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TRANSFORMATION OUTLOOK 2019

Top vendor executives share their vision of what lies ahead in 2019 along the business and digital transformation journey.



(Left to right, top to bottom) Alex Hinchliffe, Palo Alto Networks; Brian Lillie, Equinix; Brian Pinnock, Mimecast; Daryl Plummer, Gartner; Dave Russell, Veeam; Gautam Kumar, FarEye; Greg Young, Trend Micro; Haider Pasha, Palo Alto Networks; James Petter, Pure Storage; Morey Haber, BeyondTrust; Patrick Smith, Pure Storage; Raj Samani, McAfee; Ray Kafity, Attivo Networks; Sami Abi Esber, Midis Group; Santhosh Rao, Gartner; Shailesh Kumar Davey, ManageEngine; Srinivasan CR, Tata Communications.



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Dear Readers,



This month's centerpiece looks at transformation forecasts and predictions from more than a dozen key industry executives. An outstanding piece of regional research comes from Santhosh Rao at Gartner. Gartner has identified blockchain, Internet of Things, city operations centers, smart city frameworks, digital twins and smart contracts as being amongst the technologies that will achieve mainstream business adoption in the next five to 10 years in the GCC.

Rao points out that, technologies fuelling digital transformation in the region are taking longer to reach mainstream adoption. Hence, local organisations are cautious about adopting new technologies. At the same time, system integrators are not fully equipped to handle complex digital projects due to a shortage of skills.

Another great insight comes from Daryl Plummer at Gartner, who draws attention to the possible collapse of a Blockchain through the accidental invasion of personal data into the ledger. Since the Blockchain ledger cannot be edited and public access to private information will violate national data privacy laws, such erring Blockchains can only be brought down and moved offline. Plummer stresses, a public blockchain is a pseudo-anarchic system such as the Internet and cannot be sued.

Equinix's Brian Lillie, says that the market is at an inflection point, where the right digital strategies become the differentiator and source of competitive advantage for organisations. For the first time in history, the technology to fully enable digital business is available to everyone. 5G will open up possibilities of digital transformation, especially in an IoT and artificial intelligence-connected world. There will be increased investments in 2019 in the revamping of existing cellular building infrastructure and building of new edge infrastructure.

Another significant part of this year's crystal ball gazing, predicts how artificial intelligence models will be leveraged both by threat actors and their remediation counter-opponents. Both will try to move ahead of the other based on deep user profiling and threat actor analytics.

Brian Pinnock at Mimecast, writes that organisations will realise the importance of threat intelligence and will talk about the need for an intelligence function. What they really mean is that they want some insight from their vendors around the huge amounts of threat data they are acquiring. There may be a handful organisations who will stop recasting threat data as intelligence and instead focus on generating actionable insights from this data. Unfortunately, the vast majority still will not take any action from the data presented, which means they will not actually have any intelligence.

Read on for some great revelations from more than 15+ top industry executives.

Insightful reading indeed!

Arun Shankar
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PERSONALISATION IN THE DIGITAL ERA OF BUSINESS

Consumers in the digital era want a personalised experience at every stage of their interactions explains Ujjwal Goel, Managing Director, Teraciel Group.



UJJWAL GOEL,
Managing Director,
Teraciel Group.

KEY TAKEAWAYS

- Big will not beat small anymore, it will be the fast beating the slow.
- Clients today have a growing desire for personalisation, with consumption patterns tilting toward more customised goods and services.
- Consumers expect highly personalised experiences and are willing to spend more money when entities deliver targeted recommendations.
- A majority of consumers are disappointed with the ongoing lack of personalisation in their consumer experiences.
- 71% express some level of frustration when their experience is impersonal.

With the heightened need and focus on cities of the future, the question we continually ask ourselves is are our buildings and projects future ready? Are we deploying technology innovatively and effectively to prepare and respond to the rapidly changing ecosystem, whilst honouring the history and craftsmanship of the past?

The industry may believe that smart cities or cities of the future are unlikely to impact the existing built environment, or that the timing is too far out to consider seriously. However, some evolving trends are likely to impact the industry faster than expected. Growing government focus, rapid advances in technology, and innovative solutions to improve and define the landscape we live in should compel the industry to prepare and respond to the changes in the ecosystem.

And in the words of New Corporation Founder, Rupert Murdoch: "The world is changing very fast. Big will not beat small anymore. It will be the fast beating the slow."

With these thoughts in mind, we identify the drive of construction innovation and client personalisation as a key theme. This is an outlook that we believe industry owners should consider integral to their business strategy. We believe that for companies to future proof their growth, a 360 offering of a bespoke end-to-end suite of services will be imperative.

Switching our attention to the competition, we can see that for clients it has never been tighter. Clients today have a growing

desire for personalisation, with consumption patterns tilting toward more customised goods and services. In the 2017 State of Personalisation Report, it explores how personalisation impacts consumer choices, where consumers demand tailored experiences, what happens when retailers live up to expectations, and the effects of falling behind.

Consumers expect highly personalised experiences from companies and are willing to spend more money when entities deliver targeted recommendations. Despite those expectations, however, a majority of consumers are disappointed with the ongoing lack of personalisation in their consumer experiences.

As documented in the report on average 71% express some level of frustration when their experience is impersonal. The proliferation of new devices and the rapidly evolving technology landscape has led to a personalisation gap in the customer experience, and as consumers' expectations rise, many companies struggle to meet them.

It is through new technologies, access to world-renowned craftsmanship, and integrated end-to-end solutions that businesses can address and enable customisation requirements. One size does not fit all. Knowing what your customers want and need can often be the one thing that solidifies their decision to do business with you. On the other hand, if you do not know your customer, that could be the one thing that drives them to the competitor. ■

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HDD image is tentative and subject to change

EMERGENCE OF THE POWER OF ANALYTICS AND ALGORITHMS

Artificial intelligence and machine learning applied across the enterprise is creating opportunities for business, writes Jamil Jeitani at Teradata GCC.



JAMIL JEITANI,
Managing Director,
Teradata GCC.

KEY TAKEAWAYS

- Vehicle as a service will continue to drive the disruption in the transportation industry.
- The enormous amount of personal information gathered by the usage of connected cars will create challenges of data privacy.
- New data sources like surveillance cameras, movement sensors, will be fed into artificial intelligence models controlling micro marketing.
- Creating high quality data to improve an algorithmic model is a time consuming and expensive exercise.
- Tools based on artificial intelligence will be able to auto label data reducing cost and time.

A number of trends around autonomous computing and artificial intelligence are expected to dominate 2019 into the years ahead. One of the most important that is fast developing and taking shape is the connected car. This is a highly disruptive trend but not one that is going to roll out in a hurry. The connected car requires a large number of partnerships and moving parts, which many of the present incumbents do not possess.

Vehicle as a service will continue to drive the disruption in the transportation and automobile industry, as the benefits of the service become more commonplace and its operations become more legalised. Connected car technologies will feed the growth of vehicle as a service business, leading to reduction of costs driven by automation, artificial intelligence, and predictive analytics.

Adoption of connected and autonomous cars into mainstream industry will also drive scrutiny into success and failure ratios. Success will drive transparency and growth of the business model, while failure will set the reverse into motion including societal and legislative rejection.

Finally, the enormous amount of personal information gathered by the usage of connected and autonomous cars, will create huge challenges of data privacy and data security. These will need to be circumvented both by legislation as well as technology, creating opportunities for innovation while raising the risk profile as well.

Artificial intelligence will come to the rescue of the brick and mortar retail industry in 2019 by

generating better insights into customer requirements and customer experiences. New data sources like surveillance cameras, shelf cameras, proximity sensors, movement sensors, self-checkout counters, will be fed into artificial intelligence models controlling inventory management and micro-targeted marketing.

The benefits of reinforcement learning will also surface in 2019 as an alternative solution to machine learning to generate the best offers to customers or to optimise supply chain performance, as an example. Machine learning cannot be applied to complex problems that involve multiple parameters and combination of successive events, leading to an outcome.

Creating, customised, high quality data, to improve an algorithmic model, is a time consuming and expensive exercise, usually involving subject matter experts. In 2019, tools based on artificial intelligence will be able to auto label data, hugely reducing cost and time, and driving the adoption of artificial intelligence in enterprises.

Machine learning itself will go through a sea change, moving from single, narrow, outcome-based tasks, to one that works jointly across multiple single tasks. This will be enabled by adding context-aware functionality that operates hierarchically or at different spatial levels.

2019 will be a year where data structures, artificial intelligence, analytics, machine and deep learning, begin to show their true potential in driving transformation in the years ahead. ■

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for Sunday
to Begin!**



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SAFEGUARDING THE DIGITAL BUSINESS WITH MULTICLOUD

Building business continuity and disaster recovery using a multicloud framework is a safe approach for modern digital businesses, explains Paul Mattes at Veeam.



PAUL MATTES,
Vice President Global Cloud
Group, Veeam.

The new digital economy has brought about many changes, forcing businesses and their IT infrastructure to react in new ways to meet new demands. When it comes to cloud, the changes are just as dynamic. Research tells us that 81% of enterprises are embracing a multi-cloud strategy with a mix of solutions across private, public, and hybrid clouds, using multiple providers. With this big move to multi-cloud, the next question is how can businesses ensure their applications and data are available across the new multi-cloud models they are adopting?

Before that question is addressed, here are a couple of statistics highlighting the downside of low availability:

- 66 % of enterprises admit that digital transformation initiatives are being held back by unplanned downtime.
- \$21.8M is an average financial cost of availability and protection gaps for the enterprise.

Fortunately, there are some measures businesses in the Middle East can take to ensure optimal availability. Here are three key multi-cloud availability best practices to consider:

LEVERAGE THE CLOUD

A good start for any availability strategy is to make sure you are following the 3-2-1 rule, which is to have at least three copies of data, two of which are local but on different mediums, and at least one off-site copy. Businesses with a multi-cloud strategy are in an ideal position to take advantage of

the cloud to help execute a 3-2-1 approach and optimise any legacy backup systems with the cloud.

Vendors allow businesses to leverage any public cloud provider, including AWS, Microsoft Azure, and IBM Cloud or a managed service provider to protect data off-site or get a disaster recovery solution to meet RTO and RPO requirements.

PROTECT YOUR DATA

It is important to have control and protection over data already deployed in the cloud. Email data, for instance, is something many organisations must retain for extended periods of time for compliance and regulatory needs.

Whether you are using a SaaS solution, such as Microsoft Office 365, or hosting your email application on IaaS, it is critical to have protection against accidental deletions, outages, or a malicious attack.

REPLICATE AND MIGRATE

In a multi-cloud strategy, you will most likely have born in the cloud applications in your environment. Being able to replicate these applications for data protection and recovery will be critical to make sure these applications stay up and running in the event of unexpected downtime.

With the momentum to multi-cloud adoption in full swing, having an availability strategy and plan is more important than ever. Keep these approaches in mind when assessing how you will enable availability across your multi-cloud environment, so you can confidently accelerate innovation without worrying about disruption to your business. ■

KEY TAKEAWAYS

- How can businesses ensure applications and data are available across the new multi-cloud models they are adopting?
- In a multi-cloud strategy, you will most likely have born in the cloud applications in your environment.
- It is important to have control and protection over data already deployed in the cloud.
- Businesses with a multi-cloud strategy are in position to take advantage of the cloud to help execute a 3-2-1 approach.



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HOW 5G APPS CAN HELP SERVICE PROVIDERS COMEBACK

Service providers can reinvent themselves using 5G, cloud applications, and five critical criteria writes Folke Rosengard at Nokia Software.



FOLKE ROSENGARD,
Head of Business Development,
Nokia Software.

IoT will add a massive amount of new connections. The digitalisation trend creates a growing demand for a multitude of diverse connections including use cases with high bandwidth, low latency and ultra-high reliability. 5G is the ideal solution to respond to this demand, however 5G is much more than simply a new radio access network generation.

It comes with sophisticated software that affects all parts of the network, including, how service providers operate the network and how they offer profitable and compelling services. It is a whole new business system that enables service providers to respond to the massive demand fueled by the Internet of Things and digitalisation trend in a profitable way. Software is the key for realising 5G capabilities in an efficient way.

Network providers must have a strong digital fabric that is built on applications with five key characteristics:

INTELLIGENT

Analytics and machine learning in everything are critical to manage an ever-growing volume of data. Great experiences are the ones that are personal, contextual and fast. These rely on the ability to augment human intelligence with machine learning and analytics. They use the data to provide a 360-degree view of the experience and decide what actions will produce the best outcomes.

AUTOMATED

Manual processes are too slow to handle the big data explosion. As such, intelligence workflows and bots should push automation to extremes to ensure we can drive insights to action with efficiency and speed using closed-loop fundamentals.

SECURE

With more of our lives online, customers must know they can trust their providers to handle their data. The new digital fabric must include security in its foundation to provide customers with the highest level of protection in the digital world.

CLOUD-NATIVE

To respond with agility at a better cost point, software needs to be built for the cloud, from both the technological and consumption-model perspectives.

OPEN

It is unlikely that service providers will rely solely on one infrastructure vendor or partner, one revenue-sharing relationship or service. Applications must be multi-vendor, open and lightweight, and the complexity of the network must be removed or abstracted.

5G will enable a range of new use cases with a variety of specific requirements. To support each use case in an optimal way, security capabilities will need to be more flexible. For example, security mechanisms used for ultra-

AUTOMATION IS POPPING UP EVERYWHERE IN THE NETWORK AND CLOSED LOOPS ARE CONSIDERED SILVER BULLETS FOR KILLING COMPLEXITY.

low latency, mission-critical applications may not be suitable for massive IoT deployments where devices are inexpensive sensors that have a very limited energy budget and transmit data only occasionally.

Cloud native software is a fundamental principle for software for the 5G era. There are many benefits of cloud native software for telcos, including more efficient use of cloud resources, operational simplicity and horizontal scalability. Proven by massive scale companies such as Google, Twitter and Netflix over years of use, horizontal scaling or adding more containerised applications within a cluster, enables providers to provision the processing capacity they need to process data quickly.

Managing and reducing the complexity, while keeping operation costs under control, can only be achieved through injecting intelligence and automation into the transformation process. As 5G extends beyond radio technologies, deep into the cloud, across mobile and transport layers, it will be paramount to combine data from radio access network and non-radio access network sources and introduce machine learning-enabled automation to create algorithms for use cases that operate across all these data sources.

