- SD-WAN Network Configuration
- Virtualisation and Storage

For each specialisation track of the RCPE programme, there are four levels of learning depth:

RCPE Performance Foundations: Designed for all IT professionals and managers including CXXs, and leadership and technical staff. This is a self-paced online training.

RCPE Associate: Designed for a wide range of IT professionals for maintaining and supporting digital performance solutions including architects, engineers, technical sales, consultants, support staff and operators. These courses are self-paced online training.

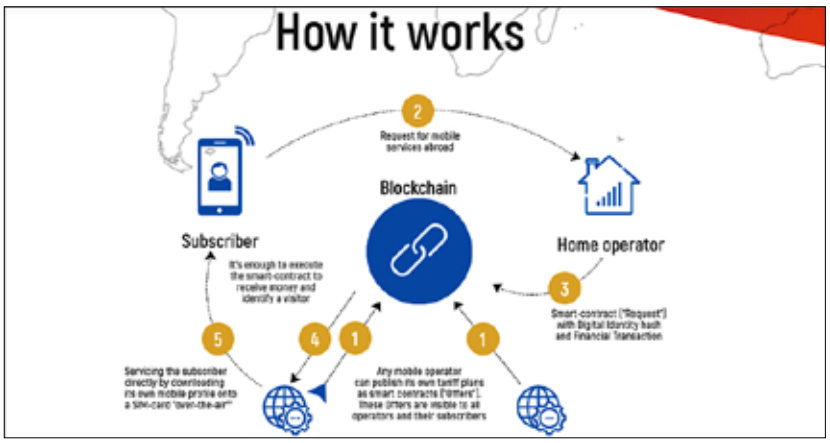
RCPE Professional: Designed for IT professionals specialising in designing, implementing and managing digital services including architects, engineers, consultants, support staff and operations. These courses are instructor led and correspond with an RCPE Professional Certification.

RCPE Expert: Designed for IT professionals responsible for the overall delivery of important digital services critical for driving and maximising value for businesses. These courses are instructor led and correspond with an RCPE Expert Certification. ■

KEY TAKEAWAYS

- For each specialisation track there are four levels of learning depth.
- It focuses on building capabilities in digital performance to enable significant business results.
- The framework covers the full spectrum of digital performance engineering.

Nexign and Bubbletone announce blockchain-based BSS solution for the telecom sector



Once operators join the platform, they will be able to expand their customer bases and increase revenue, without any additional costs, through distribution of digital value-added services..

Nexign and Bubbletone have announced an exclusive partnership to develop an industry-first blockchain-based Business Support Systems BSS solution for the telecom sector. The two companies aim to create a global marketplace for telecom operators, giving them the ability to collaborate with each other and consequently offer individually determined volumes and qualities of services to end users—an option that has not previously existed.

By facilitating seamless and secure exchange of financial and identity information between mobile network operators, phone users and service providers, the solution will enable roaming users to instantly purchase service packages, at local operator rates, using their existing SIM card.

Operators will benefit from BSS with embedded blockchain, enabling them to increase the efficiency of their business through rapid and seamless joining of the Bubbletone platform. Once operators join the platform, they will be able to expand their customer bases and increase revenue, without any additional costs, through distribution of digital value-added services.

According to Research and Markets, blockchain in the telecom market is predicted to grow at a CAGR of 84.4% between 2018-2023, driven in large part by increasing support for OSS BSS processes. The blockchain-based BSS solution from Nexign and Bubbletone has the potential to revolutionise the way operators do business and monetise services, for three key reasons:

- The platform creates a global marketplace where operators can publish and share product information as well as buy and resell as-is, or bundle, offerings from other operators, to visitors in their network
- With full support for e-SIM, IoT Apps tokens and any ASP OTT subscriptions, operators can now offer their own authentication service, publish their own tokens and sequences and sell direct to partners without anWy need for intermediaries
- The blockchain network acts as a clearing house, checking all partial charge volume transactions and mitigating any settlement risks before the billing period ends

Bubbletone is the first decentralised global telecom platform that provides mobile network operators and service providers with an opportunity to interact securely and directly via smart-contracts, without any intermediators, agreements or commitments. As a result, any operator can become global and get direct access to the international telecom market. Operators and service providers can increase the number of their customers and their revenue without making any investments or conducting any complex network integrations.

"The idea behind this project is to attract as many mobile operators as possible to the Bubbletone ecosystem and show them how easily they can take full advantage of blockchain technology and get direct access to the international telecom market in the digital economy era," said Yuri Morozov, CEO and Founder of Bubbletone Blockchain for Telecom. ■

KEY TAKEAWAYS

- By facilitating seamless and secure exchange of financial and identity information between mobile network operators, phone users and service providers,
- The solution will enable roaming users to instantly purchase service packages, at local operator rates, using their existing SIM card.
- Operators will benefit from BSS with embedded blockchain, enabling them to increase the efficiency of their business through rapid and seamless joining of the Bubbletone platform.

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Carlsberg moves to AI-driven supply chain using Tata Communications hybrid network

Tata Communications, a global digital infrastructure provider, has deployed next-generation software-defined hybrid network for Carlsberg to support the digital transformation of the global brewer's operations in 130 sites across Western Europe. The new infrastructure is a key part of Carlsberg's Next 2.0 programme, which harnesses the power of the Internet and cloud computing to boost agility, increase efficiencies and reduce costs.

The network supports Carlsberg's global SAIL'22 growth strategy, which aims to strengthen the core, position for growth and create a winning culture. To achieve these goals, the brewer is digitising its supply chain and exploring new AI-enabled direct-to-consumer services such as its connected bar concept. The new network, which has replaced a legacy MPLS network, will act as a resilient, flexible foundation for these innovative initiatives.

As the growing use of cloud-based applications has led to 70% of Carlsberg's network traffic being on the Internet, the new network has given the brewer 10 times more bandwidth, reduced costs by 25%, and halved the occurrence of network incidents. The hybrid network is a combination of Tata Communications' IZO Internet WAN and Global Virtual Private Network, with an IZO SDWAN overlay.

"We do not want to be just connected to the Internet. We want to live on the Internet, taking full advantage of its scalability and cost-effectiveness to quickly unleash new growth opportunities," said Sarah Haywood, CTO, Carlsberg. "We are using the Internet to change the foundations of Carlsberg. This does not mean putting a digital veneer on our old infrastructure – it means reimagining our entire IT estate with this next-generation network as the foundation."

SARAH HAYWOOD, CTO Carlsberg.

Tata Communications deployed the new network in just 5 months – a year less than the industry standard – and did this during the FIFA World Cup, which is one the busiest times of the year for Carlsberg. Given the critical role of the new network for the brewer's operations, avoiding any disruption to the business during the deployment was crucial. "A network transformation project of this scale was incredibly risky, because without our network we do not make or sell beer. But it paid off," continued Sarah Haywood.

"While there is a lot of hype around SDWAN, it is important to note that you cannot build it on top of a network that is not fit for purpose," said Mark Weait, Head of Europe, Tata Communications.

Tata Communications has rolled out Carlsberg's new infrastructure in Western Europe, but the reach of Tata Communications' global network allows the brewer to easily expand it to new geographies too if its business needs evolve. This network carries around 30% of the world's Internet routes and connects businesses to 60% of the world's biggest clouds. ■

KEY TAKEAWAYS

- Growing use of cloud has led to 70% of Carlsberg's network traffic being on the Internet.
- The brewer is digitising its supply chain and exploring AI-enabled direct-to-consumer services such as connected bar concept.
- Tata Communications' new network has given the brewer 10 times more bandwidth, reduced costs by 25%, and halved occurrence of network incidents.
- The hybrid network is a combination of Tata Communications' IZO Internet WAN and Global Virtual Private Network, with an IZO SDWAN overlay.

Commercial Bank begins transformation by selecting Microsoft Cloud, Dynamics

SAYED HASHISH, Regional General Manager, Microsoft Gulf.

JAMES GREENWOOD, Chief Operating Officer, CBI.

UAE's Commercial Bank International announced an enterprise partnership with Microsoft Gulf. The Bank will move to the trusted Microsoft Cloud, as a key step in its digital transformation journey. Over the past three decades, CBI has established itself as a leading UAE bank helping individuals and businesses manage their finances. To achieve its strategic aspiration of providing the best customer experience, CBI now focuses on leveraging technology to gain valuable insights about its customers' needs and expectations and optimise its operations for them.

In mapping out its digital transformation path, the Bank has put high emphasis on productivity, security, and data, as well as pursuing a parallel cultural transformation to align with the UAE's economic vision programmes. Having evaluated several cloud platforms across the technology industry, CBI selected Microsoft Azure for its depth of integration, local UAE commitment, and market-leading security, all without sacrificing flexibility and scalability.

To support business intelligence and customer relationship management, CBI has also chosen to implement Dynamics 365, Microsoft's diverse, cloud-based commerce platform that merges ERP and CRM into a seamless Common Data Model, connecting enterprises to the power of the intelligent cloud. With accelerated adoption of its cloud services in the region, Microsoft earlier this year announced that it will deliver the secure, flexible and intelligent cloud for its regional customers through two dedicated cloud datacentres, one located in Dubai and one in Abu Dhabi, catering specifically to enterprises in the Middle East.

"CBI prides itself on being a key economic enabler, as the UAE continues on its path to greater prosperity" said James Greenwood, Chief Operating Officer of CBI. "Our leaders have mapped out a future where the UAE stands out as a global knowledge and innovation hub and we will continue to play our part in that journey. By partnering with Microsoft, we intend to evolve our digital capabilities further, adopting world class technology to transform our customer experience. Microsoft's Azure platform was an ideal fit for our ambitions, delivering the strategic flexibility and agility we will need on our journey."

"CBI's transformation roadmap can propel it into a new digital era, and we are proud to be chosen as their partner in this journey", said Sayed Hashish, Regional General Manager, Microsoft Gulf. "The Microsoft Cloud and our solutions such as Dynamics 365 have been designed from the ground up to be scalable to any size of enterprise, with one of the broadest ranges of industry use cases on the market. Financial Services entities can get a 360-degree view of their customers and engage them through diverse communication channels and personalised marketing campaigns to build stronger relationships and achieve more." ■

KEY TAKEAWAYS

- CBI has put emphasis on productivity, security, and data, as well as pursuing a parallel cultural transformation.
- CBI selected Microsoft Azure for its depth of integration, local UAE commitment, and market-leading security.
- CBI has chosen to implement Dynamics 365, that merges ERP and CRM into a seamless Common Data Model.