Today, automation is popping up almost everywhere in the network, and closed loops are considered silver bullets for

killing complexity. A recent study by Nokia Bell Labs concluded that closed-loop automation can only work in combination with a new architecture and – even more important – an implementation master plan.

The full benefit of automation can only be realised if it is done in concert. Small benefits can be and are being realised with tactical, domain-specific automations, but those benefits can only be maximised if harmonised and orchestrated across all domains.

As non-telcom companies digitalise their own product offerings, new opportunities will emerge for telcos and service providers. With the new network characteristics of 5G and cloud resources sitting close to customers, these companies will be in a position to offer capabilities no IT cloud service provider can match.

Software helps communication service providers to reinvent themselves as digital service providers. To operate in digital time, service providers need a holistic and real-time view of what is happening with business and operations to determine the next best action to take. This applies for all areas of operations from marketing to product management, customer experience management, network and service operations, care and monetisation.

The ability to connect domains, derive insights, trigger and automate actions in the moments that matter is termed connected intelligence. Connected intelligence brings together customer experience, operations and networks. ■

KEY TAKEAWAYS

- 5G is much more than a new radio access network generation.
- 5G comes with software that affects the network including how service providers operate the network
- 5G is a new business system that enables service providers to respond to demand fueled by IoT in a profitable way.
- Connected intelligence brings together customer experience, operations and networks.
- Software helps communication service providers to reinvent themselves as digital service providers.



WE HELP YOU BUILD A DATA-CENTRIC STRATEGY

We're in a new world: data is now a strategic asset, and enterprises will need data-centric strategies to succeed and thrive. So it's time to re-think IT infrastructure from the bottom-up.

TRANSFORMING TELCOS TO DIGITAL SERVICE PROVIDERS

Nexign's Ahmad Sayed explains selection of the BSS tool is fundamental in transformation of communication service providers to digital service providers.



AHMAD SAYED,
Regional Director, Middle East
and Africa, Nexign.

Digital Transformation: We are all a part of it, governments, companies and consumers. But while some feel like they are on the back of a runaway train, others have taken control of their destinies. Manufacturers are using the Internet of Things to enable predictive maintenance and service-based business models. Retailers are generating 360-degree views of customers to forge agile, individualised service.

But what of communication service providers?

Ovum's latest ICT Enterprise Insights report tells us that the telecoms sector is farthest along in its digitisation, with a maturity-progression index score of 43.9%, beating innovative manufacturers and retailers, and even outpacing the banking sector, which has an index of 42%. It is worth noting that by 2021, almost all Tier 1 and most Tier 2 telecom operators will be either running on the cloud or in the midst of migratory programmes. These operators will have recognised that digital

business models can drive monetisation. They will have become digital service providers. A 2017 Ernst & Young study revealed that 71% of operators around the world consider this issue their top priority.

So how should communication service providers approach this transformation journey to become digital service providers? Customer experience is, of course, key. Deep-dive analytics can deliver actionable insights, to be sure. And introducing agility across multiple areas will allow actionable intelligence to be enacted before opportunities dissipate.

RIGHT BSS SOLUTION

Time-to-market is of extreme importance. The right BSS solution will allow telecom operators to configure new products and services quickly and efficiently, stripping development lifecycles down to a bare minimum without any trade-off in quality. True digital service providers must be able to take full advantage of transformational technologies such as cloud architecture, blockchain, IoT and 5G, to upend and reinvent business models, and to diversify revenue streams.

This flexibility in the BSS platform is of particular importance as telcos experiment with non-traditional wares, such as insurance, financial and even

TELECOM OPERATORS HAVE RECOGNISED THAT DIGITAL BUSINESS MODELS CAN DRIVE MONETISATION AND THEY CAN BECOME DIGITAL SERVICE PROVIDERS.

healthcare services. Content provisioning is also becoming increasingly popular, with many operators already offering digital TV programming and music to customers. The BSS solution must become the cornerstone of digital transformation, enabling communication service providers to capitalise on such new opportunities, which in turn have come about through the same digital revolution.

LIFESTYLE ENABLER

Before the coming of age of millennials and Generation Z, communication service providers could replicate customer experiences, selling the same product to everyone the same way. But digital transformation rules have raised the game to a new level. Each year, larger proportions of each telecom operators' potential subscriber base are digital natives.

Expectations have morphed, from – that will do, to – why can't you?

To reach all possible customers with new products and services, omni-channel brand engagement and personalised service must now come as standard. BSS platforms must be flexible enough to allow sufficient granulation of offerings, so that providers can cover a broad range of use cases. Once digital-native customers see a richer menu, from which they can select an option that meets their unique circumstances, they will come to see the telco not as a service provider but as a lifestyle enabler.

OPEN ARCHITECTURE

By opening their core platform to integration with many others, digital service providers can enrich their portfolio and extend their reach. A BSS platform that supports an open partnership infrastructure can eliminate barriers to new products overnight, broaden a provider's

talent pool, and enhance customer engagement where consumers learn that they can find everything they will ever need under a single roof. Surges in brand loyalty and ambassadorship will soon follow.

Furthermore, open architectures allow digital service providers to diversify business models in true digital transformation fashion, leading to new revenue streams. The open API is an important step. The right BSS solution must deliver this capability, along with dual-speed architecture that supports migration from legacy platforms to future-proof, cloud-based stacks: all without downtime. Business agility, accelerated integration, increased value and total cost of ownership TCO optimisation are just some of the benefits of open architecture.

CLOUD NATIVE

True digital service providers are natives of the cloud. They are plugged into a suite of AI-based analytics that allow them to understand customers and gives them the flexibility to offer granular services that transcend the market. These digital service providers integrate IoT in to their operations, using advanced sensors and analytics to tweak and enhance service delivery. They offer business customers elastic scalability and pricing models that match. These digital service providers are also a one-stop shop for core and over-the-top offerings.

In summary, the only way for communication service providers to transition into becoming digital service providers is through a digital powerhouse – a BSS solution that enables network monetisation, centralised product cataloguing, omni-channel customer experiences and the creation of rich partner ecosystems. ■

KEY TAKEAWAYS

- Digital transformation offers the potential to ride the wave of revolution and come out on top.
- By 2021, almost all Tier 1 and most Tier 2 telecom operators will be either running on the cloud or in the midst of migration.
- In 2017 Ernst & Young study revealed that 71% of operators around the world consider digital business models their top priority.
- The top-line goal should be to ensure business support systems enable a three-pronged strategy.

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MIGRATING SUCCESSFULLY FROM ON-PREMISES TO THE CLOUD

Yasser Zeineldin at eHosting DataFort explains how the complex process of migrating to the public cloud can be enabled by adopting a management approach.



YASSER ZEINELDIN,
Managing Director, LiveRoute and
CEO, eHosting DataFort.

The benefits of migrating to a public cloud platform are now becoming increasingly well known. Whether small and medium businesses or large enterprises, there are multiple large-scale benefits. While using a cloud platform, businesses no longer need to invest in hardware and computing infrastructures. These are now hosted in the cloud platform. They can choose to opt for the services that best suit their businesses and pay for them based on their usage. This is the pay as you use model.

On the flip side, businesses that choose to migrate to a public cloud platform need to accept a vanilla formula of features and usually have limited flexibility to change them. But the smooth functioning and uptime of the cloud platform is managed by a specialist hosting provider. Hence, businesses do not need to navigate and invest in the challenges of keeping themselves abreast of the latest technologies.

For businesses that have been using technology on-site and wish to access the benefits of a cloud platform, there are migration best practices to move forward. These ensure that an established way of working on-site is smoothly rebuilt on the cloud platform without minimum interruption to day to day business.

Moreover, security practices that have been established on-site need to be migrated and reset to work in the cloud without failure. These often require discussion with the cloud hosting service provider as well as with any third-party suppliers. By following a management-based approach to migration, business can ensure that they encounter minimum interruption to their day to day business.

When initiating a project that involves migration to the public cloud, making a checklist of critical factors is crucial. This helps to prioritise and draws attention to a roll back plan in case things do not run smoothly. Here is a list of the top seven factors that you should take into consideration.

WHEN INITIATING A PROJECT THAT INVOLVES MIGRATION TO THE PUBLIC CLOUD, MAKING A CHECKLIST OF CRITICAL FACTORS IS CRUCIAL.

DATABASE STRUCTURE AND APPLICATIONS

You want all your data to be migrated in its original format and want to use it off the cloud in the same way. However,

many databases that run from the cloud have different structures than their on-site counterparts. This is one area that you really need to look into from the beginning. The same differences are likely to appear in applications that have cloud and on-premises variants.

IDENTIFY THE OPERATING SYSTEM

The performance of an application and its database are also dependent on the operating system and its version that is running on-site. If the public cloud environment is using a different operating system or a different version of the same operating system, plan for variations in performance and response.

MONITOR ALL POINTS OF CROSS-OVER

The migration team must monitor the progress and success of the public cloud migration at various cross-over points including IP servers, IP gateways, storage application and third-party suppliers. Legacy applications that are being managed by outsourced suppliers, associated with long-term support contracts are high probability points of failure, at least in the initial stages. They need to be given more time and attention to reduce the impact of failures.

APPLICATION ARCHITECTURE

Not all applications are cloud ready. Ascertain that the applications that you are using on-premises are ready to be used in the cloud. Scalability and open API's are a critical part of cloud robustness and cloud-ready application architectures.

IDENTIFY ALL REDUNDANCIES

During an on-site to public cloud migration, redundancies

and backups and roll back plans are a great idea. But once the migration plan has been completed and signed off, keeping redundancies in place play no role, and are an added cost. Decommission these resources in a planned manner.

INSIDE THOSE SLA AGREEMENTS

Having a closer look at the service level agreements with all third-party suppliers involved in the migration, as well as responsibilities before, during, and after the migration is critical. Who is responsible for verification of the data integrity post migration, who is responsible for the security of the cloud platform once completed, and who is responsible for a specific failure, are important eye openers.

OBJECTIVES OF MIGRATION

What are the short, medium- and long-term objectives of the cloud migration activity? How are they to be balanced during the roll out? Single-tenant or multi-tenant options can make a big difference in costing but can give huge returns in application availability and response and finally customer experience. When do you need to go all out, is an important cost to benefit question and key component of the strategy?

A critical success factor in any cloud migration is to build digital readiness for the business. A botched and mismanaged cloud migration exercise, may not only delay the digital transformation journey of the business, but will also play havoc with building and retaining its new and ever changing digital and Internet customers. There can be no bigger loss than this one. ■

KEY TAKEAWAYS

- A critical success factor in any cloud migration is to build digital readiness for the business.
- A mismanaged cloud migration, may not only delay digital transformation, but will also play havoc with Internet customers.
- Once migration has been completed keeping redundancies in place play no role and are an added cost.
- The performance of an application and its database are dependent on the operating system and its version.

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Salesforce transformation consultant 4C announces expansion of ME operation



JOHAN VAN GENECHTEN, Group CEO at 4C.

4C, the digital transformation consultancy, announced significant growth, including increased headcount across key offices, expansion of its emerging practices, and new funding. 4C will create up to 100 new jobs in the next 12 months, which will include scaling its workforce in the Middle East by 33%.

The additional headcount coincides with the expansion of the company's core delivery teams and emerging practices of Quote-to-Cash, B2B Commerce and Contract Lifecycle Management. Introduction of Contract Lifecycle Management would make 4C the first in the Middle East to deliver this service.

The announcement caps a year of growth at 4C, which has seen its Middle East arm achieve triple digit growth, double its office space in the UAE, and also triple its workforce following the successful addition of more than 30 new regional customer accounts. These follow global successes that include the acquisition of Danish Salesforce partner 3C Consult, expansion into

the Nordics market, opening of offices in France and the United Kingdom and the addition of 80 skilled staff.

Combined with existing support from Trocadero Capital Partners, the company has recently received investment from Salesforce Ventures, the strategic investment arm of Salesforce. 4C is an independent Salesforce

Platinum partner in EMEA, and the development of its emerging practices, hiring of skilled new staff and recent investment will enable the company to offer service to its global customer base.

Building on this added investment and its strong regional performance over the last year, 4C is now looking at establishing new partnerships with Introhive and Mulesoft in the Middle East, and strengthening its partnership with DocuSign. In a bid to address the IT skills shortage, the company is also set to partner with local technology universities to offer internships to students and graduates looking to pursue careers in the IT industry.

Leon Mangan, Vice President EMEA, Alliances and Channels at Salesforce commented: "Since joining the Salesforce ecosystem, 4C has continually helped our customers innovate and grow through adopting and developing innovative Salesforce technologies. Today's announcement only further enhances 4C's reputation as a leading Salesforce partner, and we look forward to supporting their global growth over the coming years."

Johan Van Genechten, Group CEO at 4C commented: "This new investment will enable 4C to realise its global growth plans by enhancing our existing capabilities with advanced cloud platforms and tools, and bolstering our highly talented team to deliver these. As well as opening up opportunities to participate in a broader range of exciting global projects, it will allow us to create industry and solution-specific IP to power the success of our customers, which is always our primary driving goal." ■

KEY TAKEAWAYS

- Salesforce Ventures has invested in more than 280 enterprise cloud startups in 18 different countries since 2009.
- 4C has delivered more than 1,500 projects for customers including Aston Martin, FujiFilm, Corona Direct, PSA Groupe, EMAAR and more.
- 4C is looking at establishing new partnerships with Introhive, Mulesoft, DocuSign in the Middle East.

Global blockchain platform VeChain selects BIOS ME as regional go to market partner

VeChain, a global public blockchain platform focusing on enterprise adoption and BIOS Middle East, a managed cloud provider have signed an MoU to co-market and implement a framework of blockchain-as-a-service and blockchain-enabled cloud services. VeChain's wide range of blockchain solutions for enterprises comprising of the Internet of Things are ripe for major cloud service providers like BIOS Middle East to provide a variety of Blockchain-as-a-Service offerings to existing clientele across energy, finance, retail, petrochem and healthcare industries in Middle East.

BIOS Middle East and VeChain recognise that in order for large scale blockchain revolution to happen, companies will require help with designing, migrating and managing their blockchain solutions to realise its benefits. BIOS Middle East is integrating its own Security-as-a-Service offering, known as BIOS Secured on the VeChain blockchain. This will allow significant events to be encrypted and registered on the blockchain so that they are non-repeatable, eliminating the possibility of bad actors changing logs.

"Leveraging on BIOS Middle East's expertise in cloud services and system integration, I believe Dominic's team will help accelerate adoption and transactions on VeChain's platform. Starting from Dubai, one of the world's blockchain-friendly states," said Sunny Lu, Co-Founder, and CEO of VeChain.

"BIOS Middle East will work with VeChain to extend its proven solutions on the blockchain to be directly accessible to Middle East and African organisations through the CloudHPT platform, which



(Left to right) SARA NABAA, Country Manager, VeChain and DOMINIC DOCHERTY, Managing Director, BIOS Middle East.

will potentially bring thousands of transactions on a daily basis," Dominic Docherty, Managing Director, BIOS Middle East added.

Starting in June 2015, VeChain aims to connect block chain technology to the real world by providing a comprehensive governance structure, a robust economic model, and IoT integration. VeChain is the pioneer of real-world applications using public block chain technology, its notable enterprise partnerships with DNV GL Business Assurance, PwC Venture Hub Singapore, PwC Greater China and Hong Kong and recent real world collaborations with Bright Foods, BYD, PICC, DIG seals its position as an enterprise-level public blockchain platform. It has international operations in Singapore, Luxembourg, Tokyo, Shanghai, Paris, Hong Kong, and San Francisco.

Established in 2002, BIOS Middle East is a managed service and cloud provider with headquarters in Dubai, UAE. With an aim to provide its 300 plus customers the capabilities they need to become cloud enabled and successful with

their digital transformations, the company provides managed services and cloud solutions with 24x7x365 support backed by a measurable SLA. BIOS Middle East's solutions include Managed Services, Security-as-a-Service, Infrastructure-as-a-Service, Disaster Recovery-as-a-service, Managed Multi-cloud across CloudHPT, AWS and Azure and more recently Blockchain-as-a-Service. ■

KEY TAKEAWAYS

- VeChain is the pioneer of real-world applications using public block chain technology.
- VeChain aims to connect block chain technology to the real world by providing a governance structure, economic model, IoT integration.
- For large scale blockchain to happen companies will require help with managing their blockchain solutions.
- BIOS ME is integrating its own Security-as-a-Service offering known as BIOS Secured on VeChain blockchain.

GE, TSK, Masdar, complete installation of first turbine at Oman's Dhofar Wind Farm

Masdar, the Abu Dhabi Future Energy Company, announced the installation of the first of 13 turbines at the 50-megawatt Dhofar Wind Farm. Located in the southern Omani governorate of Dhofar, the project is fully financed by Abu Dhabi Fund for Development. The project follows an agreement signed in 2014 between Masdar and the Rural Areas Electricity Company of Oman Tanweer. A Masdar-led consortium including GE and Spain's TSK is developing the Gulf region's first large-scale commercial wind farm.

GE is providing the project's 3.8 MW wind turbines, while TSK is responsible for the rest of the wind farm's infrastructure, which includes medium and high-voltage substations and 13-kilometres of overhead transmission lines. Masdar is the project developer and implementation lead. All 13 turbines are scheduled to be installed by March 2019.

The Dhofar Wind Farm is expected to become operational by the third quarter of 2019. It will supply 7% of the Dhofar governorate's electricity demand, or enough clean energy to power an estimated 16,000 homes, while offsetting an estimated 110,000 tons of carbon dioxide emissions annually.

Once complete, the wind farm will be handed over to Tanweer, which will then operate the plant and supply the generated electricity to the local Dhofar power grid through an overhead power line managed by the Oman Electricity Transmission Company. The Oman Power and Water Procurement Company will offtake the generated electricity from Tanweer in line with a power purchase agreement signed on September 12, 2017.



Dr Manar Al Moneef, General Manager, GE Renewable Energy for the Middle East, North Africa, and Turkey, said: "The wind farm features our 3.8-130 wind turbine customised to the desert conditions specific to the Gulf region. The country has untapped potential in renewable energy, particularly wind energy. With this project, we are demonstrating our commitment to supporting the

diversification of the energy mix in Oman and the wider region."

Eng Saleh Bin Nasser Al Rumhi, Chief Executive Officer of Tanweer, said: "We are looking forward to the implementation of this initiative, which will be the first large-scale renewables project in Oman. Our team has worked closely with all the participants to bring this technology to the Sultanate and to ensure knowledge transfer in the country. Tanweer's mandate is to supply electricity to large areas of Oman, and this project fits well with our expertise and ambition. The company is licensed to generate, transmit, distribute, and supply electricity in the concession areas. Our customers include cities, villages, and local communities scattered across almost 75% of the land area of the Sultanate. We are also looking to implement other renewable technologies, including solar PV, to augment our existing generation plants across 11 site locations." ■

KEY TAKEAWAYS

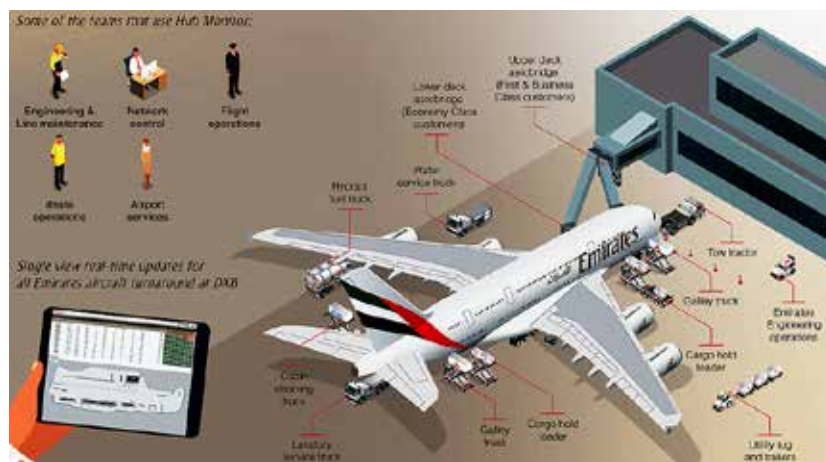
- A Masdar-led consortium including GE and Spain's TSK is developing the region's first large-scale commercial wind farm.
- GE is providing 3.8 MW wind turbines, while TSK is responsible for the rest of the wind farm's infrastructure.
- Masdar is the project developer and implementation lead.
- All 13 turbines are scheduled to be installed by March 2019.

Emirates develops Hub Monitor app to display maintenance uptime and downtime

Emirates passengers travelling from or transiting through Dubai International Airport can expect fewer instances of delays associated with aircraft turnaround thanks to a new innovative application built in-house by Emirates called the Hub Monitor. Hub Monitor is being used by Emirates' operational staff in Dubai to share and monitor real time information on the various activities that are carried out to prepare an aircraft for departure. Through its monitoring and proactive alerting system, the application helps avoid delays and improve on-time performance ultimately leading to a better passenger experience.

Emirates is the world's largest international airline operating a fleet of 270 modern all wide-body fleet of Airbus A380 and Boeing 777 aircraft. Every day around 255 Emirates flights depart from Dubai to destinations across six continents. Flights range in duration from less than an hour to over 17 hours. In order to avoid flight delays and inconvenience to passengers, it is critically important to efficiently turnaround the aircraft arriving in Dubai and prepare them for their next departure without compromising on quality or safety. It currently takes about 105 minutes to turnaround the Emirates A380, the world's largest commercial passenger jet, and about 90 minutes to prepare the Boeing 777 aircraft for departure at Emirates' hub in Dubai.

There are a number of activities involved in the aircraft turnaround process. Some of these include a complete cleaning of aircraft interiors, water and toilet servicing,



flight catering and loading meals for passengers, servicing the aircraft Auxiliary Power Unit, refueling the aircraft, maintenance checks, and loading passenger luggage and cargo. A delay in any one of these activities can have a cumulative impact on operations.

With Hub Monitor, cross-functional teams from departments including

Engineering, Network Control, Airport Services, Flight Operations, and ddata Operations keep track of the turnaround activities on a real time basis. The application also triggers alerts to operational staff when there is a delay or deviation to any above or below activity against a pre-set Precision Timing Schedule. These pre-emptive alerts allow Emirates' teams to identify and resolve the root cause of any potential delays. In fact, Hub Monitor has already demonstrated its potential, versatility and scalability and has been chosen as the platform for some of Emirates' key internal initiatives on disruption and fulfilment.

Hub Monitor integrates data coming in from a number of internal platforms and real-time aircraft downlinks. It then provides the consolidated data through a single view interface to relevant internal stakeholders. Hub Monitor is also mobile enabled, meaning staff deployed on the aircraft, ramp and in other remote areas can also easily access the information. ■

KEY TAKEAWAYS

- Hub Monitor integrates data coming in from a number of internal platforms and real-time aircraft downlinks.
- Hub Monitor provides consolidated data through a single view interface to internal stakeholders.
- Hub Monitor is mobile enabled meaning staff deployed can easily access the information.
- Emirates is the world's largest international airline operating a fleet of 270 wide-body fleet.
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PLAYING THE TRUSTED ADVISOR ROLE FOR TRANSFORMATION

Channel partners can offer best of breed technology solutions as well as play the role of trusted advisors for transformation projects according to Savitha Bhaskar at Condo Protego.



SAVITHA BHASKAR,
COO Condo Protego.

Digital transformation is one of the top C-suite priorities, with organisations using technology to transform an organization's business processes to enable new business models. Digital transformation is not a one-off project, but rather an ongoing journey, which prioritizes corporate information at the foundation. On the business side, digital transformation needs to meet specific business use cases, rather than technology for technology's sake. Digital transformation, as an individual journey for each organization, does not have a set metric for success.

"A dream digital transformation project is based on having both business and technology decision-makers at the client

organisations recognizing a successful and profitable deployment. Custom requirements need to be reviewed before and after the installation in order to make sure that the full value is being recognised from using technology as a business driver. The partner needs to work with the business and technology teams to integrate requirements that can deliver reliable, low-risk, and clear total cost of ownership to the entire organization," explains Savitha Bhaskar, COO Condo Protego.

Channel partners should work with the C-suite to develop an organization-wide digital transformation agenda, work with CIOs or CDOs to support individual lines of business, and serve as trusted advisors on which technology solutions can best meet business needs. Organisations can also start with digital transformation programs that can show quick return on investment.

Channel partners should also support the best technology solutions that meet business needs. It is also important for channel partners to describe why digital transformation projects depend not only on the latest and greatest technology solutions. Post-sales support is vital for ensuring successful implementations, and also for exchanging best practices in skills development for customers.

Technology decision-makers can get excited about adopting the lowest-price or most innovative technology solutions. Channel partners need to act as trusted advisors and outline why they should view the long-term total cost of ownership over short-term purchasing decisions.

"In the UAE and Middle East, organisations are pioneering digital innovations at a level that is on par with developed markets such as Western Europe, North America, or East Asia. The UAE fosters an environment where business leaders are able to pioneer digital transformation innovative and innovations, and in turn the UAE also benefits from innovative organisations. The technology is just as readily available here as in the most mature markets. Now an increasing number of digital transformation initiatives are applying new and emerging technologies in new and innovative ways to meet specific business use cases," remarks Bhaskar.

Condo Protego is further moving towards a business consultancy model that is adding value to the customer business journey, from conceptualisation to design and go-live. Condo Protego continues to emphasize the importance of information management and ICT infrastructure, and pioneering AI and machine learning, blockchain, and IoT. ■

BRINGING AGILITY INTO IMAGING AND EXPERIENCE SHARING

Nikon has kept abreast of the latest trends in technology by bringing in cloud and analytics for its global breed of users according to Narendra Menon.



NARENDRA MENON,
Managing Director, Nikon
Middle East.

Nikon is a pioneer in imaging solutions and technologies. The brand's philosophy at Nikon uses photography and photographers as its two main pillars. Nikon has been a proponent of merging the technical and creative with products to understand their place as an enabler of the community of artists.

For Nikon, digital transformation is the use of digital tools like cloud platforms, integration systems, social media, and data, to transform product and customer experience as well as internal workings in the business. The metrics of success of any digital or business transformation are not just based on numbers because a quality offering has much deeper ways in which it touches the life of a buyer.

"We measure our success by the appreciation and loyalty that we get from our customers. The value that we are able to add to the lives of consumers is the most significant driving force as well as the basis for measuring our success. Our relationship with customers goes beyond functional exchanges. The sense of fulfilment that a Nikon camera or product is able to create is what enables us to grow and succeed as a brand," says Narendra Menon, Managing Director, Nikon Middle East.

The most significant and beneficial takeaway after any digital or business transformation initiative is the fact that investing in customers and their journey has fetched a lot more return on investment than any marketing campaign. Customers are key focus because the growth and success of Nikon is directly proportional to the satisfaction of customer experience. Often, the gap between what is planned and what is finally implemented is a result of poor requirement identification and delayed solution provisioning.

"The most basic requirement for a dream transformation project to be rolled out is the timely identification of a need. Once a need is identified correctly, it is crucial to provide comprehensive solutions to address such needs. Constant evaluation and micromanagement of smaller issues is the foremost requirement to bring about such a transformation," elaborates Menon.

Nikon is actively adapting to the new forms of business for instance social media, cloud service, data analytics and more. These transformations have been a boon to organisations allowing easy access to everything. Nikon works with photographers who are spread across the globe and pockets of Middle East region, sharing data like pictures which are higher in resolution. Having support or access to technology facilitates the sharing of data. Regardless of sector, a brand leader must consider a cloud strategy.

"Using social media platforms has been profitable for us. We have been working with bloggers and photographer from across the world and this digital transformation allows us to accumulate and propagate data," says Menon. ■

KEY TAKEAWAYS

- Nikon is adapting to new forms of business for instance social media, cloud service, data analytics.
- The basic requirement for a dream transformation project to be rolled out is the timely identification of a need.
- Constant evaluation and micromanagement of smaller issues is the foremost requirement to bring about transformation.

TRANSFORMATION INTERNAL AND FOR GLOBAL CUSTOMERS

Tata Communication is amongst the top global carriers and it has not been a laggard to implement transformation internally comments Radwan Moussalli.



*RADWAN MOUSSALLI,
Senior Vice President for Middle
East, Central Asia, Africa, Tata
Communications.*

As a provider of global digital infrastructure services, Tata Communications offers integrated, technology solutions that underpin the fast-growing digital economy. The service provider focuses on helping customers and partners make the most of the latest network, cloud, IoT, mobility, collaboration and security technologies, and leverages them to transform how they operate and improve customer experiences.