Microsoft Dynamics 365 view of customers to boost Noor Bank transformation

Noor Bank, a Shari'a-compliant bank in the UAE, announced a partnership with Microsoft that will drive digital transformation within the bank's operations to engage customers, empower employees, optimise operations and transform products and services. Within its decade-long presence, Noor Bank has grown at a substantial pace, and provides a broad range of products and services in the personal and corporate banking spaces, in addition to offering wealth-management, insurance, treasury and trading services.

In response to an increasing demand from millennial consumers for personalised service coupled with the flexibility of omni-channel digital experiences, Noor shaped its IT strategy to implement an enterprise-wide CRM system that would transform customer engagement. The bank's leadership team focused on rolling out sales, marketing and services CRM modules across its centres of operations.

The solution was to deliver a single 360-degree point of information on customers, including prospects across corporate, retail, wealth and investments. It was also envisaged to be the core front-end enterprise application for the management of the customer lifecycle – from on-boarding to servicing, sales, marketing and off-boarding.

Noor Bank chose the Microsoft Dynamics 365's CRM platform for its ability to deliver 360-degree views of customers, through its Common Data Model. Views will cover portfolios, interactions,

JOHN IOSSIFIDIS, CEO Noor Bank.

experiences and automated services. Microsoft will work with Noor's IT and line-of-business executives to ensure the platform will support the bank's digital agenda and operational requirements for years to come.

During the selection process, the bank's decision-makers also took note of Dynamics 365's capacity for operational optimisation, especially the Social Selling dashboard, which collates open leads, top prospects and task schedules in a single, visual interface.

Another reason Noor Bank was attracted to Dynamics 365's customer-engagement suite was LinkedIn Sales Navigator, an advanced tool that allows sales teams to manage the entire pipeline through the popular professional-networking platform. LinkedIn Sales Navigator helps sales teams leverage LinkedIn's rich network to source new customers, nurture and grow existing relationships and maximise sales productivity and results, all through one platform.

John Iossifidis, Chief Executive Officer of Noor Bank, said: "Noor Bank is committed to being at the forefront of innovation by creating safe and seamless experiences for employees and customers. With Microsoft's Dynamics 365 platform, we aim to empower our people to collaborate and deliver a differentiated level of service. The real time data and analytics gathered through this tool will allow us to stay ahead of the curve and deliver outstanding customer experiences."

"Digital transformation yields boons that bridge business functions," said Sayed Hashish, Regional, General Manager, Microsoft Gulf. "The ability to engage, empower, optimise, and transform – is the promise that platforms like Dynamics 365 deliver. It merges ERP and CRM, offers flexibility, cost benefits with a rich menu of AI-based business intelligence, and is built around a warehousing architecture called the Common Data Model." ■

KEY TAKEAWAYS

- Microsoft will work with Noor's IT and line-of-business executives to ensure the platform will support the bank's digital agenda.
- The solution was to deliver 360-degree point of information on customers, including prospects across corporate, retail, wealth and investments.
- The bank took note of Social Selling dashboard, which collates open leads, top prospects, task schedules in a single, visual interface.

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Data Mount building largest datacentre in Oman to boost cloud and transformation

(Left to right) Abdull hakeem Al-Muslahi, Deputy Chairman, Data Mount and Ali Al Lawati, General Manager, Cisco Oman.

Data Mount, a datacentre hosting services company in Oman and Cisco announced signing of a Memorandum of Understanding. Data Mount is planning to establish the largest commercial datacentre in the country to date. Through its partner ecosystem, Cisco will provide datacentre technology and help enable Data Mount to design, deploy and secure its next-generation cloud services in a datacentre in Jebel El Akhdar, Oman.

The MoU establishes a framework for closer collaboration between Cisco and Data Mount, leveraging Cisco's innovative networking, datacentre and security infrastructure solutions, cloud hardware and managed services for cloud and collaboration. The MoU also outlines a number of potential areas for strategic cooperation, based on Cisco's expertise and best practices, to deliver state-of-the-art cloud services in the datacentre.

The new datacentre will be built in Jebel El Akhdar, located at the Al Hajar mountain range. This area offers a safe and secure location with moderate temperatures, so that Data Mount can save on power consumption and protect its datacentre equipment from overheating.

KEY TAKEAWAYS

- Data Mount is planning to establish the largest commercial datacentre in the country to date.
- Cisco will provide datacentre technology to design, deploy, secure next-generation cloud services.
- The new datacentre will be built in Jebel El Akhdar inside Oman's Al Hajar mountain range.
- This area offers secure location with moderate temperatures saving on power consumption.

"In line with the Digital Oman Strategy, more businesses are looking at cloud computing as an enabler on their digital transformation journeys. To meet the ever-increasing demand of Omani companies to host their critical IT infrastructure in the cloud, we are planning to build a brand new datacentre in Jebel Al Akhdar. From there, we will offer customers the option to store their data securely in the cloud inside the country," said Abdull hakeem Al-Muslahi, Deputy Chairman, Data Mount.

"Cisco, as a global technology leader and an expert in intelligent datacentre technology, is the perfect company to help us in this project. We look forward to working closely with them and leveraging their knowledge, expertise, innovative technologies, best practices and skilled resources. From this new datacentre, we plan to offer cloud and disaster recovery services to government organisations and enterprises, with a strong focus on the banking industry," added Abdull Hakeem Al-Muslahi.

Speaking on the partnership, Ali Al Lawati, General Manager, Cisco Oman said, "Oman has been at the forefront of prioritising digital transformation, innovation and the adoption of advanced technologies, with cloud computing leading the charge. We are excited to collaborate with Data Mount and help them establish an innovative and intelligent datacentre of the future."

"One of the fundamental principles of the next-generation datacentre is the ability to dynamically deliver business critical applications. Massive data volumes, speed to access and the longevity of data are key drivers for the transformation of datacentres in the region. Cloud computing is one of the main technologies driving this change. Cisco's datacentre technology captures the intent of users and applications, and it constantly learns, adapts and protects, which will help Data Mount's new datacentre to get smarter every day," concluded Ali Al Lawati. ■

GBM upgrades Bahrain payment provider Sinnad to Cisco ACI software network

The network infrastructure project is the first Cisco ACI software defined network solution deployment for a financial and private sector organisation in Bahrain.

Gulf Business Machines, announced the successful completion of a network infrastructure project for Sinnad, a card processing and payment service provider in the region. The network infrastructure project is the first Cisco ACI software defined network solution deployment for a financial and private sector organisation in Bahrain.

The network setup will provide Sinnad with next generation solutions, allowing them to more efficiently manage their corporate network platforms. The infrastructure setup will also help accelerate application and service delivery to customers substantially, with the solution providing a foundation for Sinnad from which to deploy payment and other fintech solutions.

The solution is estimated to lower operational costs and further investment to Sinnad's IT network operation. ACI provides open and comprehensive end to end security, open APIs, open standards, and open source elements that enable software flexibility for DevOps teams, and firewall and application delivery controller ecosystem partner integration.

Apart from network infrastructure, the project is comprised of IP, telephony, wireless, security, and application delivery solutions from Cisco and F5 Networks.

"We are happy to have partnered with GBM on a project that we are sure will bring about increased value for our operation and our clients. The development of our alliance with GBM was one of our major accomplishments for 2018. We see the success of our network project as not only a triumph for us at Sinnad, but also a clear indication of the energetic and forward-thinking ICT and business environment we operate in Bahrain. We have chosen the latest network architecture technology that enhances business agility, automates IT tasks and accelerated datacentre application deployment", commented Rana Al Maeeli, General Manager, Sinnad.

Commenting on the success of the project, Abdulla Ishaq, General Manager, GBM Bahrain, stated: "We are excited to have had the opportunity to work with Sinnad to bring to life such a groundbreaking project for the company and the Bahrain financial services sector overall. Bahrain is fast becoming the GCC's growth market for ICT solutions and services, particularly within the financial services fields – this best evidenced by last year's inauguration of Bahrain FinTech Bay, the largest dedicated fintech hub in the Middle East and Africa. GBM is proud to be playing a role in the blossoming of this growth sector in the Kingdom, and as a Bahraini company, we look forward to continuing to be the digital partner of choice for our clients for years to come."

GBM has been a technology partner for the banking sector for over two decades. The company's decade-old partnership with Cisco adds considerable value by ensuring professional expertise from industry leaders is combined with the experience of more than 170 specialists across GBM's nine locations. ■

KEY TAKEAWAYS

- Chosen network architecture that enhances agility, automates IT tasks and accelerates datacentre application deployment
- First Cisco ACI SDN deployment for a financial and private sector organisation in Bahrain.
- Network setup will allow Sinnad to more efficiently manage corporate network platforms.
- Help accelerate application and service delivery while providing a foundation to deploy payment and other fintech solutions.

Zain Kuwait offers enterprises cloud managed network services from Cisco Meraki

Zain Kuwait, a digital service provider in the country, announced a strategic partnership with Cisco to deliver secure, cloud-based, managed network solutions to enterprises of all sizes in Kuwait. This partnership aims at empowering a more efficient enterprise sector in Kuwait in alignment with the country's National Development Plan: New Kuwait 2035.

Zain will provide enterprise customers in Kuwait innovative and smart solutions, powered by Cisco Meraki, that can deliver secure, high-performance network experiences. The solutions cater to businesses of all sizes, allowing them to manage their IT infrastructure from the cloud through an intuitive, web-based dashboard. The solutions also promise faster time to market and better end-user experience, while helping to reduce operational costs and create new revenue streams through Wi-Fi and network monetisation.

For instance, the Wi-Fi solution has a feature-rich, easy-to-use dashboard that allows customers to centrally manage their Wi-Fi infrastructure at multiple locations and gain visibility into network users, devices and applications. Armed with rich, location-based analytics, administrators will be able to quickly create access control and application usage policies, optimising both the end-user experience and network security, all from a single portal.