“We deliver all our services seamlessly through the cloud, which in turn is underpinned by

one of the most advanced, sub-sea fibre-optic networks in the world that carries around 30% of the world’s Internet routes. Ultimately, we want to enable our customers’ digital future today, while also partnering with them, with governments and with society, to build a better tomorrow,” explains Radwan Moussalli, Senior Vice President for Middle East, Central Asia, Africa, Tata Communications.

Businesses use different digital technologies – from cloud to AI to IoT and cyber-security solutions – to thrive and survive in the constantly evolving environment, often dubbed the Fourth Industrial Revolution. In the increasingly digital, global economy, technology-enabled business transformation must have speed, scope and impact. And, as transformation gains momentum in businesses, new possibilities present themselves.

“We think of digital transformation as a constant cycle of progress. And it is not unusual for different lines of business to launch their own digital transformation initiatives,” says Moussalli

The use of AI-enabled tools in customer service, can inspire a business to extend the use of AI to increase efficiencies in internal collaboration through more automated processes that shift administrative tasks from humans to machines. The finance

team might reimagine processes with automation to streamline operations. An initiative like this can be successful, paving the way for cost savings and boosting productivity.

However, the point of integration, where the new system is linked to another set of digitally reimaged processes in another line of business – such as customer service – that is when the outcomes can be truly transformational.

The Chief Digital Officer or CIO plays a role in ensuring that different digital ambitions are aligned, which will help maximise the return on investment for digital transformation across the business. Finally, empowered by their transformation, businesses aspire to evolve further, completing the cycle and starting it all over again.

Too often, security is overlooked at the start of a digital transformation journey. So, while organisations are realising the transformational potential of technologies like AI, IoT and cloud and are deploying them across their operations, they do not always consider the need to safeguard these new digital applications and services. “When we consult our customers at the start of their digital transformation project, we bring security into the conversation from the outset,” points out Moussalli. ■

BUILDING MACHINES THAT COMMUNICATE WITH EACH OTHER

Thyssenkrupp is automating industrial machinery and processes and produces solutions for verticals, led by Mari Kuijs at Thyssenkrupp Industrial Solutions.



MARI KUIJS,
Head of Service, Middle East,
Thyssenkrupp Industrial Solutions.

At Thyssenkrupp, business transformation is defined by a change in course of action that enables a high measurable impact while driving desired results in a sustained manner. Business transformation helps positively influence stakeholders directly or indirectly across various levels.

“For a dream transformation, clients need to trust the solution provider and work in tandem. It requires many years of expertise and experience to deliver a timely transformation project. Delivering a dream project also comes with a pre-requisite of working with various stakeholders across industry verticals. The bottomline is that it must be innovative,

sustainable, scalable and global in nature,” states Mari Kuijs, Head of Service, Middle East, Thyssenkrupp Industrial Solutions.

“Thyssenkrupp is already one of the biggest change agents. With our vast experience we have been able to revolutionise industries and build solutions everyone which thought was impossible. My aspiration for Thyssenkrupp and for myself is that we scale high and continue to set new standards in our industry,” continues Kuijs.

With a business footprint in the Middle East region, along with the rest of the world, Thyssenkrupp is a technology group with traditional strengths in materials. Over 160,000 employees in 78 countries work with technological know-how to develop high-quality products and intelligent industrial processes and services for sustainable progress. The industrial solutions business at Thyssenkrupp is a partner for the engineering, construction and service of industrial plants and systems. Besides being a leading full-line supplier to the cement industry, Thyssenkrupp has vast experience and expertise in the automation of machines and systems.

The industrial specialties business unit has expertise in engineering, construction, modernisation and upgrading of coke, chemical and petrochemical plants, refineries and other industrial facilities. The service business unit offers high-

quality services for industrial plants and systems around the world: from asset management, training, consulting, spare parts management and on-site service to upgrades and revamps. Thyssenkrupp’s product range also includes innovative storage solutions for the growing renewables sector.

The company translates its extensive knowledge of processes and plant design into cost- and resource-efficient solutions and expert service for customers around the world. Apart from these, the company also provides various urban mobility solutions across the world.

“We are presenting our solutions worldwide, and our customers are open towards fully automated solutions. For them, it is important that the machines are not only working automatically on an individual basis, but all machines communicate with each other,” says Kuijs. “For example, in storage, customers want machines communicating across the board with automated processes from stacking to unstacking bulk materials. We measure metrics by creating high benchmarks on building innovative products in a cost and resource-friendly way. Any key business initiative helps us to understand the needs of various clientele, build industry relevant solutions and tackle hurdles which may not have been possible earlier.” ■



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TRANSFORMATION OUTLOOK 2019

Top vendor executives share their vision of what lies ahead in 2019 along the business and digital transformation journey.





ALEX HINCHLIFFE,
European Threat Intelligence
Analyst, Unit 42, Palo Alto
Networks.

CRYPTOMINING WILL KEEP MOVING ON

cryptomining keeps grinding on. Filling some of the void currently and for the foreseeable future are cryptominer trojans that use victims' computing resources to mine digital currency to earn money for attackers. These threats are already extremely prevalent and target IoT devices, web-browsers, cloud infrastructure as well as traditional computers and mobile devices. Malware will combine ransomware and cryptomining and this trend will continue.

In 2019, the United Kingdom will exit the European. A frequent discussion point is whether these relationships and the ability to share threat intelligence data will continue post-Brexit. Of course, with new policies coming into place, such as GDPR and NIS directives, certain constraints are imposed on data, especially that of European citizens.

Blockchain performance will become a more important requirement within the enterprise space.



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RIGHT DIGITAL STRATEGIES SOURCE OF COMPETITIVE ADVANTAGE

The market is at an inflection point, where the right digital strategies become the differentiator and source of competitive advantage for organisations. And for the first time in history,

the technology to fully enable digital business is available to everyone.

5G will open up possibilities of digital transformation, especially in an IoT and artificial intelligence-connected world. To attain the high radio density required for 5G, operators are looking to optimise costs through the use of open-source commodity networking hardware and virtualisation of the wireless networking stack. There will be increased investments in 2019 in the revamping of existing cellular building infrastructure and building of new edge infrastructure.

The growing use of artificial intelligence in business and society will increase data usage exponentially. While first-generation artificial intelligence architectures have historically been centralised, in 2019 enterprises will enter distributed artificial intelligence architectures. artificial intelligence model building and model inferencing will take place at the local edge, physically closer to the origin source of the data. To access more external data sources for accurate predictions, enterprises will turn to secure data transaction marketplaces. They will also strive to leverage artificial intelligence innovation in multiple public clouds without getting locked into a single cloud, further decentralising artificial intelligence architecture.

Blockchain investments are growing at a CAGR of 73%, with a projected total spending of \$11.7 billion by 2022, according to IDC. Enterprises will start to participate in multiple blockchain networks, example food safety, financial services, global container shipment, creating a network of networks — something that allows them to simultaneously interact with multiple blockchain ecosystems.

Blockchain performance will become a more important requirement within the enterprise space, driven by the need to accommodate more than simple transaction data or as an element in applications where real-time performance and linkage with other data sources matter. Integration will become a challenge as enterprises combine their legacy applications with multiple blockchain



BRIAN LILLIE,
Chief Product Officer, Equinix.

Blockchain performance will become a more important requirement within the enterprise space.

networks, necessitating the deployment of exchange points for blockchain participants to directly connect and collaborate.

Many enterprises and SaaS providers are deploying mini-clouds in multiple regions in order to adhere to local data residence and compliance requirements. They are also looking at distributed data management architectures that require global networks and data fabrics in order to coherently manage these distributed mini-clouds.

Enterprises are now accessing SaaS, IaaS and PaaS solutions from multiple providers. 2019 will see the next level of challenges associated with hybrid cloud and multicloud approaches. Enterprises will struggle with expanding their security perimeters, as well as integration and management issues as they pursue hybrid multicloud architectures.



BRIAN PINNOCK,
Cybersecurity Specialist,
Mimecast.

ARTIFICIAL INTELLIGENCE WILL CREATE INSIGHTS FROM THREAT DATA

Organisations will realise the importance of threat intelligence and will talk about the need for an intelligence function. What they really mean is that they want some insight from their vendors around

the huge amounts of threat data they are acquiring. There may be a handful of organisations who will stop recasting threat data as intelligence and instead focus on generating actionable insights from this data, the prerequisite for threat intelligence. Unfortunately, the vast majority still will not take any action from the data presented, which means they will not actually have any intelligence.

Artificial intelligence and machine learning will play a more prominent role as the velocity and variety of attacks makes conventional approaches – such as blacklists – outdated and ill-equipped to deal with modern cyber threats. The average phishing site, for example, is only online for a few hours. With such a crowded domain space, attackers have to be clever about the domains they register and exploit. Luckily, these domains generally have certain characteristics, which machine learning algorithms can exploit and detect, while other properties of attack vectors can also be recognised by appropriately trained artificial intelligence.

Consumer connected devices such as cameras, microphones, wearables will become a major security issue as hackers discover ways to see live audio and video.

Artificial intelligence will also be used to detect break-ins, spam, phishing and more. Although it will mostly work well, look out for the occasional mistake: these will be utterly incomprehensible to humans, and very hard for vendors to explain to their customers. As our world becomes increasingly digitised and connected devices continue to permeate every aspect of our daily lives, the risks posed by cybercriminals are escalating.

A large-scale attack on critical infrastructure such as energy services, water supplies or even hospitals could cause massive damage and even loss of life. Autonomous vehicles, although not prevalent on our shores yet, are attractive targets for the more ruthless type of cybercriminal. And with the growth in digital medical devices, hackers could directly target an individual and interfere with their pacemakers or heart rate monitors.

Privacy will also become a key concern. Consumer connected devices such as cameras, microphones and wearables will become a major security issue as

A large-scale attack on critical infrastructure could cause massive damage and even loss of life.



DARYL PLUMMER,
Vice President and Gartner
Fellow, Distinguished.

hackers discover ways to see live audio and video of unsuspecting people's lives. The fallout of such an incident being exposed could drastically erode trust in technology and make people treat technology with greater caution as they realise the devices they have enjoyed without concern, carry immense risk to their personal privacy and security.

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PRIVACY POISONING WILL AFFECT 75% PUBLIC BLOCKCHAINS

As the advance of technology concepts continues to outpace the ability of enterprises to keep up, organisations now face the possibility that so much change will increasingly seem chaotic. But chaos does not mean there is no order. The key is that CIOs will need to find their way to identifying practical actions that can be seen within the chaos. Continuous change can be made into an asset if an organisation sharpens its vision in order to see the future coming ahead of the change that vision heralds.

By 2021, 75% of public blockchains will suffer privacy poisoning, inserted personal data that renders the blockchain noncompliant with privacy laws. Companies that implement blockchain systems without managing privacy issues by design run the risk

CIOs will need to find their way to identifying actions that can be seen within the chaos.

of storing personal data that cannot be deleted without compromising chain integrity. A public blockchain is a pseudo-anarchic autonomous system such as the Internet. Nobody can sue the Internet, or make it accountable for the data being transmitted.

Through 2020, 80% of artificial intelligence projects will remain alchemy, run by wizards whose talents will not scale widely in the organisation. When it comes to artificial intelligence techniques, the needed talent is not only technically demanding, mathematically savvy data scientists to inventive data engineers, and rigorous operation research professionals to shrewd logisticians, are needed.

By 2023, there will be an 80% reduction in missing people in mature markets compared with 2018 due to artificial intelligence face recognition. Over the next few years, facial matching and 3D facial imaging will become important elective aspects of capturing data about vulnerable populations, such as children and the elderly or people who are otherwise impaired. Such measures will reduce the number of missing people without adding large numbers of dramatic discoveries in large public crowds. The most important advances will take place with more robust image capture, image library development, image analysis strategy and public acceptance.

By 2023, US emergency department visits will be reduced by 20 million, due to enrollment of chronically ill patients in artificial intelligence-enhanced virtual care. Clinician shortages, particularly in rural and some urban areas, are driving healthcare providers to look for new approaches to delivering care. In many cases, virtual care has shown it can offer care more conveniently and cost-effectively than conventional face-to-face care.

By 2023, 25% of organisations will require employees to sign an affidavit to avoid cyberbullying, but 70% of these initiatives will fail. To prevent actions that have a detrimental impact on the organisation's reputation, employers want to strengthen employee behavioral guidelines, such as anti-harassment and discrimination norms, when using social media. Signing an affidavit of agreement to refrain from cyberbullying is a logical next step. Alternatively, legacy code of conduct agreements should be updated

The network effect, which makes it hard to switch to a different service because everybody is using the service, has proven to be very powerful.



DAVE RUSSELL,
Vice President Product
Strategy, Veeam.

to incorporate cyberbullying. However, cyberbullying is not stopped by signing an agreement. It is stopped by changing culture.

Through 2022, 75% of organisations with frontline decision-making teams reflecting diversity and an inclusive culture will exceed their financial targets. Business leaders across all functions understand the positive business impact of diversity and inclusion. A key business requirement currently is the need for better decisions made fast at the lowest level possible, ideally at the frontline. To create inclusive teams, organisations need to move beyond obvious diversity cues such as gender and race, to seek out people with diverse work styles and thought patterns.

By 2023, ePrivacy regulations will increase online costs by minimising the use of cookies thus crippling the current Internet ad revenue machine. GDPR and upcoming legislation, including The California Consumer Privacy Act of 2018 and ePrivacy continue to limit the use of cookies and put greater pressure on what constitutes informed consent. An individual may not be able to simply accept the use of cookies, as they do now, but, will have to give explicit consent to what the cookie track and how that tracking will be used.

Through 2021, social media scandals and security breaches will have effectively zero lasting consumer impact. The core point of this prediction is that the benefits of using digital technologies outweigh potential, but unknown, future risks. Consumer adoption of digital technologies will continue to grow, and backlash of organisations taking technology too far will be short term.

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COST, COMPLEXITY, CAPABILITY, THREE PAIN POINTS

The world of today has changed drastically due to data. Every process, whether an external client

interaction or internal employee task, leaves a trail of data. Human and machine generated data is growing ten times faster than traditional business data, and machine data is growing at 50 times that of traditional business data.