Eaman Al Roudhan, Chief Executive Officer of Zain Kuwait, commented: "At Zain, we are committed to further expanding our partnership ecosystem with global technology leaders like Cisco to empower a more efficient enterprise sector in Kuwait. Enterprises are the backbone that drives Kuwait's economic progress, and our partnership to offer them Cisco Meraki's smart solutions comes in line with our capabilities as an active partner in achieving the goals of the Kuwait National Development Plan. Zain's strategy is centered around digital transformation leadership and, by signing this partnership, we reaffirm our commitment to meet our enterprise customers' aspirations, and deliver on our promise of unlocking opportunities and offering unrivalled services and latest technologies."

EAMAN AL ROUDHAN, Chief Executive Officer of Zain Kuwait

"As Kuwait accelerates its digital transformation initiatives, the proliferation of mobile devices and heightening user expectations are forcing businesses to rethink their network requirements, especially for Wi-Fi. Cisco Meraki's simplified, powerful cloud-managed technology will allow Zain to fulfil the wireless requirements of SMBs and enterprises in Kuwait, and offer them the intelligence to help grow their businesses. With this innovative, wireless, cloud-managed network solution, Zain will be able to solve networking and business enablement challenges for their customers," concluded Ali Amer, Managing Director, Global Service Provider Sales, Cisco Middle East and Africa. ■

KEY TAKEAWAYS

- The Wi-Fi solution has easy-to-use dashboard that allows customers to centrally manage their Wi-Fi infrastructure at multiple locations and gain visibility into network users, devices, applications.
- Zain will provide enterprise customers in Kuwait, smart solutions powered by Cisco Meraki, that can deliver secure, high-performance network experiences.
- The solution allows them to manage their IT infrastructure from the cloud through an intuitive, web-based dashboard.
- The solutions help to reduce operational costs and create new revenue streams through Wi-Fi and network monetisation.

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DUBAI AIRPORT MOVES TO MICROSOFT AZURE CLOUD

With 50% of data being generated at other airports and through other airlines, Dubai Airport is now migrating to Microsoft Azure Cloud to enable interoperability using a robust secure platform.

Dubai Airports announced that it has migrated to Microsoft Azure Cloud platform as part of an ongoing strategy to drive digital transformation across the organisation, engaging customers, empowering employees, optimising operations and reinventing products and services. As a regional and global hub for leisure and business travellers, Dubai airports have received some 90 million passengers each year, expected to increase to 120 million by 2025. Dubai Airports, in a renewed effort to ensure that each passenger's experience is enjoyable and hassle-free, decided to take a fresh look at its technology infrastructure.

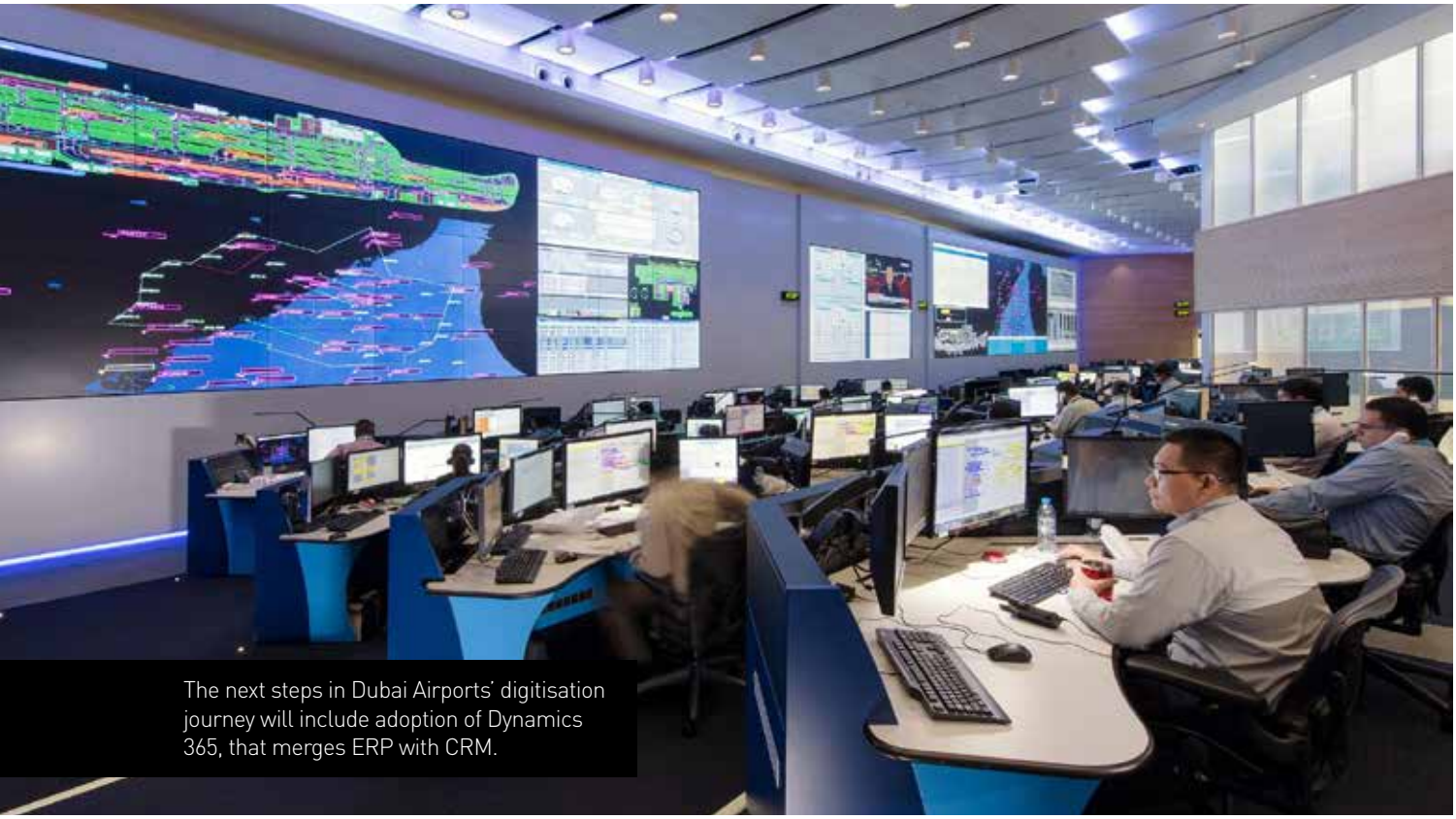
MICHAEL IBBITSON
Executive Vice President of Technology and Infrastructure, Dubai Airports.

"The time had come to look at the global realities of our business," said Michael Ibbitson, Executive Vice President of Technology and Infrastructure, Dubai Airports. "Some 50% of our operational data is generated overseas, at other airports and by many different airlines. It quickly became clear that cloud services were no longer optional for us. Their benefits are evident: flexibility, agility, capacity, scalability and cost-effectiveness. The cloud allows us to maintain the level of service that passengers the world over associate with the emirate of Dubai, while building a secure environment in which everyone can feel safe."

Security was a key consideration for Dubai Airports' business technology decision makers. In a diligent assessment of the technology industry, they concluded that only cloud providers have the economies of scale and experience necessary to provide the level of protection that Dubai Airports was seeking.

The next steps in Dubai Airports' digitisation journey will also include adoption of Dynamics 365, Microsoft's all-purpose commerce platform that merges ERP with CRM and connects all aspects of a business to the power of the intelligent cloud. The rollout of customer service functionality is currently in progress, and a later phase will include Dynamics' accounts management modules.

Microsoft invests more than $1 billion annually in cybersecurity research and development. The company's Azure platform was built from the ground up



The next steps in Dubai Airports' digitisation journey will include adoption of Dynamics 365, that merges ERP with CRM.

with the technology industry's most advanced security measures integrated into every layer. Client data is encrypted both at rest and in transit, and a team of seasoned cybersecurity experts maintains a 24-7 vigil, to ensure that Microsoft customers can operate in the cloud with complete confidence.

Microsoft has been a partner of Dubai Airports for 15 years. The company already hosts mission-critical applications on Azure, such as Al Majlis, e-services and WOW-Fi. Dubai Airports' team also uses Office 365 and SharePoint for automation, collaboration and productivity as well as Yammer.

Microsoft has seen a surge in demand for its cloud services across the GCC and wider MEA region in recent years. According to a Microsoft survey, more than half 51% of organisations identified cloud computing as a top priority. Spurred by these findings, Microsoft announced in March this year that it would deliver its trusted, secure and versatile cloud to Middle East customers from two new dedicated datacentres in the UAE, one in Dubai and the other in Abu Dhabi.

"The time had come to look at the global realities of our business," said Michael Ibbitson, Executive Vice President of Technology and Infrastructure, Dubai Airports. "Some 50% of our operational data is generated overseas, at other airports and by many different airlines. It quickly became clear that cloud services were no longer optional for us. Their benefits are evident: flexibility, agility, capacity, scalability and cost-effectiveness. The cloud allows us to maintain the level of service that passengers the world over associate with the emirate of Dubai, while building a secure environment in which everyone can feel safe."

"Cloud services are not necessarily unsafe or insecure, but your management of them may well be," added Ibbitson. "You need to choose the right partner, as we have carefully selected Microsoft, for its track record in service and security – and develop your people so they learn how to use SaaS, IaaS and other cloud services safely."

"We are looking forward to accompanying Dubai Airports on the next leg of its digital transformation journey," said Sayed Hashish, Regional General Manager, Microsoft Gulf. "Managing the world's busiest international hub requires bold thinking and careful planning. An entire service ecosystem may hang on your decisions. The intelligent cloud puts information at the fingertips of those who need it, and provides the flexibility and scalability to roll out new applications quickly, so that your customers continue to receive that top-class service they have come to expect."

"Microsoft's mission is to empower every person and every organisation on the planet to achieve more. The digital transformation opportunities delivered by the intelligent cloud are extensive. Empowerment, engagement, optimisation, reinvention; they are all there to capture," he added. ■

TRANSFORMING SUPPLY CHAIN OF ABDUL LATIF JAMEEL MOTORS

Saudi Arabia's largest Toyota distributor used SAP to transform its supply chain though a project ranked amongst the most complex using 140+ consultants from South Africa based Brighthouse.

South Africa based Britehouse, specialists in advanced supply chain and manufacturing industry solutions, recently completed the roll out of a large-scale, SAP based, automotive digitisation project. The Britehouse team were deployed primarily from South Africa to implement an SAP digital solution for automotive distributor Abdul Latif Jameel Motors.

Abdul Latif Jameel Motors is the largest distributor of Toyota and Lexus vehicles in Saudi Arabia, and one of the largest distributors for Toyota globally. The solution enables the company to view their supply chain in terms of vehicles sales, vehicle logistics as well as after sales space, reducing customer waiting time and increasing the ability to provide service for clients

The Britehouse team was asked to come on board, taking over a large-scale complex project, when Abdul Latif Jameel Motors realised the scope of the project had outgrown the capabilities of the original service integration partner. As one of Southern Africa's largest SAP Partners, with over 750 SAP specialist consultants and ability to deliver complex SAP solutions into large enterprise organisations, Britehouse was identified as the new partner to take over the project.

The design of the solution, called the business blueprint, was completed by the time Britehouse came on board. However, the design had to be reviewed as new functionality had become available since the inception of the programme in 2014. The new solution was configured and developed using the SAP software. The next phase was to obtain user acceptance, and the training of all end-users, across Saudi Arabia.

Elma Potgieter, Britehouse's Regional Executive, Middle East explains, "Britehouse was the only company that could offer the entire solution from an SAP functional and technical scope, and within the fixed price contract. We were awarded the contract in August 2016. In September, the project started with a team of 28 Britehouse consultants, which grew to a total of 141 consultants, this included 51 consultants that supported the project remotely from South Africa. We successfully completed the project in August 2018 and are still providing remote support to the company from South Africa," said Potgieter.

FAISAL ABDALLA, Vice President, Abdul Latif Jameel Motors.

Britehouse had a strong organisational change management team on board, ensuring adoption of the new solution, after many years of users operating on a legacy system. Being responsible for overall

programme management, the structure consisted of a programme director and six project managers, each one responsible for a specific stream of functionality, including finance, human capital management, vehicles, after sales training and the technical stream.

Britehouse followed a three-in-the-box approach, comprising of full time and complementing project members from Britehouse and Abdul Latif Jameel Motors IT and business.

The magnitude and complexity of the SAP implementation required a phased approach. The first functionality went live as Phase I in April 2017, with finance, non-core procurement, human resources and payroll, as well as the technical landscape, including SAP's Lifecycle Management tool, Solution Manager. Britehouse also was instrumental in certifying the Abdul Latif Jameel Motors SAP Centre of Excellence during this phase.

Phase II was the most complex. It comprised vehicle sales and vehicle logistics, part sales and part logistics, service and warranty, advanced planning and optimisation, and extended warehouse management. For Phase II, the go-live dates were approached in five distinct waves, to ensure proper training and adoption of the solution across Saudi Arabia, and to allow for minimal business disruption.

SAP ensured the quality of the solution before every phase and wave of go-live. They also collaborated to resolve functional issues within the software. This was the first project globally that required such a wide scope of functionality, and Britehouse and SAP worked closely together to develop functionality that was not previously available to other SAP clients in this industry.

Britehouse followed a three-in-the-box approach comprising members from Britehouse and Abdul Latif Jameel Motors IT and business.

ELMA POTGIETER, Britehouse Regional Executive, Middle East.

For Faisal Abdalla, Vice President, Abdul Latif Jameel Motors, the project was about more than just implementing a new IT system. "It is completely changing how we manage our business to provide a new level of service to our guests. It is an important step for Abdul Latif Jameel Motors, introducing advanced technology and infrastructure that will serve us and our guests long into the future."

Faisal Abdalla refers to Saudi Arabia' Vision 2030 strategy. He adds, "As the government has made clear, the private sector in Saudi Arabia needs to innovate and modernise if we are to create the competitive economy that delivers the growth and jobs the country requires. We are proud to be doing our part and will continue to strive to strengthen and grow the business."

Britehouse is committed to the success of the Abdul Latif Jameel Motors SAP solution and intends to be involved in its further expansion and to drive value from this solution. The solution as implemented now, is the baseline for Abdul Latif Jameel Motors' digital transformation drive.

Britehouse's Potgieter feels it now has an understanding of the business and organisational culture across the Middle East. "We now have a competent team, and should use this to the advantage of potential new clients," says Potgieter. The company is looking forward to expanding their footprint in the automotive sector across not just in the Middle East, but globally too. ■

DAMAN USES ARUBA CLEAR PASS FOR IOT ANALYTICS

Implemented to bring wired and wireless networks into security compliance, Daman is leveraging Aruba Introspect to build IoT and network analytics using AI and machine learning.

Set up in 2006 by the Abu Dhabi Government in collaboration with Munich Re, Daman is now the leading specialist health insurer in the region serving nearly 3 million customers. As a semi-government entity headquartered in the UAE, it was imperative for Daman to comply with a new electronic security governmental standard for information security. Omar Almarzooqi, Manager, IT Security & Networks at Daman, and his team knew that implementing a Network Access Control solution in their environment would be essential to ensure successful compliance with the new regulation.

Besides the implications of complying with the new electronic security regulation, the absence of a NAC presented both security and administrative concerns. While previous wireless solutions worked conveniently, they presented their own concerns and risks which required a more comprehensive solution. In addition to the complexities involving a wireless network, the challenge was even greater on the wired network. "The previous wired network access controls were not robust enough to meet today's challenges. With so many locations, all frequented by numerous contractors and customers, the risks we had to look into were considerable and wide reaching," explained Almarzooqi.

Recognising these risks, Daman began evaluating access control solutions from five market leading vendors and after careful research, narrowed its search down to two candidates, including Aruba. "In addition to security which was the prime requirement, the solution needed to be flexible enough to work in a multi-vendor environment, and scalable enough to be deployed across our twelve large branches without adding complexity or management overheads," said Almarzooqi.

Each vendor was given an entire floor at Daman's headquarters to execute a POC within the company's production environment. These were then scored on the basis of technical, support and commercial criteria. "Aruba completed the implementation in under a week which we found extremely impressive given the complexity of our IT environment," said Almarzooqi. Aruba's solution was more easily integrated and performed better than that provided by the competing vendor who had the experience of working on Daman's network solutions previously.

The insurance provider deployed two Aruba ClearPass Policy Manager 5K virtual appliances in its datacentre and disaster recovery sites and ten further Aruba ClearPass Policy Manager 500 virtual appliance nodes in its branches. This translated to immediate cost savings as Almarzooqi explained, "Because there was no need for any physical appliances, we could maximise the utilisation of our existing servers by running Aruba ClearPass VMs. These were easily installed on commodity hardware which is testament to the open nature of Aruba's solutions."

Implementation of ClearPass allows Daman to centrally control network access at all locations via

a single intuitive dashboard. No longer can users plug their devices into Ethernet ports and connect to the network, nor does the company need human resources to manage approvals for wireless access. "Now when someone requires access, they simply raise a request from their device which can be instantly approved or rejected with a single click," explained Almarzooqi. "This process is equally convenient on the wired as well as the wireless network and for devices running all types of operating systems. As a result, all users get a uniformly great experience."

This self-registration system automates authorisation from over 45,000 devices per week and has entirely eliminated the need for the IT team to get involved, reducing the number of helpdesk calls related to network access from over thirty per day, down to zero.

"Earlier, and without manual intervention, approved devices almost never saw their access being revoked after connectivity was no longer necessary. Now however, we can specify the duration for which authorisation should remain valid at the time of approval. This feature is especially useful when considering the large number of third-party contractors who frequently work from our offices for extended durations," said Almarzooqi.

Security is further enhanced as ClearPass automatically vets' devices prior to connecting them to Daman's wired or wireless network, thus mitigating the possibility of endpoint vulnerabilities being exploited for an attack or data breach. "We have a pre-set checklist that includes identifying whether the device's operating system is updated and patched, and that its running antivirus software. ClearPass rapidly tests against our criteria and only devices that meet these checks are permitted access," said Almarzooqi.

Security and compliance may have been Daman's only expectations of Aruba's access control solution, but the company has successfully leveraged ClearPass to introduce several new IT services. "The powerful features of ClearPass have made possible a host of benefits we did not even consider at the time of evaluation. After meeting and exceeding our expectations for NAC, ClearPass enabled us to implement Wi-Fi self-registration and onboarding, Wireless Security Policy Management, BYOD support and guest management," said Almarzooqi.

OMAR ALMARZOOQI
Manager IT Security and Networks, Daman.

ClearPass delivers policy-based network security, allowing employees, contractors and guests to self-register and connect to the network with the appropriate level of access to either the internet or intranet. Via convenient dashboards, Daman's IT team can set and modify these policies, and monitor all connections as well as their usage of the network.

The company has also started introducing innovations based on ClearPass. "We successfully integrated it with our queue system so now, instead of waiting in line to get a physical coupon to access the Wi-Fi network, guests can connect to our network, click a single button and get a token," explained Almarzooqi.

Almarzooqi and his team have already begun exploring ways to further extend their ClearPass utilisation. "We are particularly interested in augmenting its security capabilities through integration with Aruba's endpoint behaviour analytics solution," he said.

Aruba Introspect monitors the behaviour of endpoint and IoT devices and using AI and machine learning, detects and flags anomalous or malicious activities. "By combining this with ClearPass, we would be able to automatically quarantine or block rogue devices which will drastically enhance our incident response capabilities," he continued.

"Aruba's solution performs exceptionally well even in our complex multi-vendor environment and its powerful capabilities open up the possibility of leveraging it for many more purposes than we initially intended. We will continue innovating with this solid platform and are excited to grow our relationship with Aruba to enhance services for all stakeholders," Almarzooqi concluded. ■

BLENDING TECHNOLOGY AND PREMIUM EXPERIENCES

With onboard sensors, cameras, networks, Internet, hotspots, applications, ports, touch screens, adaptive driving, this vehicle is a representation of things to come.

Sami Malkwai, Regional Manager, Lincoln Middle East.

The popularity of the Lincoln Navigator vehicle has been growing rapidly across the Middle East including UAE and Saudi Arabia. According to the company, the all-new Navigator full-size SUV contributed greatly to Lincoln's bumper year, with record number of Navigators delivered to customers in June, eclipsing that of Navigators sold throughout 2017. More than 30% of Navigators sold were in the new upscale Presidential trim.