With companies operating across borders and the reliance on technology growing more prominent than ever, an expansion in multi-cloud usage is almost inevitable. On-premises data and applications will not become obsolete, but that the deployment models for data will expand with an increasing mix of on-premises, SaaS, IaaS, managed clouds and private clouds. Over time, we expect more of the workload to shift off-premises, but this transition will take place over years.

The versatalist or generalist role will increasingly become the new operating model for the majority of IT organisations. The future of digital is still analogue: it is people. Talent shortages combined with new, collapsing on-premises infrastructure and public cloud and SaaS, are leading to broader technicians with background in a wide variety of disciplines, and increasingly a greater business awareness as well.

Standardisation, orchestration and automation are contributing factors that will accelerate this, as more capable systems allow for administrators to take a more horizontal view rather than a deep specialisation. Specialisation will of course remain important, but as IT becomes more and more fundamental to business outcomes, it stands

With companies operating across borders and the reliance on technology growing more prominent than ever, an expansion in multi-cloud usage is almost inevitable.

As IT becomes fundamental to business outcomes, IT talent will likewise need to understand the wider business and add value across many IT domains.

to reason that IT talent will likewise need to understand the wider business and add value across many IT domains.

Cost, complexity and capability are the 3C pain points. These 3 C's continue to be why people in data centers are unhappy with solutions from other vendors. Broadly speaking, these are excessive costs, unnecessary complexity and a lack of capability, which manifests as speed of backup, speed of restoration or instant mounting to a virtual machine image. These three major criteria will continue to dominate the reasons why organisations augment or fully replace their backup solution.

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GAUTAM KUMAR,
Co-Founder and COO, FarEye.

OFFERING AN INSTORE-LIKE DELIVERY EXPERIENCE

In the Middle East region, revenue from the food delivery market is expected to grow at an annual growth rate of 13.6%. Hence, it is not surprising that investors will continue to fund food aggregators. Not worried about generating profits, food aggregators are seldom known for playing by the rules and conflict of interest between these aggregators and restaurants owners are common. The question is how does a restaurant compete with

these aggregators who are delivering food at cut-throat prices?

There is no easy answer to this but adopting an advanced supply chain and logistics platform can surely solve a lot of problems. An advanced supply chain and logistics software helps businesses increase fleet visibility, boost customer experience and engagement, optimise delivery routes, customise delivery locations, predict communications and so much more.

The incorrect and inadequate postal address is a major problem that supply chain and logistics business face in the Middle East and Africa region. To resolve this inaccurate-address problem, supply

In UAE only 53% of retailers offer click and collect as a service and only three retailers offer next-day delivery.

chain and logistics companies need to embrace artificial intelligence and machine learning-based platforms that can leverage advanced technologies to geolocate a customer's delivery address intelligently. Next-day deliveries, customising delivery locations and timing on the fly, paperless billings and more such customer expectations will continue to drive businesses to embrace advanced supply chain and logistics platforms.

Online customers in the Middle East and Africa region want retailers to deliver in-store like buying experience focused on instant gratification. According to Google, in UAE only 53% of retailers offer click and collect as a service, and only three retailers offer next-day delivery. The only way to be on top of the customer experience trend is to drastically improve last-mile delivery with advanced SaaS-based logistics and eCommerce platforms.

How does a restaurant compete with aggregators who are delivering food at cut-throat prices.



GREG YOUNG,
Vice President Cybersecurity,
Trend Micro.

THREAT ACTORS TO PROFILE VICTIMS USING ARTIFICIAL INTELLIGENCE

As we head into 2019, organisations must understand the security implications of greater cloud adoption, converging IT and OT, and increasing remote working. Cybercriminals will continue to follow a winning formula: exploiting social engineering and stolen credentials to drive profits.

As both the corporate attack surface and unknown cyber threats increase, it is more important than ever for organisations to put more resources behind employee education to help protect against these growing attacks. The role of social engineering in successful attacks against businesses and individuals will continue to increase throughout the year. Since 2015, the number of phishing URLs blocked by Trend Micro has increased by nearly 3,800%. More vulnerabilities will be found in cloud infrastructure, such as containers, and weak cloud security measures will allow greater exploitation of accounts for cryptocurrency mining.

Role of social engineering in attacks against businesses and individuals will continue to increase throughout the year.

Attackers will also implement emerging technologies like artificial intelligence to better anticipate the movements of executives. This will lead to more convincing targeted phishing messages, which can be critical to attacks. Additionally, it is likely that attacks will target more employees who report to C-level executives, resulting in continued global losses.

Additionally, the smart home will be an increasingly attractive target for attacks that leverage home routers and connected devices.

SIM swapping and SIM-jacking will be a growing threat to take advantage of remote employees and everyday users. This attack method allows criminals to hijack a cell phone without the user's knowledge, making it difficult for consumers to regain control of their devices. Additionally, the smart home will be an increasingly attractive target for attacks that leverage home routers and connected devices.

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HAIDER PASHA,
Senior Director and Chief Security
Officer Emerging Markets, Palo
Alto Networks.

MACHINE TO MACHINE FACE-OFF AHEAD

Several years ago, the CEOs of a small number of security vendors agreed that if we could collaborate on threat intelligence, we could provide better customer outcomes. This collaboration has the potential for a systemic impact and improvement in how we share and use threat intelligence to prevent cyber-attacks. While cybersecurity experts look for new ways to spot adversaries using machine learning techniques, and leverage artificial intelligence against the mass of threat indicators gathered, adversaries will be increasingly looking to subvert machine learning and artificial intelligence.

They will be trying to find ways to trick such solutions, looking for the cracks to sneak through. We can also be sure they are also looking to leverage artificial intelligence for their own purposes.

Businesses will have to leverage the cloud to store, process information and apply algorithms at speed to prevent attacks.



JAMES PETTER,
EMEA Vice President,
Pure Storage.

Cybersecurity is moving into a machine versus machine fight with humans on hand to help and apply judgment

We will see a wholesale move of cybersecurity to the cloud in 2019. As cybersecurity aims to be as technically and commercially agile as DevOps, we can only expect more cloud-based security with new commercial models. However, each business will be gathering Petabytes of security data and, that is before regulation forces us to hold it for longer periods.

Businesses will have to leverage the cloud to store, process information and apply algorithms at speed to prevent attacks. Adversaries simply will not wait, and the cloud could give cybersecurity teams the edge they need.

As the digital mesh of IoT and OT devices grows, so do the risks. 5G, which will begin service trials in 2019 in many European markets, will only accelerate the number of connected devices at risk. We are starting to see two IoT trends with security implications: more inter-connection and more data collection. We must expect adversaries to use each of these as hopping off points to another resource or worse, a data gatherer as part of a bigger, targeted attack.

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CREATING FUTURE DATA SCIENTISTS

As the artificial intelligence skills gap becomes more like a chasm, next year we will see the technology talent war heat up even more. Artificial intelligence is reinventing the way we work, redefining business strategies and helping organisations make sense of the ever-growing volume of data they possess. This makes roles

Expect to see new tools that will simplify adoption of artificial intelligence, reducing the learning curve for new talent.

such as data scientist and artificial intelligence specialist a necessity, as opposed to merely being a competitive advantage.

The challenge? There is not enough talent to go around. Artificial intelligence and data specialists are not being trained fast enough to meet demand, with the best professionals likely to be monopolised by large firms with deep pockets. This could result in an innovation vacuum in the start-up and SMB space.

In a study commissioned from MIT Tech Review Insights, business leaders felt a lack of resources and talent was one of the biggest barriers preventing a better management of data in their organisation. With data undoubtedly the new currency of businesses, this is a serious issue for the industry and action needs to be taken.

With this in mind, we expect to see businesses of all sizes and industries begin working with educational institutions, ensuring that courses are designed to prepare students with the skills that organisations need. To end the war for talent once and for all, we need to see the creation of artificial intelligence-specific internships and flexible university curriculums that keep up in real-time, with technological change.

We also expect to see new tools that will simplify the adoption of artificial intelligence, reducing the learning curve for new talent. These efforts, among others, will help accelerate the creation of future data scientists.

Gartner's Top 10 **Strategic** Technology Trends for 2019

Intelligent

#1



Autonomous Things

#4



Augmented Analytics

#7



AI-Driven Development

Digital

#2



Digital Twins

#5



Empowered Edge

#8



Immersive Technologies

Mesh

#3



Blockchain

#6



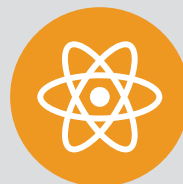
Smart Spaces

#9



Ethics & Privacy

#10



Quantum Computing

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MOREY HABER,
CTO, *BeyondTrust*.

ARTIFICIAL INTELLIGENCE USED TO CREATE LEAN AND MEAN ATTACKS

2019 will see an increasing number of attacks coordinated with the use of artificial intelligence and machine learning. Artificial intelligence will analyse available options for exploit and develop strategies that will lead to an increase in number of successful attacks. Artificial intelligence will also be able to take information gathered from successful hacks and incorporate that into new attacks, potentially learning how to identify defense strategies from the pattern of available exploits. This evolution may potentially lead to attacks that are significantly harder to defend against.

The opportunity to create ransomware scenarios affecting critical national infrastructure will draw attention from cyber criminals.

The next few years will see an increase in the attention that industrial control systems and SCADA systems attract from cybercriminals and nation-state hackers. The opportunity to create ransomware scenarios directly affecting critical national infrastructure will draw attention from cyber criminals motivated both, by financial gain, as well as those who are looking to develop weapons in the evolving cyber-frontline. Historically, operational technology teams have been reluctant to engage with IT security practices, but we are seeing this change as all teams recognise that cybersecurity is a critical aspect of business continuity.

Major security breaches will continue to dominate the news, but the latest form of attacks on organisations will come in the form of an attack on their supply chains. Corporate attacks and corporate espionage will take on a whole new meaning as more supply chain attacks with embedded malware are discovered.

Android will no longer be fully open and extensible. Google has already announced that only the default application can access calls and SMS texting data for the next release of Android, and the default application must be explicitly set in the configuration. No longer can multiple applications—including tools used for spam detection—be shared with your favorite calling and texting applications. Expect Google to continue this trend to fight malware and spyware by closing more of the operating system in the name of security.

Infonomics will begin to become mainstream and, just like other intellectual property, expect businesses to begin applying a value to the data and disclosing the information they have and what it costs for sale. If you think this is farfetched, consider the value of GPS data over the last 30 years. From the early days of MapQuest to dedicated GPS receivers, driving and transportation data has become a commodity.

In an effort to protect and control the exposure of personal data, information brokers will begin to emerge. These services will provide centralised mechanisms that allow granular sharing of data so that only the essential data is shared for whatever service you are signing up to. The EU has been working on digital identity in this form for several years and may well be the first to bring that into full effect, but others will follow in providing a mechanism by which our data is decentralised. This will help limit individual data exposures when systems are compromised and allow more control by individuals over their data and who has legitimate access to it.

Cyber criminals will be motivated both by financial gain as well as those looking to develop weapons in cyber-frontline.

The challenges of moving data between public cloud and on-premise solutions need to be ironed out.



PATRICK SMITH,
EMEA Field CTO,
Pure Storage.

TACKLING THE CLOUD AND STORAGE DIVIDE

The cloud divide that currently exists is forcing organisations to compromise. This is no small compromise either; infrastructure underpins every business and needs to be able to respond to the unique demands placed upon it. At present the public cloud is not purpose-built for enterprise needs, and enterprise-grade storage is not as user-friendly, agile or scalable as public cloud.

The problems facing modern enterprises are complex and the challenges of moving data between public cloud and on-premise solutions need to be ironed out. In 2019 we will see more robust and unified multi-cloud solutions that provide both the flexibility and simplicity that organisations need when bridging this divide.

The arrival of a truly hybrid architecture will create an environment that allows enterprises to combine the agility and simplicity of the public cloud with the enterprise functionality of on-premises. In this hybrid cloud world applications can be developed once and deployed seamlessly across owned and rented clouds, giving customers the flexibility to turn data into value wherever that data resides.

In 2019 we will see unified multi-cloud solutions provide flexibility that organisations need.

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RAJ SAMANI,
Chief Scientist and
McAfee Fellow, Advanced
Threat Research.

Nation-states leverage bot battalions to deliver messages or manipulate opinion and their effectiveness is striking.

USING FAKE NEWS FOR CORPORATE EXTORTION

The elections were influenced, fake news prevails, and social media followers are all foreign government-controlled bots. At least that is how the world feels sometimes. During this period a game of cat and mouse has ensued, as automated accounts are taken down, adversaries tactics evolve, and botnet accounts emerge looking more legitimate than ever before. In 2019, we predict an increase of misinformation and extortion campaigns via social media that will focus on brands and originate not from nation-state actors but from criminal groups.

Nation-states leverage bot battalions to deliver messages or manipulate opinion, and their effectiveness is striking. Bots often will take both sides of a story to spur debate, and this tactic works. By employing a system of amplifying nodes, as well as testing the messaging including hashtags to determine success rates, botnet operators demonstrate a real understanding of how to mold popular opinion on critical issues. Next year we expect that cybercriminals will repurpose these campaigns to extort companies by threatening to damage their brands. Organisations face a serious danger.

Due to the ease with which criminals can now

Expect evasion techniques to begin leveraging artificial intelligence to automate target selection.

outsourcing key components of their attacks, evasion techniques will become more agile due to the application of artificial intelligence. In recent years, we have seen malware using evasion techniques to bypass machine learning engines. Clearly, bypassing artificial intelligence engines is already on the criminal to-do list; however, criminals can also implement artificial intelligence in their malicious software.

We expect evasion techniques to begin leveraging artificial intelligence to automate target selection, or to check infected environments before deploying later stages and avoiding detection. Such implementation is game changing in the threat landscape. We predict it will soon be found in the wild.

TARGETING THE SMART HOME AND ITS DEVICES

As technology fans continue to fill their homes with smart gadgets, from plugs to TVs, coffee makers to refrigerators, and motion sensors to lighting, the means of gaining entry to a home network are growing rapidly, especially given how poorly secured many IoT devices remain.

But the real key to the network door next year will be the voice-controlled digital assistant, a device created in part to manage all the IoT devices within a home. For now, the voice assistant market is still taking shape, with many brands still looking to dominate the market, in more ways than one, and it is unclear whether one device will become ubiquitous.

If one does take the lead, its security features will quite rightly fall under the microscope of the media, though not perhaps before its privacy concerns have been fully examined in prose. Last year we highlighted privacy as the key concern for home IoT

devices. Privacy will continue to be a concern, but cybercriminals will put more effort into building botnets, demanding ransoms, and threatening the destruction of property of both homes and businesses.