A key innovation in the vehicle is how technology is being used to improve the safety of the vehicle and its occupants, as well as make it easier to drive. Says Sami Malkwai, Regional Manager, Lincoln Middle East, "The focus is mostly right now on eliminating driver error. We have a lot of driver assistance systems that are already in the car. These are becoming more and more popular in the premium segment."

As an example, these improvements are in the form of lane assisted driving and adaptive cruise controls. With both of these features, the vehicle is kept within the lane if the driver deviates to one side, or the vehicle will slow down or accelerate to keep consistent distance with the car ahead.

Across the UAE and Saudi Arabia, tech savvy consumers are driving the requirement for more technology and mobility features to be embedded in premium vehicles. Malkawi feels the demand for these features here is more than elsewhere. "The customer expectation in the region here is more ambitious than everywhere else, because customers here are more tech savvy. Everyone has a smartphone and a smartwatch so a lot of people are looking to sync these with their vehicles." However, the demand and expectations from technology to be present in the car are higher in Saudi Arabia in comparison to other countries.

While the type of technology features and devices and their functionality, keeps improving in every new release of Lincoln model, the level of network and computing embedded in these vehicles is still some distance from how a smartphone or a regular computing device behaves. As an example, updates to applications shipped with the Lincoln Navigator are not automatically downloadable from the Internet. Application and software updates for Lincoln vehicles can only be done at the authorised workshops, for now. "In the cars that we have today, the software does not get upgraded automatically," explains Malkawi.

While luxury and ergonomic features can vary across the various models of Lincoln cars based on their premium value, wherever technology is added on as a safety feature, they are kept consistent across the models. "Generally speaking, we try to keep technology safety features as standard as possible," differentiates Malkawi.

For example, lane assisted driving has been added to the Lincoln Navigator 2018 model. But a more improved version is being added to the Lincoln Nautilus due for release in Q1 2019. The heads-up display is another example of technology innovation that is meant to enhance the safety of Lincoln vehicles. The heads-up display has a colour bar between the car ahead.

This changes colour based on the distance between the car ahead and how fast that distance is closing. When the bar is red, the driver instinctively slows down to normalise the colour and hence increases the distance between the car ahead. The heads-up display shows a number of other parametres like speed and KM to empty tank that are always visible to the driver when they are looking ahead.

The philosophy of innovation embedded with the Lincoln brand, especially around product design, is about making the car intuitive for its driver and occupants. "This is all about the customer experience," says Malkawi. He also points out that according to Lincoln internal research, luxury buyers have three principal criteria for selecting a premium vehicle. This includes massive presence, technology and horsepower. The Lincoln Navigator rates favourably across all these three parametres. "Prestige and premium keep coming up as purchase decisions," stresses Malkawi.

This is also a reason why Lincoln Navigator chooses to associate with other super premium and luxury brands like Revel Harman and Burj Al Arab Jumeirah. Malkawi stresses that for their buyers giving them a memorable luxury experience that lasts forever is better than giving them a product that may not last as long. "We would always like them to be experiences because they are more memorable than a product that would be outdated down the road." In the years ahead, technology may also soon be added as part of that memorable luxury experience with the Lincoln Navigator. ■

Prebuilt applications can be selected from the 10-inch Touchscreen Navigation System.

Various network options using the Lincoln Navigator's 4G LTE wireless hot spot.

Available wireless networks inside the Lincoln Navigator.

Using the touch screen keyboard to enter wireless network passwords.

Searching and pairing with available Bluetooth devices.

GPS assisted 3-D maps with pinch-to-zoom capability using the 10-inch Touchscreen Navigation System.

GPS assisted 3-D maps with pinch-to-zoom capability using the 10-inch Touchscreen Navigation System.

Setting up personal profiles including voice control, seat contour, seat movements, ambient colour.

Setting up ambient colour lighting and saving it as part of personal profile.

Setting up seat contour and seat movements and saving it as part of personal profile.

Setting up voice and speech control and saving it as part of personal profile.

Setting up voice and speech control and saving it as part of personal profile.

TECHNOLOGY FEATURES INSIDE

2018 LINCOLN NAVIGATOR

- Wireless charging pad inside the media bin
- Rear seat entertainment system with 10-inch adjustable screen controlled through Lincoln Play app
- Rear seat entertainment system also available through SD card, HDMI input, USB device.
- Rear seat entertainment system also controlled from the front through SYNC AppLink app.
- Rear seat entertainment system can display different content on each screen and can share with mobile through SYNC AppLink app.
- Rear seat inputs include 6 x USB ports, 4 x 12V power outlet, 220V power outlet.
- SYNC 3 app is compatible with Apple CarPlay and Android Auto app.
- Voice activated 10-inch Touchscreen Navigation System controls calls, music, apps with voice and touch.
- Touchscreen Navigation System presents 3-D maps with pinch-to-zoom capability.
- Touchscreen Navigation System and apps updated through Wi-Fi.
- Inbuilt 4G LTE hotspot allows up to 10 devices to be connected within a range of 50 feet.
- Sensor assisted parking support detects parking space and then gives instructions to steer, brake, and accelerate.
- 360-degree parking and stationary view through four cameras or 180-degree front and back view.
- Forward camera provides lane detection and lane alert system.
- Alert system to detect vehicle in blind spot while moving forward, backward, or laterally.
- Projected heads-up display shows preselected parametres like speed, direction, KM to empty.
- Adaptive Cruise Control with collision mitigation, variable speed adjustment based on lane traffic speed and complete halt.
- Supports various mobile apps including SYNC AppLink, Lincoln Connect, Lincoln Way, Lincoln Play.

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TEN TECHNOLOGY TRENDS DRIVING TRANSFORMATION

According to Gartner, businesses need to be aware of ten strategic technology trends that are likely to gather momentum, reach a point of inflexion, and impact their businesses five years ahead.

Gartner highlighted top strategic technology trends that organisations need to explore in 2019. Gartner defines a strategic technology trend as one with substantial disruptive potential that is beginning to break out of an emerging state into broader impact and use, or rapidly growing trends with a high degree of volatility reaching tipping points over the next five years.

"The Intelligent Digital Mesh has been a consistent theme for the past two years and continues as a major driver through 2019," said David Cearley, Vice President and Gartner Fellow. "For example, artificial intelligence in the form of automated things and augmented intelligence is being used together with IoT, edge computing and digital twins to deliver highly integrated smart spaces. This combinatorial effect of multiple trends coalescing to produce new opportunities and drive new disruption is a hallmark of the Gartner top 10 strategic technology trends for 2019."

The top 10 strategic technology trends for 2019 are:

I AUTONOMOUS THINGS

Autonomous things, such as robots, drones and autonomous vehicles, use artificial intelligence to automate functions previously performed by humans. Their automation goes beyond the automation provided by rigid

programing models and they exploit artificial intelligence to deliver advanced behaviors that interact more naturally with their surroundings and with people.

"As autonomous things proliferate, we expect a shift from stand-alone intelligent things to a swarm of collaborative intelligent things, with multiple devices working together, either independently of people or with human input," said Cearley. "For example, if a drone examined a large field and found that it was ready for harvesting, it could dispatch an autonomous harvester. Or in the delivery market, the most effective solution may be to use an autonomous vehicle to move packages to the target area. Robots and drones on board the vehicle could then ensure final delivery of the package."

2 AUGMENTED ANALYTICS

Augmented analytics focuses on a specific area of augmented intelligence, using machine learning to transform how analytics content is developed, consumed and shared. Augmented analytics capabilities will advance rapidly to mainstream adoption, as a key feature of data preparation, data management, modern analytics, business process management, process mining and data science platforms.

Automated insights from augmented analytics will also be embedded in enterprise applications, for example, those of the HR, finance, sales, marketing, customer service, procurement and asset management departments, to optimise the decisions and actions of all employees within their context, not just those of analysts and data scientists. Augmented analytics automates the process of data preparation, insight generation and insight visualisation, eliminating the need for professional data scientists in many situations.

"This will lead to citizen data science, an emerging set of capabilities and practices that enables users whose main job is outside the field of statistics and analytics to extract predictive and prescriptive insights from data," said Cearley. "Through 2020, the number of citizen data scientists will grow five times faster than the number of expert data scientists. Organisations can use citizen data scientists to fill the data science and machine learning talent gap caused by the shortage and high cost of data scientists."

DAVID CEARLEY,
Vice President and Gartner Fellow

3 ARTIFICIAL INTELLIGENCE-DRIVEN DEVELOPMENT

The market is rapidly shifting from an approach in which professional data scientists must partner with application developers to create most artificial intelligence-enhanced solutions to a model in which the professional developer can operate alone using predefined models delivered as a service. This provides the developer with an ecosystem of artificial intelligence algorithms and models, as well as development tools tailored to integrating artificial intelligence capabilities and models into a solution.

Another level of opportunity for professional application development arises as artificial intelligence is applied to the development process itself to automate various data science, application development and testing functions. By 2022, at least 40% of new application development projects will have artificial intelligence co-developers on their team.

"Ultimately, highly advanced artificial intelligence-powered development environments automating both functional and nonfunctional aspects of applications will give rise to a new age of the citizen application developer where nonprofessionals will be able to use artificial intelligence-driven tools to automatically generate new solutions.

Tools that enable nonprofessionals to generate applications without coding are not new, but we expect that artificial intelligence-powered systems will drive a new level of flexibility," said Cearley.

#4 Digital twins

A digital twin refers to the digital representation of a real-world entity or system. By 2020, Gartner estimates there will be more than 20 billion connected sensors and endpoints and digital twins will exist for potentially billions of things. Organisations will implement digital twins simply at first. They will evolve them over time, improving their ability to collect and visualise the right data, apply the right analytics and rules, and respond effectively to business objectives.

"One aspect of the digital twin evolution that moves beyond IoT will be enterprises implementing digital twins of their organisations DTOs. A DTO is a dynamic software model that relies on operational or other data to understand how an organisation operationalises its business model, connects with its current state, deploys resources and responds to changes to deliver expected customer value," said Cearley. "DTOs help drive efficiencies in business processes, as well as create more flexible, dynamic and responsive processes that can potentially react to changing conditions automatically."

5 EMPOWERED EDGE

The edge refers to endpoint devices used by people or embedded in the world around us. Edge computing describes a computing topology in which information processing, and content collection and delivery, are placed closer to these endpoints. It tries to keep the traffic and processing local, with the goal being to reduce traffic and latency.