This opportunity to control a home's or office's devices will not go unnoticed by cybercriminals, who will engage in an altogether different type of writing in relation to the market winner, in the form of malicious code designed to attack not only IoT devices but also the digital assistants that are given so much license to talk to them.

Next year we expect to see two main vectors for attacking home IoT devices: routers, smartphones and

Malware authors will take advantage of phones and tablets to try to take over IoT devices by password cracking.

tablets. The Mirai botnet demonstrated the lack of security in routers. Infected smartphones, which can already monitor and control home devices, will become one of the top targets of cybercriminals, who will employ current and new techniques to take control.

Malware authors will take advantage of phones and tablets, those already trusted controllers, to try to take over IoT devices by password cracking and exploiting vulnerabilities. Infected IoT devices will supply botnets, which can launch DDoS attacks, as well as steal personal data. The more sophisticated IoT malware will exploit voice-controlled digital assistants to hide its suspicious activities from users and home-network security software. Malicious activities such as opening doors and connecting to control servers could be triggered by user voice commands.

INDUSTRIAL CONTROL AND IOT EDGE DEVICES PRIME TARGETS

Triton malware that attacks industrial control systems, has demonstrated the capabilities of

adversaries to remotely target manufacturing environments through their adjacent IT environments. Identity platform and edge device breaches will provide the keys to adversaries to launch future remote ICS attacks due to static password use across environments and constrained edge devices, which lack secure system requirements due to design limitations.

An edge device is any network-enabled system hardware or protocol within an IoT product. We expect multifactor authentication and identity intelligence will become the best methods to provide security in this escalating battle. We also predict identity intelligence will complement multifactor authentication to strengthen the capabilities of identity platforms.

Identity is a fundamental component in securing IoT. In these ecosystems, devices and services must securely identify trusted devices so that they can ignore the rest. The identity model has shifted from user centric in traditional IT systems to machine centric for IoT systems. Unfortunately, due to the integration of operational technology and insecure edge device design, the IoT trust model is built on a weak foundation of assumed trust and perimeter-based security.

Most IoT edge devices provide no self-defense isolating critical functions, memory protection, firmware protection, least privileges, or security by default so one successful exploit owns the device. IoT edge devices also suffer from break once, run

Most IoT edge devices provide no self-defense isolating critical functions, memory protection, firmware protection.

everywhere attacks — due to insecure components used across many device types and verticals.

IoT security must begin on the edge with a zero-trust model and provide a hardware root of trust as the core building block for protecting against hack and shack attacks and other threats. There will be an increase in compromises on identity platforms and IoT edge devices in 2019 due to the adoption of smart cities and increased ICS activity.

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RAY KAFITY,
Vice President - Middle East
Turkey and Africa (META),
Attivo Networks

IoT ADOPTION TO SURGE DESPITE REGULATORY SLUGGISHNESS

In 2018, organisations in the Middle East invested heavily in multiple solutions to build and strengthen their cyber defenses. This trend will continue in 2019 as well, as organisations steadily increase their cybersecurity investments. IoT will continue its rapid expansion with over 50% of businesses incorporating IoT into their operations in 2019 for economic advantages, market competitiveness, and differentiation.

IoT-enabled device innovation will continue to outpace the security built into those devices and Federal government regulation will continue to fall short in defining the laws and fines required to affect change. State-level regulations will be enacted to improve the situation, but will likely fall short in impact, and in many cases, only result in a false sense of consumer confidence with respect to the security of these devices.

Cloud will become an increased target in 2019 as adoption grows and attackers exploit weaknesses in shared security models. Cloud providers will protect the infrastructure platform with an increased awareness of hardware-based attacks,

State-level regulations will be enacted to improve the situation and in many cases result in a false sense of consumer confidence.

IoT will continue expansion with over 50% of businesses incorporating IoT for economic advantages, market competitiveness.

however the lack of understanding about how best to secure data in and access to the cloud will leave room for errors and misconfigurations.

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SAMI ABI ESBER,
President MDS Gulf, Board
Member Midis Group.

CORPORATE CLOUD LITERACY A TRANSFORMATION ENABLER

Regardless of the industry or enterprise, one or the other technology will play a part in transforming business by offering benefits like cost savings, improved security and better customer experience, among others. With the acceleration of digital transformation in

The most popular blockchain use cases will be cross-border payment and settlements, asset and goods management, identity management.

the region, more and more devices are getting connected. Although the adoption of IoT will be massive, it is still slow as the devices are not standardised. From autonomous vehicles to drones to sensors in oilfields, healthcare, transport, IoT will have a huge impact on enterprises and consumers.

Enterprises in the region are now using multiple cloud solutions whether on-premises, public cloud, or a hybrid of both. In the coming years, upfront costs will become less important as cloud vendors continue to produce convincing use cases. Corporate cloud literacy is becoming an operational prerequisite as technological progress accelerates in EMEA. With massive volumes of data being generated every second from connected devices, machines and IoT, Big Data is definitely a trend to watch out for. Big Data is the new oil as it has the

A recent survey by ServiceNow indicates that customer service is an area that is showing a fast return on investment.

potential to empower organisations to make better business decisions, in real time.

The use of artificial intelligence technologies is now penetrating many aspects of business. A recent survey by ServiceNow across Europe, Middle East and Africa indicates that customer service is an area that is showing a fast return on investment. Interest in blockchain technologies in the region is growing rapidly. The pace is being set by the government and public sector including education, healthcare, finance, distribution and services. The most popular blockchain use cases in the coming years will be cross-border payment and settlements, asset and goods management and identity management.

Across the private sector, we have seen announcements of recent initiatives by The Atlantis, Jordan Investment Bank, Noon Capital, DIFC, Halal Guide, amongst others. Global blockchain player, ConsenSys recently conducted a blockchain developer training and hackathon camp in Lebanon.

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SANTHOSH RAO,
Senior Research
Director, Gartner.

BLOCKCHAIN, IOT, DIGITAL TWINS, KEY TRANSFORMATION TECHNOLOGIES

Gartner has identified blockchain, Internet of Things, city operations centers, smart city frameworks, digital twins and smart contracts as being among the technologies that will achieve mainstream business adoption in the next five to 10 years in the GCC. Of the 29 technologies on this year's Hype Cycle, eight are entering the Slope of Enlightenment and climbing toward the Plateau of Productivity. This shows that the GCC region is entering an important stage and growing in maturity.

However, technologies fuelling digital transformation in the region are taking longer to reach mainstream adoption. Local organisations are cautious about adopting new technologies. At the same time, system integrators are not fully equipped to handle complex digital projects due to a shortage of skills.

Of the six technologies, enterprises should focus on blockchain, IoT and digital twins, as these are

Gartner analysts expect oil and gas and manufacturing companies to combine digital twins and IoT solutions for asset performance management in GCC.

Digital twins enable businesses to optimise or transform their business model and will become the dominant design pattern for solutions.

growing rapidly. In addition, local organisations know that these technologies will help create competitive differentiation and enhance service delivery. Although blockchain technology maintains high visibility, Gartner does not expect blockchain architectures to be suitable for many enterprise activities, especially taking account of issues of decentralisation, risk and governance. However, startups may continue to seek disruptive opportunities using the original block and chain concept, and Gartner recommends that business executives undertake scenario planning accordingly.

In GCC, blockchain technology has received significant interest from the governments and financial institutions, due to the increase in the number of digitalisation projects currently underway. Organisations should consider proof-of-concept experimentation, but remain aware that the general public may not readily accept non-intermediated information management and transaction execution models and decentralised governance.

IoT has a business transformation and evolutionary impact on most organisations as it can be used as a key enabler to deliver services and create new business opportunities. IoT projects will impact most organisations' competitive position, product development strategy and internal operations, as connected things will help generate revenue and lower costs.

A digital twin is a virtual representation of a real object that is designed to optimise the operation of assets such as aircraft, power plants and buildings. The primary short-term use is to lower maintenance costs and increase asset uptime. In GCC, Gartner analysts expect oil and gas and manufacturing companies to combine digital twins and IoT solutions for asset performance

Gartner does not expect blockchain to be suitable for many enterprise activities, taking account of decentralisation, risk and governance.

Using mature technologies, natural activities of making phone call, taking video, taking a picture could be used to fill out data-enriched forms automatically.

management and streamlining processes.

Organisations considering the use of digital twins should focus on identifying a portfolio of digital twin initiatives that provide short paybacks within one year and midrange paybacks within five years. Simultaneously, they need to conduct a threat and opportunity analysis of their current business ecosystem, incorporating digital twin developments by competitors or partners.

compliance and rapid decision making.

Lots of countries mandate that data needs to reside within geographical boundaries. Enterprises using SaaS or PaaS will end up using country-specific public clouds or even private clouds. As a result, critical data and applications that need to be monitored will be spread across geographies. Monitoring tools and technologies that help consolidate the view of these applications and data will see larger enterprise adoption.

Enterprise adoption of process automation technologies will continue with vigor. Process automation will also help enterprises to go beyond the simple operational and efficiency gains made with basic automation to tap new revenue opportunities. The principal challenge of process automation is any web form customers, employees, or partners must fill out when an organisation wants to capture their data. Every one dreads screens with forms.

Artificial intelligence and machine learning are mature enough to process voice, video, text, and images reliably. Using these mature technologies, the natural activities of making a phone call, taking a video, or taking a picture could be used to fill out data-enriched forms automatically. Hence both objectives will be met—collecting adequate data and filling out fewer forms—and these technologies will continue their march into the enterprise.

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SHAILESH KUMAR
DAVEY, Vice President,
ManageEngine.

ARTIFICIAL INTELLIGENCE TO ENABLE PROCESS AUTOMATION

With GDPR becoming a reality and hosts of other countries passing similar privacy laws, data usage will be closely monitored. Data will be tagged so that its origin will be known at the point of usage. Tools related to data tagging and master data management will become crucial. Privacy concerns and related legal ramifications could slow down decision making in enterprises. In response, new generation messaging, audio, video web conferencing tools will be used by enterprises to achieve the twin objectives of privacy

New generation messaging, audio, video, web conferencing tools will be used by enterprises to achieve objectives of privacy compliance.

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SRINIVASAN CR,
Chief Digital Officer, Tata
Communications.

TRANSFORMATION MUST ENABLE SPEED, SCOPE, IMPACT

Thinking about 2018, we have seen several game-changing events within the technology industry such as the roll-out of GDPR across Europe in May and the crash in Bitcoin value. We have also seen the lines between technology, politics and society become increasingly tangled, exemplified in Facebook's ongoing battles.

The inaugural global Cycle of Progress digital transformation benchmark study, examines business leaders' hopes and fears about emerging technologies. It reveals which technologies they are actively implementing to drive digital transformation of their business – versus which ones are yet to live up to the hype.

Businesses use the latest technology advancements to thrive and survive in this constantly evolving environment, often dubbed the Fourth Industrial Revolution. To make a real difference to the bottom line, technology-enabled business transformation must have speed, scope and impact. And, as transformation gains momentum in businesses, new possibilities present themselves.

More than half 53% of Cycle of Progress respondents say they have adopted IoT in some shape or form so far. Already well established in

43% of decision makers see artificial intelligence as having a positive impact, only 3% of business leaders think that it will have a negative impact.

The potential of blockchain goes beyond crypto currency and the survey shows global implementation rate of 44%.

many businesses, IoT applications and services are leading the pack in having the greatest positive impact. It helps businesses gather and analyse real-time data to enable everything from improving the customer experience to streamlining supply chain operations.

And the future looks bright, with 48% of decision makers seeing it as having the most significant impact, ranking above any other emerging technology in our study. In 2019, IoT supported by advanced connectivity solutions such as 5G and LoRaWAN – will continue to go from strength to strength especially in emerging markets such as India, where a staggering 69% of Cycle of Progress respondents reported to have adopted the technology.

According to the Cycle of Progress, artificial intelligence has already been adopted by 46% of global businesses. What is even more interesting is that, despite the scare mongering around the potential negative impact of artificial intelligence on people and jobs – just 8% of business leaders who took part in our survey have no plans at all to start using artificial intelligence. Furthermore, 43% of decision makers see artificial intelligence as having a positive impact, and only 3% of business leaders think that it will have a negative impact.

Shared ledgers like blockchain have the potential to enhance security while also boosting efficiency and speed. The potential of blockchain goes way beyond crypto currency, and the survey shows a global implementation rate of 44%. While the outlook for digital transformation in the coming year is positive, implementing new technologies like blockchain is not without its challenges.

In fact, business leaders cited cost as the biggest barrier to integrating new innovations, while security and privacy were also highlighted as major challenges. There is also significant concern over the ever-growing skills gap, with 30% of decision makers stating that the lack of the right skills in their workforce is preventing them from adopting the latest technologies.



BAHRAIN GEARS UP FOR VAT DRIVEN TRANSFORMATION

Bahrain will be the third country in GCC to implement value added tax following Saudi Arabia and UAE and can gain much from their previous transformation and change management roll out experiences.



DR JASSIM HAJI
President of AI Society Bahrain.



TANMAY SAXENA
Head of Department, Tax Services at Affinix Partners.

On 9 October 2018, the Kingdom of Bahrain released its Value Added Tax Law under Royal Decree No 48 of 2018. The VAT implementation date will be 1 January 2019. Bahrain's VAT Law differs in key areas from corresponding legislation introduced in Saudi Arabia and UAE in that it provides for more and broader zero-rates and exemptions, with a view to balance a range of relatively unique socio-economic objectives.

In November 2016, the Gulf Cooperation Council Member States executed the Common VAT Agreement of the States of the GCC, outlining the framework that member states should follow when implementing their domestic VAT rules. Saudi Arabia and the UAE implemented their VAT systems on 1 January 2018. Bahrain released the VAT Law on 9 October 2018 via the Official Gazette website. The Royal Decree states that VAT will be implemented on 1 January 2019.

HIGHLIGHTS OF THE LAW

Article 4 of the Royal Decree states that the Law will come into force on 1 January 2019. In accordance with the GCC VAT Agreement, Article 2 of the Law provides that the supply of all goods and services made in Bahrain, as well as imports, shall be subject to VAT. Article 3 of the Law provides for a standard rate of 5%, while certain goods and services may be subject

to a zero-rate or exempt from VAT. Article 53 of the Law sets out provisions where certain supplies and sectors are subject to the zero-rate of VAT subject to satisfying conditions and procedures.