In the near term, edge is being driven by IoT and keeps the processing close to the end rather than on a centralised cloud server. However, rather than create a new architecture, cloud computing and edge computing will evolve as complementary models with cloud services being managed as a centralised service executing, not only on centralised servers, but in distributed servers on-premises and on the edge devices themselves.

Over the next five years, specialised artificial intelligence chips, along with greater processing power, storage and other advanced capabilities, will be added to a wider array of edge devices. The extreme heterogeneity of this embedded IoT world and the long-life cycles of assets such as industrial systems will create significant management challenges. Longer term, as 5G matures, the expanding edge computing environment will have more robust communication back to centralised services

6 IMMERSIVE EXPERIENCE

Conversational platforms are changing the way in which people interact with the digital world. Virtual reality, augmented reality and mixed reality are changing the way in which people perceive the digital world. This combined shift in perception and interaction models leads to the future immersive user experience.

"Over time, we will shift from thinking about individual devices and fragmented user interface technologies to a multichannel and multimodal experience. The multimodal experience will connect people with the digital world across hundreds of edge devices that surround them, including traditional computing devices, wearables, automobiles, environmental sensors and consumer appliances," said Cearley. "The multichannel experience will use all human senses as well as advanced computer senses such as heat, humidity and radar across these multimodal devices. This multi-experience environment will create an ambient experience in which the spaces that surround us define the computer rather than the individual devices. In effect, the environment is the computer."

7 BLOCKCHAIN

Blockchain, a type of distributed ledger, promises to reshape industries by enabling trust, providing transparency and reducing friction across business ecosystems potentially lowering costs, reducing transaction settlement times and improving cash flow. Today, trust is placed in banks, clearinghouses, governments and many other institutions as central authorities with the single version of the truth, maintained securely in their databases. The centralised trust model adds delays and friction costs commissions, fees and the time value of money to transactions. Blockchain provides an alternative trust mode and removes

the need for central authorities in arbitrating transactions.

"Current blockchain technologies and concepts are immature, poorly understood and unproven in mission-critical, at-scale business operations. This is particularly so with the complex elements that support more sophisticated scenarios," said Cearley. "Despite the challenges, the significant potential for disruption means CIOs and IT leaders should begin evaluating blockchain, even if they do not aggressively adopt the technologies in the next few years."

Many blockchain initiatives today do not implement all of the attributes of blockchain, for example, a highly distributed database. These blockchain-inspired solutions are positioned as a means to achieve operational efficiency by automating business processes, or by digitising records. They have the potential to enhance sharing of information among known entities, as well as improving opportunities for tracking and tracing physical and digital assets. However, these approaches miss the value of true blockchain disruption and may increase vendor lock-in. Organisations choosing this option should understand the limitations and be prepared to move to complete blockchain solutions over time and that the same outcomes may be achieved with more efficient and tuned use of existing non-blockchain technologies.

8 SMART SPACES

A smart space is a physical or digital environment in which humans and technology-enabled systems interact in increasingly open, connected, coordinated and intelligent ecosystems. Multiple elements, including people, processes, services and things, come together in a smart space to create a more immersive, interactive and automated experience for a target set of people and industry scenarios.

"This trend has been coalescing for some time around elements such as smart cities, digital workplaces, smart homes and connected factories. We believe the market is entering a period of accelerated delivery of robust smart spaces with technology becoming an integral part of our daily lives, whether as employees, customers, consumers, community members or citizens," said Cearley.

9 DIGITAL ETHICS AND PRIVACY

Digital ethics and privacy is a growing concern for individuals, organisations and governments. People are increasingly concerned about how their personal information is being used by organisations in both the public and private sector, and the backlash will only increase for organisations that are not proactively addressing these concerns.

"Any discussion on privacy must be grounded in the broader topic of digital ethics and the trust of your customers, constituents and employees. While privacy and security are foundational components in building trust, trust is actually about more than just these components," said Cearley. "Trust is the acceptance of the truth of a statement without evidence or investigation. Ultimately an organisation's position on privacy must be driven by its broader position on ethics and trust. Shifting from privacy to ethics moves the conversation beyond are we compliant toward are we doing the right thing."

10 QUANTUM COMPUTING

Quantum computing is a type of nonclassical computing that operates on the quantum state of subatomic particles for example, electrons and ions that represent information as elements denoted as quantum bits qubits. The parallel execution and exponential scalability of quantum computers means they excel with problems too complex for a traditional approach or where a traditional algorithm would take too long to find a solution.

Industries such as automotive, financial, insurance, pharmaceuticals, military and research organisations have the most to gain from the advancements in QC. In the pharmaceutical industry, for example, QC could be used to model molecular interactions at atomic levels to accelerate time to market for new cancer-treating drugs or QC could accelerate and more accurately predict the interaction of proteins leading to new pharmaceutical methodologies.

"CIOs and IT leaders should start planning for QC by increasing understanding and how it can apply to real-world business problems. Learn while the technology is still in the emerging state. Identify real-world problems where QC has potential and consider the possible impact on security," said Cearley. "But do not believe the hype that it will revolutionise things in the next few years. Most organisations should learn about and monitor QC through 2022 and perhaps exploit it from 2023 or 2025." ■

MULTI-CLOUD ENABLING FUTURE TRANSFORMATION

The next order of transformation will be enabled by multi-cloud frameworks that are well orchestrated and architected to bring in best of breed public cloud features for the digital enterprise.

The ability to keep pace with technological change and consumer demand will push many European, Middle Eastern, and African businesses to breaking point in the next five years. While the era of cloud apprehension is almost over, the multi-cloud is a huge opportunity to innovate and stay ahead of the curve. It also presents a new dimension of strategic challenge. Cloud storage was an enormous and cost-effective step forward for both enterprises and consumers. That was just the tip of the iceberg. The challenges and possibilities have irrevocably changed.

Using multiple public clouds is now a powerful conduit for flexibility, innovation and regulatory compliance. The multi-cloud is a game-changer bringing cloud architects, DevOps, NetOps and SecOps together for transformational services traditional infrastructures simply cannot deliver. Technologies such as artificial intelligence and machine learning will be fundamental to driving higher levels of automation. Although challenges exist today related to cost, skills, legal constraints and legacy infrastructure configurations, the outlook over the next five years is bright.

Multi-cloud is defined as managing resources across two different clouds or more, regardless of location, that is multiples of public and or private cloud. Amazon Web Services and Microsoft Azure lead the way in terms of popularity as well as market share, followed by Google Cloud Platform, Oracle, IBM and HP.

Businesses not using multi-cloud will be in the minority in the next five years. According to RightScale's 2018 State of the Cloud Report, 81% of surveyed global enterprises currently have a multi-cloud strategy in place. There will be some businesses that stick with one vendor, but the majority are definitely going to go on a multi-cloud journey.

TABREZ SURVE

In today's business environment, it is impossible to stick to one platform, one provider, and one type of cloud. Some industries are already leading the multi-cloud field. The biggest multi-cloud consumers right now are finance by a huge margin, retail and healthcare. That is a huge hunk of the economy.

In Cloudify IOD's 2017 State of Enterprise MultiCloud Report, the most popular two-cloud combination was AWS and Azure, followed by AWS and OpenStack, and AWS and Google Cloud. Cloudify believes the preference for AWS and Azure stems from a desire to avoid vendor lock-in.

Now, more than ever, the multi-cloud environment is the de facto pattern. With the uptake in cloud consumption, organisations are fearful of being locked in to a single global provider. CIOs have realised that some clouds are more appropriate for certain workloads than others. It is not about going for a supplier anymore but more about picking the

right place for the right reason.

While a multi-cloud strategy can facilitate significant developments in security, flexibility and control it also presents significant challenges. Experts claim that one of multi-cloud's biggest impacts is likely to be cultural, particularly within IT departments. The multi-cloud ramp up is one of the ultimate wake-up calls in internal IT to get their act together. One of the biggest transformative changes that it brings to an enterprise is the realisation of what a high performing IT organisation is and how it compares to what they have. Most are finding their IT organisations are sadly underperforming.

There are now outsourced options where a datacentre can be put in place within minutes. You do not really need an IT organisation that needs a month to prepare servers for a business project. Interestingly, the process of selecting which public cloud to use has the most divergent views. Central IT believes the selection of public clouds is more integral to their role than the business units envision.

VENDOR LOCK-IN

Vendor lock-in is a major concern for enterprises that value flexibility, and a major conundrum when weighing up the pros and

KEY TAKEAWAY

IDC REPORTS OVER 42% OF EUROPEAN ORGANISATIONS CITE MANAGING AND CONTROLLING COST AS THEIR MOST PRESSING MULTI-CLOUD PRIORITY.

63%

RESPONDENTS CLAIMED THE NEED FOR MULTIPLE MANAGEMENT TOOLS HALTED THEIR MULTI-CLOUD STRATEGIES.

cons of multi-cloud. Some companies will commit to one platform if it means they can access innovative new services more easily. 47% of industry influencers surveyed by Logic Monitor see vendor lock-in as one the biggest challenges for organisations dealing with the public cloud. Meanwhile, 20% of enterprises in the 2017 Cloudify IOD State of Enterprise Multi-Cloud report stated that interoperability and no lock-in was the most important feature.

Specialisation and the provision of specific vertical innovations may not be in the spotlight as often as the big hypervisors, but they are important factors in a multi-cloud world. You are going to see more regional clouds provided by telcos to deliver specialist services to specific areas. Sometimes a local cloud is much more important than having something that is generic.

According to the 2017 Cloudify IOD State of Enterprise Multi-Cloud report, Software Defined Networking and Network Function Virtualisation are the most critical emerging technologies for the telecommunications, defence and space industries. Containers are much more important for the software, networking and IT services industries. The cloud service providers that can integrate all these new technologies for specific industry verticals are becoming increasingly valuable.

You should have at least two hyperscale providers and maybe one specialty provider. This way you can have competition at the hyperscale level combined with the specialist services of the smaller provider. The smaller provider's prices could also influence the others. Having multiple cloud service providers means also enterprises can quickly migrate workloads based on their needs at any given time.

Multi-cloud is a game-changer bringing cloud architects, DevOps, NetOps and SecOps together for transformational services traditional infrastructures simply cannot deliver.

Experts agree that specialist clouds running in concert with the large cloud service providers are likely to accelerate multi-cloud adoption in the next five years. Businesses are becoming more technologically savvy and specific with their requirements. This is forcing the bigger service providers to adapt while also opening up significant opportunities for those that can fill in the gaps and innovate.

INNOVATION IN THE FUTURE

Dashboards that can be used to monitor multiple cloud services while also providing granular information will be the most common addition to IT professionals' tool-kits over the next five years. Experts agree that dashboards and the abstraction of a single layer are big short-term necessities. Simple management dashboards are already available, but the incorporation of new technology will be vital. Looking ahead, abstraction that can reach throughout the whole stack, integrating cloud services, containers and serverless functions will become standard. It is moving you towards configuration, including smaller amounts of code, more manageable cost profiles.

As workload types change, so too does the need to orchestrate or manage them. Logic Monitor's Cloudvision 2020 report shows that 27% of IT professionals surveyed believe that 95% of workloads will be run in the cloud in five years. Inevitably, workloads will change in the future, influenced by factors such as the need to process data generated from IoT and other nascent technologies.

The abstraction of the various layers and constant adaptation to new services does, however, impact on flexibility and cost. While enterprises want to be flexible, it can be difficult when tools that manage different cloud services and containers are hard to find. In addition, maintaining multiple cloud service providers can also be costly, depending on the size of a workload. Cloud service providers are adapting to customer demands, proactively creating new services and modules, as well as enabling start-ups and small and medium businesses to implement new strategies or develop new ways of launching products.

KEY TAKEAWAYS

- Whoever controls the multi-cloud, controls the future.
- Gone are the days of using a single cloud provider and the age of multi-cloud is unavoidable.
- One of the most disruptive developments that will evolve over the next five years is serverless paradigm.
- Serverless growth has been documented by RightScale's 2018 State of the Cloud report, showing 75% increase in just one year.
- ability to move fluidly between different cloud service providers as needs dictate is becoming essential.
- Multi-cloud management complexity means businesses need new tools and processes to cope.

Embracing multi-cloud could also increase vulnerability. New services that are not properly implemented could soon result in exploits, hacks, bugs and a host of other unforeseen problems. Over the coming decade, AI orchestration will lead to the gradual takeover of tasks and functions. AI and new orchestration capabilities will allow enterprises to automate many processes that would otherwise take up valuable time, freeing up IT teams for other tasks. New serverless architectures will fuel enterprises to cut down on time-to-market and simplify processes. It could also enable provider agnosticism and make it easier to benefit from the multi-cloud.

FLEXIBILITY

Vendor lock-in can prevent enterprises from being as flexible as they would like. This includes concerns of missing out on new features from other cloud service providers or the lack of a failsafe. The whole process of digitalisation demands that you have the ability to seamlessly move between different forms of cloud, whether it is on-premises or off-premises or in the private or public cloud.

Comparison tools can give companies the ability to plan their multi-cloud strategy before committing to a provider mix. A diversity of consumption models can also enable focused trials and experimentation before committing to a service provider. While dashboards are becoming more readily available, the ability to seamlessly switch between cloud services is already practiced in some enterprises. In this instance, using a layer of abstraction could preserve flexibility while cutting down both financial and time costs.

IDC reports that over 42% of European organisations cite managing and controlling cost as their most pressing multi-cloud data management priority. This rises to 51% among larger enterprises. According to RightScale's 2018 State of the Cloud Report, 64% of enterprise central IT respondents said that they viewed managing and optimising the costs of the cloud as central to their role.

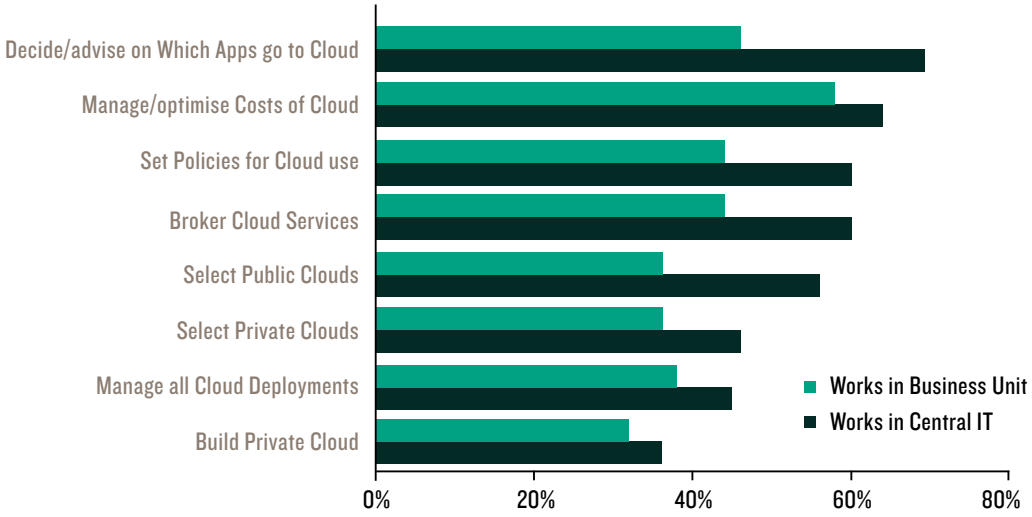
Inefficiency is also an issue. On average, respondents estimated that 30% of their cloud spend was wasted. RightScale also measured an additional 5% of waste. Costs can soon mount: 43% of respondents claimed to spend over $50,000 a month on their public cloud provision. Consolidation of spending and understanding the existing technology landscape is of paramount importance for enterprises. RightScale reports that 58% of respondents believe cloud saving optimisation is the number one priority in 2018.

MULTI-CLOUD DASHBOARD

Getting the right provider mix in place calls for rigorous analysis and clarity of purpose. Brand loyalty should not curtail action. If a service provider is fit for purpose, it should be considered. The availability of choice will allow people to cherry-pick where they will get the best bang for their buck for a specific service. Experts call for more enterprise support to get it right. This could come in the form of a dashboard or management platform that flags instances of waste. Ultimately, upfront costs are less important if enterprises alight on their optimal cloud configuration and remain customer-centric.

With a multi-cloud dashboard, it becomes possible to mix, match and combine the best options. Once you have more of that dashboard approach, and once you have greater commoditisation and the prices come down further, you will see an explosion in start-ups leveraging multi-cloud's benefits.

21% of respondents in the RightScale 2018 State of the Cloud Report stated that



Rightscale 2018 State of the Cloud Report

managing cloud spend was a significant challenge, with 55% saying that it was somewhat of a challenge. This changes slightly by company size, with 80% of enterprises claiming that managing cloud spend was a challenge, compared to only 72% of SMBs. Billing complexities can drive enterprises away from multi-cloud. Tools such as dashboards can help give DevOps and other IT professionals the visibility needed to maintain control.

Flexibility and cost are two of the main motivations for enterprises using cloud services today. A strong multi-cloud strategy can only emerge if constructed with a coherent aim and full visibility of any potentially derailing variables. Experts expect to see the emergence of price comparison and switching services for cloud. Initially, these will require user input, but automation could soon take over for greater speed and accuracy. Both cloud service providers and enterprises would be able to devote much more time to other more strategic tasks. Automation-focused tools also have powerful waste-saving properties.

MULTI-LAYER DASHBOARDS

A dashboard is on the mind of every single IT director or CIO that you talk to. While dashboards can significantly decrease the complexity of managing multi-cloud services, some argue that it could add another dimension of complexity. Future automation could mitigate this viewpoint, however. There needs to be an IT operations desk that gives you the operational view.

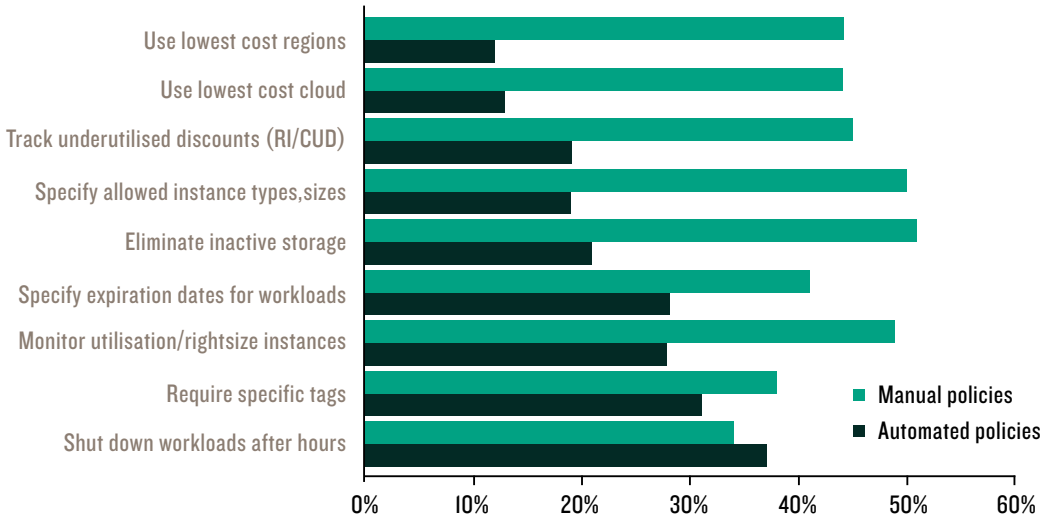
It is a kind of two-layered single pane. The end-user view and then the operations view of what is really happening behind the scenes while consumers are using all these different cloud services, building apps, deploying them in to containers and so on. There needs to be that single view to basically aggregate all those APIs into.

Generally, a dashboard is necessary to implement control over various different processes, including utilisation management and potentially even historic utilisation analysis. More specifically, a dashboard is vital in the context of controlling security operations across multiple clouds.

Managing security across multiple clouds can be difficult, especially with different protocols that are not interoperable with one another. As a result, a multi-dashboard solution may be required. The single pane of glass for the cloud is only one of multiple panes of glass that we need to manage this environment."

The need for multiple dashboards to drill down into specific operations such as security also raises questions about the elimination of potential vulnerabilities, including on-premises storage and cloud services. Automation is key, governance is key, third party security systems and identity access management are key. This is going to drive a lot of spending over the next five years.