In summary these include: oil derivatives and gas sector, foodstuffs, local transport, international transportation services, construction of new buildings, educational services, preventive and basic healthcare services, supplies of certain medicines and medical equipment, export of goods, export of services, supply of goods under a customs duty suspension scheme, import of investment gold, silver and platinum, import of pearls and precious stones.

Articles 54 to 56 set out the scope of exemptions. In summary these include: supply of financial services, supply of vacant land and buildings, where the supply of goods in the final country of destination is exempt or zero-rated, goods that are exempt from customs duty, diplomatic exemptions, military exemptions, used personal effects and household items, personal luggage and gifts carried by travelers, necessities for people with special needs

Article 51 provides that import VAT should be paid to the customs authority, where Bahrain is the first point of entry. Tax authorities may allow the taxable person to defer the payment of VAT until submission of the VAT returns.

HANDS-ON WORKSHOP

In order to prepare financial decision makers in Bahrain to prepare for these process changes, with effect from 01 January 2019, GEC Media Group organised the Tax transformation Workshop in Bahrain. GEC Media Group, publishers of Business Transformation, Enterprise Channels MEA, The Titans, Cyber Sentinels, successfully completed the Tax Transformation Workshop on 19 December in Bahrain. The workshop was held in partnership with AI Society Bahrain, Affiniac Partners, Sage Middle East, and Valto Technologies. Close to 75 senior and middle level financial executives attended the workshop at the Gulf Convention Centre, with the total number of attendees closer to 100.

The event was kickstarted by a key note from Dr Jassim Haji, President of The AI Society Bahrain. His topic was titled – Using AI and Machine Learning technologies in VAT implementation. This



MANSOOR SARWAR

Director of Technical Services and Pre-Sales, Sage Middle East.



FARAZ AFZAL

Pre-Sales Consultant at Sage Middle East.



VINAYAN P

CEO at Valto Technologies.

UAE VAT compliant solutions from Sage

Sage Accounting, previously Sage One

Sage Accounting offers easy to use online accounting software that supports entrepreneurs and small businesses. Accessible 24x7, it allows businesses to grow and offers a simple way to get things done. Sage Accounting is for start-up companies, valid in UAE but the VAT module is not yet customised for Bahrain.

Sage 300 Cloud, Sage 300 ERP

Sage 300 Cloud makes it easy to manage mobile and distributed medium-sized to large business. Whether the business operates as one company, 10 divisions, or 100 entities across the Middle East, Sage 300cloud helps to connect business and speed up growth, without the cost or complexity of traditional ERP software. Sage 300 Cloud is for SMBs and has been tailored to comply with Bahrain laws.

Sage Business Cloud Enterprise Management, previously known as X3

Sage Business Cloud Enterprise Management takes the complexity out of running business. It simplifies operations, leaving them lean and ready for whatever comes next. Sage Enterprises is suitable for larger enterprises.

was followed by an overview of the VAT guidelines due to be implemented in the Kingdom of Bahrain by 01 January 2019 by Tanmay Saxena, Head of Department, Tax Services at Affiniac Partners. Saxena also presented how the GCC VAT framework will impact business in Bahrain.

Mansoor Sarwar, Director of Technical Services at Sage Middle East, presented both a global and regional overview of how



Role of Federal Tax Authority of UAE

The Federal Tax Authority of UAE, the government entity responsible for the collection and management of federal taxes in UAE, was established in 2016 by the President of the UAE, His Highness Sheikh Khalifa Bin Zayed Al Nahyan, via Federal Decree-Law No 13 of 2016 on the establishment of the Federal Tax Authority.

Its mandate includes:

- Achieving economic diversification through fiscal best practices
- Increasing the UAE's non-oil revenues
- Reducing dependence on oil resources in preparation for the post-oil economy
- Enhancing UAE's economic sustainability
- Helping business community understand responsibilities with regard to taxation

The vendors that have FTA UAE compliant solutions that are UAE VAT ready include: Zoho Corporation, Tally Solutions, Sage Group, Focus Softnet, RnR DataLex, Circuit Computer, SAP, Versify, Dolphin Solutions, FACT Software, First BIT, Posibolt Solutions, Dear Systems, AJ Technology, DCS Infoway, FACTS Computer Software, PayMyVAT, Dsoft, Digital Research Lab, Newage, Genibooks, SunTec, Coral Business Solution, Microsoft Dynamics, Reach Business Automation Software, Way Point System, Bisan.

the VAT tax system benefits governments and how it will help GCC nations reduce their budget deficit in the post-oil economy. Sarwar explained the fundamentals of the VAT process, elements of VAT invoicing, and other guidelines to be kept in mind while implementing the VAT taxation system. Sarwar also explained the Sage software application and the various features that enable VAT reporting and VAT analytics.

“At Sage, we develop solutions to aid businesses of all sizes in delivering quality products and services to their customers. With the introduction of VAT earlier this year in UAE and Saudi Arabia, we rolled out tax-compliant software in the GCC region to help businesses adjust easily. We have tailored our products to suit each country's VAT law and currently, we are customising software solutions that comply with Bahrain VAT laws as more details emerge,” said Mansoor Sarwar, Director of Technical Services and Pre-Sales, Sage Middle East, during the workshop.

The hands-on explanation of the Sage application was continued by Faraz Afzal, Pre-Sales Consultant at Sage Middle East. The concluding key note session was delivered by Vinayan P, CEO of Valto Technologies on SWOT analysis of document management. All the delegates engaged in a lively question and answer discussion during the individual sessions. Networking between the event partners, delegates and attendees continued into the lunch break.

With the implementation of VAT across the countries of the GCC, businesses need to invest in an accounting solution that

streamlines tax collection, record-keeping, and reporting processes. The solutions from Sage, include essential elements for a start-up, small and medium businesses or enterprise, needed to run with efficiency and flexibility.

“Some businesses may find adapting to new changes challenging at the beginning, but with the right support, the transition can be smooth. Business owners should view VAT as an opportunity to support the local economy, boost corporate transparency and optimise operations – not as an administrative burden or a daunting task,” advised Sarwar at the end of the workshop. ■

ROLE OUT OF VAT IN BAHRAIN

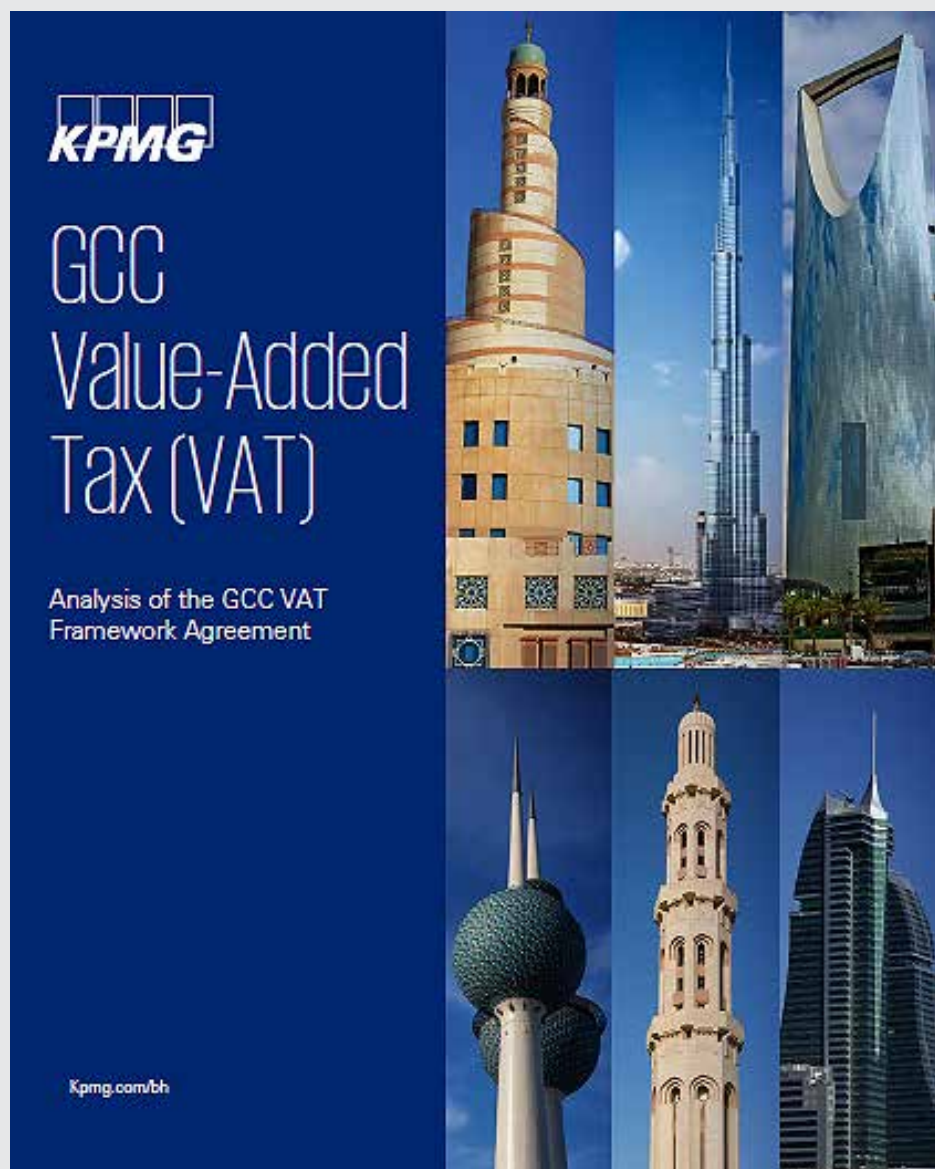
The Gulf region including the Kingdom of Bahrain, has long been considered an attractive and low-tax environment. However, to keep up with the changing economic landscape and as part of wider development reforms, the Gulf Cooperation Council member states signed a framework agreement to introduce Value-Added Tax on the supply of goods and services at a standard rate of 5%, in 2018. Implementing VAT will have implications for businesses and new taxpayers, both in Bahrain and abroad. However, a broad-based VAT at a low rate is unlikely to deter investment into Bahrain, or the surrounding region, whose appeal stretches much further than its low-tax status.

Infrastructure development, access to high-potential growth markets in Africa and Asia, free-trade zones, competitive labor costs, few trade barriers and economic and political stability are all factors which add to the region's appeal. In addition, VAT will have a neutral impact on registered businesses when managed efficiently.

The Unified Agreement for VAT of the Cooperation Council for the Arab States of the Gulf, sets out the framework under which VAT can be implemented in each of the GCC member states. The framework includes agreement on certain matters and in addition, requires member states to implement mandatory local legislation whilst allowing discretion on how to handle other related issues.

Once the agreement is ratified, each member state must integrate the framework into local law and implement VAT. The framework allows for a basic rate of VAT on supplies of goods and services of 5%, as well as allowing certain supplies to be zero-rated or VAT exempt depending ultimately on the domestic legislation of each country.

VAT is a tax on the consumption of goods and services. It is charged and collected by a taxable person and remitted to the tax authority. A taxable person, being a natural or legal person, is a person, who carries out economic activity that requires them



to be VAT registered. The VAT framework comprises of 15 chapters and 79 articles.

VAT impacts every business that supplies goods or services in the GCC countries. In particular, businesses that make taxable supplies over the mandatory threshold, must register with the relevant tax authority. There is scope for voluntary registrations and VAT registration requirements will apply to non-resident entities. Additionally, there is scope to register multiple entities as a single VAT group, subject to conditions to

be set out in the domestic legislation of each GCC country.

VAT will vary depending on the local VAT regulations for each member state, according to the place of supply. The place of supply of goods is where the goods are disposed of or used by the customer. The place of supply of goods provided with transport is the place where the transport starts.

A taxable person will be entitled to deduct the VAT amount incurred input tax in carrying out their taxable supplies from the VAT due on the taxable supplies made output tax. Evidence of VAT charged and paid must always be available, typically a tax invoice. Each member state will adopt its own conditions for VAT deduction.

There are special rules which transfer the place of supply of goods with transport to the customer if they are a VAT registered entity in another member state. For services, the place of supply is where the supplier is resident. However, the place of supply of services provided to a taxable customer shifts to where the customer is established. Taxable supplies include all supplies of goods and services and transactions that are deemed to be such supplies for example, transfers of stock abroad and either subject to the 5% VAT rate, zero-rated or exempt.

This includes:

- all goods or services, transfers of ownership, disposals, leases, rentals and construction used in business
- transfers of goods and services from and to other GCC countries
- transfers of goods and services from and to the rest of the world outside the GCC
- deemed supplies
- import of goods and most services

ZERO-RATED VAT

Zero-rate VAT is still a rate of tax for a taxable supply. Consequently, a supplier of zero-rated goods or services is entitled to a credit for the VAT incurred on costs. In contrast, VAT exempt is not a rate of tax and is not a taxable supply. Those taxable persons making VAT exempt supplies may not claim credits on the VAT incurred on their costs. This results in a higher cost for VAT exempt suppliers.

Imports refer to goods entering the GCC countries from outside the Gulf region. VAT is typically due on imported goods,

however there are special rules regarding the valuation of imported goods and goods under suspension as per Customs regulations. Exports refer to goods transported outside of the GCC. Exports are typically zero-rated, subject to certain conditions.

There are special provisions for the place of supply of the following:

- medicines and medical supplies, common list to be determined by the Committee of Health Ministers
- basic food items, common list to be ratified across the GCC
- oil sector, at the discretion of the member state
- international and intra-GCC transport
- transport, at the discretion of the member state
- supply outside the GCC for example, exports
- supply of investment gold, silver and platinum

Additionally, member states can choose to zero-rate or exempt the following sectors:

- education
- medical
- oil, gas, water, electricity
- transport services for goods and passengers
- services to real estate properties
- supply of telecommunication and electronically provided services
- supply of restaurant, leisure, cultural and sporting events

VAT EXEMPT

Financial services carried out by authorised banks and financial institutions will generally be VAT exempt. Exempt services are not taxable supplies and therefore supplies made to a taxable person making exempt supplies would not be able to recover any input VAT incurred. Financial institutions may however be afforded the right to a refund of input tax, based on refund rates determined at the discretion of each member state. Member states also have the discretion to apply any other tax treatment to the financial services sector.

Excerpted from, Analysis of the GCC VAT Framework Agreement by KPMG.

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WHY REGIONAL MANUFACTURING IS ADOPTING INDUSTRY 4.0

Digitising manufacturing processes using IoT and cloud brings in data transparency, scalability, agility writes Terri Hiskey at Epicor Software.



*TERRI HISKEY,
Vice President of Product
Marketing for Manufacturing,
Epicor Software*

According to several reports, the manufacturing sector in the UAE is expected to account for 25% of the country's GDP by 2025. To survive and thrive, manufacturers must focus on growth, and one of the ways they can achieve this is to leverage Industry 4.0 technologies. According to research from PwC, for businesses in the Middle East, Industry 4.0 creates the potential to reap cost savings of \$17.3 billion per year.

Industry 4.0 is all about doing things differently—introducing automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of Things, and cloud computing. The goal is the smart factory with cyber-physical systems capable of autonomously exchanging information, triggering actions, and controlling each other independently.

This facilitates fundamental improvements to the industrial processes involved in manufacturing, engineering, material usage, asset performance and management, and supply chain and lifecycle management.

While there is a great deal of discussion about the various technology enablers of Industry 4.0, it is more crucial to reframe the discussion around business benefits. Industry 4.0 is not a technology initiative. It is the future of manufacturing as we know it. It is not just about improved performance and efficiency; investments into new manufacturing technologies enhance agility, flexibility, and speed-to-market when designing and launching new products and services.

Adopting an Industry 4.0 approach also provides the means to navigate change. UAE manufacturers are reinventing their business models to focus on value-added services, entering new geographic markets or adjacent market segments. Today's Industry 4.0-outfitted factories are empowered to drive productivity, and this keeps costs down while ensuring quality and consistency across manufacturing processes globally.

From a business perspective, Industry 4.0 supports four major tenets of operational execution: interoperability, information transparency, actionable insights and automation. These tenets in turn, support several business imperatives.

These include:

SCALABILITY

Automation in the factory gives manufacturers the ability to transition personnel to more value-

MANUFACTURERS NEED TO BE ABLE TO RECONFIGURE THE FLOOR QUICKLY TO AVOID EXPENSIVE MACHINE LINE DOWNTIME.



KEY TAKEAWAYS

- Cloud technology is central to Industry 4.0 and allows manufacturers to scale operations by focusing more on core competencies.
- Industry 4.0 is not a technology initiative, it is the future of manufacturing as we know it.
- Industry 4.0 supports four major tenets: interoperability, information transparency, actionable insights, automation.
- Manufacturers need to address whether business systems they have in place are ready to support Industry 4.0.

added activities, and provides the foundation to extend and expand product and service offerings. As they look to expand globally, automation maintains process consistency across locations. This also allows manufacturers to focus on what they do best to find and refine their sweet spot. This moves manufacturers into a more advantageous position from taking on every job to taking on those jobs the organisation can do well, while achieving the best profit margins.


Cloud technology is central to Industry 4.0. It allows manufacturers to scale operations by focusing more on core competencies versus IT operations. Many small to mid-market manufacturers have limited IT staffs; they must be very strategic

with IT resources.

The cloud is the great IT equalizer—giving small and mid-market enterprises access to leading software capabilities, while freeing them from having to monitor and manage infrastructure. The cloud also gives manufacturers the ability to spin up computing power, providing agility to help organisations rise to the occasion when needed.

SECURITY AND REDUNDANCY

As digitisation in the factory continues, security implications grow and a sophisticated and layered approach to security is critical. This is challenging for manufacturers who may not have the security resources in-house to adequately address this



growing challenge. Leveraging a cloud-hosted software model can give manufacturers the ability to confidently charge forward in their Industry 4.0 initiatives.

CONTROL AND VISIBILITY

In an increasingly complex and global manufacturing enterprise, a single digital thread across all operations is needed to support responsiveness, improve collaboration, reduce risk, and streamline compliance requirements. Visibility from order entry to inventory to finished product is required to inform customers, partners and other stakeholders as to status at any time.

CUSTOMER EXPERIENCE

This visibility is key to providing the omni-channel order and fulfilment options that customers demand today. It is also critical to support co-creation — the ability to collaborate with customers and suppliers. Making business processes transparent and open to engagement from customers and suppliers can support improved satisfaction, stronger relationships and loyalty.

CUSTOMISATION

Mass market manufacturing has given way to personalisation and customisation. This entails shorter production runs and the need to switch out lines more often. Manufacturers need to be able to configure and reconfigure the shop floor quickly and easily to avoid expensive machine and line downtime. Velocity is the new business currency.

Technologies such as augmented reality can help reduce lag time between design and production. 3-D printing is pivotal in this area. To date, the use case for rapid prototyping has proved to be a game changer, and other broader use cases are now coming into focus. These include 3-D printing

for spares or replacement parts—providing the ability to improve responsiveness for customers at a time of need.

Additionally, manufacturers also benefit from 3-D printing of replacement parts—another game-changing value proposition when you consider all the benefits — reducing the acquisition time and cost of parts, especially for old or obsolete parts, and enabling manufacturers to implement speedy repairs that significantly reduce downtime while extending equipment shelf-life and return on investment.

INNOVATION

Manufacturers need to address whether the business systems they have in place are ready to support the journey toward Industry 4.0. Product Lifecycle Management, Enterprise Resource Planning, Manufacturing Execution Systems, and Computer Aided Drafting - Computer Aided Manufacturing, all must be integrated to support the move toward increased digitisation and customisation.

Several local organisations are spending many IT cycles on integration, which takes away from their ability to focus on innovation. This integration albatross is the subject of a study by Accenture, which reports a typical IT budget may allocate up to 90% towards maintaining the current state and just 10% on innovating — a technology debt that is bankrupting competitive advantage.

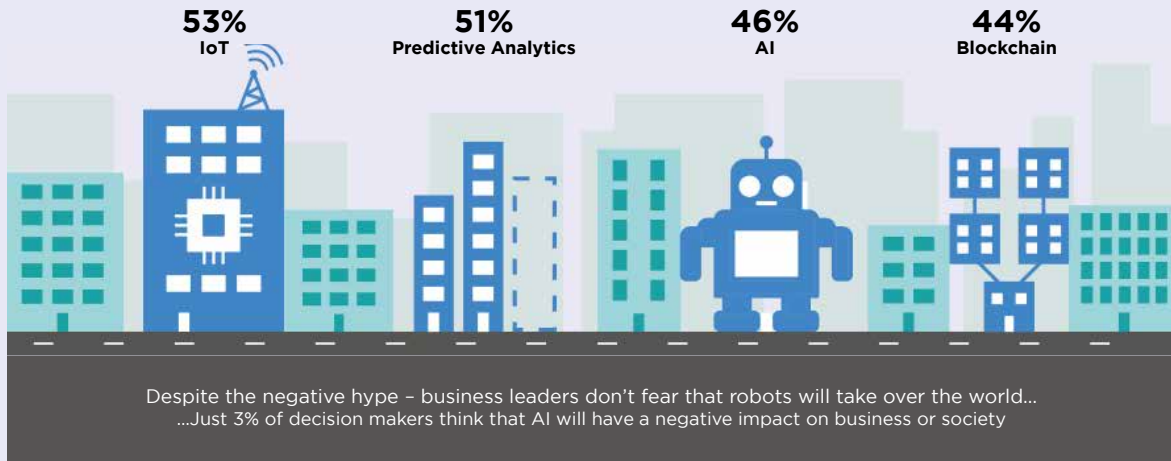
The boundaries between production and management must disappear, and ERP, MES and other critical systems must form an integrated unit if businesses are to realise the growth opportunities presented by this new age of intelligent manufacturing. Evaluating the existing IT environment is the first step to understanding how ready UAE manufacturers are for Industry 4.0. ■

KEY TAKEAWAY

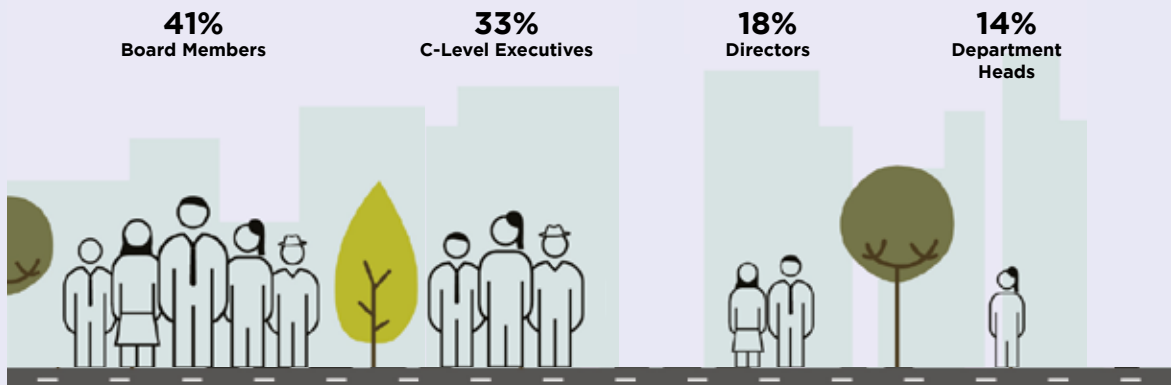
MAKING BUSINESS PROCESSES
TRANSPARENT AND OPEN TO
ENGAGEMENT FROM CUSTOMERS CAN
SUPPORT IMPROVED SATISFACTION
AND LOYALTY.

The Cycle of Progress

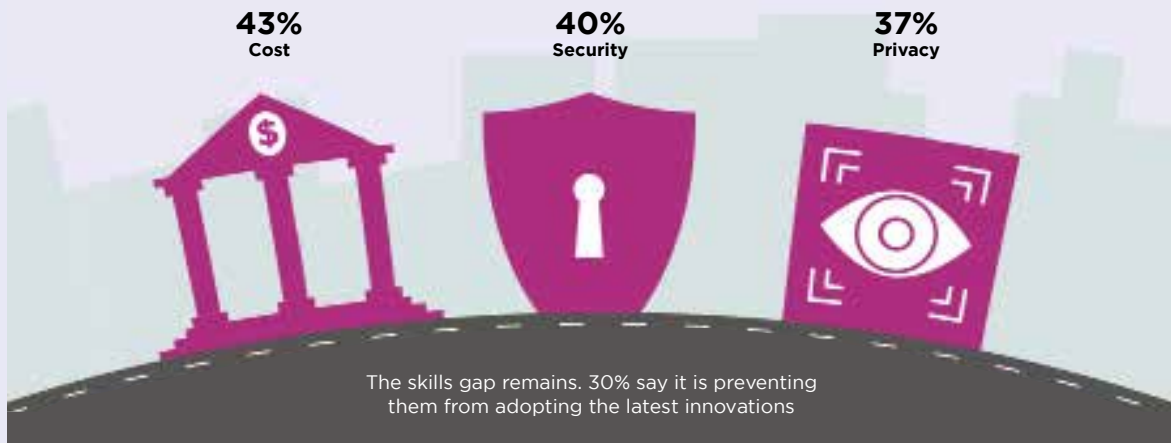
Businesses are adopting the latest technology innovations to thrive and survive in the global digital economy:



But senior leaders think their business is further along in their digital transformation journey than it actually is:



Yet, digital transformation barriers remain...
Decision makers are anxious about:



Source: The Cycle of Progress, Mapping the digital transformation journey, Courtesy Tata Communication.

The Cycle of Progress

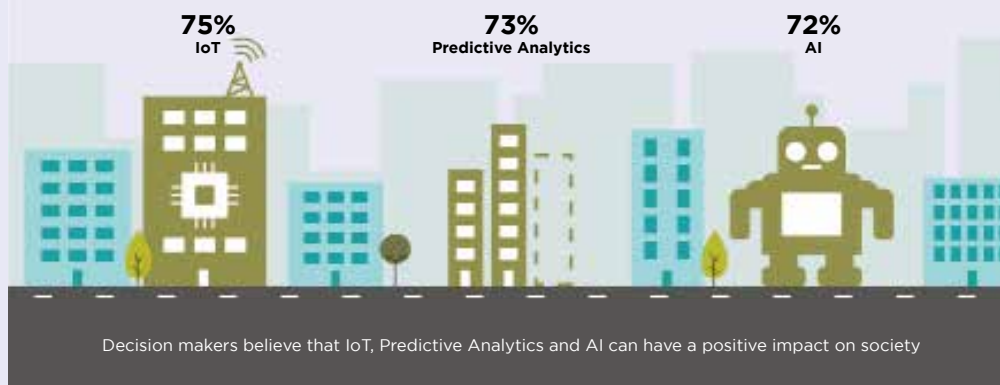
Business leaders in developing markets are confident that adopting these technologies is putting them ahead of the curve in their industries:



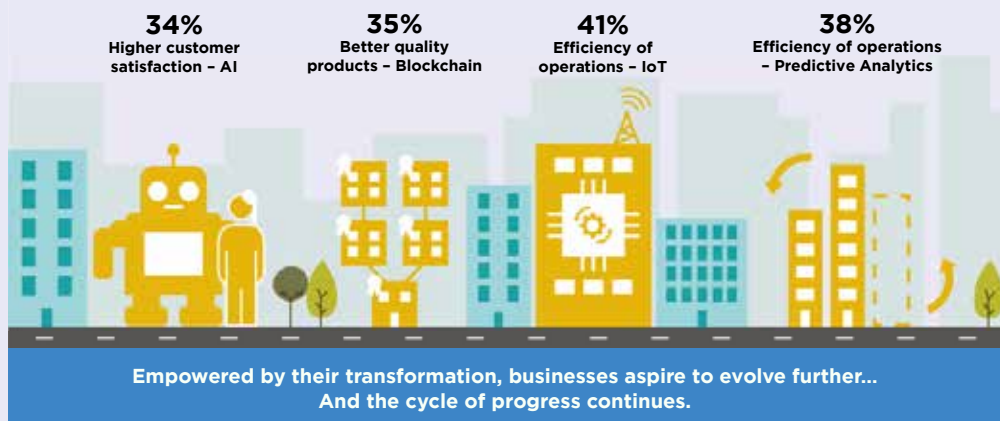
Compared with decision makers in developed markets:



Digital technologies can pave the way for a better world too:



As digital transformation begins, businesses see new possibilities. The top benefits of technologies are:



Source: The Cycle of Progress, Mapping the digital transformation journey, Courtesy Tata Communication.

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