While a dashboard would be a welcome addition to the monitoring arsenal of a



business, some experts believe it could distract DevOps from the underlying technology and just create another new set of problems to grapple with. Dashboards can only really abstract you away so much from the underlying platform. Ultimately, you still need to understand everything that lies behind that. While a dashboard can provide information and oversight it could also add another layer of unwanted complexity. Furthermore, the desire to drill down into operations to look at native services may prevent some IT professionals from adopting more generalist dashboards.

SKILLS CHALLENGE

Adopting a multi-cloud strategy is necessary for many businesses for flexibility reasons but the added complexity of monitoring multiple cloud services, as well as containers, APIs and other processes can be daunting. Standardisation of processes across multiple cloud services can thus be a major inhibitor to multi-cloud. There is also a knowledge and skills gap to contend with. Available workforces are simply not keeping pace with technological developments and business requirements. Siloing of existing knowledge or lack of collaboration within businesses may further exacerbate multi-cloud apprehension and unfamiliarity.

Many IT professionals lack both general and specific knowledge as it relates to multi-cloud. For instance, they may not know about how to efficiently use new services like serverless architectures, or how to integrate or orchestrate multiple processes to work in tandem. A move to a multi-cloud strategy brings significant challenges and enterprises need to ensure they understand the nuances of these before they invest too heavily.

Multi-cloud management was cited as the fourth biggest challenge for enterprises according to the 2017 Cloudify IOD State of Enterprise MultiCloud report. This is seen as almost as important as more traditional cloud management concerns such as app deployment or automated scaling and was deemed even more important than cost analysis. Not sharing information across teams can also deny businesses access to new and potentially game- changing technologies.

Cloudify and IOD's 2017 State of Enterprise MultiCloud report found that the speed of technological adoption was far greater in non-siloed organisations. 74% of non-siloed organisations took six months or less to adopt new technology, versus 58% of siloed organisations taking over six months to adopt new tech.

It is vital for all the relevant parts of a business to understand any cloud strategy in use. Any knowledge gaps can result in severe security or compliance issues. It can also lead to problems with Shadow IT whereby certain individuals begin using another cloud provider without the knowledge of the rest of the organisation. Experts claimed that there was little difference in the skills required to use multiple clouds. Someone trained on

KEY TAKEAWAY

ACCORDING TO THE CLOUDIFY IOD 2017 STATE OF ENTERPRISE MULTICLOUD REPORT, THREE BIGGEST HINDRANCES TO NEW TECHNOLOGY ARE PEOPLE 32%, SKILLSETS 22%, AND CULTURE 21%.

According to RightScale's 2018 State of the Cloud Report, 64% of respondents said they viewed managing costs of cloud central to their role.

Azure or AWS is going to be able to make the transition fairly easily and understand the language and the environment.

According to the Cloudify IOD 2017 State of Enterprise MultiCloud report, the three biggest hindrances to the adoption of new technology are people and politics 32%, skillsets 22%, and company culture 21%. These make up 75% of the hindrances to new technology adoption and highlights the necessity to properly disseminate of information within a company. Building skillsets is arguably the trickiest to overcome. Training or hiring can be an enormous effort for enterprises, and even deciding on which skills are necessary can be difficult.

Learning multiple platforms is a pain. Trying to make the shift from on-premises to the cloud is hard enough, and learning multiple cloud platforms is an added, unnecessary layer of complexity. The cumulative result of all this uncertainty is that some enterprises will not move to the multi-cloud in the near future. The multi-cloud approach can scale relative to the size of the enterprise, but the ability to keep track of the myriad services and upgrades pushed out by major cloud service providers can be overwhelming.

If you know Amazon has 500-1000 services that you are interested in and Google has 200 services and Azure has 500 services, and if you are adding all three of those clouds, then you have to manage the use of those services amongst the systems in your portfolio. The ability to do abstraction, governance, and federated security that goes beyond the major cloud providers is key, and obviously that adds much more risk, much more expense, and much more complexity.

Enabling IT to broker multiple cloud services is an important initiative for 32% of respondents in RightScale's 2018 State of the Cloud report. This shows that there may be miscommunication between IT operators who see the necessity of developing a multi-cloud strategy, and those that are restricting it. Once again this can impact innovation and agility. Clearly, it is necessary to have standardised knowledge and goals throughout an organisation.

MANAGEMENT DEFICIENCY CREATES LAG

According to findings from 451 Research, there are regional differences to consider as well. Almost four out of five surveyed businesses in Western Europe claimed IT and security departments are best placed to understand digital transformation. In the Middle East and Africa, it was just over three in five.

451 Research found that legal teams lag behind in the understanding of digital transformation, which in the context of GDPR and other regulations could prove problematic. In Western Europe, just over half of legal departments claimed full understanding, dropping to below two in five for the Middle East and Africa. The nature of moving to multi-cloud can have far-reaching implications. Making sure all teams adequately understand the details is vital to prevent inconsistencies and difficult situations. The good news is that workforces tend to be receptive to new technology and skillsets.

Recent data from WinMagic's June 2018 survey of global IT decision makers backs this up. 63% of respondents claimed that the need for multiple management tools halted their multi-cloud strategies. A quarter of the respondents claimed that, because of compliance issues, they only work with a single cloud vendor. The difficulty of staying on top of cloud services increases steeply with the number of services an enterprise monitors. If you have got lots of small services then monitoring becomes key.

FUTURE

As more enterprises adopt a multi-cloud strategy, complexity will increase dramatically, at least for a period of time. This will be somewhat alleviated when dashboards and other tools become common, and orchestration and machine learning take over time consuming aspects of managing and standardising multiple clouds. ■

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ARRIVAL OF HORIZONTAL MOVEMENT ELEVATORS

Recent innovations have created horizontal movement elevators thereby disrupting visitor movements inside buildings, explains Prof Michael Cesarz at MULTI.

PROF MICHAEL CESARZ, CEO MULTI.

We have come a long way when it comes to building distinctive infrastructure, setting up skyscrapers, creating tall and beautiful structures. Since 2000, the number of high-rise buildings has tripled. However, there has been less innovation until recently when it comes to skybridges.

A skyway, skybridge, or skywalk is a type of pedway consisting of an enclosed or covered footbridge between two or more structures. Skybridges can connect the tallest structures and you do not need to wait or even walk anymore to use it. The right elevator has been invented that helps you travel horizontally.

Kingdom Center, the 99-floor skyscraper and one of the tallest in Saudi Arabia, has a 184-foot-skybridge at the very top. It weighs about 300 tons and is 918 meters above the sea level. The Petronas Twin Towers, an 88-floor building, in Malaysia is also interlinked with double-decker style skybridge on the 41st and 42nd floor.

Today, with inventions such as bullet trains and hyperloop projects that accelerate mobility, the distance between places has been reduced significantly. It has become much easier for commuters to travel. The GCC countries have made huge progress in urban mobility and public transport through autonomous transport, semi-automated ports, testing of delivery robots and drones, and passenger walkways.

An exemplary work in Dubai is the iconic Burj Khalifa, an 828-metre tower which is the world's tallest structure and even has an observation deck at 452 meters. Dubai has completed 21 super tall buildings, which is more in number than in the next two cities combined – Guangzhou and Shenzhen.

According to commercial data provider 2thinknow's 2018 report, Dubai holds first position in the region and 33rd in the world for being the most innovative in infrastructure development. Technology has indeed been the driving narrative for the UAE, which has seen significant strides being made in the last four decades to establish it as one of the most innovative nations.

This has been no doubt a giant leap for the UAE; if you look four decades back, the progress and thought-leadership achieved

A STUDY FOUND THAT IN NEW YORK CITY OFFICE WORKERS SPENT A CUMULATIVE 16.6 YEARS WAITING FOR ELEVATORS TO TRANSPORT THEM.

DUBAI HAS COMPLETED 21 SUPER TALL BUILDINGS, WHICH IS MORE IN NUMBER THAN IN THE NEXT TWO CITIES COMBINED – GUANGZHOU AND SHENZHEN.

by the UAE in such as short span of time is nothing short of remarkable.

The next obvious move is to connect tall buildings and infrastructure with elevators that are custom-built to work in skybridges and move horizontally. Last month, the Council on Tall Buildings and Urban Habitat, an international body in the field of tall buildings and sustainable urban design, held its global conference in Dubai that focused on Polycentric Cities, The Future of Vertical Urbanism.

The event witnessed leading architects and urban mobility companies come together to discuss vertical and horizontal transport and how can travel time and costs be reduced significantly without compromising on sustainability and safety.

At the CTBUH 2018 Conference, the world's first rope-free elevator that can move horizontally and vertically, was showcased. It ends the 160-year reign of the rope-dependent elevator that is considered the industry's holy grail. It has a linear motor technology and replaces ropes used in vertical transportation for elevators in high-rise structures.

This comes with no building height or shape restrictions and adapts to different traffic concepts. It is key to connect skybridges, skyscrapers and tall structures. Additionally, it enables reduction of elevators' footprint by up to 50% and provides more uptime availability leading to less passenger queues.

The horizontal movement of an elevator can redefine urban mobility and reduce waiting time. A study by Columbia University found that in 2010 alone, New York City office workers spent a cumulative 16.6 years waiting for elevators to transport them around a building. The waiting time is nearly three times higher than riding time and this is not acceptable. This clearly showcases the lack of efficiency in traditional elevator designs.

Worldwide, more than 12 million elevators make seven billion trips and move over one billion people every day. Urbanisation will see a 2.8 billion increase in city populations by 2050, with a key focus on emerging markets. Since 40% of all the energy worldwide is consumed in buildings, smart buildings are not the low-hanging fruit of energy efficiency. Such serious issues clearly indicate the need for an innovative as well as a sustainable solution for urban mobility.

Horizontal movement elevators have the capability to provide up to 75% reduction in peak power consumption. This is ideal for the UAE since the country is an early adopter of innovative technologies and is at the forefront of the real estate development. When installed in skybridges, this elevator can also act as an escape route from one building to another. ■

KEY TAKEAWAYS

- A skyway, skybridge, or skywalk is a type of pedway consisting of an enclosed or covered footbridge between two or more structures.
- Skybridges can connect the tallest structures and you do not need to wait or even walk anymore to use it.
- The horizontal movement of an elevator can redefine urban mobility and reduce waiting time.
- Horizontal movement elevators have the capability to provide up to 75% reduction in peak power consumption.

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